



# **THE FLORIDA STATE UNIVERSITY**

## **DESIGN GUIDELINES AND SPECIFICATIONS**

*April 2008*

TABLE OF CONTENTS

**INTRODUCTION..... 6**

    REVISION HISTORY: ..... 6

*May 2006:* ..... 6

**DIVISION 1 - GENERAL PLANNING AND DESIGN DATA ..... 8**

    GENERAL CONTRACT GUIDELINES ..... 9

    GENERAL DESIGN GUIDELINES ..... 10

*General Information* ..... 10

*Visual Clutter*..... 12

*Acoustical Treatment* ..... 12

*Accessibility Guidelines* ..... 13

*Guidelines for Toxic/Hazardous Materials*..... 13

    DESIGN CRITERIA FOR SPECIFIC SPACES..... 14

*Design of Parking Structures*..... 14

*Restroom Design*..... 15

*Classroom Design*..... 15

*Custodial Closet Design*..... 16

**DIVISION 2 - SITEWORK ..... 17**

    AESTHETIC COMPATIBILITY ..... 17

    GENERAL GUIDELINES..... 17

    SAFETY PROVISIONS, SECURITY PROVISIONS AND TEMPORARY SERVICES..... 17

    PARKING ..... 20

    DEMOLITION ..... 20

    EARTHWORK..... 21

    PEST CONTROL ..... 22

    UTILITY WORK ..... 22

    PAVING ..... 23

    LANDSCAPING ..... 23

    EXTERIOR SIGNAGE..... 27

    STORMWATER DRAINAGE GUIDELINES..... 27

**DIVISION 3 – CONCRETE ..... 28**

    GENERAL REQUIREMENTS..... 28

    EXTERIOR EXPOSED CONCRETE OR PRE-CAST STONE ..... 28

**DIVISION 4 – MASONRY ..... 29**

    GENERAL REQUIREMENTS..... 29

**DIVISION 5 – METALS ..... 31**

    EXTERIOR FERROUS METALS..... 31

    EXTERIOR METAL STUDWALLS..... 31

**DIVISION 6 - WOOD AND PLASTICS ..... 32**

    GENERAL REQUIREMENTS..... 32

    RESTROOM COUNTERTOPS..... 32

<b>DIVISION 7 - THERMAL AND MOISTURE PROTECTION.....</b>	<b>33</b>
GENERAL REQUIREMENTS.....	33
ROOFING .....	34
EXTERIOR CLOSURE ASSEMBLIES.....	34
GENERAL ROOFING GUIDELINES .....	34
<b>DIVISION 8 - DOORS AND WINDOWS .....</b>	<b>36</b>
GENERAL DOOR GUIDELINES.....	36
GENERAL HARDWARE GUIDELINES.....	37
<i>General</i> .....	37
<i>Keying</i> .....	38
<i>Interior Door Hardware</i> .....	38
<i>Exterior Door Hardware</i> .....	39
<i>Electronic Card Access</i> .....	39
GENERAL DOOR AND HARDWARE GUIDELINES FOR SPECIFIC SPACES .....	39
<i>Restrooms</i> .....	39
<i>Custodial Closets</i> .....	39
<i>Classrooms</i> .....	40
HOUSING GUIDELINES FOR DOOR HARDWARE AND CYLINDER BITTING.....	40
WINDOW GUIDELINES .....	40
<b>DIVISION 9 - MATERIALS AND FINISHES .....</b>	<b>42</b>
GENERAL MATERIAL AND FINISH GUIDELINES.....	42
GENERAL FINISH REQUIREMENTS FOR SPECIFIC SPACES .....	42
<i>Restroom Floors</i> .....	42
<i>Custodial Closet Floors</i> .....	42
CARPET.....	42
<i>General Carpeting Design Guidelines</i> .....	42
<i>Carpeting And Related Products</i> .....	43
<i>Use of Carpet</i> .....	43
<i>Carpet Cleaning</i> .....	44
<i>General Carpeting Installation Guidelines</i> .....	44
<i>Glue-Down Installation Guidelines</i> .....	44
<i>Carpet Warranty</i> .....	45
RESILIENT FLOOR TILE .....	45
<i>General Considerations for Resilient Tile</i> .....	45
<i>General Resilient Tile Installation Guidelines</i> .....	46
<i>Resilient Tile And Related Products</i> .....	46
<i>Resilient Tile Cleaning</i> .....	46
<i>Resilient Tile Warranty</i> .....	46
STUCCO AND PLASTER .....	47
QUARRY TILE.....	47
CERAMIC TILE .....	47
ACOUSTICAL CEILING TILE .....	47
PAINTING .....	48
<b>DIVISION 10 - SPECIALTIES .....</b>	<b>49</b>
GENERAL ACCESSORY REQUIREMENTS FOR SPECIFIC SPACES.....	49
<i>Toilets</i> .....	49
<i>Custodial Closets</i> .....	49
<i>Classrooms</i> .....	49

MARKERBOARDS AND TACKBOARDS .....	50
SIGNAGE.....	50
CONSTRUCTION SIGN.....	50
BUILDING PLAQUE .....	50
FIRE PROTECTION SPECIALTIES .....	51
LOUVERS.....	51
WALL AND CORNER GUARDS .....	51
<b>DIVISION 11 - EQUIPMENT .....</b>	<b>52</b>
CENTRAL VACUUM SYSTEMS.....	52
TRASH HANDLING EQUIPMENT.....	52
LOADING DOCK EQUIPMENT.....	52
<b>DIVISION 12 - FURNISHINGS.....</b>	<b>53</b>
GENERAL GUIDELINES.....	53
WINDOW TREATMENT .....	53
FIXED SEATING SYSTEMS .....	53
LABORATORY CASEWORK .....	54
<b>DIVISION 14 – ELEVATORS CHAIR LIFTS AND DUMBWAITERS.....</b>	<b>55</b>
<b>DIVISION 15 - MECHANICAL UTILITIES AND EQUIPMENT .....</b>	<b>76</b>
GENERAL MECHANICAL GUIDELINES .....	76
PLUMBING .....	78
HEATING AND STEAM .....	79
CENTRAL UTILITY PLANT (CUP) CENTRAL CHILLED WATER SYSTEM/BUILDING INTERFACES .....	81
AIR CONDITIONING .....	81
FUME HOODS .....	82
REFRIGERANT MANAGEMENT REQUIREMENTS .....	83
<i>General Requirements.....</i>	83
<i>New Equipment Guidelines.....</i>	84
<i>New Equipment ID Tags .....</i>	84
<i>New Equipment Leak Testing.....</i>	84
<i>Demolition Procedure for Equipment Removed by Contractors.....</i>	85
BUILDING AUTOMATION AND CENTRAL MONITORING SYSTEMS .....	85
<b>DIVISION 16- ELECTRICAL .....</b>	<b>86</b>
BASIC MATERIALS AND METHODS.....	86
WIRES AND CABLES.....	87
PANELBOARDS .....	88
MOTORS AND STARTERS.....	89
POWER GENERATION .....	89
SERVICE AND DISTRIBUTION.....	90
ELECTRIC SERVICE: .....	90
METERING .....	91
GROUNDING .....	91
<b>MEDIUM VOLTAGE CABLE .....</b>	<b>94</b>
DUCT BANK SYSTEMS .....	94

MANHOLES .....	94
LIGHTNING PROTECTION SYSTEMS .....	95
LIGHTING SYSTEMS .....	95
OUTDOOR LIGHTING.....	96
PARKING DECK LIGHTING .....	97
FIRE ALARM SYSTEMS .....	98

**APPENDIX A** – FSU Telecommunications Infrastructure Standard (r2.2G, 05/22/2006)

**APPENDIX B** – Interior Signage Specification (10/2005)

**APPENDIX C** – Landscape Design Guidelines (1/14/2005)

**APPENDIX D** – Building Automation and Central Monitoring Systems (10/20/05)

**APPENDIX E** – Classroom Design Standards (5/2006)

**APPENDIX F** – Architectural Design Guidelines (1/14/2005)

**APPENDIX G** – Project Sign Standard (3/2006)

**APPENDIX H** – Networking Equipment Guidelines (3/8/2002)

**APPENDIX J** – Management of Refrigerant and Refrigerant Containing Equipment (2004)

**APPENDIX K** – Carpet Procurement Specification (4/30/2008)

**APPENDIX L** – LEED (Leadership in Energy and Environmental Design) (4/30/2008)

## INTRODUCTION

The guidelines described in this document are for the use of architects, engineers, designers, and both in-house and outside construction personnel. They are presented to assist the professional with the design, construction, and management of building projects at the Florida State University, by familiarizing him with University construction policies and preferences. The design professional shall incorporate applicable portions of this guide into the project drawings and specifications unless specifically relieved of particular provisions by the University Project Manager assigned to his project.

This manual is divided into various sections and modeled approximately after the Construction Specifications Institute (CSI) 16-division format, starting with general guidelines and site work, continuing through architectural concerns, and concluding with engineering guidelines.

The information contained in this document is based upon sound architectural and engineering principles as well as the University's years of experience in these fields. However, these guidelines are neither completely inclusive nor totally exclusive. If a situation develops which is contradictory to these guidelines or, if the design professional can demonstrate a more advantageous solution, the University will welcome requests for modifications, upon approval by the Project Manager.

We also welcome comments and suggestions for improvements to this document to better serve the University. Questions, comments or suggestions can be addressed to Robert Thompson at Facilities Design and Construction, Facilities Design Office, The Florida State University, 125 Mendenhall Building A, Tallahassee, Florida 32306-4153 or by phone at (850) 644-6801.

### REVISION HISTORY:

Beginning in the May, 2006 edition, a brief summary of major revisions will be included here, to make it more convenient for the user to find the most important changes. All changes to the main body of these guidelines, both major and minor, made since the edition immediately preceding, will be shown by a vertical bar in the margin. Changes to Appendices will be noted here, but may not include margin bars.

#### May 2006:

1. Major formatting revision to the information previously contained in the 2/20/04 Appendix E – Classroom Design Standard, are included in this edition. Few changes have been made to the actual classroom design requirements themselves, but, in order to facilitate spec writing, some of the information contained in the previous Appendix E has been incorporated into the body of the Guidelines. The user will find classroom requirements, if any, now contained in Divisions 1-16 where they are related to those sections. Technology standards for classrooms and descriptions of our standard classroom types are still found in Appendix E.
2. Revised Appendix G – Project Sign Standard.
3. Pest Control requirements have been updated and relocated to a more appropriate spot in the guidelines and given a separate section under Division 2 – Site work.

#### April 2008:

1. Revised Division 2 - Sitework, Landscaping guidelines and included design guidelines and specifications for campus irrigations system.
2. Revised Division 4 – Masonry, paragraph 13, multiple wythe masonry construction.

3. Revised Division 5 – Metals, Exterior Metal Stud Walls to clarify their use.
4. Revised Division 8 – Doors and Windows, General Hardware Guidelines, Exterior Door Hardware.
5. Revised Division 9 –Materials and Finishes,
  - 5.1. Carpet, Glue-Down Installation Guidelines
  - 5.2. Acoustical Ceiling Tile, Suspension system requirements.
6. Revised Division 10 – Specialties, General Accessory Requirements for Specific Spaces
  - 6.1. Toilets
  - 6.2. Custodial Closets.
7. Revised Division 14 – Elevators Chair Lifts and Dumbwaiters, XVIII Elevator Phone.
8. Revised Division 15 – Mechanical Utilities and Equipment
  - 8.1. Plumbing, Paragraph 12 Urinals
  - 8.2. Plumbing, Paragraph 16 Water Closets
9. Revised Division 16 Electrical
10. Revised Appendix K, Carpet Procurement Specifications, Acceptable Manufacturers
11. Added Appendix L, LEED (Leadership in Energy and Environmental Design)

## **DIVISION 1 - GENERAL PLANNING AND DESIGN DATA**

### **GENERAL GUIDELINES FOR ARCHITECTURAL AND ENGINEERING SERVICES**

1. The Architect/Engineer (A/E) shall endeavor to provide a design concept which will facilitate possible future, changes, expansion, or renovation.
2. The Design Professional shall follow all requirements specified in the current edition of the "Professional Services Guide". It will be the responsibility of the A/E to ascertain that the project concurs with current:
  - a. Fire safety requirements as provided in Section 255.25(5), F.S. including required plan review by the State Fire Marshal's Office.
  - b. Requirements for the physically disabled as provided in Section 255.21 F.S., including the "Florida Americans with Disabilities Act of 1993."
  - c. Flood plain management criteria as described in Section 255.25(6) F.S.
  - d. Facility energy evaluation per the requirements of Section 255.254 F.S., utilizing the Trane Trace program or approved equal.

Exception: The building shall meet the requirements of Section 255.254 regarding energy consumption per sq. ft. per year. However, the space temperature requirements shall be as follows:

Cooling: Interior temperature of 72 degrees F with an exterior temperature of 100 degrees db and 78 degrees wb.

Heating: Interior temperature of 72 degrees F with an exterior temperature of 15 degrees.

Ventilation: Twenty (20) cfm per person. Designs that will reduce the total quantity of ventilation air during periods of low occupancy are encouraged.

- e. Applicable codes, regulations, and orders as listed in the "Professional Services Guide."
  - f. The Project Management Section will assist and advise in these matters. Prior to commencing the preparation of schematic drawings, the design professional will be invited to participate in conferences with the University staff at which time he will be informed of more detailed requirements and specific data concerning materials, heating, air conditioning, electrical work, plumbing, and related areas.
3. Adequate time shall be programmed in the design process for complete review of design by the University staff at the Schematics, Design Development and Construction Documents phases. At least one week or preferably ten days shall be allowed for each review. Written approval of each submittal shall be obtained from the University Project Management Section before proceeding with subsequent phases. In no case shall the design professional release construction documents to prospective contractors prior to final approval of all documents by the University.
  4. As part of the design contract the A/E shall prepare, and submit to the University Project Manager for approval, two copies of the Florida Life Cycle Energy Evaluation study utilizing the Trane Trace program, or approved equal, if necessary for the project. The completed study shall be submitted for approval no later than the Advanced Schematics Design Phase.
  5. The A/E shall give a complete copy of this document to all consultants.
  6. The University requests that "cuts" or drawings of all lighting fixtures, plumbing fixtures and heating and air-conditioning equipment be provided for review with the design development drawings.

7. If required by contract or by additional services authorization, the design professional shall, using the record set of drawings provided by the contractor, prepare a complete set of as-built drawings on photographic mylar mat (4 mil or greater), and one set of diskettes containing complete CAD files complying with the CAD submittal requirements in the "Professional Services Guide". These drawings must be of the highest quality to allow the production of clear legible prints. Unless otherwise stipulated, these as-built drawings will be produced on sheets measuring 24" x 36". Upon completion, the A/E shall deliver the complete set of drawings to the Project Manager. For electrical and mechanical equipment, furnish three sets of operating manuals, wiring diagrams, pneumatic and electronic control diagrams, and parts lists applicable to each piece of equipment. Maintenance instructions and parts lists are to be bound in booklet form. Furnish an as-installed diagram of controls, wiring and operating instructions mounted behind glass on the equipment room wall for each mechanical room.
8. The A/E shall provide to the university a set of as-built key plans drawn to scale of a minimum of 1"=30' for all new buildings or substantial renovations. The key plans shall be provided on photographic Mylar mat (4 mil or greater), and one set of diskettes (current AutoCAD Version). Key plans shall be drawn for production on a 12" x 18" sheet with 11" x 17" inside border, one floor per sheet. Samples of existing key plans will be provided upon request.
9. The A/E shall provide, in final specifications, for the contractor's coordination with neighboring buildings or activities in cases of excessive noise, vibrations, utilities outages and the like.

#### GENERAL CONTRACT GUIDELINES

1. The contractor shall keep a set of project construction documents on site at all times and log all changes made during the construction period. No deviations from the drawings and specifications shall be made without full knowledge and consent of the architect or engineer. Record drawings shall show dimensions, location, and depth of all buried and concealed piping, plugged outlets, and equipment and shall be kept up to date. No backfilling of trenches will be permitted until the Project Manager approves as-built drawings as up-to-date. Depth of sewers shall be from a permanent benchmark as shown on the contract drawings. The contractor shall maintain a daily log of weather conditions.
2. The construction contract shall provide for security guards at the construction site during specified periods on a unit cost basis.
3. All construction, renovation, repairs or maintenance work shall be scheduled so as not to disrupt University operations at any time. The contractor, subcontractor, repairperson, or the like shall schedule and coordinate all work with the University Project Manager before commencing. The contractor must understand that after-hour work may be required to accomplish the work.
4. Damage to University property or other property incurred by the contractor during any stage of the work shall be immediately repaired and the damaged area restored to its original condition by the contractor at no expense to the University.
5. Projects will only be certified substantially complete when the Project is ready for occupancy for its intended use and approved for occupancy by the State Fire Marshall and the FSU Building Official.
6. Alternates. A limited number of alternates may be used as a means of ensuring base bids within the available construction funds. The Architect/Engineer shall consult the Owner regarding priority of alternates. Only additive alternates shall be used. Proposals should be clearly defined, listed in priority of need and held to not more than 7% of construction cost.
7. The Contractor shall prepare a master construction schedule using the Critical Path Method, as outlined in the Associated General Contractors of America (AGC) publication "The Use of CPM in

Construction - A Manual for General Contractors" (An alternate type of schedule will be considered based on the project complexity and size.)

1. Quality control is of major importance in each university construction project. Provide requirements for compliance (rather than simply referencing standards). The Architect/Engineer shall provide an up-to-date copy of his/her respective firm's in-house quality control manual.
2. Contract Closeout Documents. Include information regarding final cleaning, adjusting, Project Record Documents, close out procedures, and manufacturers' maintenance instructions including schedules showing proper time intervals for lubrication, adjustment, calibration or checking. Contractor shall consolidate manufacturers' schedules with a single master schedule of required maintenance.
3. Project Record Documents: The Contractor shall maintain on site one set of the following record documents to record actual revisions to the Work: Contract Drawings, Specifications, Addenda, State Fire Marshal Approved Documents, Change Orders and other Modifications to the contract, Approved Shop Drawings, product data, and samples. Record documents shall be stored separately from documents used for construction and kept concurrent with construction progress. The Architect/Engineer shall monitor and verify progress in updating record documents prior to approval of Contractor's monthly Applications for Payment. The Architect/Engineer shall require submission of record drawings reflecting "record set" conditions to the University with the project Close-out Documents. This "record set" shall be adequate to provide the Owner with a permanent record of actual construction, to facilitate troubleshooting, and for use in future building alterations.
4. HVAC Systems Manuals: The Contractor shall submit to Architect/Engineer, no later than the 75% completion date of the HVAC systems, four sets of manuals (or if deemed prudent, a draft set of manuals) for review. Architect/Engineer shall review and require such changes or additions as necessary to meet these standards and when Architect/Engineer approves the manuals, the Architect/Engineer shall forward a set to the Owner. The Owner will review and comment and will advise the Architect/Engineer, who will then secure the required corrections and transmit three completed sets to the Owner before a Certificate of Substantial Completion is issued.

## GENERAL DESIGN GUIDELINES

### General Information

1. Adhere to the requirements of the Agreement and the "Professional Services Guide" for each submittal.
2. Comply with applicable codes, regulations and orders as listed in the "Professional Services Guide".
3. Make all contact through the University Project Manager as the "single point of contact" and coordinator for all University Departments and Offices.
4. Comply with requirements for the physically disabled and follow the ADA Requirements, and Fair Housing Act where required.
5. Coordinate between Architectural, Structural, Plumbing, Mechanical and Electrical Sections concerning compliance and consistency with applicable codes.
6. Provide Post-Occupancy Services as required.
7. Upon completion of Schematic Design Phase, room numbers and door numbers shall be coordinated with the FSU Office of Space Utilization and Analysis through the Project Manager. Final numbers shall not appear on subsequent documents without prior approval from the Project Manager.
8. FSU prefers simplified detailing to reduce costs.

9. Endeavor to incorporate a design concept that will facilitate possible future changes, expansion, or renovation.
10. Comply with fire safety requirements including required plan review by the State Fire Marshal's Office and establish early reviews with the State Fire Marshal during preliminary design phases.
11. Coordinate with the Physical Plant Department and the Department of Environmental Health and Safety where toxic/hazardous materials are involved in a project and incorporate Environmental Health and Safety specific requirements in Specifications.
12. Ensure that Geotechnical Engineer's analysis and site investigation data is evaluated by a structural engineer and coordinated with the structural engineer's design criteria. Provide plans showing required test boring locations and any other information required for the testing laboratory's sub-surface investigation. Study underground utilities and avoid them when locating test-boring locations.
13. In buildings that require vending equipment, a separate room or space must be provided.
14. Provide low maintenance and no maintenance materials and equipment both interior and exterior.
15. Don't use products containing asbestos.
16. Follow the Florida Department of Education, State Requirements for Educational Facilities, Rule 6A-2.0111, for space requirements and ask for written interpretation for unique spaces not shown.
17. Ensure that all proposed and expanded services and distribution systems and infrastructure are coordinated with the University's Utilities Master Plan.
18. For areas that must be occupied by a specific date, coordinate and schedule time for these moves with the Project Manager.
19. Thoroughly investigate and take measures to maintain services to surrounding areas that are occupied.
20. Provide temporary partitions to control dust and noise. Schedule intrusive work during off hours.
21. Provide a safety procedure place for "Hot Work" areas such as in areas where volatile gases and fuels are in use (for example medical, laboratory, and garage spaces).
22. Provide specific guidance to provide for future work such as additions or installations of special equipment, with particular attention to fire safety, circulation, accessibility, structural provisions, utilities, site work, and future extensions of piping, ductwork and electrical service.
23. Specify method of payment for water, fuel, chilled water and power consumed by the Contractor. Require the general contractor to make arrangements, through the University Project Manager, with the Department of Physical Plant for installation of temporary lines.
24. Operation and Maintenance Data. Provide detailed requirements in the appropriate sections of the specifications. The following checklists should be modified to suit project requirements: Roofing Manufacturers maintenance data. Elevators and hoists as per specifications. Piping systems (printed diagrams, valve tag, etc). Control systems (printed diagrams, operating instructions, etc). Communications (point-to-point wiring diagrams and instruction manuals, if installed by the Contractor). Fire protection systems (as per specifications). Motor control (overload heater charts). Equipment (operating instructions).
25. Project Turnover Procedures. Specify instructions and requirements of the Contractor, Architect/Engineer and Owner for acceptance of the project. The Architect/Engineer is responsible for including in the Specifications the obligations for the Contractor, for an orderly acceptance and turnover. Included in such obligations are: punch lists, "record set" plans and specifications, operating and maintenance manuals, and indoctrination of the university personnel. Include written notification for insurance purposes.

## Visual Clutter

1. Certain building system components are typically visible on the exterior of a building or elsewhere on a project site. These components, which include devices such as backflow preventers, transformers, switchgear, condenser units, and waste dumpsters, detract from a building's appearance if not appropriately handled. The design professional shall exercise care to ensure that these types of devices do not impact or detract from the project's appearance. Ideally, the device shall be incorporated into a project's design in such a manner that it is not conspicuous. Other types of concealment, such as screening walls or landscaping, shall be utilized where appropriate. All methods of concealment must comply with all applicable codes and with the access requirements of local utilities.

## Acoustical Treatment

### *General Requirements*

Proper control of sound is essential to the function of an educational environment such as FSU. Pursuant to this fact, the Design Professional shall determine, in conjunction with University representatives, appropriate sound control characteristics on a space by space basis and provide acoustical privacy from space-to-space consisting of, but not limited to, (1) partitions full height up to the underside of structure above (not up to suspended or dropped ceilings), (2) carpeting, acoustical ceilings and other sound absorptive surfaces as appropriate to the use and maintenance of the space, (3) protection of openings such as solid core wood stave doors with sound seals, (4) control of ambient noise and (5) other measures required to accomplish sound control goals for each space, as set forth by University representatives and these guidelines.

Specific spaces that will always require sound control measures shall be, but are not limited to, the following: offices, interview rooms, conference rooms, classrooms, seminar rooms, and lecture halls. Consideration shall be given at the early planning stages of a project to the location of sound sensitive spaces in relation to spaces that are sources of ambient noise, such as mechanical rooms, lobbies, break rooms, food service areas, loading docks, elevator shafts, restrooms, trash disposal areas, outdoor areas where people gather, high traffic outdoors areas, and nearby noise producing equipment such as generators. Where site conditions and other planning considerations make it necessary to locate sound generating functions near those with sensitive sound control requirements, special consideration shall be given to the separation of these functions with effective sound transmission barriers.

### *Acoustical Treatments for Classrooms*

1. To prevent noise transmission, there should not be a common wall or ceiling between any classroom or lecture hall and the restrooms. If that is unavoidable, then additional measures must be taken to prevent noise transmission.
2. Classrooms shall be located away from sources of high noise levels (e.g., mechanical rooms, elevator shafts) as noted above.
3. Structural columns and other obstructions shall not be placed within the seating areas of classrooms and lecture halls, so as not to obscure sightlines to the instructor or projected images. In renovations, the Design Professional should avoid laying out classrooms such that structural columns are within the seating area. If that is absolutely unavoidable, then the Design Professional should consult with University representatives on ways to minimize the impact of such columns.
4. Corridor walls (or common walls with other unsecured rooms) shall run from floor to underside of structure above. Special consideration should be given to wall or partition construction above the

ceiling lines on the corridor side of the room.

5. Walls in classrooms and lecture halls should have a minimum sound transmission class (STC) rating of 50. All walls must extend to the floor above or to the roof construction, and not stop at the ceiling. (This reduces noise transmission as well as improves security.)
6. Higher STC ratings and special wall-construction details must be included whenever classrooms are located adjacent to, above, or below restrooms, mechanical rooms, elevator shafts, bus stops, athletic facilities, or other sources of high noise levels, or where the classroom function generates a significant amount of noise (e.g., a music classroom).
7. The mechanical system supporting general-purpose classrooms should generate a background noise level of no more than NC 35 (preferably designed to NC 30), and should provide at least six changes of air per hour with an NC (Noise Criterion) rating less than 30. Ducts need to be sized large enough to permit low air velocities. Select diffusers with NC ratings below 25. Design longer duct runs to reduce mechanical noise and reduce the transmission of sound between classrooms. Locate mechanical equipment away from classrooms. Other suggestions may be found at [www.ashrae.com](http://www.ashrae.com). Ambient sound levels measured at 48" AFF at all points throughout the room should have a Noise Criterion (NC) rating of no more than 35 (preferably 30). Background noise should not exceed 45dB-C. Although the space should be designed to an NC of 30-35, it does not have to be certified. (FSU reserves the right to certify a random sample of rooms to ensure that this standard was met.)
8. For specific requirements of each standard FSU Classroom Type – see Appendix E.

#### Accessibility Guidelines

1. All renovations and new work shall meet the requirements for the physically disabled as described in Section 255.21, Florida Statutes, American with Disabilities Act, OSHA, and ANSI.
2. The presence of many visually and physically disabled students on campus must be taken into consideration in preparing construction documents.
3. Outside stairways shall have railings as required by OSHA and as modified by the latest ANSI standards for the handicapped.
4. Any raised platforms shall have railings, toe-boards, labeling, and painting and shall conform to OSHA requirements as modified by ANSI standards for the handicapped.

#### Guidelines for Toxic/Hazardous Materials

1. The Florida Department of Environmental Protection has determined that regulated small and large quantity generators of hazardous waste are responsible for all hazardous wastes generated on their sites. Therefore, contractors working on the campus must comply with the same federal and state regulations pertaining to hazardous waste management and disposal as the University.
2. Based on the Florida State University EPA and DEP permits for hazardous materials management and disposal, the following basic guidelines are provided:
3. On main campus all hazardous wastes are required to be collected, managed and disposed of from the construction location.
4. Other campus location programs must be determined at the time of the construction activity.
5. Appropriate laws must be followed at all times for the use, collection and disposal of all hazardous materials. Contact EH&S for additional information.
6. The A/E shall complete an environmental assessment survey as specified in the FSU Instructions to Contractors for Environmental Compliance. The A/E, contractor and other related safety personnel should contact the University Department of Environmental Health and Safety

concerning all questions, comments or instructions on all toxic/hazardous materials involved in a project.

7. Prior to contracting for work, each contractor, subcontractor, and their employees, who use hazardous materials and may generate a hazardous waste, must provide evidence of having received RCRA (Resource, Conservation & Recovery Act) Hazardous Waste Awareness Training and Hazardous Materials Emergency Response Awareness Training as required by 29 CFR 1910.120 and 40 CFR 311.
8. All employees are required to attend Hazardous Materials Management and Disposal training prior to commencing work with any hazardous materials at FSU facilities. Contact EH&S for additional information.
9. All construction, maintenance, and/or investigative work shall be coordinated with the Facilities Planning and Construction Department and the Department of Environmental Health and Safety where toxic/hazardous materials are involved.
10. Materials shall be selected to minimize hazardous material (lead, chromium, etc.) use during the project. Any building material containing a hazardous material shall not be specified or used in a building project, unless specifically approved by the Project Manager and the Department of Environmental Health and Safety (EH&S). No material containing asbestos may be specified or used in a building project, as provided by Section 255.40, F.S.
11. All electrical transformers, switches, or other electrical equipment which contains polychlorinated biphenyls (PCB) or other equipment which has come in contact with PCB is to be identified and brought to the attention of the University Project Manager and EH&S. Absolutely under no circumstances is the contractor, subcontractor or other related personnel allowed to remove such equipment off the site without prior approval of EH&S. The A/E shall contact the University Project Manager and the Department of Environmental Health and Safety regarding handling procedures of this equipment.
12. Any hazardous or toxic material, such as asbestos, lead based paint or PCB, which is discovered during the course of a project, shall be reported immediately to the University Project Manager. All work involving suspected asbestos, hazardous, or toxic materials shall halt immediately and shall not resume until a notice to resume work has been given by the Project Manager.
13. The A/E shall contact the University Department of Environmental Health and Safety prior to the commencement of a renovation project in order to determine the extent of asbestos or other hazardous contamination in a particular building.
14. In order for the environmental design engineer to be able to submit the final asbestos/lead abatement report to the University Department of Environmental Health and Safety in a timely fashion (60 days after substantial completion), the abatement contractor shall provide post project submittals within 14 calendar days after substantial completion.

## DESIGN CRITERIA FOR SPECIFIC SPACES

### Design of Parking Structures

Special attention must be paid to the location and design of Parking Structures, conformity to the Master Plan, ingress and egress, traffic control, vehicular and pedestrian circulation, utilities and services, safety and security systems, code conformance, provisions for the handicapped, signage, lighting, and protection. Special attention must also be paid to the selection of the structural system and materials, the design and location of control and expansion joints, sealants, treatment of parking surface, finishes, and underside of structure, slopes (minimum of 1/4" per foot), location and design of drains, gutters,

waterproofing systems and membranes to avoid water penetration and material deterioration, and maintenance and operation programs.

### Restroom Design

1. Restrooms for men and women must be supplied on each floor. All restrooms are to be sized and equipped for the handicapped in accordance with the current ANSI and ADA standards. Public restrooms in residence halls are only needed at the main lobby and/or the building recreation room.
2. Countertops and shelves shall comply with Division 6 requirements.
3. Restroom doors shall comply with Division 8 requirements.
4. Floor finishes shall comply with Division 9 requirements.
5. Fixtures and partitions shall comply with Division 10 requirements.
6. Toilet room accessories shall comply with Division 10 requirements.
7. Restroom lighting shall comply with Division 16 requirements.

### Classroom Design

1. Classrooms shall be located on the lower floors to minimize the amount of traffic that uses elevators or stairways.
2. Restrooms shall be located on each floor, and the capacity of the restrooms should be calculated according to the number of students in the area during class change times rather than according to the capacity of the classrooms.
3. Structural columns and other obstructions shall not be placed within the seating areas of classrooms and lecture halls, so as not to obscure sightlines to the instructor or projected images. In renovations, the Design Professional should avoid laying out classrooms such that structural columns are within the seating area. If that is absolutely unavoidable, then the Design Professional should consult with University representatives on ways to minimize the impact of such columns.
4. In new construction, ceiling height shall be a minimum of 10'. The larger the room, the higher the ceiling should be. Ceiling height must be determined based on the height of the projected image, which is 1/6th the distance of the farthest student from the projection screen. To that dimension, add 48" (e.g., in a room in which the farthest student sits 54' from the projection screen, the height of the projected image will be 9', to which 4' will be added making the ceiling height at the front of the room 13'). (See also notes regarding ceiling height in lecture halls.) For renovations, in no case shall the ceiling height at the front of a classroom be lower than 9'.
5. Classrooms shall be designed to maximize the seating capacity. This would include placing the entrance at the front of the room.
6. The front wall of the classroom shall be clear of any protrusions or light switches or thermostats or fire-alarm enunciators so that a marker board may be installed across the entire front wall. See Division 16.
7. Dry-erase marker boards shall be used instead of chalkboards. See Division 10.
8. Instructor consoles shall be located so as not to obscure the students' sight line of the projection screen(s) and marker board(s).
9. For lighting requirements specific to classrooms, see Division 16.
10. There should be no elevator motors, compressor motors, blower motors, or other types of equipment on the side of the power transformer that feeds classroom or lecture hall circuits.

11. Power poles shall not be used within a classroom.
12. Folding walls must not be used in classrooms because it is difficult to have a folding-wall design that will maintain adequate sound separation between classrooms over an extended period of time.
13. All classrooms with permanently installed multimedia equipment shall be connected to a security system. The security system shall include a card access reader at the main entry door, door security contacts on each door and motion sensors in the room. The panels for the security system shall be on emergency power circuits.
14. The lower portion of the corridor walls in classroom areas should have a very durable surface to protect walls and corners from the heavy traffic found during class change times. This protection should extend to approximately shoulder height to protect against damage from backpacks.
15. A high-density plastic chair rail shall be placed on the side walls surrounding the seating area.
16. The University is in the process of selecting a synchronized clock for use in all University buildings. The Design Professional shall make provisions so that these clocks can be installed in classrooms.
17. Audio-visual Requirements – see Appendix E.
18. For specific requirements of each standard FSU Classroom Type – see Appendix E.

#### Custodial Closet Design

1. Provide a minimum of one custodial closet on each floor. Tool holders shall be mounted above the sinks for wet mops. Minimum floor space to be 6'-0" x 8'-0"
2. Custodial closets shall not share space with building mechanical, plumbing, electrical, or telephone equipment and shall not be a passageway to such a room. They shall be directly entered from a corridor.
3. The closet assembly shall conform to the current NFPA Fire Marshal requirements.
4. Provide a central custodial/storage area on the ground floor with similar features to the standard closets except increase area size to approximately 225 square feet and provide additional shelving. This room shall be easily accessible from the building central delivery point.
5. Comply with door and hardware requirements in Division 8.
6. Comply with finish requirements in Division 9.
7. Comply with requirements in Division 10.
8. Comply with plumbing fixture requirements in Division 15.
9. Comply with lighting requirements in Division 16.

## **DIVISION 2 - SITEWORK**

### **AESTHETIC COMPATIBILITY**

1. Refer to the University's Architectural Design Guidelines, Landscape Design Guidelines and Campus Beautification Standards for guidance in these matters.
2. The use of chain link fences shall be kept to a minimum, but where their use is required; the entire fence system shall conform to ASTM F669 Heavy Industrial Fencing, with ASTM Medium Industrial wire fabric, black PVC coated per ASTM F668.
3. Ensure that Project Site is coordinated with Master Plan criteria.

### **GENERAL GUIDELINES**

1. Provisions shall be made for locating a dumpster receptacle and recycling containers in an accessible site with aesthetic screening provided.
2. The building shall have at least one loading zone to accommodate frequent moving of portable equipment to and from the building and to allow maintenance vans and personnel to have ready access to the building. Where loading docks are provided, they shall be located as close as possible to freight/passenger elevators and shall be covered.
3. All parking and spaces used outside of the construction area will require that decals be purchased from the University Parking Services Department, except for construction vehicles with the contractor's logo on them.
4. The contractor will determine the number of special entrance permits that are required and will submit a request for these permits to the Project Manager.
5. Bike racks shall be similar to Bike Stanchions from the Bike Security Racks Company or The Ribbon Rack by Brandir, and approved by the University.

### **SAFETY PROVISIONS, SECURITY PROVISIONS AND TEMPORARY SERVICES**

1. A six-foot high heavy woven steel wire fence on steel posts (where appearance is a consideration, a privacy type fence might be required) with gates shall be erected around the project site. No trespassing signs to meet OSHA requirements shall be specified. The fence shall be shown on the drawings. The Owner shall be held harmless if improper or inadequate fencing is installed by the Contractor and injury or damage results.
2. Building Security. Provide one exterior door of any enclosed structure with a lockset including a university security cylinder during construction. Furnish the University Project Manager two keys for each lock or two masters for all gate locks. These keys will be turned over to the University Police Department for emergency access to the construction site.
3. Safety of Persons and Property. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to all university faculty, staff, and students and all other persons who may be affected thereby. Also, all the work, all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any Subcontractors or Sub-subcontractors. Other property at

the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

4. When the use or storage of explosives or other hazardous materials on campus is necessary for the execution of the work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel. Notification of such activities shall be provided to the University Project Manager and the University Environmental Health and Safety Department prior to their being brought and/or used on campus.
5. The specifications shall require the Contractor and its employees, while working on the premises, to comply with the Safety Orders issued by OSHA, the University Director of Environmental Health and Safety and any other safety, health or environmental regulations of the State of Florida having jurisdictional authority.
6. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the University's Environmental Health and Safety Department and the University Project Manager.
7. The Contractor shall not load or permit any part of the work to be loaded so as to endanger its safety.
8. In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss. Notification of such occurrences must be made to the University Police Department as soon as practical.
9. The specifications shall require that no persons, other than employees of the Contractor, Architect/Engineer, Department of Physical Plant, Facilities Design and Construction, or the Office of Capital Programs enter the construction work site without specific prior approval of one of these parties. Warning signs may be posted to assist in the enforcement of this requirement.
10. The Contractor shall provide continuous utility services until the date of Substantial Completion, or Beneficial Occupancy, whichever comes first, including operation of permanent equipment and services.
11. Provide temporary heating and cooling as necessary to protect the work from dampness and cold, and to dry out the building prior to millwork doors, paint and acoustical tile installation.
12. Provide temporary water necessary for construction, drinking, and testing of plumbing and mechanical systems from the department of Physical Plant through the University Project Manager. The connection point must be verified by the Physical Plant Department. The line size must be adequate for all demands. Make necessary connections and install a meter, and install all pipes from the meter. Remove temporary lines upon job completion. All costs, including use and connection fees, shall be paid by the Contractor at current rates. All temporary water lines will have backflow preventers.
13. Provide temporary Sanitary Facilities and maintain in a neat and sanitary for the use of the Contractor's employees as necessary to comply with the regulations of the State Board of Health and the county and municipality. The point of tie-in to sewage systems, if utilized, shall be designated by the University's Project Manager; otherwise, the Contractor shall provide adequate chemical portable sanitary facilities for Contractor's forces. Chemical toilets will not be emptied in the university sewage system. Pit toilets are prohibited.
14. Provide temporary, as well as permanent, fire protection facilities including fire hydrants. During construction, fire hydrants shall be installed within the specified distance of a building according to the occupancy classification to meet the NFPA requirements that pertain thereto.

15. Provide temporary Barriers and Enclosures. The Contractor shall provide rigid barricades, especially for open trenches and excavations, shielding, and/or warning signs including audible warning devices for the sight impaired, to protect all University employees, students, and the general public from hazards outside the required construction site fence. This includes but is not limited to: open trenches, falling objects, and the lighting and posting of warning signs about physical hazards during darkness to comply with all OSHA requirements.
16. Noise and Dust Control. In occupied buildings, indicate areas for which noise and dust control must be provided and specified methods of control. If details of installations are involved, specify these in the applicable sections of the technical specifications. The Contractor shall be required to install barriers indicated by the Architect/Engineer and shall provide other dust control barriers as required by construction operations.
17. Clean-up Enforcement. The specifications shall contain provisions that the Contractor must remove mud and spillage from public and university streets without delay. Failure to clean streets promptly could result in streets being cleaned by the Owner at the Contractor's expense.
18. All catch basins and storm drain lines in the vicinity of the site shall be protected at all times from the entry of mortar, concrete spoil, dirt and other construction debris. The residue from the cleaning of concrete trucks, wheelbarrows, concrete buggies, etc., must be prevented from entering the drainage system. If cleaning is done, it must be contained and the Contractor must remove the residue from the campus with other construction refuse.
19. Repairs of Damages to Facilities. The specifications shall contain provisions that damage to roads or other facilities on the grounds, resulting from Contractor's hauling, storage of materials, or other activities in connection with the Work, shall be repaired or replaced, at no expense to the Owner. Repairs or replacements shall be made to the Owner's satisfaction. Clean up of areas shall occur on a weekly basis. Contractor shall not overload vehicles with material causing spillage and possible future damage.
20. Planning for Temporary Control. Specify that the University Security/Parking Services must be notified at least 1 week in advance of any anticipated work affecting traffic flow. To ensure maintenance of flow and to safeguard all parties involved in planning temporary routing, a field inspection should be made jointly by the Architect/Engineer, the Owner, and Contractor prior to performing any work that would interrupt normal traffic patterns. Rerouting of traffic shall be planned, as to route and direction, in cooperation with the Police Department.
21. Temporary lanes shall be well marked, and obstructions, barriers, lane changes, or detours shall be indicated by appropriate signage at each point of potential confusion, as well as at each change in direction of a temporary route. The University Police Department shall be notified in advance of the anticipated time of return to normal traffic patterns. Upon completion of construction affecting streets or traffic flow, but before temporary control devices and lane markings are removed, the area shall be restored to receive traffic in the normal pattern. The Police Department shall be notified of the actual time of completion of restoration.
22. Project Identification and Signs. Include requirements for temporary project identification and informational signs required during construction, and removal at completion of work been. Refer to the FSU Professional Service Guide.
23. Contractor's Office shall be of size suitable for the use of the Contractor, Subcontractors, and the Architect/Engineer's representative. Office shall be heated, lighted, and provided with doors with locks, and private line telephone service. One lockable space in the office shall be provided for use of the Architect/Engineer's representative; space shall be equipped with plan table, desk, suitable chairs

or stools, plan rack, filing cabinet, and telephone. The Contractor or an authorized agent shall be present at the office or shall arrange to be called readily, at all times while the work is in progress.

## PARKING

1. The Director of Parking & Transportation Services prior to the production of final construction documents and bidding the work must approve all parking lot design and designation of parking spaces. Phone 850-644-5278.
2. Address parking by including parking requirements as part of facility design and cost as well as restoration of displaced and disrupted parking.
3. All parking spaces shall comply with applicable code regulations and be a minimum of 9 feet wide.
4. All faculty and staff parking lots shall include traffic control gates at the entrance and exit of the lot. All gates shall be equivalent to Federal ADP gates.

Striping of all lots must be done using set-fast water borne traffic marking paint. Colors: TM226 White, TM2132 Red, TM2159 Yellow and TM2133 Blue. (Sherwin Williams numbers)

## DEMOLITION

1. Include the removal of all structures interfering with new construction in the demolition plans. Debris resulting from stripping and demolition operations shall be removed from University property at frequent intervals so as to prevent this material from accumulating on the site.
2. Removal of trees and shrubs shall include the removal of stumps and roots to the extent that no root greater than three inches in diameter remains within five feet of an underground structure or utility line or under footings or paved areas. Grubbing in open areas shall include removal of stumps and three-inch roots to two feet below finish grade elevations.
3. In open areas, foundations of structures shall be removed to a minimum of three feet below finish grade elevation. Where new structures will replace existing structures, indicate extent of foundation removal on the drawings. No existing slabs will remain under fill for new structures. Hazardous material removal shall be conducted prior to structural removal as required by federal, state and local requirements.
4. Disposal of existing buildings and structures, trees, dismantled equipment, etc., is the responsibility of the Contractor.
5. Identify cutting and patching in detail, including incidental cutting, fitting, and patching required to complete the work or to make several parts fit together properly.
6. Materials and Equipment. Salvage on Demolition and Renovation Projects. On all projects involving demolition and/or renovation, the Architect/Engineer should review with the University Project Manager (for inclusion in the bid documents) the possibility of salvage of materials and equipment, either for use in the remodeling project, or by the Department of Physical Plant. The University Project Manager, upon notification by the Architect/Engineer of salvage not needed in the remodeling, will notify the Architect/Engineer of materials and equipment to be removed by the Owner or to be turned over to the Owner by the Contractor. The Contractor will remove non-reusable materials, including toxic and/or hazardous waste, from campus. The university reserves the right to remove salvage prior to start of construction, and, in certain instances, to require the Contractor to turn over certain items of salvage.

## EARTHWORK

7. No excavation, drilling, exploratory work or installation of fence posts, etc., is permitted until the Contractor and university personnel review drawings of existing utility lines. Any damage done to known lines shall be repaired immediately in a manner acceptable to the University and at the Contractor's expense.
8. Earthwork includes, but is not necessarily limited to the following: excavating, filling, backfilling, grading and compaction. Dewatering of excavations and work areas, as required. Shoring and bracing, as required. Disposal of excess and unsuitable excavated materials. Preparation of sub-grade for building slabs, walks, decks and pavements. Backfilling of trenches within contract limit lines. Excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances is included as work of this section. "Excavation" consists of removal of all material encountered to sub grade elevations indicated and subsequent disposal of materials removed.
9. Earthwork for Buildings. The site for the new building will be stripped and the area around the existing buildings graded to suit the architectural requirements. Excavation and removal of materials from the premises will be done as required for the building and structures. This will include disposal of debris and waste material, foundation drainage, backfill, compaction, shoring, sheathing, temporary protection and barricades. Storm water drainage will be controlled during construction of the project. Fill as required for rough grading elevation. Site preparation for building according to Geotechnical Engineer's recommendations.
10. Earthwork. This area should address excavation, filling and grading for the new structure as required to suit site appurtenances. Grading and filling will be performed to lines and grades required by civil engineering. These grade lines will be integrated with the new paving and surfacing as well as landscaped areas. Removal of the unsatisfactory or deleterious materials from the premises will be done as required for the work. Disposal of debris and waste material, temporary protection of work, barricades, rerouting requirement, signage, etc. will also be included. Storm water drainage will be controlled during construction of the project and will also be included.
11. Rough Grading. Slopes shall not be greater than one vertical to six horizontal in grassed areas. Steeper slopes will be considered in unique circumstances and will be reviewed and approved by the Owner.
12. Excavating. The excavation and backfilling of trenches, etc., for piping, manholes, pull boxes, etc., in the mechanical trades is considered better placed under those divisions than under this general division but the Architect/Engineer should ensure that the compaction of backfill in trenches is covered and that the soil type is the same and that restoration has occurred.
13. Under no circumstances shall topsoil and other excavated soils be removed from the campus. If such materials are not required for the project, the Contractor should consult with the University Project Manager who will advise the Contractor regarding a disposal location.
14. Where topsoil is removed and grading is accomplished on the site, or where the existing ground surface is otherwise disturbed, care shall be taken to prevent soil erosion. If soil is needed, specify that the Contractor will have to obtain it from private sources at the Contractor's expense.
15. When necessary to hold large piles of excavated earth on the job site, the Contractor should be required to provide cover or adequate means of water sprinkling to keep the sand particles wet and prevent them from being wind-blown about the campus.
16. Backfilling is required at building perimeter and site structures up to sub grade elevation. Fill under interior and exterior slabs-on-grade or pavement, and fill under landscaped areas shall meet applicable ANSI/ASTM standards.

17. Trenching. When excavating and backfilling for the mechanical and electrical trades is covered in this portion of the specifications, make certain that the compaction of back-fill is properly specified and meets applicable ANSI/ASTM standards and the requirements of Section 553.60, F.S., the Trench Safety Act.

#### PEST CONTROL

1. New buildings should have lockable access doors installed in chases to facilitate application of chemicals to prevent infestation of household pests. Access doors shall match or exceed the rating of the wall systems in which they are installed.
2. Termite treatment is required for every building. The Subcontractor, for soil poisoning, must furnish a service agreement stating the work performed will be guaranteed for a period of 5 years from the date of substantial completion. In addition the agreement must state that the structure will be inspected yearly for infestation and treatment provided as necessary. The Subcontractor shall offer an optional renewal of the service on the same terms. The type of chemical treatment must be specified, including the amount of application per unit area. The service agreement shall state that in the event of damage during the guarantee period, the Contractor shall make repairs to structurally damaged surfaces to a dollar value based on the size of the building. An independent testing laboratory shall certify that the treatment meets the requirements of the Specifications.
3. If treatment is provided prior to substantial completion, the Architect/Engineer should specify modification of service and guarantee so that the university is not billed prior to acceptance of the building.
4. Chemicals and application shall conform to EPA's Federal Insecticide, Fungicide and Rodenticide Acts.

#### UTILITY WORK

1. Connections to Existing Utilities. If connections to university utilities are permitted, the specifications shall require the Contractor to make requests for utilities service through the University Project Manager. Contractor shall make all necessary arrangements for the service, including the point of tie-in, times permitted for utility work, shutdown scheduling, traffic control, amount of lead time notification, etc., with the Department of Physical Plant through the University Project Manager. The Architect/Engineer shall obtain drawings of existing utilities and shall consult university personnel regarding services available and points of connections to services. All services shall be metered through meters furnished by the Contractor, and the Owner shall be reimbursed for utilities.
2. Detectable or non-detectable plastic marking tape shall be installed underground above all buried utility lines; to facilitate the location of the lines before damage to the lines can occur during required excavation.
3. Ensure that all proposed and expanded services and distribution systems and infrastructure are coordinated with the University's Utilities Master Plan.
4. Water Distribution System. Water main materials: ductile iron pressure water pipe and PVC pressure pipe, joints are optional. Provide gate valves at all new branches, fire hydrants, backflow prevention devices and meters. Discuss valve location and installation details such as valve boxes, direct burial, and ground level access to valve operator with the university. Water lines will be disinfected according to AWWA Standard C-601. All pipes will be tested for leakage. Detectable plastic marking tape shall be installed underground above buried utility lines, as required; to facilitate the location of the lines before damage to the lines can occur during required excavation.

5. Sanitary Sewer System. Sanitary sewers shall be vitrified clay pipe with gasketed push joints or PVC pipe with joints as recommended by pipe manufacturer. Sanitary manholes shall be precast concrete or cast-in-place concrete. Cover and frames shall be cast iron. Cleanouts shall be commercially manufactured wye branches.

## PAVING

1. All exterior ramps, stairs, landings and walks shall have an integral non-slip finish and provided with a waterproof sealant coating.
2. Expansion joints shall be provided in all concrete sidewalks every 20'-0" regardless of width. The expansion joint shall be made of elastomeric pre-molded expansion joint filler, manufactured for expansion joints. Tooled control joints are not to exceed 5'-0". Consult Portland cement Association, Cement Mason's Guide Booklet. All sidewalks shall be designed to prevent water from ponding on them; either crowned or sloped and contain ADA approved tactile warnings.
3. Asphaltic Concrete Paving. Provide materials and installation to comply with requirements of the Florida Department of Transportation and as determined by the civil engineer. Minimum installation shall consist of 1" plant mixed type S-1 asphaltic concrete surface course over 6" compact base over 10" stabilized soil, unless civil engineers determine otherwise.
4. Concrete Paving. Provide Class 'A' concrete with a minimum compressive strength of 3000 psi in 28 days. All products, materials, and execution shall comply with applicable ANSI and ASTM Standards. Provide pre-molded type 2" thick, full depth of concrete, maximum 30'-0" o.c. and at junctions with vertical surfaces. Specify expansion joints and show on the drawings. Control joints shall be saw-cut to squared relief, e.g., 6'0" wide sidewalk, 6'0" space between. Line up control joints so that new stress points do not occur and cause more cracking of the concrete surface. Provide floated, troweled, and medium broom finished surfaces. The university recommends boring as the standard procedure for crossing streets/roads. Saw-cut finished surfaces only as a last resort. Concrete walks shall be cut and replaced from joint to joint, doweled to the remaining slab.
5. Walks used as vehicular drives shall be a minimum of 6" thick with edges increased to a minimum of 2 additional inches thick and 10'-0" wide, steel reinforced. Secondary sidewalk width should be a minimum of 6 feet, and should match surrounding walk patterns. Care must be taken to prevent slick finishes, and to avoid the possibility of marking or vandalism while the concrete is curing. Expansion joints must be properly designed and indicated on contract drawings. Medium broom finish on all sidewalk Work is required. Protect concrete from defacement by fencing or providing appropriate personnel to maintain and secure the area until the concrete has properly cured.
6. The University will not accept defaced concrete.
7. Telecommunications infrastructure- see Appendix A for guidelines for new and relocated duct banks, manholes, conduit runs and other telecommunication components.

## LANDSCAPING

1. Refer to Appendix C – The Florida State University Landscape Design Guidelines.
2. Tree Relocation. Provide instructions in the Construction Documents for relocation of existing trees or other major landscaping and ground coverings.
3. Landscape Grading. Acceptable fill materials shall be in accordance with Geotechnical Engineer's Report and recommendations. Topsoil: Existing stockpile topsoil shall be free from sticks, stones, roots, clods and any extraneous material. Imported topsoil shall be a fertile, friable, natural topsoil

of loamy character obtained from a well-drained, arable site free from sticks, stones, roots, clods and extraneous matter. Topsoil shall be a black loam, indigenous to general area in which the project is located and shall be suitable for planting and seeding. Specify a six-inch depth of topsoil for seeded areas and 12-inch depth for planting areas.

4. All areas not otherwise landscaped shall be sodded with appropriate sod. Comply with ASPA (American Sod Producers Association) - Guideline Specifications to Sodding. Scarify subsoil to a depth of six inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil. Topsoil shall be a minimum of two inches depth over area to be sodded.
5. Landscaping Materials shall be scheduled in the landscape plan, including plant name in botanical identification, nominal size of trunk or spread of branches, height or other identifiable criteria. All landscape plans shall be reviewed by the Director and/or appropriate staff of the Landscape and grounds department of Florida State University. Creative designs with regard to maintenance, practicality, ingenuity, and appropriateness to the area are encouraged. Prior to the start of the design work a site review and analysis meeting will be scheduled with the Director of Landscape Operations.

**Quality:** All installed plant material shall be Florida Fancy or Florida #1 as per Grades and Standards for Nursery Stock, Florida Department of Agriculture and Consumer Services. FSU reserves the right to refuse any material with visible insects or mites or with apparent insect or mite injury. Plants that are diseased, sun scalded, cold injured, showing nutritional deficiencies or for other reasons are deemed unattractive may be refused.

**Size:** Shrubs smaller than 3 gallon pot size will be rejected. Preference should be given to 5 gallon, 7 gallon or larger sizes. Exceptions due to availability or type must be approved by the Director or Asst Director of Grounds. Shrubs should show a good branching pattern. Poorly shaped specimens may be refused. Palms must be free of noticeable trunk injuries and have fronds that are free of necrotic spots and yellowing. All trees shall be a minimum of 2 inches in caliper thickness measured at breast height.

#### 6. Planting Specifications:

**Planting Shrubs:** All planting beds shall be tilled. All landscaping beds shall be prepped and cultivated with appropriate aeration and soil amenities to enhance drainage. The landscape contractor shall assure percolation of all planting beds prior to installation. Root balls are to be scarified before planting if there are visible encircling roots (pot bound). Shrubs shall be planted at ground level. The top of the root ball will not be buried.

**Weed Barrier:** All landscape beds shall be covered with a weed barrier fabric that gives a 20 year or longer protection unless otherwise approved by the FSU Landscape Department. Approved weeds barriers are: DeWitt Pro-5 Weed Barrier; UPC MFG# 042579, SCC MFG# 00042579 or DeWitt 20 year Weed Barrier UPC MFG# 042579, SCC MFG# 0042579 or equal. No soil will be permitted on top of the weed barrier fabric.

**Mulches:** There shall be a minimum of 2 ½ inches of mulch install over planting beds. "Red Mulch" is to be utilized which consists of shredded pine (with or without the addition of shredded hardwood) with a fade resistant, non toxic biodegradable red stain coating. Pine straw will be permitted as mulch in areas with a strong slope provided it is fresh and free of limbs.

**Planting Trees:** Trees are to be planted to soil that has been loosened or tilled prior to planting by excavating to a minimum diameter of twice the width of the root ball. Tamp loosened soil at the

bottom of the planting hole to prevent settling. Small trees, less than 3" caliper thickness, are to be staked using two evenly spaced 8 foot 2"x 2" pine posts driven to a height of 5 ft above finished grade. Tree trunks are to be protected from rope or straps ties used for staking with rubber hose or other equivalent or approved protective covers. Large trees are to be staked using 3 ropes or double strand galvanized guy wires secured with wooden or plastic ground stakes. **Steel reinforcing rods shall not be used as stakes.**

7. Tree Mitigation Notes: All tree mitigation activities shall be supervised by an Arborist certified by the International Society of Arboriculture (ISA).
8. Survey existing trees to save major existing trees from damage by the new construction. Identify these trees in the landscaping plan and make provisions to keep damage and stress from occurring to the trees due to construction activity.

**Barricades:** Before the start of construction, construct a physical protective barrier around existing trees noted to remain. The protective barrier shall extend as close to the drip line as possible. Because roots grow beyond the drip line, enclosing as large an area as possible is desirable.

**Protection from Compaction:** There shall be no additional compaction within the drip line of protected trees. Storage of construction materials or equipment is not permitted inside the barricade.

**Trenches:** Dig trenches by hand or tunnel under the tree if underground utilities must be installed with the drip line. Prune roots larger than ¾" by hand. Do not rip them out with a trencher or other excavating equipment. Bridge roots when trenches for new construction would damage them.

**Root Pruning:** All roots greater than 2 inches in diameter with a root saw or pruner. All roots are to be cut cleanly.

**Watering:** After rooting pruning and until substantial completion, all affected tree root zones are to be watered at a rate equivalent to 1 inch of water per week.

**Fertilization:** A slow release (at least one half of the nitrogen shall be an insoluble form fertilizer) to be applied by broadcast application over the root zone following the recommended rate.

**Limb Pruning:** All limb pruning is to be performed under the direct supervision of a certified Arborist.

9. Landscape Irrigation. All landscaped and sodded areas shall be irrigated with an automatic sprinkler irrigation system. The irrigation system shall be designed to minimize water spray on pedestrian walkways and buildings. All sprinkler lines shall be self-draining. Design the irrigation system to prevent or minimize runoff of irrigation water onto roadways, driveways, walks, etc. Drip irrigation systems are encouraged where deemed appropriate.

**Specifications:**

**Controller – Clock:** Hunter ACC 1200 wall mounted, water proof unit suitable for exterior installation if required. The basic controller shall have a minimum of 12 stations capable of being expanded to a maximum capacity of 42 stations. The controller shall be equipped with an

integrated, pre-wired SmartPort to permit connection of wireless remote controls or other devices that may be necessary to coordinate new installations with existing.

The controller shall be adaptable to a compatible computerized central control system through a communications module with a selection of hardwired cable, UHF radio, dial-up-modem, and cellular telephone. The controller shall be capable of two way communications with the central computer management and monitoring system. All hardwire connections shall be through conduit.

**Controller Installation:** An authorized Hunter representative/installer shall insure proper communications with the central control system. A standard telephone jack shall be provided within three (3) feet of the controller with a designated dial-up number. A designated 120 volt circuit shall be provided for the controller. There shall be 1-2 inch sweep for separate irrigation zone wires; 3 – 1 inch sweeps for the grounding wires, antenna cables, and remote control access. All sweeps shall be easily accessible outside the building line.

**Rain Sensor Shut Off:** shall be Hunter Mini-Clik or Wireless Rain-Clik as appropriate for the installation.

**Electric Valve:** All valves shall be professional grade solenoid valves with min. 150 psi rating that provide flow control, dial setting pressure regulation, and have internal and/or external bleed.

**Wiring:** Wires shall be bonded and taped ever 20 ft and buried beneath the main line.

**Piping:** All piping shall be schedule 40 installed to allow for expansion. Sleeves where required under walks etc shall be schedule 40 and a size bigger than the pipe it encompasses. All irrigation trenches shall be a minimum of 2 feet.

**Turf Heads and Sprays:** Heads and sprays shall be professional grade of heavy-duty ABS construction including an extra thick body and cap. Spray shall be adjustable from 1 to 360 degrees by a top adjustment screw.

**Bubblers:** shall be ½” pressure compensated adjustable flow up to 2.0 gpm. Bubblers shall be capable of fine tuning by a top mounted stainless steel screw.

**Back Flow Preventers** shall be installed on all systems. They located to minimize their visual impact on the campus. Provide covers labeled ‘irrigation’.

**Riser Pipes** shall be schedule 40 and be (painted) green in color and sized in accordance with the height of plants.

**Swing Joints** shall be used in high traffic areas.

**Pressurization:** Pressure on the system should not exceed 75 psi unless otherwise specified. An approved pressure reducing valve shall be provided.

**Valves Boxes** shall be provided for every irrigation valve. Boxes shall be installed level with the final grade, lockable and labeled ‘irrigation’. Boxes in high traffic areas shall be concrete with a maximum size of 12 inches. Boxes in low traffic areas may be green PVC.

**Zones:** Irrigation shall be separated by (1) Turf; (2) Shrub; (3) Trees unless otherwise approved. Spray heads shall not be on a rotor zone. Drip irrigation is encouraged when appropriate.

10. The Project Manager shall notify Landscaping and Grounds when a project is ready for final review and acceptance. At final acceptance Landscaping and Grounds shall be responsible for care.

## EXTERIOR SIGNAGE

All exterior sign types shall be designed in accordance with the specifications contained in the most recent edition of the Florida State University Signage Style Manual, or as directed by the Project Manager.

## STORMWATER DRAINAGE GUIDELINES

1. Follow these considerations when preparing the design of site storm water drainage and related facilities: Comply with flood plain management criteria.
2. Determine the impact that the proposed facility has on the current drainage system and plan accordingly.
3. Building floor elevations shall be set to minimum standards above 100-year flood plain elevation, but in no case lower than two feet above the 100 YFP.
4. Overland flow capacities from the 100-year storm event available for all flow in excess of capacity of underground and open channel conveyance systems.
5. No floodwater from the 25-year storm event greater than six (6) inches deep on local roads, parking lots or other non-street vehicular use areas.
6. No flood waters from the 25-year storm event in one driving lane each direction of collector streets.
7. No floodwater from the 25-year storm event in two driving lanes each direction of arterial streets.
8. Where open channel conveyances are to be constructed, storm event in excess of capacity of underground conveyance system, or for full 25-year storm flow if no underground system exists.
9. The rate of off-site discharge shall not exceed the pre-development rate of discharge.
10. No floodwater from a 5 or 10-year storm event in one driving lane of local roads.
11. No floodwater from a 5 or 10-year storm event in the driving lanes of any other road than a local road.
12. Underground conveyances not overflowing from a 5 or 10-year storm event.
13. Storm Drainage System. Provide catch basin or inlets of precast or cast-in-place concrete? Grates and frames shall be cast iron or galvanized steel. Drainage pipe to be concrete, corrugated metal pipe or helicoidal metal pipe (bituminous coated or aluminum).

## BLUE LIGHT SYSTEM

1. The AE shall include new locations for the University's system of emergency blue lights, as appropriate for the project.
2. The FSU Department of Public Safety shall determine the location of blue lights.
3. For additional information see Florida State University, Telecommunications Infrastructure Standard – FSU Design Guidelines Appendix 'A'.

## **DIVISION 3 – CONCRETE**

### **GENERAL REQUIREMENTS**

1. Require concrete tests as specified in appropriate articles of the SUS Professional Services Guide. For quality control, all material products and execution shall conform to ACI 301 and applicable ANSI/ASTM Standards tests.
2. Require proper coverage of reinforcement in specifications and during inspection. Reinforcing bar supports frequently are exposed to the weather on soffits and other surfaces, and corrode. Use plastic supports.
3. The Architect/Engineer shall justify the use of admixtures. In general, admixtures are not desired.
4. Include specifications for cold weather concreting in accordance with ACI 03200.04
5. Provide proper seals where pipes pass through floors, to be made tight around the piping to prevent passage of vermin, rodents and fire.
6. Specify proper filler where expansion space is needed.
7. Provide a straight expansion-joint-filler appearance.

### **EXTERIOR EXPOSED CONCRETE OR PRE-CAST STONE**

1. No buildings or other structures shall be built using exposed concrete finishes, other than exposed concrete paving and pre-cast architectural concrete or cast stone. Exposed concrete, pre-cast concrete and cast stone using steel reinforcing shall have exaggerated concrete coverage and/or epoxy coating to prevent rusting and spalling.
2. Do not cut cast stone or other pre-cast concrete pieces that contain steel reinforcement.
3. Architectural concrete specifications and inspection procedures shall be structured to ensure compliance with these requirements.
4. Provide a sample of finished concrete for approval before proceeding.

## **DIVISION 4 – MASONRY**

### **GENERAL REQUIREMENTS**

1. Lay concrete masonry units as follows: a) with full mortar coverage on horizontal and vertical face shells. b) Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells and cavities to be filled with grout, c) fill all below grade cells with grout and d) maintain joint widths indicated, with only minor variations to maintain bond alignment, typically 3/8" (10 mm) joints.
2. Lay solid brick masonry units as follows: a) completely fill bed and head joints, butter ends with sufficient mortar to fill bed and head joints and shove into place, do not furrow bed joints or slush head joints, b) slope beds toward cavity in cavity walls to minimize mortar protrusion into cavity, use a drag stick to keep cavity clear of mortar and trowel mortar protrusion flat against cavity face of brick.
3. Lay hollow brick masonry as follows: a) lay vertical cell units with full head joints, unless otherwise indicated, b) provide bed joints with full mortar coverage on face shells and webs, c) lay horizontal cell units with full bed joints, unless otherwise indicated, d) keep drainage channels, if any, free of mortar, e) form head joints with sufficient mortar so excess will be squeezed out as units are placed in position, f) butter both sides of units to be placed, and g) maintain joint widths indicated, except for minor variations required to maintain bond alignment, 1/4" – 3/8" (6-10 mm) unless otherwise noted.
4. Tool all exposed joints slightly concave when thumbprint hard, using a joint tool larger than joint.
5. Cut joints flush for masonry walls that are to receive waterproofing or other direct applied finishes (other than paint), unless otherwise indicated.
6. Plasticizers, accelerators, retardants, water repellent agents, or other admixtures are not recommended for mortar unless specifically required and approved by the University Project Manager.
7. Tops of all masonry walls, exterior and interior, where applicable, shall be built tightly against the floor construction above for stability, fire and sound protection, except where provision must be made for expansion, requiring alternative means for ensuring stability, etc. Provide masonry and other anchors sizes and spacing in project specifications.
8. Composite Masonry mock-up (if required): Erect a 4 x 4 foot minimum panel size, include specified mortar and accessories. The panel shall show color range and texture of masonry units, bond mortar joints and demonstrate minimum standard for the work. Completed masonry work in the building shall be equal to that shown in the approved panel. The panel shall not be removed until masonry work is completed or until removal is authorized.
9. Provide concrete block units wherever feasible for interior wall finish. All units shall comply with all structural codes and shall be properly protected at the job site to insure placing in the wall without excessive moisture content.
10. All walls exposed both sides shall be 6" thick, minimum.
11. Provide bullnose on all exposed external concrete block corners that extend to the floor (or to top of base). Rub out all casting irregularities (so as to result in smooth transitions from flat face to rounded corner) before any finish treatment is applied.
12. Provide treated wicks in weep holes.

13. Provide a weep cavity where concrete blocks are veneer faced with brick or precast units. Face units shall not be installed directly against outer face of interior wythe. The exterior facing shall be tied to the interior wythe with ties specifically designed for this purpose. A damproof coating shall be provided on the outer face of the interior wythe prior to install the facing..
14. Check split coursing at the head of any type of opening.
15. All brick proposed for historic brickwork, and their range of color, must be approved by the University, and conform to the Secretary of Interiors Standards for color, texture, pattern, bond and size.
16. All face brick shall be standard size with net cross-sectional area not less than 75% of the gross area in the same plane, and must conform to appropriate ASTM Standards
17. All brick shall be laid with modular coursing, three courses to 8", unless otherwise required to match existing coursing or to accentuate an architectural feature or pattern. ASTM standard shall be complied with for all face brick, Grade SW, Type FBS. In addition, manufacturer's certification will be required stating that the rating for effervescence is not more than "slightly effervesced" in accordance with ASTM.
18. Glass Unit Masonry. Provide horizontal joint reinforcement, uniform joint treatment interface with adjacent wall systems and compliance with strict structural and code requirements.
19. Masonry Cleaning. Refer to the Southern Brick and Tile Manufacturing Association to for bulletins covering cleaning. (Cleaning should be done sufficiently early for the walls to dry thoroughly; at least four weeks prior to application of silicone or other recommended waterproofing. Sandblasting is not recommended for bricks, terracotta, or ceramic finished material. Specify that brickwork, especially historic brick or stonework must be inspected prior to application of waterproofing.) Specify cleaning agents of detergent or solvent. (Acid solution is not recommended and must be approved by the Project Manager.)

## DIVISION 5 – METALS

### EXTERIOR FERROUS METALS

1. Structural Metal. All structural steel work shall comply with AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" and applicable ASTM Standards.
2. All exterior ferrous metals shall be hot-dipped galvanized including all shelf angles and other metal used in cavity walls, whether or not it is exposed to view.
3. Shop Painting. Has it been specified that all iron and steel items must be shop primed and have additional coats applied at the job to prevent rusting?
4. Use galvanized steel angles in all exterior masonry, stone or precast concrete walls, and in all interior walls where used in conjunction with stone.
5. Use galvanized steel angles in all interior walls where used in conjunction with stone.
6. All exterior ferrous metals exposed to view shall be primed and painted with a paint coating designed for compatibility with the galvanized surface on which it is applied.
7. All interior ferrous metal shall be painted with three mils of paint on all. Use galvanized steel angles in all exterior masonry, stone or precast concrete walls and in all interior walls where used in conjunction with stone.
8. All metal components shall conform to applicable ASTM requirements and shall include gratings, castings, supports for ceiling hung equipment and framed partitions, construction inserts and fastening devices, expansion joint inserts and covers, stair nosing and access doors for both ceiling and wall applications, vertical ladder for elevator pit; welded steel ladder (to meet OSHA). Elevator pit sump gratings; corner guard angles; steel angles, channels and clips; pipe sleeves for mechanical and electrical trades; trench drain gratings and frames; galvanized steel corner guards and, miscellaneous structural shapes.
9. Handrails and Railings. Handrails shall not end in 90 degree angles where there are circulation paths nor extend more than 3 inches past the circulation areas. All rails: 1-1/2" standard steel pipe. All posts: 2" x 2-1/2" standard steel pipe. Comply with all applicable codes.
10. Tree Grates. Tree grates shall be of dimensions as required with concentric patterns having gray iron frame sections and gray iron grate bolted to the frame.
11. Expansion Control. Complete and of compatible materials to produce waterproof expansion joint seals including matching wall, deck and wall, wall and roof and wall intersection systems.

### EXTERIOR METAL STUDWALLS

1. The use of exterior metal stud backup wall assemblies will be considered only on a project by project basis. **The masonry backup wall systems is the University's preferred method of construction.**

## **DIVISION 6 - WOOD AND PLASTICS**

### **GENERAL REQUIREMENTS**

1. Wood Blocking and Curbing. Provide pressure treated lumber for all lumber in contact with concrete, masonry or steel. Wolmanizing process is considered best of the treatments for lumber in buildings; Boliden salts are excellent and treatment is equivalent to Wolmanizing if pressure treatment of 100/150 psi is used.
2. If plastic laminate is used, a backing sheet of manufacturer's recommendation must be specified. This material shall meet flame spread-rating requirements of NFPA 101 for interior finish consistent with the occupancy classification.
3. All wood shall be back painted.
4. Minimize the use of wood handrails because of the difficulty of maintaining an acceptable finish. Wood handrails shall return to walls and/or newel-posts.

### **RESTROOM COUNTERTOPS**

1. Shelves shall be provided in the vicinity of lavatories on which to place books or other personal items.
2. All lavatory counters are to have a seamless surface with back splashes at least four inches high and of a light or medium shade smooth material.

## **DIVISION 7 - THERMAL AND MOISTURE PROTECTION**

### **GENERAL REQUIREMENTS**

1. Water-proofing product (sheet butyl, PVC, EPDM, CPE, CSPE, neoprene, hypalon, or composite laminated membrane) shall be designed to function as principal moisture stop in arresting water predominantly in a horizontal application; adhesive bonded, self-adhered, loose laid, or mechanically secured installation.
2. Slabs on grade shall be designed and installed so as to prevent damage to membranes during construction. At special areas and where waterproofing is considered necessary for slab on grade, a double slab system is preferred in order to reduce chances of a punctured membrane. A product equal to "Bituthane" by W. R. Grace should be considered under the wear slab. For a basement waterproofing condition, a water bar is essential at walls and columns.
3. If a Radon Barrier is required, special consideration shall be given to design.
4. Provide a through-wall damp-proofing membrane to prevent moisture in the soil from extending up the wall by capillary action. Material can be as light as 2 oz. copper-backed sisal paper if properly lapped and sealed at joints.
5. Basement walls shall be damp-proofed or waterproofed on the soil side. The type of material to be used depends upon the condition; a brushed-on coat of bituminous paint might be adequate for dampness but sheet membrane waterproofing or "Bentonite" or equal should be considered where hydro static pressure is suspected.
6. Special consideration shall be given to preventing leakage in shower and drying room areas.
7. A depressed floor shall be provided for toilet areas where ceramic tile is used to allow space for the waterproofing pan and slope to drain.
8. In waterproofed floor areas, a 24-hour water test required prior to placement of the finish flooring. If leaks occur, another test is required after repairs are made.
9. Water Repellent Materials. Provide clear elastomeric water repellent.
10. Vapor Barriers and Retarders. Provide a method used to continue a seal formed by a vapor and air barrier for each building enclosure construction, and to seal gaps between adjacent materials forming wall and roof openings.
11. Fire Stopping. Fire stop material shall be used to close openings and continue a fire resistance rating uninterrupted.
12. Gutters and Downspouts. All gutters and downspouts, hangers, straps and shoes shall be completely detailed and/or described. Gutters and downspouts shall be held 1" from the building wall to allow air to circulate between gutter/downspout and wall surface.
13. Sealants, Caulking and Seals. Specify the work shall be done by experienced mechanics. Provide the highest quality of sealants for each individual application. Evaluate life-cycle costs for sealant products. In addition to caulking for water tightness, caulking shall be specified for finished appearance, i.e., at cracks between the juncture of different materials or of horizontal with vertical surfaces. Caulking is not to be used as permanent construction. Caulking shall be specified for use only as a supplement to properly designed and detailed joints.

## ROOFING

1. Sheet Metal Flashing and Trim. Provide in accordance with the Architectural Sheet Metal Manual by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
2. Skylight Structures. The University prefers clerestory structures in lieu of skylights. If skylights are used in the building design, the University cannot stress enough the importance of the quality of the skylight and the care of its installation and related moisture protection. During preparation of the specifications, ensure that performance requirements have been made as stringent as possible.
3. Scuppers. Provide overflow scuppers in parapet walls to prevent water building up if the roof drains clog.
4. Gravel Stops. Where gravel stops are used over exterior surfaces, provide high gravel stops, to prevent water from spilling over with resulting stain effect.

## EXTERIOR CLOSURE ASSEMBLIES

1. Don't use exterior wall assemblies that have not been tested for 20 years such as EIFS (Exterior Insulated Finish Systems).
2. Don't rely on sealants to prevent water infiltration.
3. Don't use galvanized metal for flashing.

## GENERAL ROOFING GUIDELINES

1. Roofs shall be maximized, but in no case less than 1/4 inch per horizontal foot. The slope of the roof can be obtained either through the structural design or tapered insulation. The design and workmanship of the finished roof shall be such that no water shall pond on the roof surface more than 24 hours after a rainfall.
2. An interior means of gaining access to the roof shall be provided with locking capability.
3. The A/E shall specify a minimum of three manufacturers of roofing systems and shall obtain notarized letters from each factory technical representative that the type of roofing system specified will perform in this locality and that all materials delivered to the job site and used by the contractor complies with the specifications. Minimum warranty shall be 20 years unlimited with no dollar limit.
4. Roof drains shall be unobstructed, properly connected to storm drains and designed and installed as per the Florida Building Code.
5. Emergency overflow scuppers shall be constructed below the flashing and not more than one inch above the roof surface.
6. If pre-stressed concrete structural members are used to support flat roofs or roofs with minimum pitch (with or without a light-weight concrete topping poured on the structural members), an expansion joint shall be provided at the ends of each pre-stressed section where the structural members butt together to allow for proper expansion. The roof insulation shall be applied in two layers with no bonding applied between the two layers. Regardless of the thickness required to obtain required pitch or "R" rating, the thickness shall be enough to prevent expansion and contraction of the pre-stressed members. The bottom layer of insulation shall be bonded to the felt layer above. Care shall be taken to avoid coincident placement of joints.
7. On all built-up or membrane roofs, roof walkways shall be provided from roof access point(s) to

and around all roof installed mechanical or electrical equipment.

8. Don't provide rooftop A/C units or exposed ductwork.
9. Parapet walls and caps (or coping) shall have through the wall flashing. If limestone caps are used they shall have a lead "T" shaped cap embedded in caulking between each piece of stone cap. Mortar shall not serve this purpose.
10. Warranties from roofing manufacturers shall include coverage for installation as well as materials. In the event of roofing material failure, the roofing manufacturer shall warrant all costs of roofing repairs, including labor. Warranty shall be in effect for as long as the material warranty is in effect.
11. The A/E shall provide full-time inspection service and post-installation moisture testing as required by the above standard practice. The proposed inspector shall be approved by the Project Manager prior to commencing work on the roof.
12. The A/E shall physically verify dimensions where critical to the project design, such as roof areas, room layouts, etc.
13. Roof installations must meet current wind load design standards.
14. Sheet Metal Flashing and Trim. Provide in accordance with the Architectural Sheet Metal Manual by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

## **DIVISION 8 - DOORS AND WINDOWS**

### **GENERAL DOOR GUIDELINES**

1. All exterior doors shall be insulated metal doors with adequate weather stripping and threshold utilized to conserve energy. If glass is used, the glass shall be thermal/safety glass, and non-reflective.
2. All interior solid core wood doors to be left natural shall be finished with a natural material, which is insoluble and resistant to marring, abrasion and staining.
3. Doorframes shall be properly anchored to prevent movement of frame during the opening and closing of the door. Galvanized frames shall be used in exterior applications and interior frames subject to moisture. Frames in masonry shall be fully grouted.
4. To prevent the flexing and breaking of the wall along the door frames, a nest of studs shall be provided around each door installation to accommodate the weight of the door and the shock caused by the closing of the door. The number and gauge of studs in the nest must be specified. The finished wall shall extend into the doorframe throat opening a minimum of 1-1/2 inches for wrap-around frames.
5. All operable items on exterior doors shall have an integral finish. Not applied, painted, baked-on, etc.
6. At least one main entry door shall be accessible from adjacent sidewalks by wheelchair and shall display the proper handicapped signage. Preferably all other entry doors shall have proper signage to direct wheelchair handicapped persons. The current ANSI standards shall apply to raised letter signage for the blind. Provide automatic door opening devices for the handicapped at entrance doors on the accessible path and at main (multi-toilet) restrooms designed for accessibility.
7. Exterior doors shall be of "monumental" quality, minimum width of each leaf 3'-0" and minimum height of 7'-0". In renovation projects, a different height may be used, if appropriate, upon approval by the Project Manager.
8. Interior doors shall be 3'-0" wide minimum x 7'-0" high each leaf, except that in renovation projects the door height shall match existing. Do not mix door heights in adjacent areas. All doors shall be solid core wood stave. Classroom doors shall have wired glass view panels set in steel framing or stops according to code.
9. All doorways shall be numbered. Do not place number on door, but to the open side with raised numbering at a height of five feet. Room numbering schedule shall be reviewed by the Project Manager during Schematic Design and finalized during Design Development.
10. View panels in any fire door shall conform to Florida Fire Prevention Code specifications.
11. Install doorstops on all doors.
12. Hollow Metal Door Frames. All interior frames shall be a minimum of 16 gauge metal. Exterior frames shall be a minimum of 14 gauge metal. Provide reinforcing of frames for hardware. A light angle is desirable. Where two doors swing from the same mullion the metal should be of heavier material and reinforced. All frames shall be pre-primed
13. If fume hoods or other large equipment occur in a room, provide doors of adequate width to provide clearance for moving the items in or out. If size is questionable, use larger size opening.
14. All corridor doors and doors to closets shall be 1-3/4" solid core to meet requirements of NFPA 80 and 101, and able to use standard locksets. Where cutouts for closers are required, the head rail should be not less than 6 inches. If hardwood edges are desired, they should be completely specified with the thickness given. Wood doors shall meet the Standards of The National Woodwork

Manufacturers Association.

15. All doors shall be 7-foot high doors as a standard.
16. Wood door quality shall be clearly specified as well as manufacturer's name noted. For example, the term "equal to Mengel" is not sufficient.
17. Plastic Faced Wood Doors, Facing and Adhesives. Plastic laminate shall conform to NEMA LD-3 Adhesives for both exterior and interior shall conform to ANSI/NWMA-I.S.1.

## GENERAL HARDWARE GUIDELINES

### General

1. Include a completely itemized hardware schedule in the specification. A cash allowance for finish hardware shall not be used unless otherwise authorized.
2. The hardware schedule shall include a complete list of items proposed as standard, together with manufacturers' names and with the names of manufacturers whose products are proposed as equals. This schedule must be approved by the University Project Manager at 50% Construction Documents.
3. All hardware shall be furnished under this section.
4. Specify one manufacturer as standard and, whenever possible, at least two other manufacturers whose products are proven equal.
5. The hardware supplier shall furnish to the door manufacturer templates or the actual hardware.
6. Hardware added to existing buildings will be of the same manufacturer as the existing hardware, unless specified otherwise, and shall include compatibility with the American with Disabilities Act.
7. Use non-handed door closers whenever possible: Russwin 2800 series, Sargent 1230 series, or LCN equivalent.
8. When fire exit bolts are required, use horizontal exit bolts for single doors and horizontal exit bolts with removable mullions for double doors. Vertical rod fire exit bolts are not desired unless their use is dictated by specific functional requirements.
9. All operable items on exterior doors shall have an integral finish -- not applied, painted, baked on, etc.
10. Provide only five-knuckle, stainless steel ball-bearing hinges, with non-removable pins, on exterior doors. Provide heavy-duty ball-bearing butts, with 4 ball bearing for exterior doors and interior doors over 3 feet wide and standard weight butts with 2 ball bearing for interior doors up to 3 feet wide.
11. Provide extra-heavy adjustable pivots at exterior doors that have a high frequency of use.
12. Provide Von Duprin type 99 in a finish compatible with the door.
13. Provide Kawneer Panic Guard, or comparable, at exterior double door aluminum entrances
14. All building entrance/exit doors shall be equipped with exit devices with concealed vertical rods. **Surface vertical rods for exit devices are not acceptable.** Where exterior doors are required to have a removable center mullion rim type devices may be provided.
15. Provide aluminum or steel removable mullion at all lockable pairs of doors, interior and exterior.
16. Provide surface applied Russwin 2820 series, LCN 4040 series, or comparable closers. Provide Corbin 110 series at dormitories. Locate on room side of doors so not visible from corridors, lobbies, and other public spaces.
17. Use stainless steel at all locations where severe usage is anticipated.

18. Provide weather-stripping at heads and jams and surface applied automatic door bottoms, on machine room doors and other doors where excessive noise is anticipated.
19. Avoid thresholds raised above floor levels at doors to trash and receiving rooms and at all doors intended for use by handicapped persons.

### Keying

1. All door locks, except for **MEDECO** High Security locks, shall be on the new proprietary University Keying System (**BEST** Removable Core) as specified by Facilities Operations and Maintenance Key Shop. **All** keyed locks shall be subject to the Zone Master as assigned to the facility at Florida State University.
2. The contractor shall provide extra copies of the approved hardware submittal and current floor plans, showing door numbers, to the University's project manager. The project manager will then provide this submittal to the Facilities Operations and Maintenance Key Shop, together with room numbers, the building number(s). In order to allow adequate time for proper "pinning", the project's approved hardware submittal must be provided to Facilities Operations and Maintenance Key Shop **120** (one hundred and twenty) days prior to substantial completion for projects containing more than 250 doors, and **90** (ninety) days for projects containing less than 250 doors. The Lock Shop keeps material on hand for small projects having less than 12 doors. Cores can be provided and installed on these jobs with a minimum of two weeks notice. All hardware must be purchased with Best removable core cylinders "**less cores**". The University will accept no substitutes. Cost of the cores will be borne by the contractor. The contractor must coordinate with the Key Shop, which will procure cores on the contractor's behalf. All keys and cores shall be supplied and installed by the FSU Facilities Operations and Maintenance Key Shop, in order to maintain consistency of University master keying systems.
3. All keying schemes shall be planned in coordination with Facilities Operations and Maintenance, Key Shop. All Best cores and keys shall be obtained by the University Key Shop. The process shall begin early enough to insure that systems (key plans, keyways, cores) are compatible with Florida State University's total Master Keying System, that time phasing is proper, and that the University Key Shop retains control of **all** keys and cores.
4. The Contractor will supply and install temporary construction cores and provide construction personnel and the owner with keys during construction.
5. The final keying schedule is prepared by, and directly submitted to Best by the Facilities Operations and Maintenance Key Shop.
6. Interior stand-alone card access shall be Locknetics. In order to maintain consistency, the University will accept no substitutes. Installation and programming will be done in coordination with the Facilities Operations and Maintenance Key Shop.
7. All card access will have Best key override, coordinated with Facilities Operations and Maintenance Key Shop.

### Interior Door Hardware

18. Use Best mortise lock 35H7J, Russwin ML2255, or Sargent 8237, for classrooms and laboratories.
19. Use Best mortise lock 35H7E, Russwin ML 2251, or Sargent 8205 for corridor and office doors.
20. Use Best mortise lock 34H7R, Russwin ML 2212, or Sargent 8203, for restroom doors. Provide kick plates, push plates, or pull plates of lexan or stainless steel.

21. Use Best mortise lock 35H7EW, Russwin ML 2257, or Sargent 8250, for custodial closets.
22. Hardware trim shall be Satin Chrome, US26D, 626 finish. Trim design: Best 15J, Russwin NSN, or Sargent WT L, cold forged escutcheon plate.
23. Use Locknetics 5596 MGK 17 LC 626 ATK, with Best cylinder and core for stand alone interior card access.
24. Use astragals on interior double doors for security.
25. All interior fire doors shall have magnetic door holders actuated by the building fire alarm system, where appropriate and allowed by code.

#### Exterior Door Hardware

1. Von Durpin shall be specified. **(No substitutions).**
2. Single doors - Use a Von Durpin 99 series. Do not use mortise lock.
3. Double Doors - Use Von Duprin 99 series with removable mullions. Use Russwin 298 foot and head bolts with dust proof strikes, or Sargent equivalent. Do not use mortise locks.
4. All exit bolts installed on exterior doors should have cylinder dogging devices.
5. All hinges on exterior doors or doors in security areas should have non-removable pins to prevent the unauthorized removal of the door from the outside.
6. Exit bolts for narrow stile exterior doors shall be Von Duprin 55 series.
7. Doors that are of the narrow stile type shall have the same hardware functional requirements as specified for other exit bolts. All double doors shall have a removable rabbeted mullion and each door leaf shall not be less than 36 inches wide.
8. Provide latch guards at secure exterior doors.
9. All mullions are to be key locked into the door frame; contractor to provide Best cylinder.

#### Electronic Card Access

1. Where feasible, provide electronic building card access and control system compatible with existing university system(s). The University is in the process of establishing University-wide standards for these systems. A specification for this system will appear in a later version of this document. In the meantime, coordinate with University's Project Manager and the Facilities Operations and Maintenance Key Shop. Contact Jim Thayer, (850) 644-5654.

### GENERAL DOOR AND HARDWARE GUIDELINES FOR SPECIFIC SPACES

#### Restrooms

1. All interior restroom and vestibule doors are to have 10" wide kick and push plates of stainless steel or lexan and are to be non-lockable.

#### Custodial Closets

1. Entrance doors shall swing outward where possible.
2. Each closet lock shall be individually keyed and keyed to the grandmaster system.

## Classrooms

1. Classroom doors shall have wired glass view panels set in steel framing or stops according to code.

## HOUSING GUIDELINES FOR DOOR HARDWARE AND CYLINDER BITTING

1. All student rooms will be keyed differently with grand master and building master.
2. Bitting number will be provided for all mechanical rooms, electrical rooms, elevator rooms, laundry rooms, and communications rooms. They shall be keyed to the grand master and building master.
3. A key shall be established as a janitor and trash room only.
4. Kitchens shall be keyed alike.
5. In each construction project some doors will have bypass features.
6. FSU Housing will identify these doors.
7. All exterior doors shall be keyed alike.
8. All interior hall doors shall be keyed alike.
9. FSU Housing will determine the key for offices, storage rooms, and various other restricted areas.
10. If the building's rooms are in an apartment layout, each interior student room key will bypass the apartment door.
11. Furnish four (4) keys with each cylinder. Bow of key shall be stamped
12. "Property of FSU Do not Duplicate". Keyway and key number shall be stamped on reverse side.
13. Furnish fifteen (15) each of the grand master and building master.
14. Furnish one bitting list for owner's file.
15. Visual control number shall be stamped on the plug of each cylinder.
16. FSU Housing will determine mortise lock hardware and exit devices. Russwin and Von Dupin hardware is preferred.
17. Each exterior door will require 3/4" conduit home run to the nearest telephone closet. The conduit is to include a pull string. The communication closet will contain a security electronic mode.
18. All exterior doors will be security monitored. Doors with card readers will be monitored through the card reader, while doors without card readers will be monitored by a door contact.
19. The type of automatic door closers (if needed) and student room door closers will be determined by FSU Housing.
20. The rooms to have door viewers will be determined by FSU Housing.
21. The privacy lock for interior student room bathrooms will be determined by FSU Housing

## WINDOW GUIDELINES

1. Don't locate glass in areas that are inaccessible.

2. Exterior windows shall be accessible for washing either by manually operable sash, the use of a swinging scaffold or the use of safety gear that snaps onto the window frame. Each window shall be properly equipped with anchors to support safety gear. The architect shall design and supervise the installation of the windows into the building frame, insuring that the windows are adequate and safe.
3. All windows shall be capable of being opened manually for cleaning and in the event of a shutdown of the HVAC equipment, unless fixed windows are required for control/security reasons. Operable windows shall be provided with positive locking devices. **Pivot windows shall not be specified.**
4. Consideration shall be given to the use of double panes (thermopane) with outer shield of solar glass, especially if windows area exceeds 3% of wall area.
5. Provide guardrails at all full height glass panels in accordance with applicable codes.
6. Confirm that any hurricane shelter requirements have been considered in the design of windows and selection of window materials.
7. Types of glass and location shall be indicated on the drawings or in the specifications as follows: A "type number" to each type of glass being used on the job. Location of each by the simple note, "glass type 1", "glass type 2," etc. (Avoid lengthy descriptions of the glass on the drawings.) Each glass type precisely defined in the specifications.
8. Use obscure glass in toilet and bathroom windows.
9. All window glass shall be replaceable from inside the building wherever feasible.
10. Windows shall be glazed in the closed position and left closed for several weeks, particularly awning or projected types.
11. Specify safety glass in all hazardous locations to comply with Life Safety Code, ADA Requirements, etc.
12. Selection of window materials shall be assessed for long range, life-cycle cost.

## **DIVISION 9 - MATERIALS AND FINISHES**

### **GENERAL MATERIAL AND FINISH GUIDELINES**

1. The selection of materials shall have the benefit of long range, life cycle cost analysis. All selections shall, however, be within budget limitations. It is expected that the A/E will advise the University of all savings opportunities regarding material selections. Solid and hazardous waste disposal costs for excess materials shall be included in the life cycle cost analysis.
2. The A/E shall coordinate all color and material color selections with the Project Manager. Color schedules will be required for University review with the check set of working drawings. Schedules and samples shall be provided for interior finishes, such as paint, vinyl, baseboards, carpet, tile, bathroom partitions, and the like as well as exterior finishes, such as paint, roof shingles, glazing, and so on. Colors shall be presented in the form of a non-returnable "color-board," which demonstrates all color selections in the form of an overall project color palette.
3. Samples of all finishes and finishing material shall be submitted to the University for approval no later than the 50% Construction Documents phase. In case of special concrete finishes or stucco work, a sample at least 2'-0" square shall be submitted.
4. As a minimum, use a latex-based semi-gloss paint on all wall surfaces to be painted to facilitate cleaning. Use water based epoxy paint behind and beneath water coolers, trash receptacles, adjacent to elevations, in vending rooms and in all restrooms. Do not use paint containing lead.
5. All horizontal, plastic laminate surfaces shall have a matte finish.
6. Blown-on acoustical ceilings and walls are not acceptable.

### **GENERAL FINISH REQUIREMENTS FOR SPECIFIC SPACES**

#### Restroom Floors

1. Floors shall be of ceramic, porcelain or quarry tile with dark epoxy grout. They shall have a watertight membrane/sealed so as to prevent seepage.

#### Custodial Closet Floors

1. The floor shall be finished with ceramic or quarry tile and dark grout, or sealed concrete. The walls shall be of ceramic tile or other special waterproof coating material, a minimum of 4 feet high.

### **CARPET**

#### General Carpeting Design Guidelines

1. Carpet grain direction, seaming, and scribing shall be carefully addressed in drawings and specifications.
2. All carpet, unless otherwise specified, shall run in the same direction. Lay with a minimum number of seams and carpet sections. All carpet is to be smoothly laid with no bubbles, ridges, etc.
3. Where roll carpet is used, no seams shall occur at doorways and entries perpendicular to doors and entries. Seaming occurring at doorways parallel to doors shall be centered directly under doors. When seams occur at corridors, change of directions shall follow wall line parallel to carpet direction.

4. Cross-joints, which are necessary due to length of rolls, shall be placed in the cutting, to avoid occurrence at conspicuous locations, near doors, or at pivot points.
5. Where needed, raw carpet edges at doorways and the like shall be finished with a top quality metal strip or molding.
6. Do not specify carpet in stairways.

#### Carpeting And Related Products

**Unless directed otherwise by the University Project Manager, all carpeting shall be supplied by the University, and installed by the Contractor.** The Contractor will be responsible for coordinating material delivery and installation with the sequencing of the work. Carpet shall be installed using an installer, installation materials, i.e., adhesives, edging, etc., and methods approved by the carpet manufacturer.

The Design professional shall be responsible for carpet type and color selection. Based on appropriateness of use, design selections shall be made from the following:

- a) Broadloom Carpet – 12’ roll goods, woven polypropylene backing.
- b) Hard-backed Carpet – 6’ roll goods, solid backing impervious to moisture.
- c) Modular Carpet – same as hard backed carpet except supplied as individual solid backed carpet squares. Install with releasable adhesive. Recommended for general use and where additional cleanability, acoustical dampening and durability is desired. Modular carpet is recommended where frequent carpet replacement is anticipated, where access to the substrate is necessary and where replacement of roll goods is impractical due to obstructions in the space.
- d) Solution Dyed Carpet – made with carpet yarn that has color throughout the yarn and therefore has superior color retention and resistance to fading. Solution Dyed Carpet may be supplied as Broadloom, Hard-Backed or Modular. Recommended for general use and use in areas with high sunlight exposure and/or potential exposure to bleaching agents, such as laboratory zones where chemicals in use may have a bleaching action, and areas near toilets or janitor’s closets where bleach is used in cleaning.

#### Use of Carpet

Carpet shall be applied to areas within projects according to the following recommendations:

1. Very High Traffic Zones – Immediately inside entrance doorways, elevator doors, and other places where traffic is very highly concentrated, use tile, walk-off mats, or similar materials in the immediate vicinity of the doorway, elevator entrance or other high traffic zone. As traffic concentration begins to be more spread out, transition to carpet, using the recommendations below for High Traffic zones.
2. High Traffic Zones – Modular Carpet is recommended for High Traffic Zones where frequent carpet replacement is likely. Transition to Hard Backed Carpet as traffic becomes less concentrated, and frequent carpet replacement becomes less likely. These zones must be designed carefully and with respect to the challenges of each particular project, but, in general, the designer should consider Hard Backed Carpet in corridors, lobbies, atriums, aisles, walkway areas within open office areas and similar spaces. Give careful consideration to the transition of this thicker carpet to adjoining areas using Broadloom Carpet.
3. Classrooms – Due to the severe use, likelihood of spills and acoustical considerations, Hard Backed Carpet is recommended for most classrooms. The backing provides this carpet with much better acoustical properties and is much more impervious to moisture penetration.

4. Areas With High Sunlight Exposure or Exposure to Bleaching Chemicals – Use Solution Dyed Carpet for superior color retention and resistance to fading. Provide this carpet as a Broadloom, Hard Backed or Modular design, depending on the traffic characteristics of the space, as outlined above. Examples of such areas are Atria, spaces located inside large areas of South-facing glass, spaces adjacent to certain laboratories using chemicals with bleaching properties, and carpeted areas adjacent to Janitor's Closets and Toilets.
5. All Other Areas – Other areas, including offices and other spaces, can be carpeted with Broadloom carpet, at the discretion of the designer and University Project Manager. Careful consideration should be given to the use, traffic load, and sunlight exposure of each area in choosing the most effective carpet for that area.

#### Carpet Cleaning

22. As job progresses, surplus adhesive squeezed out between joints shall be removed. Any stains remaining shall be removed by approved methods.
23. Upon completion of work, all base and edging shall be cleaned, all foreign materials removed by approved methods.

#### General Carpeting Installation Guidelines

1. Installation of carpeting and related items shall be done by a competent contractor normally engaged in this trade with materials and methods complying with the specifications and drawings, and in such a manner as to insure a workmanlike job.
2. Any existing resilient vinyl cove base shall be cut to obtain a flush edge with the wall.
3. Sub-Floor Preparation: It is the responsibility of the carpet contractor to remove the existing carpet and pad, where necessary. All surfaces on which the carpeting is installed shall be clean and free of dust, dirt, and debris. Any holes, cracks, depressions, or other imperfections shall be filled and brought to a true plane with non-shrinking grout (similar or equal to "Surco" by W.R. Grace and Company). The A/E shall inspect the surface preparation prior to the installation of the carpet. Moisture tests of substrates are required prior to the installation of carpet and vinyl tile in new structures. A satisfactory reading, conforming to the manufacturer's requirements, shall be obtained before installation is permitted.
4. Damage to the facility or surrounding property incurred by the contractor during any stage of carpet installation shall be repaired and the damaged area restored to its original condition by the contractor at no expense to the University.
5. Installation of carpet shall not disturb the normal usage of the facility. Therefore, the contractor shall arrange with the University Project Manager a time schedule not concurrent with student, faculty, or staff occupation or use.
6. Carpet shall not be installed prior to drywall installation.

#### Glue-Down Installation Guidelines

- a) Floors shall be free of all wax, grease, paint, oil or any other substance that would create adherence problems. Cracks, expansion joints, etc. are to be filled with a top quality patching compound and finished smoothly. The carpet contractor shall notify the A/E and the University of any flooring conditions that would prevent the completion of satisfactory work.
- b) Floors are to be thoroughly swept and vacuumed by the carpet contractor before applying adhesive.

- c) The mill or factory edge on all roll carpet is to be trimmed far enough in from the carpet edge in order to provide a clean and even seam. Manufacturers' recommended cutting methods shall be used.
- d) Cut edges on all roll carpet are to be treated with a seam sealer at the edge of the carpet at the base of the pile and primary backing. On all carpets, excess sealer is to be removed in accordance with the manufacturer's recommendations. To insure an almost 100% contact with the adhesive, the carpet is to be pressed with a roller or push broom per the manufacturer's standard procedures. Note: Carpet with an attached cushion is not to be treated with a floor-covering roller exceeding 30 pounds.
- e) All carpet shall be installed in strict accordance with the approved seaming plan.
- f) Glue down carpet and/or carpet tiles shall not be installed over existing flooring materials.

### Carpet Warranty

**Contractor Warranty:** The Contractor shall give the University a written, notarized warranty guaranteeing carpet installation and related work for a period of one year after the date of substantial completion. The warranty shall commit the Contractor to making all repair and replacement including labor and materials at no cost to the University.

**Manufacturer's Warranty:** The Carpet Manufacturer shall provide the University an unrestricted, full replacement, non-prorated, minimum fifteen-year warranty against wear, edge ravel, tuft bind and delamination. The Carpet Manufacturer shall coordinate any and all installation and material approvals, inspections and certifications required to support the specified warranty with the Contractor and Owner's Representative.

## RESILIENT FLOOR TILE

### General Considerations for Resilient Tile

1. The contractor shall visit the site and familiarize himself with the work to be accomplished. If verification of sub-flooring is required, the contractor shall, upon approval of the Project Manager, remove a portion of the existing flooring material, as required.
2. The A/E shall submit to the University representative samples and manufacturers' literature of materials to be used for approval.
3. The A/E shall submit no later than the completion of the 50% Construction Documents scheduled information regarding floor tile location, color, material, size, gauge, as well as similar information for base and edging. Specify 12" X 12" X1/8" thick per Federal Spec. FS-312-IV.
4. Damage to the facility or surrounding property incurred by the contractor during any stage of resilient flooring installation shall be repaired and the damaged area restored to its original condition by the contractor at no expense to the University.
5. Installation of resilient flooring shall not disturb the normal usage of an existing facility. Therefore, the contractor shall arrange, with the University Project Manager, a time not concurrent with student, faculty, or staff occupancy or use.
6. Immediately upon completion of the tile installation, apply a high quality floor sealer and the minimum number of coats of floor finish recommended by the manufacturer to prevent damage to the floor during construction. Re-coat prior to acceptance of the facility by the owner.

7. 5% surplus floor tile to be saved for the owner.
8. Resilient Tile shall not contain asbestos.

#### General Resilient Tile Installation Guidelines

1. Installation of resilient flooring and related items shall be done by a competent contractor normally engaged in this trade with materials and methods complying with the specifications and drawings and in such a manner as to insure a workmanlike job.
2. Sub-Floor Preparation: All surfaces on which resilient flooring and edging are to be installed shall be cleaned free of grease, dirt, paint, and hardeners. Holes, cracks, and other depressions in the existing floor slabs shall be filled or patched, and brought to a true plane with a non-shrinking grout similar or equal to "Loxon."
3. Floor tile shall be laid with the proper adhesive, meeting Federal specification standards and with close, even joints, to a smooth, even surface, and square with the corridor axis.
4. Floor tile shall be laid with the grain direction alternating in a checkerboard pattern.
5. Floor tile at borders on opposite sides of the space shall be equal, and shall be laid, cut, fitted, and scribed to walls, columns, door frames, and the like after laying of the field tile.
6. Base and molded corners shall be firmly cemented to walls and other vertical surfaces with tight joints. Base throughout its entire length shall have its top and bottom edges in firm contact with the floor and walls. Base shall be scribed accurately to molded corners and to doorframes.

#### Resilient Tile And Related Products

1. The University must approve all resilient floor tile and related products. Samples of all resilient floor tile and related products as well as manufacturer's product literature must be submitted to and approved by the University prior to the 100% Construction Document submittal.
2. Adhesives for flooring and accessories shall be of the types specifically recommended by the resilient material manufacturers, for the installation conditions involved and shall meet Federal specification standards. For the installation of floor tile and edge strips, waterproof adhesive only shall be used.
3. All resilient tile and resilient base shall be of the same millrun to maintain consistency.
4. All resilient edging strips shall be vinyl with factory formed feathered edge (similar or equal to Johnsonite Reducer Strips).

#### Resilient Tile Cleaning

1. As the job progresses, surplus adhesive squeezed out between the joints shall be removed. Any stains remaining shall be removed by approved methods.
2. On completion of this work, all tile, base, and edging shall be cleaned as recommended by the tile manufacturer. All foreign matter shall be removed and any chipped or broken tile, base, or edging shall be replaced with sound material.

#### Resilient Tile Warranty

1. The contractor shall give the University a written warranty guaranteeing all work performed under this contract for a period of one year after the date of completion. In this written guarantee, the contractor shall agree to make all repairs or corrections required to maintain the completed work in first class condition for the one-year period at no cost to the University. If subcontractors are involved in this project, a similar written guarantee shall be furnished by each subcontractor covering his

portion of the work. Subcontractors' warranties will not relieve the general contractor of any warranty responsibility.

#### STUCCO AND PLASTER

1. Use galvanized steel metal lath in conjunction with acoustic plaster to eliminate rust stains.
2. Where conditions require the highest corrosion resistance, specify that lathing accessories such as corner and casing beads be made of zinc alloy.
3. Provide ample control joints in stucco, particularly in overhangs. Two No. 60 expansion type casing beads butted together are preferred.

#### QUARRY TILE

24. Quarry tile is a desirable material for stairways, corridors, kitchens and for many other areas both interior and exterior because of its enduring quality, ease of maintenance and fire resistance.
25. Quarry tile treads are preferred for main stairs and should have an integral abrasive of approximately 65% aluminum oxide, ceramically bonded at high temperature.
26. Quarry tile treads shall be replaceable.
27. Quarry tile specified for exterior slab finishes must have an integral abrasive.

#### CERAMIC TILE

1. The current edition of "The Handbook for Ceramic Tile Installation," published by the Tile Council of America, shall be used as a reference guide for selecting design details and specification wording.
2. Ceramic tile is desirable for floors and walls or wainscots in toilets as well as in some laboratories and utility rooms. Toilet floors shall have dark sealed grout.
3. Ceramic tile on a masonry wall is insufficient to prevent water from permeating a shower room wall. Specify parging or painting the back of the wall and provide a through-wall flashing near the base as a means of conducting the water back to the shower room floor.

#### ACOUSTICAL CEILING TILE

28. Use extreme care in choosing the correct acoustic units. Do not specify exotic patterns, etc. Ensure that only standard patterns have been specified that will be available for many years in the future.
29. Specify that the Contractor cannot accept discontinued acoustic units, since matching replacements is impossible.
30. Specify that all acoustical ceiling materials shall meet flame-spread rating requirements of prevailing codes for interior finish according to occupancy classification.
31. Specify acoustical ceilings, not only by noise reduction coefficient, but also by tile thickness.
32. Specify mechanical suspension of acoustical ceilings. Adhesive attachment is not permitted.
33. Do not specify acoustical tile in dormitories. Acoustic tile is a poor material to use in dormitories because of vandalism.

34. Where exposed grid systems are specified, a reflected ceiling plan is required on the drawings. Specify construction tolerances regarding plumb, dimensions and locations, particularly where exposed masonry and concrete is used.
35. Specify that the buildings must be dried by heat or other means prior to installation of acoustical ceilings, to control humidity.
36. Specify that all suspension systems shall be intermediate duty rated. Heavy duty systems will be provided if the loading dictates. All grid systems shall be supported at a minimum of 4ft in each direction in accordance with the provisions of the latest edition of ASTM 635 and 636.
37. All lay-in light fixtures regardless of weight shall be independently supported from the structure above.

## PAINTING

1. Require undercoats to have slightly different tints, and to be inspected and approved by the Architect/Engineer prior to application of the next coat.
2. Specify the total thickness of paint by "dry mil" or "wet mil" thickness (according to which is recommended by the paint manufacturer), and verify the thickness on the job by use of special low-cost gages.
3. The university will assist the Architect/Engineer in specifying the quality of paint required, acceptable vendor products and paint specifications for specific types of paint and their application. Paints with the highest proportion of titanium dioxide should be used for dirt shedding properties.
4. Clearly describe substrate preparation requirements.
5. Require metal doorframes in masonry walls to be back painted prior to installation.
6. Specify paint on steel and iron items on the basis of mil thickness rather than number of coats. Items exposed to the weather shall have a minimum of six mils total dry film measurement. Interior steel and iron shall have a minimum of four mils dry film measurement.
7. Use a clear silicone waterproofing or approved alternative the exterior of all brick buildings including the stone. 3% silicone is considered adequate; for limestone a 5% silicone is desirable. Products, which have been used and found acceptable, are: Florida Laboratories Chemclear 30 and Sonneborn-Hydrocide S-X.
8. Clear silicone waterproofing shall contain a minimum of 3-5% silicone resin solids in a hydrocarbon solvent conforming to formulation and performance standard of Federal Specifications SS-W-OO110 (G.S.A.). Container label shall certify that it meets above requirements. Where an interior paint is used on masonry or concrete surfaces, no silicone waterproofing is desired.
9. Maintenance prefers and uses a latex based paint for interior applications and an oil based paint for exterior applications. Interior paint shall be low VOC.

## DIVISION 10 - SPECIALTIES

### GENERAL ACCESSORY REQUIREMENTS FOR SPECIFIC SPACES

#### Toilets

1. Fixtures and partitions shall be wall or ceiling hung to keep floors clear for cleaning. Fastening is to be by means of toggle bolts and through bolts into studding, stringers, or joists to prevent attaching to the wall only.
2. All items are to be securely installed. In drywall partitions, use solid wood backing.
3. Solid plastic stall walls are preferable. Santana or Equal, graffiti resistant type.
4. Provide coat hooks on the inside of each stall door.
5. Provide soap dispensers -Dispenser, FMX, 1250 ml FMX Dispenser, container size 1250 milliliters, color gray, uses FMX 1250 ml refills. Grand GOJO mfr model 5150-06.
6. Provide toilet tissue dispensers --Dispenser, Tissue size 9 in, Number of rolls 2, color smoke (gray), dimensions 12 5/8 x 20 3/16 x 5 5/8 inches as manufactured by Georgia Pacific.
7. Provide paper towel dispensers –Dispenser, Towel Roll, Hard wound roll with stub roll, 2 compartment, color gray, dimensions 14 7/8 x 12 1/8 x 10 inches as manufactured by Georgia Pacific.
8. Provide wall mounted semi-recessed stainless steel waste receptacles WITHOUT TOWEL DISPENSER.
9. Provide stainless steel sanitary napkin receptacles in all female toilet stalls.
10. Soap dispensers must be of the type that use sealed soap refills (SEE LINE 5). BUILDING SERVICES WILL NOT SERVICE REFILLABLE DISPENSERS. They shall be wall-mounted above sinks, one per every two sinks, with an additional dispenser by each sink within independent handicapped accessible stalls.
11. Do not provide ashtrays.
12. Mirrors are to be provided for all restrooms. Do not place mirrors in open view of the entranceway. Mirrors shall be mounted at a height to be handicapped accessible.

#### Custodial Closets

1. Provide 18'-0" of 12" shelving mounted at 4'-0" AFF.
2. Provide one built in locker 2'-0" x 4'-0" x 7'-0" with hasp.
3. Provide wall splash protection.
4. Provide sink with hose hook up. The custodial closet sink shall be provided with hot water per OSHA.

#### Classrooms

1. Furnish audio-visual blind systems or other acceptable window coverings, which exclude light in all exterior classrooms.

## MARKERBOARDS AND TACKBOARDS

1. The Architect/Engineer shall schedule the sizes and locations of chalkboards and tack boards with the university project manager during planning meetings.
2. Provide at least four map hooks per eight feet of length. Set the tops of marker boards at seven feet above the floor.
3. Dry-erase marker boards shall be used instead of chalkboards. Marker boards should contain a marker tray and 1-1/2" continuous tack strip at the top. Mount tray 36" AFF to the tray. The dry-erase board should cover as much of the front wall as practical.

## SIGNAGE

1. Refer Appendix B – Signage Specification, for FSU preferred signage requirements.
2. Room Naming and Numbering – All room numbers will be assigned by the FSU Office of Space Utilization and Analysis. Contact: Lori Pinkerton (850) 644-9660.
3. Provide marking, signage and other identification for all mechanical equipment and piping.
4. Provide clear marking in accordance with code for all fire rated wall assemblies.
5. Provide a sign at each floor level landing in accordance with NFPA 101 (Life Safety Code), Chapter 5. The sign shall indicate the floor level, the terminus of the top and bottom of the stair enclosure, and the identification of the stair. The sign shall also state the floor level of the direction to exit discharge. The sign shall be located approximately 5 ft. (152 cm) above the floor landing in a position that is readily visible when the door is in the open or closed position.
6. The Architect/Engineer shall include directional signs for direction of the public through corridors to destination together with identification of specific functions of rooms such as, MEN, WOMEN, CUSTODIAL CLOSET, MECHANICAL ROOM, DEPARTMENTAL NAMES, HIGH VOLTAGE, etc. Observe requirements of the Handicapped Codes and ADA. Particular attention should be given to placement of exit signs to ensure compliance with applicable codes and occupancy limit at designation on signs at specific areas. Design, placement, and other details will be in accordance with the Fire Marshal's requirements.

## CONSTRUCTION SIGN

1. Before the ground breaking ceremony for a new facility the project construction sign shall be erected by the contractor at a site designated by the University Project Manager, and be constructed according to the requirements shown in Appendix G., It is the contractor's responsibility to insure that all names, project numbers, and personnel are correct and up-to-date. This requirement also includes correct spelling. Mount sign on 2 – 4"x4"x12' PT wood posts. Removal shall be performed by the contractor at substantial completion.

## BUILDING PLAQUE

1. The construction contract shall contain an adequate allowance for the installation by the contractor of a cast metal building plaque.

2. Location of the plaque in the building shall be as determined by the Project Manager, FSU Facilities Planning and Construction Department.
3. It shall be the responsibility of the contractor to verify all the information on the Building Plaque, including spelling, project name & number, University officials, etc.

#### FIRE PROTECTION SPECIALTIES

1. Unless otherwise required by Code, all fire extinguishers shall be maximum 5 lb. units, with a 3A40BC rating. 10 lb. units may be used in work shops, parking garages, large mechanical rooms, elevator equipment rooms and labs containing large quantities of flammable liquids. Rooms housing only HVAC systems, small electrical rooms, janitor's closets do not require fire extinguishers unless otherwise determined.
2. CO<sup>2</sup> extinguishers – Do not use except with prior approval of the Environmental Health & Safety department.
3. Fire extinguisher cabinets – Use only UL approved pull open, non-locking keyless cabinets, with a flat, shelf bottom without interior hanger and sized for a minimum 10 lb ABC extinguisher. All cabinets shall be fully or partially recessed and shall not extend greater than 4 inches from finish wall surface. Do not use break glass or plastic bubble front units. Extinguisher cabinets shall be installed to maintain the integrity and fire rating of the partition system it is installed in. The words 'FIRE EXTINGUISHER' shall be clearly visible on the exterior face of the cabinet. Additional signage will be provided to guide occupants to a fire extinguishers location if hidden by columns or other building components.
4. Use Halatron or FE2000 fire extinguishing agents in computer rooms and laboratories where sensitive equipment exists. 2AC rated water mist extinguishing systems may be used in computer server rooms or laboratories with department approval.
5. Use K – Type extinguishers in commercial kitchens.

#### LOUVERS

1. All wall louvers shall be extruded aluminum, storm proof, and include bird screens.
2. All louver perimeters shall be sealed to provide full perimeter integrity.
3. Meet hurricane requirements where required.

#### WALL AND CORNER GUARDS

4. High impact vinyl and stainless steel may be used with approval of the University Project Manager. Provide 3/16" or a heavier gauge PVC to prevent warping.
5. Light gauge aluminum is not satisfactory.

## **DIVISION 11 - EQUIPMENT**

### **CENTRAL VACUUM SYSTEMS**

1. Where project budget permits, install central vacuum systems in all new facilities, which are to be carpeted.

### **TRASH HANDLING EQUIPMENT**

1. Install trash chutes and trash compactors in all new facilities. Establish on site recycling areas accessible to staff members assigned to the collection and pickup of recyclable materials. (I.e., immediately off loading docks or accessible by paved sloping walkways, not stairs.)
2. Pay particular attention to fire prevention problems associated with trash removal and storage.
3. Buildings three or more stories high shall be designed with a trash receiving room large enough to place a 10 cu. yd. (8' wide X 7' deep X 8' high) steel trash collection box directly below a vertical chute. (A roll-up door is suggested, not less than 10' X 10'.)
4. Provide areas for recycling bins.

### **LOADING DOCK EQUIPMENT**

1. All loading docks shall be equipped with leveling platforms and be covered to accommodate deliveries in inclement weather.

## **DIVISION 12 - FURNISHINGS**

### **GENERAL GUIDELINES**

1. The University prefers standard items to reduce costs and maintenance or replacement problems, in preference to special items.
2. Recessed trash receptacles shall be located outside each classroom door, each elevator door, and each building entry and in all hallways and lobbies. Recessed, wall mounted trash receptacles shall be located outside each designated classroom door, each elevator door, and each building entry. Receptacles shall have hinged doors or be removable. Cigarette urns shall not be provided except near building entrances, where sand urns shall be located.
3. Building directories shall be provided in all main lobbies.
4. All shelving shall be adjustable except when a specific installation is impractical.
5. Bulletin boards and display cases shall be provided as designated by the user.
6. For classroom areas, provide good quality marker boards in long sheets with a tack railing provided on top of the board.
7. Entrance floor mats shall be recessed flush with finished floor and be provided inside and outside of all building entrances. Where possible, recessed and replaceable walk off mats shall have a 12-foot run length inside of all entrance doors. Exterior mats shall be a minimum of 4x6 for a single door, and 6x8 for a double door. Exterior mats shall be of the type to scrape and remove heavy dirt and soil. Interior mats shall be absorbent and be constructed so as to trap sand and finer particles.
8. Stored pressure dry chemical, refillable, multipurpose ABC type fire extinguisher shall be provided in each hose rack cabinet and at other locations as required by the NFPA.
9. In rooms designed for frequently moved furniture or equipment provide a chair rail or guard around room perimeter to protect wall finishes. Coordinate design and location with the University Project Manager.
10. Provide an interior signage system meeting ADA requirements.
11. Provide exterior signage meeting ADA requirements as appropriate.
12. Provide clocks on a master clock system.

### **WINDOW TREATMENT**

1. All exterior classrooms with exterior openings are to be furnished with audiovisual blind systems, which exclude light.

### **FIXED SEATING SYSTEMS**

1. The A/E shall request and receive shop drawings for the installation of fixed seating in auditoriums, theaters and lecture halls. He shall request that a sample installation be done for testing and the Project Manager and University representatives shall approve the test installation before approving shop drawings for the complete installation.

## LABORATORY CASEWORK

1. The A/E is required to obtain sign-off from University personnel for the selection of acceptable laboratory casework construction, materials and manufacturers.
2. Select working surfaces for the intended use. Plastic Laminate tops are satisfactory for many labs but epoxy countertops must be specified where top is exposed to heavy usage, strong chemicals, heat, etc.
3. In order to obtain full information directly from lab users, the University Project Manager shall arrange conferences with the appropriate University personnel and the A/E to discuss laboratory design and specialty construction such as environmental rooms, diagnostic labs, coolers, sound proof rooms, etc.

## **DIVISION 14 – ELEVATORS CHAIR LIFTS AND DUMBWAITERS**

**IT IS RECOMMENDED THAT AN ELEVATOR CONSULTANT BE RETAINED TO ASSIST WITH ALL ELEVATOR, DUMBWAITER AND CHAIRLIFT SPECIFICATIONS AND DESIGNS.**

### **1. HANDICAP REQUIREMENTS:**

1. Elevators and Chairlifts shall be handicapped barrier free in accordance with design standards of the National Elevator Industry, Inc. ANSI A-117.1 and ADA Standards.
2. The height of the center of the operating buttons shall comply with all codes enforced at the time of installation of the equipment.

### **2. ELEVATOR MANUFACTURER AND CONTRACTOR REQUIREMENTS AND QUALIFICATIONS:**

1. An approved manufacturer regularly engaged in manufacturing elevator equipment of the type required for this project
1. The manufacturer or authorized agent of an elevator equipment manufacturer with not less than ten (10) years of satisfactory experience installing and servicing elevator equipment equal in character and performance to the project elevator. Any welding on the site must be performed by personnel who have successfully passed an American Welding Society authorized test and whose welding work has been judged by a natural person who is fully authorized to do so by the American Welding Society. The authorized person who evaluates the welding must sign the certificate signifying applicant has passed required tests. No substitutions will be permitted.
2. The Installation Contractor must submit catalogs and show evidence that all required parts are kept in inventory within ten (10) miles of the elevator installation. The Installation Contractor must certify that he/she has a Service Office with full time employees within ten (10) miles of the project site.
3. The Elevator Contractor must pay the expenses of a “QEI” Certified Elevator Inspector not employed by the installing Contractor to witness all testing of the equipment again immediately prior to expiration of the twelve (12) months warranty period. A Copy of the testing report must be turned over to the Owner and to the Elevator Contract Administrator for the University.

4. The cost of all elevator inspections and certificates are to be paid for by the Contractor.

### III. ELEVATOR MAINTENANCE:

1. Elevator maintenance and warranty on new and/or up-graded elevators shall be for a period of 12 months after acceptance. The Certified Mechanic must spend a minimum of two (2) hours per month per traction, one (1) hour per month per hydraulic, one (1) hour per month per dumbwaiter and/or one (1) hour per month per chairlift regularly and systematically cleaning, examining, adjusting lubricating per Manufactures Recommendations.  
The approved elevator maintenance Technicians must be certified with a "Certificate Of Competency" from the State of Florida. The Contractor shall be responsible for providing additional maintenance, repairs, service, call-backs and other work on a 24 hour, 7 days per week basis as part of the installation or modernization contract Response time for any problem calls must be with in one (1) hour after notification of the problem.

#### 1. ELEVATOR PIT AND HOISTWAYS:

1. The elevator pit area, which includes the floor and walls up to the lowest landing threshold area must be water sealed and painted with two (2) coats of high gloss acrylic latex floor enamel.
9. Pit ladders are to be installed according to all codes enforced at time of installation. Location of ladder is to be determined by the Elevator Contractor and Designing Firm.
10. Sump holes to be installed in Pit, covered by grate. If Sump is to be used, installation of Sump Pump must be installed according to all codes enforced at time of installation.
11. Conduit and Lighting Fixtures in Pit are to be installed for WET conditions. All codes governing this type of lighting system at the time of installation must be followed.
12. All voids, holes, slots, etc., in the hoistway shall be grouted or pointed up to obtain fire rating. All nails, snap-ties, form straps and wood shall be removed from hoistway.
13. Where needed, grating shall be provided in shafts to permit safe lubrication of sheaves and equipment.

## 2. ELEVATOR MECHANICAL ROOM:

1. The elevator machine room shall be no larger than necessary to house and repair machinery. The elevator machine room walls and ceiling must be primed and completely painted with two (2) coats of semi-gloss acrylic latex paint. The machine room floors shall be smooth and level. The elevator machine room floors must be painted with two (2) coats of highest quality oil based light gray color gloss floor and deck enamel.
9. The elevator machine room shall not to be used for storage of any kind. No foreign piping, ductwork or conduit shall pass through hoistway and/or machine room. With the use of Microprocessor based elevator control system, the Elevator Mechanical Room must be environmentally controlled. All nails, snap-ties, form straps and wood shall be removed from machine room walls and ceiling.
3. All elevator machine room doors must be self-closing, self-locking, requiring a key to open. Door must also have a sign stating "Danger-Elevator Equipment". Machine Room Doors shall be not less than one and one-half hour fire rating B label, not less the 3' 4" in width and not less than 6' in height. Doors shall be provided with a spring type lock arranged for opening from the inside without a key. A key is required to open the door from the outside.
4. Elevator machinery rooms must be well lighted in order to provide a safe environment for the elevator technicians to work. Lighting must be at least 19 foot candles, measured at the floor, in all portions of the room. Lighting must have guards to protect lamps. Light switch shall be located on the lock-jamb side of the access door. Elevator machine rooms shall have a head room of not less than 7'0", (Head room is determined by measuring from the floor to overhead items such as wire duct, beams, lights, etc.
5. Stairways for access to elevator machine rooms shall be of metal and shall conform to the following:
  1. Maximum angle of sixty (60) degrees from the horizontal.
  2. Stair treads shall not be less the 28 inches in height.
  3. Stair treads shall be level and not less the 6 inches in width with slip-resistive surface.
  4. The rise shall not be less than 8 inches or more the 10 inches.
  5. The headroom from the top any tread shall be not less than 7 foot vertical clearance, measured in line with the face of the riser.

6. There shall be no more than 14 feet in an unbroken vertical rise.
  7. Stairway floor opening shall be guarded by a metal railing 42 inches in height with intermediate rail and toe board.
  8. Open side of stairs shall be protected with a metal handrail not more the 34 inches in height from the upper surface of top rail to surface of tread in line with face of riser at forward edge of tread, and with intermediate rail.
5. Access to elevator mechanical rooms across roof shall have steps or ramps with metal railing built over pipes or other obstructions.
  6. All Electrical disconnects, fusing and receptacles shall be installed following all Codes enforced at time of installation.
  7. All hoist way vents shall be installed following all Codes enforced at time of installation.
  9. Elevator machine rooms shall not be located adjacent to classrooms and other noise sensitive spaces without thorough consideration to noise transmission to these spaces.

#### VI. PAINTING OF EQUIPMENT:

1. Elevator equipment must be completely painted in the field, except for the stainless steel and for the polished machined surfaces of the hydraulic buffers, guide rails and/or hydraulic plungers.
1. ELEVATOR SERIAL NUMBER SPECIFIC OPERATION, ADJUSTMENT & MAINTENANCE DATA; TOOLS OR COMPUTER DEVICES, FOR EACH ELEVATOR (OR FOR EACH MULTI-CAR GROUP ELEVATOR SYSTEM) ELEVATOR ELECTRICAL CONTROLLER AND DOOR OPERATOR CONTROL, IS TO BE PROVIDED TO OWNER:

Elevator Contractor shall provide four (4) copies of typewritten or professionally printed, elevator serial number specific installation, adjustment and troubleshooting instructions, to be used in maintaining and repairing all new, up-graded or renovated elevators or group elevator systems.

Elevator Contractor shall provide four (4) copies of the elevator serial number specific, as built, electrical wiring diagrams, designed with point to point wiring or circuit connections. Further, furnish a complete set black on white drawings, printed on high rag content paper for long life, to be used for reproduction of wiring diagrams, if needed in the future. Additionally, provide one (1) complete set of the same high quality wiring diagrams, laminated with heavy gauge clear plastic, and designed to be hung on sturdy wall bracket(s) in the elevator machine

room(s). Drawings shall be designed to be easily removed from the rack for use by the elevator technicians.

Elevator Contractor shall provide four (4) copies of all elevator serial number specific computer or handheld adjustment device passwords, legends, reference codes, key words, operational descriptions and related information so that a competent elevator technician can access the elevator electrical controller system(s), make adjustments to the equipment settings, determine the malfunction codes, troubleshoot the electrical system or verify correct operation of the elevator electrical controller or door operator equipment.

Elevator Contractor shall provide four (4) copies of an elevator serial number specific replacement parts list for each elevator or group of elevators, located in a new building, or that which is renovated or up-graded in an existing building.

Elevator Contractor shall have the right to furnish either “on board” mounted computers or hand held diagnostic devices, or similar portable computer or hand held devices that can be disconnected from the elevator electrical controller and door operator controller systems. Either design is acceptable so long as the required maintenance and adjustment information, diagnostic functions, equipment operation, equipment performance and troubleshooting activities can be performed without unnecessary delays, and the same performance results can be anticipated. Regardless of the type of computer or diagnostic equipment provided under the contract, the Elevator Contractor must provide the Owner with one (1) complete set of computer or handheld technical equipment devices that will operate each and every elevator covered by the new elevator or elevator up-grade contract.

Provide a complete set of current, as built and installed, microprocessor software for each and every elevator covered by the contract.

The Elevator Contractor must provide a notarized letter with his bid that states that, if he receives the contract to perform the elevator work, the Elevator Contractor shall provide all of the required installation and adjustment information, computer devices or service tools, data, instructions, diagrams, parts lists and related information at the time the project is completed.

All required information, data, diagrams, instructions and related materials shall be provided in heavy duty, oversize type, three (3) ring binders, properly identified with the project name, locations, elevator serial numbers, building elevator numbers and related information.

## 2. REPLACEMENT PARTS:

9. All of the major parts utilized in new or up-graded elevators must be manufactured in North America, and the elevator manufacturer must have a documented quality assurance program.
10. Only new parts or components shall be accepted. The installer shall not use rebuilt, used or reconditioned equipment or parts on any new elevators or up-graded elevators. The only used equipment allowed are existing components that are specified to be reused during an

elevator up-grade contract. None of the parts or equipment removed from the project can be used elsewhere on the Florida State University Campus.

11. The Elevator Contractor, and Elevator Manufacturer, if not the same company, must provide a notarized letter at the time the elevator work project is bid stating that all necessary replacement parts, supplies and related equipment, necessary to maintain, repair and service the elevator equipment will be promptly sold, without delays, directly to the Owner, or to the Elevator Contractor who maintains the elevator equipment on behalf of the Owner without the necessity of the replacement parts being initially purchased by the Owner. The letter must be signed by an executive officer of the Elevator Contractor.

### 3. FASTENERS:

1. All exposed screw is to be of the vandal (tamper-proof) type. Include countersunk, vandal resistant, 316 stainless steel screws for cover plates.
2. Drive pins to attach any surface mounted Braille plates.

### 4. THRESHOLDS/SILLS:

1. In Cab – Nickel Silver.
2. Landings/Floors – Floors with heavy traffic Nickel Silver

## XI DOOR OPERATORS:

1. Elevator Door Operators must be highest quality, heavy duty type, with “closed-loop,” type microprocessor digital control system. Door operator must have digital encoder.
  - a. Include the following features in door operator control system:
    - Door position monitoring
    - Door velocity monitoring
    - Door motor current monitoring
    - Door closing pressure monitoring. Doors must reopen when door pressure setting is reached in closing direction.

## XII. LANDING STATIONS:

1. Push – button stations located at each landing that includes mirror finished, vandal resistant, stainless steel buttons with flush jewels in the center that indicates that the call has been registered. The call registered jewels shall light up brilliant red with the use of ultra-bright light emitting diodes. The cover plate shall be made of no. 4 satin finished

no. 316 stainless steel, minimum of 1/8 inch thickness, approximately 7 inches wide and shall be of an overall size that will contain the following:

- a. Either single (terminal floors) or double buttons (intermediate floors) of the appropriate diameter to meet code for handicapped.
- b. Engraving and red epoxy filling of a sign to indicate “ **IN FIRE EMERGENCY, DO NOT USE ELEVATOR – USE EXIT STAIRS.**” Use ½ inch high letters. Also, provide a flame Pictograph symbol of the appropriate size, utilizing a durable plastic insert mounted from the rear into a laser cut hole, or by engraving and filling the area with the required colors of epoxy material for long life service.

### XIII. FIREMAN’S PHONE AND RECALL:

1. Fireman’s phone jack neatly incorporated. Do not provide an exposed nut on the front of the station. Shielded pair of wire to be run from each jack to junction box at a location outlined by the Owner.
9. Verify location of Fireman’s recall switch and instructions with Fire Department and Architect. Instructions should be engraved into plate and filled with red epoxy. Provide for Phase I and Phase II operation. Include suitable fireman’s insignia type jewel in station. The fireman’s jewel the designated floor station will flash in the event the smoke detector activation was in the machine room or hoist way. Switch shall be keyed to match the fire service key currently being used on the FSU Campus, key number G-1617X. If local codes call for a different type of Fireman’s Service Key, the G-1617X key must not be used. Engrave instructions in designated landing push button station and in cab front return panel.

### XIV. HYDRAULIC ELEVATORS:

**NOTE: ALL HYDRAULIC ELEVATORS MUST BE INSTALLED ACCORDING TO ALL CODES AT THE TIME OF INSTALLATION.**

1. A Hydraulic Elevator can only be used when total travel is less than fifty (50) feet.
2. The Motor Starter for new or up-graded hydraulic elevators must be soft start type, adjusted to a maximum of three (3) times the full load running current.
3. Elevators not on Emergency Generator System must be place on a

Battery Lowering System.

4. Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist.
5. All door frames, headers, etc., shall be grouted solid to maintain fire rating.
6. The hydraulic cylinder assembly shall include the following:
  - a. The hydraulic jack assembly (cylinder) shall be a complete new assembly of the highest quality available, and manufactured in strict accordance with ASME A17.1-1996, Safety Code for Elevators and Escalators, including the latest published addenda as of the date of the written specifications. The total length of the cylinder must include the required over – travel at top and bottom landings
  - b. Multiple sections on the plunger and cylinder, if necessary, to permit ingress into the building and Hoistway without damage to the building or the equipment.
  - c. The hydraulic cylinder must have external, threaded type couplings for multi-section cylinders. There shall be no materials at the coupling(s) that reduce the interior clearance of the hydraulic cylinder.
  - d. The jack packing seal around the plunger must be of the molded type that does not require adjustment. The packing gland must be designed to accept the molded packing or seal that is clamped in place without the use of unusually high pressure on the attachment bolts.
  - e. The top of the cylinder shall have a ring for collecting the oil that seeps past the jack packing and/or wiper ring. Provide a new drip tube from the top of the cylinder to new five (5) gallon collection container that has a small entry hole for the drip line. Leakage of more than one 1/2 gallon per month will not be accepted.
  - f. The jack assembly shall be supported on a pair of new steel channels of adequate strength that are approximately as long as the distance between the elevator guide rails. Reinforce mounting brackets shall support the weight of the fully loaded elevator and cylinder on the pit channels. The

pit channels must be at least 6” in height, and weighing at least 16.3 pounds per foot. The pit channels shall be capable of supporting the vertical reaction on the hydraulic cylinder and the full loaded car without deflection.

The pit channels must receive a rust inhibitive primer and two (2) finish coats of paint before installation.

7. Additional Protection Against Electrolysis: The entire hydraulic jack assembly shall be completely electrically isolated from the entire building, elevator car/platform, pumping unit, pit mounting channels and all other components of the elevator by using the following insulating techniques:
  - a. The jack plunger shall be isolated from the elevator car/platform assembly through the use of specifically designed rubber isolated platen plate that will no allow metal to metal contact and absorb pulsations from the hydraulic pump. The minimum thickness of the rubber under compression from a fully loaded car shall be at least 3/4 inch.
  - b. The hydraulic cylinder assembly must be isolated from the jack support channels and the pit floor. The material to be used between the cylinder mounting brackets and the top of the support channels is Micarta or any high quality high pressure plastic laminate material of at least 3/8 “ thickness. The backs of the channels must be isolated from the top of the cylinder with a double wrapping of high quality rubber sheeting material, which is wrapped around the top area of the cylinder (behind the pit support channels) and secured with an oil resistant cement. The pit support channels must not make metal-to-metal contact with the cylinder. The bolts that attach the support brackets to the support channels must be positively insulated with high strength rubber. Micarta or schedule 40 PVC insulating material around the bolts, washers and nuts to prevent metal to metal contact between the cylinder and the cylinder support channels.
  - c. The oil pressure supply line must contain at least two (2) rubber isolated sound and vibration isolation couplings the effectively isolate the pumping unit from the cylinder. The blow-out proof isolation couplings must be installed in the machine room as required by ASME A17.1. The oil pressure supply line, from the point of the isolation couplings, must be completely isolated from the building structure, pit floor and any other material in a manner that is effectively isolated to prevent a grounding effect. The

use of high quality rubber materials at least 3/8" thick when fully compressed will be acceptable as an isolation material for pipe supports or hangers.

Electrical isolation couplings without sound and vibration-absorbing properties are not acceptable.

9. The oil pressure supply line shall be insulated from the building structure, walls, supports and all other contact points. Where the piping penetrates a wall, the piping shall be insulated with rubber materials at least 3/8" thick when compression.

- e. The complete isolation of the jack assembly must be checked during installation, and after the installation work has been completed to verify that there is no electrical path to ground. Elevator Contractor must use a megger and high quality ohmmeter to verify that his work complies with these work specifications, and the effectiveness of the isolation must be demonstrated in the presences of representatives of Florida State University.

The Elevator Contractor will be required to remove or correct any work that does not fully comply with the isolation requirements.

8. Hydraulic Oil Line: The oil line shall include the following:

1. The oil line shall be schedule 80 thickness, with threaded forged steel fittings at all locations where the oil line must change directions or be coupled. Victaulic or similar brand clamp type fittings are not permitted except that one (1) Victaulic fitting may be utilized where the oil line connects to the hydraulic control valve at the pumping unit so long as it is correctly installed and not used to correct for alignment deficiencies in the oil line. All threaded fittings must be sealed with Expando brand thread sealer. Install a high quality ground joint union near the hydraulic cylinder. Flexible hoses shall not be used under pressure in this installation.
  - b. Install the pipe rupture valve adjacent to the hydraulic cylinders. The valve must be adjusted to properly to stop the decent of the elevator car in the event of pipe or valve rupture; however, the passengers should not be burdened by unnecessary closure of the valve when no emergency exists.
  - c. Two (2) oil shut-off valves must be installed in the oil

line. One (1) shut-off valve shall be installed adjacent to the pumping unit, and is to be provided for purpose of being used when the relief pressure is tested on an annual basis.

One (1) line shut-off valve is to be installed near the hydraulic jack cylinder and is to be used only when the packing is replaced in the jack.

Elevator Contractor shall attach a laminated plastic tag on the valve handle stating that the valve is to be used for packing replacement purposes only. The lettering on the tag shall be with 3/8 inch high letters stating the following: "Caution!! This valve is to be used when serving the cylinder only. Do not use for hydraulic system pressure tests." tag lettering must be a contrasting color to the surface.

The bursting strength of both valves shall comply with the requirements of ASME A17.1, Section 1302, Safety Code for Elevators.

- d. Perform all the necessary cutting as may be required to run or install the oil supply line from the machine room to the hoist way, including the work necessary to completely isolate the oil line from the building or other building systems. Isolation of the oil supply line must be neatly installed, and be rubber at least 3/8 inch thick while under compression.

1. Hydraulic Muffler Device: The Oil line must be equipped with an effective muffler device that removes the hydraulic pump pulsations and noise before being transmitted to the hydraulic cylinder through the oil supply line. The muffler must have rubber absorbing materials that can be replaced on a regularly scheduled basis. The muffler device shall be held together with high strength bolts and designed to be serviceable without removal from the oil supply line. Connections must be threaded. Include a metal tag on the muffler to indicate the required service by replacing the rubber pads every two (2) years. Locate muffler device in the elevator machine room area in a manner that will not inhibit the service work.

7. Hydraulic Oil:

- a. The hydraulic fluid for all new or up-graded hydraulic elevators must be manufactured by Hydro-Safe Oil Division, grade VG-32, biodegradable type vegetable oil.

Install a large data plate on the power unit identifying the oil that has been installed in the system.

8. Pumping Unit:

- a. When the motor of the pumping unit is 40 horsepower or less, the pumping unit shall be of the type with the pump and electrical motor submerged in the oil supply in reservoir. Oil reservoir shall be capable of holding at least 25 gallons of additional fluid above the amount required moving the elevator safely to the upper floor. The motor must be insulated to withstand up to 120 starts per hour without burnout from overheating. The valve shall be installed inside the reservoir and under the reservoir cover. The valve must be mounted above the oil level. Provide a drain connection fitting near the bottom of the oil reservoir. A heater must be installed in the Oil reservoir to maintain constant hydraulic oil temperature.

9. Hydraulic Cylinder Installation:

- a. **All hydraulic cylinder casing for new hydraulic elevators or replacement cylinders for existing elevators must be installed in a completely plumb condition with a variation of not more than 1/8-inch variation from absolute vertical plumb condition from bottom to top of the cylinder. The plumb condition must be demonstrated to representatives of Florida State University and/or his/hers designee prior to installation of the back fill sand, and prior to installation of the guide bearing and plunger assembly in the cylinder. A weighted “spider” shall be hung from a plumb line for checking the plumb condition at least every 12 inches from bottom to top of cylinder.**

The back-fill material for the hole surrounding the hydraulic cylinder must be washed masonry sand only. Building rubble, wood, steel, concrete, rocks or any other debris will not be permitted to be dumped into the hole surrounding the cylinder

All hydraulic cylinders for new hydraulic elevators or replacement cylinders for existing elevators must be fully protected by schedule 40 PVC piping and 100% isolated from all other portions of the elevator, building, pumping unit and the pit floor.

Copper tubing (2 tubes, ¼ inch interior diameter) must be installed to be used for checking for liquid presence in the space between the PVC pipe and the pressurized cylinder one (1) copper tube shall be approximately 30 inches long and equipped with a quick-connect fitting to allow low-pressure air hose to be attached. Air pressure will be applied to the PVC pipe for purposes of determining if the liner contains either water or oil. Install a cap on the fitting to prevent dirt, debris, oil or water from entering the PVC liner. One (1) copper tube shall be long enough to run from the pit

area to within ½ inch of the bottom of the PVC liner. Extend the tubing so that it does not interfere with any of the pit mounted equipment or elevator car but to a point that it could be used later to check for any liquid that may have accumulated in the bottom of the PVC liner. Install a screw type cap on the upper end of the tubing to prevent dirt, debris, oil or water from entering the PVC liner.

Seal the space between the pressurized cylinder and PVC pipe, at least six (6) inches deep, with oil resistant RTV (Room Temperature Vulcanizing) Silicone Sealant. The cylinder must be electrically isolated from all other components that would permit an electrical path to ground.

Cylinder must be primed and receive two (2) coats of machinery enamel prior to installation inside the PVC pipe.

#### XV. TRACTION ELEVATOR:

NOTE: ALL TRACTION ELEVATORS MUST BE INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.

1. All elevator driving machines and elevator controller equipment must be Installed in a machinery room separate from the hoist way area.
2. All new or up-graded geared traction driving machines must have full synthetic gear oil of the proper viscosity according to the machine manufacturer's recommendation.
1. Traction elevators must have VVVF AC controllers with digitally controlled "closed-loop" type vector controlled micro-processor systems such as Megnetek. The motor control system shall be quiet in operation with no objectionable air-borne or electrical noise.
4. All traction elevators must be equipped with as ascending elevator-braking system. The system shall be or equal to a Hollister-Whitney rope gripper system, a counterweight safety device with over-speed governor or a bi-directional under-car safety device/over-speed governor.
5. Provide access door leading to metal gratings that shall be provided in shafts, where required by code, to permit access for lubrication of sheaves and equipment.
6. Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist.

7. All door frames, headers, etc., shall be grouted solid to maintain fire rating.

#### XVI. HOLE LESS EQUIPMENT:

If Hole less type of equipment is to be installed, isolation from the building is a must. Place the piston that will be installed in the pit on Non-Conductive and Non-Compressive material. If guide shoes are used, the guide shoes must be of the Non-Metallic type. Isolation material must be used to ensure that all hydraulic piping does not come in contact with the building.

#### XVII. CABS:

1. If applied Wall Panels are used, place the Wall Panels on the sides and/or rear of the Elevator Cab; the panels must be constructed of 3/4" thick quality A/B grade plywood. The panels shall be backed with plastic laminate material to reduce warping and moisture intrusion. The face of the new panels shall be covered with a high quality plastic laminate (.50 thickness, minimum) in color and texture as selected by the Owner. Apply type no. 316 L, No. 4 satin finished stainless steel angle edges on the panels with mitered and welded corners. The stainless steel panel binders shall be formed of 10 gauge angles with screw attachments on the rear of the panels. The distance between the panels shall be reduced to approximately 1". Attach the new panels in a manner that requires a workman on top of the car to remove fasteners to prevent easy removal by unauthorized personnel.

Cover the area surrounding and between the panels, as well as the base area, with Type 316 L, 16 gauge satin finished stainless steel glued to the cab's backing panel.

Over-lap the spaces by a least 2" on each side to prevent the stainless steel from becoming dislodged once the panels are in place. Use the highest quality industrial contact cement for attaching the stainless steel to the reveal areas.

1. Provide a complete set of protection pads and stainless steel protection pad buttons on each panel and on front return panel. Install the pad buttons with "locktite" to prevent easy removal.
2. Elevator Cab's floor shall be of resilient floor tile or vinyl sheeting. Carpeting shall not be used. Diamond plate of Stain-less steel material shall be used in special areas.
4. The Elevator Cab's for new or up-graded elevators must have hinged, swing type front return panels to contain all of the operating devices, stainless steel vandal

resistant buttons, indicators, standard size certificate holder, emergency phone (furnished by OTC), handicapped markings and other devices. NO SEPARATE COVER PLATES FOR CAR OPERATING STATION WILL BE ALLOWED. All mounting must be from the rear to provide neat and vandal resistant panel. All information is to be engraved into panel. No plates or covers shall be attached from the front of the panel.

Front return panels must have heavy hinges, and vandal resistant locking devices.

The car operating panel shall contain all buttons and operating devices require by A17.1. Any other switches such as car lights, exhaust blower, Independent service, etc. shall be located in a separate cabinet with a locked, hinged door.

All stainless steel in elevator cabs for dormitories shall be 14 gauge, Type 316L stainless steel, except when heavier gauges are required for the application.

5. Cab ceilings for passenger elevators must contain either “down-light” type lighting with vandal resistant security rings and electronic dimmers, or suspended ceiling with Lexan “Thermoclear” panels in 11 gauge stainless steel frame. Cab lighting must measure at least 35-foot candles at the elevator floor near the cab entrance threshold with the door open.
  6. All elevators must have cab emergency lights and alarm System that is at least equal to Elevator Product Corporation “Flexilite”- EFP1 system that will illuminate a portion of the normal cab lighting fixtures for at least four (4) hours. System must have four (4) gel cell six (6) volt batteries and a charger-inverter unit, all for mounting on the car top.
  7. The passenger or service elevator door protection must be Janus Pana 40 Plus, with 3-Dimensional-protection feature.
1. Install a top emergency exit as required by ASME A17.1 Safety Code for all Elevators. Include electrical contact arrangement to prevent the elevator for being operated unless the top emergency exit is in the closed and locked position.

#### XVIII. ELEVATOR PHONE:

1. A one (1) inch home-run conduit shall be provided from the elevator phone to the telephone equipment room.
2. Elevator Contractor shall provide and install phone that meets the requirements of the FSU Office of Telecommunications (OTC). The phone shall be rear mount in a swing type return panel; provide a punched or drilled grille

work for the speaker and microphone. Each elevator shall have an emergency telephone. **Programming and Wiring connections shall be accomplished by OTC.**

**XIX. CAB DOORS:**

In Dorms, all Hoistway Door emergency release escutcheons shall be equipped with Barrel Key locks as manufactured by Tri-lock Mfg. And Maint. Corp. using Barrel Key #6950.

**XX. FREIGHT ELEVATORS:**

**NOTE: ALL FREIGHT ELEVATORS MUST BE INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.**

9. Freight elevators shall be located in close proximity to docks and service area. They shall go to each floor and be of sufficient size to accommodate large equipment.

2. In the event a freight elevator is installed in a corrosive environment or installed in conditions that require sanitary environment, the equipment shall be fabricated from extremely corrosion resistant and/or materials that are easily sanitized.
3. If power assisted car gate(s) is used, provide electronic screen across gate opening.
4. Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist.
5. All door frames, headers, etc., shall be grouted solid to maintain fire rating.

**XXI. CHAIRLIFTS:**

**NOTE: ALL CHAIRLIFTS INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.**

Any chairlift being placed outside of building must be manufactured to withstand WET conditions and be placed in surroundings to protect from ALL weather conditions.

**XXII. DUMBWAITER:**

**NOTE: ALL DUMBWAITERS MUST BE INSTALLED ACCORDING ALL**

## CODES AT THE TIME OF INSTALLATION.

The Dumbwaiter Car shall be constructed in Stainless Steel, including the Bi-parting car gate. Car shall have a least one (1) Stainless Steel Shelf. Hoistway Doors, Hoistway Frames and Door Seals shall be Stainless Steel.

### XXIII. APPROVED MANUFACTURERS

1. Approved Elevator Manufacturers:
  - a. ThyssenKrupp Elevator Corporation
  - b. Otis Elevator Company
  - c. Schindler Elevator Company
  
2. Closed-Loop Door Operator Equipment
  - a. MAC
  - b. ECI
  - c. Motion Control Engineering
  - d. Smartraq
  - e. Approved elevator manufacturers' proprietary equipment subject to the requirements of Sections VII, VIII and XXIV.
  
3. Micro-Processor and Car/Group Control Equipment
  - a. Motion Control Engineering and Elevator Controls Corp.
  - b. Approved elevator manufacturers' proprietary equipment subject to the requirements of Sections VII, VIII and XXIV.
  
4. Motor Drive Systems for Elevator Machine Motors
  - a. Megnetek
  - b. Approved Equal
  
5. Hoisting Machine Motors Only
  - a. General Electric
  - b. Imperial Electric
  - c. Magnetek
  - d. Rueland Electric
  - e. Approved Equal
  
6. Elevator Hoisting Machines and Deflector Sheaves
  - a. Hollister – Whitney Elevator Corp.
  - b. Titan Machine Corp.
  - c. Approved Equal
  
7. Rope Gripper for Traction Machines
  - a. Hollister – Whitney Elevator Corp.
  - b. Approved Equal

8. Hydraulic Fluid
  - a. Hydro Safe Oil Division, Inc., Grade ISO VG-32
  - b. Approved Equal
  
9. Pump Motor
  - a. General Electric
  - b. Imperial Electric
  - c. Magnetek
  - d. Ziehl-Abegg
  - e. Thyssen/Krupp
  - f. Approved Equal
  
10. Hydraulic Pump
  - a. IMO
  - b. Allweiler AG
  - c. Approved Equal
  
11. Oil Control Valves
  - a. Beringer
  - b. Maxton
  - c. EECO
  - d. Thyssen/Krupp
  - e. Approved Equal
  
12. Hydraulic Cylinders
  - a. EECO
  - b. United
  - c. CEMCO
  - d. Approved Equal
  
13. Pipe Rupture Valves
  - a. EECO
  - b. Thyssen/Krupp
  - c. Approved Equal
  
14. 3D Door Detector Devices
  - a. Janus Elevator Products
  - b. Approved Equal
  
15. Car Emergency Lighting System
  - a. Elevator Products Corp.
  - b. Approved Equal

16. Vandal Resistant Signal Fixtures
  - a. Innovation Industries
  - b. GAL
  - c. EPCO
  - d. Thyssen/Krupp
  - e. Schindler
  - f. Otis
  - g. Approved Equal
  
17. Battery Powered Automatic Lowering System
  - a. Reynolds and Reynolds Electronic
  - b. GAL
  - c. Schindler
  - d. Otis
  - e. Approved Equal
  
18. Elevator Cab Materials
  - a. Gunderlin, Ltd.
  - b. Tyler Elevator Products, Inc.
  - c. H&B Elevators
  - d. Elevator Cabs, Inc.
  - e. Approved Equal
  
19. Elevator Hoistway Entrances and/or Hoistway Door Panels
  - a. Gunderlin, Ltd.
  - b. Tyler Elevator Products, Inc.
  - c. H&B Elevators
  - d. Elevator Doors Inc.
  - e. Approved Equal
  
20. Guide Shoes and Roller Guides
  - a. Elsco
  - b. Thyssen/Krupp
  - c. Otis
  - d. Approved Equal
  
21. Paint & Coatings
  - a. Pratt & Lambert
  - b. Sherwin-Williams
  - c. Martin Senour
  - d. Approved Equal
  
22. Chairlift Manufacturers
  - a. National – Wheel – O – Vator Inc.

- b. Porch Lift
  - c. Approved Equal
23. Dumbwaiter Manufacturers
- a. Atlas Elevator Company
  - b. Matot Corp.
  - c. Approved Equal
24. Door Hanger and Interlock Equipment
- a. GAL Manufacturing
  - b. Approved Equal
25. Mobil Computer Security Cabinet
- a. EDSAL #CSC6726
  - b. Approved Equal

#### XXIV. APPROVED SUBSTITUTIONS

1. Where noted in Section XXIII, the Elevator Contractor may request approval of substitutions. Substitutions must, in the opinion of the Owner, Architect and Elevator Consultant, equal to, or exceed, the quality of the specified product.
2. Where noted above, products manufactured by the list of Approved Elevator Manufacturers will be acceptable subject to complete compliance with the technical specifications written based on these guidelines.
3. Elevator Contractor may only substitute other manufacturers of Elevators Cabs and Elevator Hoistway entrance materials, subject to the following:
  - a. The Elevator Contractor must agree to an inspection by the Owner's Representative(s), Architect and Elevator Consultant (if used on project) of the Elevator Cabs and/or Elevator Hoistway Entrance materials at the factory after shop assembly, but prior to shipment to the project site. Any deficiencies found after assembly at the factory shop must be corrected prior to shipment to the installation site. The Elevator Contractor shall schedule the shop inspection at least 20 days in advance of the physical inspection date to allow suitable arrangements to be made for inspection of the materials.
  - b. The substitution(s) must fully comply with the specifications contained herein, including design, quality of fabrication and fit, quality of materials and every other aspect of the specified products.

- c. The Elevator Contractor shall be responsible for all costs associated with correcting any deficiencies, or deviations from the specifications, caused by substitutions of material that is specified herein. Further, the Elevator Contractor shall be responsible for arranging for all travel time and costs of Architect and Elevator Consultant (if used on project) associated with visiting, or revisiting, the manufactures facilities to examine the work of any firm not on the approved bidders list.
  
- d. No extension of time in the completion schedule for the work will be granted as a result of the need to correct defects or deficiencies associated with the use of material substitutions.

## DIVISION 15 - MECHANICAL UTILITIES AND EQUIPMENT

### GENERAL MECHANICAL GUIDELINES

Utility work and connections to University utility systems must be properly planned to prevent disruption of classes and/or research efforts. All utility work shall be coordinated with the Utilities Section through the University Project Management Section. Each drawing that shows a connection to existing utilities must have a note that states that the Contractor shall request permission for all outages as far as possible in advance. This shall be a minimum of 14 days except in case of emergency. It shall be noted that even with the advance notice, it will not always be possible to grant the requested time and date, as classes and research must have precedence. Permission must be obtained, through the project manager, from the Utilities Section. Explicit details must be shown for all connections to existing utilities. The Utilities Section must approve both the location and method of the proposed connection, in advance.

1. It shall be the responsibility of the A/E to investigate and determine the actual location of all underground utilities or obstructions at the building site before beginning design work. The University will provide all available information as appropriate.
2. The construction contract specifications shall provide for the orientation and training of University personnel on all installed equipment and systems.
3. The contractor shall pay for utilities during construction. The contractor shall contract with the City of Tallahassee whenever possible. If it is necessary to have construction utilities supplied from the University, the contractor shall install a temporary services in accordance with local codes. The University will bill the contractor monthly for utilities used. Shall the University wish to make an exception to this, the A/E will be so informed.
4. Heat, air conditioning, humidity control and any other environmental factors shall be the responsibility of the contractor throughout the construction period.
5. Prepare Energy Life Cycle Cost analysis. Use industry standard cost analysis software such as that available from the Trane Co. At least three schemes shall be considered. Obtain approval of the candidate schemes from the Director of Utilities prior to performing the analysis.
6. All utilities are to be metered for each building, including water, steam, and chilled water. All utility metering must be coordinated with the University Project Manager prior to construction. All metering devices must have the capability to report to the Campus Energy Management System. If the building contains Auxiliary occupants in addition to E&G occupants, separate metering must be provided for each Auxiliary occupant. This shall be coordinated with the Utilities Section through the Project Management Section.
7. Provide separation of mechanical equipment and other noisy areas from academic and office areas.
8. Care shall be taken in the placement of all outdoor air inlets to ensure that odors and other pollutants (automobile exhaust, generator exhaust, fume hood exhaust, etc.) do not enter the building.
9. Mechanical rooms must have adequate openings to facilitate the removal and replacement of major pieces of equipment. Provide double 3'-0" doors which swing outward, with active/inactive leaves.
10. There must be adequate space in mechanical rooms to provide ample access space around all equipment for routine maintenance items and procedures, such as filter replacement, lubrication, and so on.
11. Pipe insulation thickness to be per latest energy efficiency standards.
12. Access to electrical rooms, mechanical rooms, telephone closets, elevator machine rooms, fan rooms,

pump rooms, etc., shall not be through other rooms. It is preferred that access to these spaces be achieved from a main corridor and/or exterior space. Access shall not be by ladders. Where possible, penthouse rooms shall have elevator access.

13. Mechanical Rooms and similar spaces are not to contain storage areas. All power disconnects to equipment shall be so located as to be easily accessed.
14. All piping shall be color coded and labeled as to use.
15. All fans shall be labeled as to use, area served and power source.
16. All HVAC controls shall be of the direct digital type and conform to the standard outlined in Appendix D – Building Automation and Central Monitoring Systems.
17. All hydronic systems shall have adequate air eliminators installed.
18. Provide MERV 9 air filtration on all central-station air handling units.
19. Manhole design shall be carefully coordinated with the University Project Manager and the Utilities Section. Contact Director of Utilities for latest manhole standards.
20. All piping utilized for underground piping are required to have the ends sealed prior to storage or use on site. No end seals shall be removed until the end in question is actually ready for welding or otherwise connecting. In no event shall any piping be left in a trench with an open end at any time. This requirement shall be strictly enforced.
21. Systems Test & Balance will be provided through the A/E as an additional service. The specifications will require the contractor to participate in the testing, make any changes necessary and pay for any re-testing that may be required to make the systems meet specifications.
22. All air handling unit condensate drain pans must drain to the storm sewer system, with a by-pass to the floor drains when using chemicals to clean coils. Contract Director of Utilities for standard detail for coil drains.
23. Mechanical rooms shall not be utilized as return air plenums.
24. Mechanical rooms that generate heat such as steam rooms and pump rooms shall be cooled using a thermostatically controlled forced air ventilation system utilizing outdoor air. Generally, pump rooms and similar spaces with electronic systems such as variable speed drives, shall be separated from rooms containing steam reducing stations and condensate pumps. Wherever possible, intake are shall be directed into the pump room and removed from the steam room. If cooling using outdoor air is considered not feasible, approval of an alternative cooling scheme shall be approved by the Director of Utilities.
25. All mechanical equipment such as air handlers, pumps, exhaust fans, etc., shall be referred to and labeled by floor number, i.e., EF3-5 would be the fifth exhaust fan on the third floor.
26. The A/E shall contact the University Department of Environmental Health and Safety Asbestos Coordinator prior to the commencement of a renovation project in order to determine the specifications for labeling and demarcation of the extent of new (non-asbestos) pipe insulation applied by the mechanical contractor following any abatement of asbestos pipe insulation for the project.
27. Identification signage systems and markings for all mechanical equipment and piping shall be required.
28. For additional requirements of specific FSU classroom types – see Appendix E.

## PLUMBING

1. The City will furnish water meters and taps for domestic and fire water. All tap fees and system charges shall be paid for by the Contractor. The City of Tallahassee has jurisdiction over the installation. Install water meters and domestic water backflow preventer above grade and provide insulated cover. Install backflow preventers in accordance with City Ordinance. Contact the City for their requirements and information. The City's approval for all proposed connections must be received prior to completion of the 100% documents. Written proof of the City's approval must be provided to the Utilities Section prior to bidding the project. Fire Flow backflow preventers shall be installed inside the building.
2. Below grade, all domestic cold water piping exterior to building shall be ductile iron or PVC. Underneath buildings, piping shall be type K copper or ductile iron. All domestic water piping inside the building and above grade shall be type L copper, except for high purity water. Materials for high purity water systems shall be coordinated with the University Project Manager.
3. Fire water system connections shall be compatible with the City of Tallahassee Fire Department fittings. Contact them for information.
4. Provide shut off valves at least at each floor level for all utilities. Toilets, urinals, sinks and water coolers shall have individual shut-off valves. Provide access panels with the appropriate fire ratings for maintenance and repair activities.
5. Floor drains are to be provided in all toilet rooms, custodial closets and mechanical rooms.
6. All piping system strainers shall be equipped with valves for blowdown cleaning.
7. Hose bibs shall be provided in toilet rooms located underneath the sink, machinery rooms and at 100-foot intervals in exterior areas for maintenance use.
8. Teflon containing joint sealer shall be utilized in all screwed piping installations.
9. All piping shall be color coded and labeled as to use and flow direction.
10. All exterior valves shall be fitted with a complete one-piece valve box unit constructed of concrete, steel or plastic. The box shall have a hinged cover and be set in concrete. The installation shall be such to support small vehicle and lawn maintenance equipment.
11. Fire suppression systems shall be installed, tested and certified per appropriate NFPA and State Fire Marshal requirements.
12. Urinals shall be of the flooded open throat type to avoid stoppages and odor problems. Urinals shall be provided with automatic flushing sensors. Urinals shall be designed for 0.13 gallons per flush.
13. Floor drains, where necessary, are to be placed at the lowest point in the area and shall be provided in all restrooms, custodial closets, mechanical rooms, storage rooms, etc.
14. Lavatory faucets shall be the types that will not flow over .5 GPM and provided with automatic sensors. Where sensors are not considered cost effective, timed shut off valves shall be used.
15. Standard type washbasin shall have strainer type drain, lever handles equipped for handicapped use, cold water faucets, no hot water faucets (except in dormitories and service buildings) and soap dispensers.
16. Water Closets shall be wall mounted and designed for a maximum of 1.24 gallons per flush.
17. Custodial closet faucets shall be single delivery mixing type with hot and cold water and have threaded spout equipped with a vacuum breaker and a three-foot hose. Place faucets 30" - 36" above sink rim.

## WATER BASED FIRE EXTINGUISHING SYSTEMS

1. The contractor shall furnish all labor and equipment for the complete installation of a water based fire-extinguishing system and shall be the installing contractor or site representative with the required license. No subcontracting will be allowed. The contractor must be NICET level III certified and must possess the appropriate class I or class II fire sprinkler license as required by the State of Florida.
2. Fire water based systems shall be installed, inspected, tested and certified per appropriate NFPA 13, 14, 20, 24, 25, including NFPA 101. Any applicable codes shall apply to meet State of Florida and Fire Marshal requirements, local and state jurisdiction.
3. The fire system contractor shall be responsible for equipment, materials and workmanship of the system for one year. The warranty shall be enforced 24 hours a day, seven days a week including weekends and holidays during this period of time. The contractor will also respond after being advised of his responsibility and the nature and/or condition of the equipment that has failed by the FSU Fire Systems on-call technician. After notification has been made to the responsible equipment contractor, a minimum of one hour will be allowed to respond and arrive on site. When the problem has been secured or corrected to the satisfaction of the technician o the FSU Police Department will be notified.
4. The installation of fire water mains shall included backflow preventers in accordance with TREEO (Training Research & Education for Environmental Occupations) set forth by the University of Florida and NFPA requirements including City Ordinance. Contact them for their requirements and information. All fire mains and/or valves shall be painted and labeled to indicate the proper building name controls. The City must approve all connections to the City water mains. The City's approval must be received prior to completion of the 100% documents. Written proof of the City's approval must be provided to the Utilities Section prior to bidding the project.
5. Fire water system connections and fittings shall be compatible with the City of Tallahassee Fire Department fittings. Contact them for information.
6. Provide six extra Escutcheon Plates of each type installed on any system, installer will provide manufacturer name and address, supplier name and address and parts number.
7. The main drains and inspectors test drains be pipe to an adequate drain or outside the building. When piped outside the drain shall not affect the architectural design and landscaping of the building. When piped outside the building, the water flow shall not pose a threat to persons on sidewalks or streets adjacent to the building.
8. Provide 3-1/2" gauges with a connection not smaller than 1/4", and each gauge connection equipped with a shutoff valve and provisions for draining.
9. All control, drain and test connection valves shall be provided with permanently marked weatherproof metal or rigid plastic identification signs. The sign shall be secured with corrosion-resistant wire, chain or other approved means.
10. All control valves will have proper signage to indicate the areas of coverage. This will start from the feed supply into the building through all branch lines.
11. On any fire pump installation, the use of PVC and/or plastic pipe, fittings, or components will not be acceptable.

## HEATING AND STEAM

1. Steam is supplied at pressures varying between 70 psig and 125 psig, depending on the season. The building steam systems shall have a minimum utilization pressure of 50 psig and shall be designed to operate with the inlet pressure to the building varying between 70 psig and 125 psig.

2. All bolts and nuts shall be hex configuration, coarse threaded, and be of ASTM A-193, Grade B7 alloy steel such as USS Supertanium alloy, or equivalent.
3. All high pressure and low pressure steam piping shall be Grade A ASTM A-106, schedule 40 seamless piping, and condensate return lines shall be schedule 80 seamless pipe. The use of pre-insulated steam and condensate return piping is permissible. Contact the Director of Utilities for currently approved types and manufacturers.
4. All steam and steam condensate lines underground shall have properly sized expansion loops, which shall be properly anchored. If pre-insulated piping is used, the expansions loops shall be sized and located per manufacturer's instructions.
5. Valves installed above grade as part of the high-pressure steam system, and valves installed below grade, shall be 300 lb. valves. Valves that are 2-1/2" and larger shall be flanged, and all valves less than 2-1/2" shall be screwed. Valves installed in manholes shall be 300# butterfly valves. Contact Director of Utilities for latest approved types.
6. All piping that is 2-1/2" and larger shall be welded, not screwed. A certified welder shall weld all underground fittings.
7. High pressure steam fittings 2" and larger shall be butt-welded fittings with backing rings. Fittings that are 1-1/2" and smaller shall be forged steel screwed or socket weld fittings. Unions that are 2" in size shall be 300 lb. screwed cast iron or forged steel. All high-pressure steam nipples shall be schedule 80.9. Low pressure steam fittings that are 2" and larger shall be schedule 40 butt welded fittings with backing rings, and flanges shall be slip-on or weld neck flanges. Low pressure steam fittings that are 1-1/2" and smaller shall be 150-lb. cast iron using 300 lb. cast iron unions and schedule 40 nipples.
8. Condensate lines that are 2-1/2" and larger shall be schedule 80 butt weld fittings with backing rings and steel weld neck or sip-on flanges that are the same pressure class as the valves. Condensate lines that are less than 2-1/2" shall be forged steel or socket weld using 300 lb. screwed unions and schedule 80 nipples.
9. All steam condensate receiver unit vents shall be run full size from unit to a safe discharge location. In no case is the discharge to be over a sidewalk or other public area. In addition, discharges shall not be located near air intakes.
10. Insulation for high and low pressure steam and condensate lines above grade shall consist of calcium silicate. Below grade steam lines shall have a calcium silicate inner layer and a foamglas outer layer wrapped with glass fabric cloth and with proper mastic applied. Condensate lines below grade shall have foamglas insulation wrapped with glass fabric cloth and with proper mastic applied. Deviations from the above shall be approved by the Project Manager.
11. The attachments for the insulation below grade shall be stainless steel wiring or bands, or 16 gauge copper wire, on 9" centers.
12. Below grade steam fittings are insulated with mitered segments of calcium silicate wired in place. Below grade steam flanges, unions, and valves are insulated with oversized pipe insulation.
13. All insulation materials shall be installed according to the manufacturer's instructions.
14. Inside buildings, all domestic hot water piping shall be insulated with foamglas pipe insulation and the domestic cold water piping that is exposed in unconditioned spaces shall be insulated to prevent sweating.
15. All water valves that are 2-1/2" and larger shall be flanged 125 psi valves. All pressure and temperature gauges shall be 4-1/2" face, bottom connection, and industrial grade.
16. All temperature gauges shall be mounted in wells.

17. All steam pressure reducing valves shall be Fisher, pilot operated. Contact Director of Utilities for currently approved alternates.
18. Refer to Building Management System/Remote Control Monitoring Appendix D, for Steam Flow Metering requirements.
19. All condensate pumping units shall be above grade and shall be duplex electric pumps with cast iron receivers and ceramic seals, or with the approval of the Utilities Section, may be of the steam pressure type. The pumps shall be equipped with balanced mechanical seals.
20. All water pumps shall be equipped with balanced mechanical seals.
21. Utilize the campus steam system as a heating source with a pumped condensate return to the Central Utilities Plant.
22. Install drip traps before all thermostatic temperature-regulating valves and pressure reducing valves.

#### CENTRAL UTILITY PLANT (CUP) CENTRAL CHILLED WATER SYSTEM/BUILDING INTERFACES

1. The following are requirements for new building designs in order to best produce the most efficient utilization of the CUP system, utility distribution system, and the building.
2. The CUP was designed as a variable flow system to achieve maximum energy economics. The design of the building shall be such as to operate over a varying pressure range.
3. The interface between the building and the Central Chilled Water Distribution System will insure the chilled water temperature difference will equal to or exceed 15 degrees while satisfying the building design criteria. The interface will also insure that the building pump(s) and the distribution pump(s) will be completely decoupled. The Utilities Section will provide design and material requirements for the interface.
4. The CUP is operated to produce 45 to 48 degrees F. chilled water depending on overall system needs and energy conservation measures being utilized. The design professional shall verify this strategy with the project manager before design begins.
5. Existing pressures leaving the CUP vary from 50 to 85 psig. Be aware that the maximum operating pressure for the existing chilled water underground piping is 100 psig. Any additions to this system shall be designed for 150 psig.

#### AIR CONDITIONING

1. Utilize the campus chilled water system for cooling if at all possible. The interface between the system and building is discussed later. A fine mesh monel or stainless steel strainer shall be installed in the chilled water supply line of each building to prevent contamination of the building chilled water system. All chilled water strainers shall have a pressure gauge installed across the strainer so as to quickly determine when strainers are dirty.
2. When the air conditioning system cannot be connected to the Central Chilled Water System, consider the use of water cooled condenser(s) utilizing a deep well water supply with injection return. Utilize existing wells as practical. New well pumps shall be mounted above ground with a suitable enclosure. Provide water lubrication. Cooling towers are not desired by the University. The existing Northwest Florida Water Management District Consumptive Use Permit will have to be amended if a new well is to be installed. Be aware that Leon County has a Wellhead Protective Ordinance that also will have to be complied with. All cooling well design and permitting must be coordinated with the Utilities Section.

3. All air conditioning condensate lines shall be of insulated type "L" copper or approved equal. Provide insulation details to insure vapor proof covering.
4. If condensation occurs on the outside of insulated ducts, HVAC equipment, VAV boxes, flex ducts, piping, etc. during the construction period, the Project Team shall take immediate action to determine the reasons, and initiate corrective action. Substantial Completion shall not be approved until corrections are agreed to in writing. The contractor shall be required to rework the insulation until satisfactory if condensation occurs on any cold surface at any time during the warranty period.
5. All chilled water taps into the Central Chilled Water System shall be made without system interruption, where feasible. Each juncture shall be provided with a shut off valve and valve box for easy access. Note that most of the Central Chilled Water System piping is constructed of asbestos bearing material, i.e. Transite. "Hot tapping" details will be provided by the University. All chilled water connections, whether external or internal, must be coordinated with and approved by the Utilities Section. Initial coordination concerning the approved location of new connections must be done prior to completion of the Schematic Design Phase.
6. Exterior steel piping shall be schedule 40 black steel with welded joints. The use of pre-insulated black steel pipe is permissible. Contact Director of Utilities for currently approved types and manufacturers.
7. Insulation for chilled water piping above grade shall consist of foamglas that is covered with a .016 inch thick aluminum weatherproof jacket that has a factory applied integral vapor barrier. The foamglas shall be glued to the piping. Fasten with aluminum bands located not more than 12 inches apart. Insulation below grade shall be foamglas with Pittwrap cover.
8. All building chilled water systems served from central chilled water shall be designed to have variable flow characteristics compatible with the central system.
9. All chilled water piping shall be installed with shut-off valves at each floor and at each AHU.
10. All major air handling unit coils shall be designed for not less than 15 degrees Fahrenheit temperature rise, and be provided with two way control valving.
11. The use of fan coil units is discouraged; however, if utilized, it is recommended that they not be installed above the ceilings. Insure that adequate ventilation is provided per ASHRAE Standard 62-1981R.
12. A/C Air Handling Units shall be double wall construction with a solid inner liner (no insulation exposed to airstream).
13. Air Handling Units shall have fans mounted on internal vibration isolators (2" static deflection).
14. Air Handling Units shall have double wall insulated drain pan.
15. Air handling units installed in spaces exposed to outdoor air conditions (such as attics) must be sufficiently insulated to prevent surface condensation.
16. In classrooms, the HVAC system shall provide an adequate rate of "fresh air" to each student seat (18 cfm per student seat).

#### FUME HOODS

1. At the time these Design Guidelines were issued, the University was in the process of developing new fume hood standards. Therefore, the design professional shall contact the Project Manager to obtain the fume hood standards currently in effect.
2. However, in general, fume hoods shall meet the following performance requirements: Supplier to

provide factory ANSI/ASHRAE 110-1995 TEST OF HOOD. Hood to have a rating of 8.0 AM 0.05 using the above test.

Hood to be tested using ANSI/ASHRAE 110-1995 after installation in lab (testing to be provided and paid for by the hood supplier) and shall achieve a rating of 8.0 AI 0.05. If the hood does not achieve the rating, and the CFM and static pressure meet the supplier performance data, the fume hood supplier shall be responsible for any system changes and upgrades needed to achieve the “as-installed” rating.

## REFRIGERANT MANAGEMENT REQUIREMENTS

### General Requirements

1. See Appendix J.
2. The contractor and mechanical engineering design professionals shall work with the University’s Refrigerant Manager, Shawn Pearson, (850) 644-2610, to identify specific requirements for each project and interpret requirements from this section as they pertain to upcoming work.
3. Mechanical engineering design professionals shall incorporate the requirements of this section in their equipment and contract specifications.
4. Contractor shall be responsible and accountable for compliance with the EPA Clean Air Act (CAA) Section 608, 40 CFR Part 82 and any state and local codes for all refrigerant-related work. Contractor shall ensure that all contractor employees are made aware of the content of these practices prior to beginning work on refrigerant containing equipment.
5. Contractor shall provide only proper level EPA certified technicians using EPA certified and registered recovery/recycle units to perform work on FO&M refrigerant equipment.
6. Contractor shall submit the following information prior to starting any work.

A list of all service technicians’ names and EPA certification numbers and level of certification (copies of EPA Certification Cards are acceptable).

1. A list of all recovery/recycling units to be used and a signed statement that an EPA Recovery Unit Acquisition Certification form has been sent to the EPA (a copy of the form is acceptable).
2. A signed letter/memo addressed to contractor employees that notifies contractor technicians to provide the specified refrigerant related information written on a Refrigerant Compliance Manager™ software Service Order input form.
3. Documentation and Record-Keeping
4. Contractor shall provide service records with all required information to the Refrigerant Manager. A Service Invoice that is only sent to accounts payable does not meet the requirement for site records.
5. Equipment ID tag number
6. Manufacturer and Model number
7. Serial number
8. Location of equipment
9. Refrigerant type and Unit Charge
10. Date of service

11. Service, repair or disposal description
12. Quantity of refrigerant added
13. Quantity of refrigerant removed, recovered, recycled, reclaimed or disposed of
14. Quantity of lubricant disposed of, and method of disposal
15. Detailed information on any leaks discovered and repaired
16. Name(s) of EPA certified service technicians who performed work
17. EPA Certified and registered recovery/recycling units used on equipment

#### New Equipment Guidelines

1. All new equipment installed shall utilize non-CFC refrigerants. The goal is to limit the number of new alternative refrigerants utilized on site. Standardizing and limiting refrigerant types will reduce maintenance and inventory costs. The Refrigerant Manager and engineering shall work as a team to determine what refrigerants are presently in use and set standards for all future refrigerant equipment purchases. In addition, further maintenance and parts inventory cost savings can be achieved by standardizing on equipment manufactures. Service history and existing parts inventory shall be considered in this analysis and the recommendations presented to purchasing.

#### New Equipment ID Tags

1. All new equipment shall be tagged with a FO&M Unit ID number as specified by the Refrigerant Manager. This number shall be used as the equipment id number by the RCM software.

#### New Equipment Leak Testing

1. All new equipment including: packaged equipment - factory charged, field charged, split systems or field-constructed systems with field installed refrigerant piping shall be leak tested prior to or during startup. The leak testing process shall utilize the appropriate electronic leak testing equipment and shall be witnessed by the (Refrigerant Coordinator) or a designated HVAC technician.
2. The contractor or installing party shall submit a RCM Service Order form with notes verifying the leak testing and results to the Refrigerant Manager.
3. If a leak is detected the following shall occur:
4. Notify the Refrigerant Manager.
5. Document the leak on a RCM Service Order input form.
6. Repair the leak.
7. Document the action and procedures taken on the RCM Service Order form.
8. Leak test to verify the leak was repaired.
9. Schedule and provide a 30-day follow-up verification leak test with a HVAC team member.
10. Document follow-up leak testing on the RCM Service Order form.
11. Repeat the above process if follow-up leak is detected.

### Demolition Procedure for Equipment Removed by Contractors

1. Contract language for any refrigerant handling work by contractors shall include requirement for contractor to provide names of EPA certified technicians with their certification number and certification level who will be performing the refrigerant equipment demolition and refrigerant recovery. An *RCM Service Order Form* shall be filled out by the certified contractor technician and forwarded to the Refrigerant Manager.
2. If a properly certified contractor technician removes the refrigerant, the unit tagged as such and the RCM service Order form has been submitted then a non-certified person may perform the actual demolition.
3. The contractor in contractor provided refrigerant recovery cylinders shall take ownership of the recovered refrigerant and transport off site to a proper disposal company or certified reclaimer (Unless other wise directed by the Project Team). The quantity removed from each unit and from the site shall be documented on the *RCM Service Order form* used for the actual recovery procedure.

In all cases the contractor technician shall tag the unit that the refrigerant was removed, as required by the Refrigerant Manager.

### BUILDING AUTOMATION AND CENTRAL MONITORING SYSTEMS

Refer to Appendix D.

## **DIVISION 16- ELECTRICAL**

### **General:**

All utility work shall be coordinated with and approved by the Utilities Section through the Project Manager. Each drawing that shows a connection to existing utilities shall have a note stating the Contractor shall request permission for all outages a minimum of 14 days in advance, unless an emergency arises. Explicit details shall be shown for all connections to existing utilities. The Utilities Section must approve both the location and the method of the proposed connection.

The Contractor, through the Project Manager, shall pay for all electric energy consumed during construction. The Contractor shall obtain the Utilities Procurement Procedures from the Project Manager. Requirements for establishing service are as detailed. Drawings shall clearly call for the Contractor to take such action.

All electrical materials and equipment shall be UL or ETL listed. CSA is not considered equivalent.

All materials and types of construction shall meet or exceed the requirements of UL, ANSI, NEMA, IEEE, and the NEC as well as conform to manufacturer's written recommendations.

Record Drawings that accurately reflect the actual installed conditions must be furnished on both hard line drawings and CAD discs at the end of the project. Inaccurate, incomplete Record Drawings may be cause to reject a pay request or deter classifying the project complete.

An authorized representative(s) of the Owner shall witness an operational demonstration of completed systems. Representative(s) shall be completely instructed in the operation and maintenance of installed equipment. Representative(s) shall sign and date a statement that confirms they've received proper, comprehensive training.

## **BASIC MATERIALS AND METHODS**

### **Conduits**

Schedule 40 PVC is permitted for exterior lighting, minimum 1", and buried to a depth called for by the NEC. When a junction box is installed near a pole location, a ¾" conduit may be used from the junction box to the pole. If no junction box is installed, the 1" conduit shall extend to the pole foundation.

PVC bends shall be made with a hot box. Flames or hairdryers are unacceptable.

PVC shall be converted to metallic where exposed to physical damage. Buried metallic conduit must have, minimum, two coats of bitumastic or have factory applied PVC coating.

All empty conduits shall have a 200-pound test pull cord. Conduit shall be manufactured in the United States.

## WIRES AND CABLES

Conductors shall be copper. Insulation shall be Type THHN/THWN. Minimum power conductor size is #12AWG. Control conductor sizes and color-coding shall be as governed by approved wiring diagrams or schematics. Power conductors shall be sized for maximum 5% voltage drop from source to point of utilization. Wire #12 AWG and smaller shall be solid, larger-stranded.

### MC Cable

All wire and cable shall be installed in conduit or where applicable, tray-rated cable in cable trays. In lieu of wire in conduit, MC cable may be used in areas allowed by the NEC, but only with the joint approval of the Engineer of Record, the FSU BCA, and FSU Plan Reviewers

### Conduit Systems Identification

Conduit systems shall be identified by the color code listed below. If a color code is already in use in a building, then that code will be utilized for that building. If no code is in use, then this one shall be used. If an existing building system is being modified, these requirements apply only to the new raceway systems.

<u>SYSTEM</u>	<u>COLOR</u>
Fire Alarm	Red
Emergency Power (Life Safety Branch)	Yellow
Critical Branch	Orange
Equipment Branch	Green
Essential Distribution (Genset Output to Line Side of ATS)	Purple
Normal Power	Blue
Security	Brown

The last six inches of conduits, their junction boxes, and their covers shall be painted the appropriate color.

For power conduits, the circuits involved shall be identified on the junction box covers using a black permanent marker.

For unique colors associated with telephone or data cable raceways, see appropriate paragraphs of OTC requirements.

## PANELBOARDS

Panelboards shall be identified using permanently attached machine engraved phenolic nameplates. Standard color shall be white letters on black background. Emergency panels shall have white letters on a red background. Panelboard bus shall be copper. Lighting and receptacle panelboard neutral bus shall be rated 100%. Panelboards shall be sized for minimum 20% spare above calculated diversified demand loads.

Circuit breakers shall be bolt-on construction. Devices shall be rated for the calculated available bolted fault short circuit currents. Copies of the fault current calculations shall be furnished to the Project Manager for review with plans prior to construction.

Main Distribution panels shall have metal oxide varistor (MOV) type surge protection device (SPD). The MOV device shall have a short circuit current rating of 200 kA or greater. The MOV shall be rated for service voltage of the facility.

## Switches and Receptacles

Switches and receptacles shall be specification grade and rated 20 amperes. Standard color shall be ivory with stainless steel plates. Devices assigned to the emergency system shall be distinctive in color: red is considered standard unless another color code has already been established in an existing facility.

Vending areas shall have outlets mounted no greater than 48" on center. Hallways shall have outlets mounted 50 feet on center, maximum.

Outlets shall be provided on the exterior of facilities located according to the geometry of their footprint and good design, so that their spacing does not exceed 100 feet on center.

Device mounting heights shall conform to the latest applicable edition of ADA standards. Floor outlets shall be flush with finished floor or floor covering, as applicable.

When required for classrooms, receptacles for overhead LCD projector shall be mounted flush with ceiling.

## MOTORS AND STARTERS

Motors shall be high efficiency and have an operating power factor of 90% or greater. Provide reduced voltage starters or variable speed drives for all motors 15 horsepower, or larger. Variable speed drives shall be connected to the campus-wide energy management system. For detailed requirements for these connections, contact the FSU Utilities Section. For a list of acceptable manufacturers of VFD's see the Mechanical section of these guidelines.

## POWER GENERATION

Where required for life safety per NFPA-101 and/or for continuity of function in certain facilities, provide a standby rated emergency power engine generator set. The addition of battery-powered lighting, instead of providing a generator set, to meet NFPA-101 exit/egress requirements is highly discouraged.

Engine generator set shall be diesel fueled unless so small that diesel prime mover is not commercially available. Natural gas and LP fueled sets are unacceptable. Fuel tank shall be sized for minimum 36 hours of operation at full load. Larger tanks may be required to serve facilities where continuity of function is mandatory. The operation and fueling requirements for those types of facilities shall be handled on a project-by-project basis as design criteria through the Project Manager. Fuel tanks shall be above ground and approved by EPA. If fuel tank is of such dimension that the top of the mounting skid is 24" or greater AFG, then a substantial maintenance platform shall be constructed around all sides. Platform shall be in full accordance with all applicable OSHA safety standards for handrails, etc.

The set shall be started electrically using its own properly rated and sized batteries. Air start is unacceptable.

Engine generator set shall connect to building power distribution system through coil and contactor operated automatic transfer switches. "Walking Beam" switches are unacceptable. Transfer switch shall have an integral, field adjustable automatic exerciser clock.

In addition to other requirements, the generator set shall have the capacity to serve, as a minimum, one elevator, all building data gathering panels used for HVAC control and management systems, steam condensate return pumps, and sump pumps. Generators shall be sized for minimum 20% spare above calculated diversified demand loads.

Generator shall conform to ISO-9001; have Class H insulation, and permanent magnet excitation for production of 300% of rated full load current for ten seconds.

Generator set on-site acceptance testing shall be performed in accordance with NFPA-110 at 80% and 100% power factors. Generator Shop personnel shall be notified of the test schedule so that they may attend.

Contractor shall furnish a full tank of fuel at the completion of all acceptance testing.

Equipment supplier shall supply two operation and maintenance manuals. Deliver one to the Project Manager and one directly to the Generator Shop Supervisor.

There are numerous locations on campus where terrain or geometry of adjacent structures may require that the generator set be installed in a sound attenuated enclosure with a rated sound attenuating silencer. This requirement will need to be discussed during initial design meetings and the actual level of attenuation determined early in the design process.

Sets shall be installed on building exteriors except possibly for locations such as energy/utility plants. The location of the generator set shall be coordinated with the relative location of the fresh air intake for the building to minimize the intrusion of the generator's exhaust fumes into the building air conditioning system. Unit shall be located and physically protected in such a manner as to reduce the vulnerability to damage by severe storms or hurricanes.

Generator set shall be cooled with self-contained coolant and radiator system. Remote coolers are unacceptable.

All systems shall have a five-year warranty, unless the project considerations dictate differently and is approved by FSU Maintenance Department.

Engine generator sets shall be Caterpillar or Cummins/Onan all other manufacturers are unacceptable.

## SERVICE AND DISTRIBUTION

### ELECTRIC SERVICE:

Electric service to buildings and facilities on campus will normally be served from FSU's 15 KV (12,470V) medium voltage distribution system. If a building is not served from an existing sectionalizing device, a new SF6 gas insulated vacuum fault interrupter device shall be installed. Interrupters shall have 600-ampere separable quick change bushings. G & W is the only acceptable manufacturer. A 6 lb bottle of SF6 gas shall be furnished with all new sectionalizing switch installations.

Service to buildings shall be supplied from pad-mounted transformers as described below. The transformers, service entrance conductors or bus, and main electrical panel or equipment shall be of adequate size for the demand expected in the facility and to allow for future growth of 25% based on calculated diversified demand.

Transformers shall be located as close as possible to the main electric service room. Future servicing or replacement of transformers shall be a consideration when selecting a location. The transformer shall be protected from vehicular and pedestrian traffic.

The location of the building electric service apparatus shall be incorporated in the landscaping as much as possible.

## METERING

A watt-hour meter with a demand register shall be provided for each building. This shall be coordinated through the University Project Manager with the Utilities Section.

For buildings being served by a pad mounted transformer, the meter location shall be on the transformer. Metering current transformers shall be installed in the secondary compartment of the transformer. A 1" conduit shall be installed from the pad to the nearest building system control junction box.

## GROUNDING

All grounding for building services, standby generators, and transformers shall achieve a maximum 10-ohms or less as required by specific project criteria, using the three-point test method. If necessary, multiple rods shall be driven to achieve the desired resistance to ground. All grounds shall be connected with a properly sized copper conductor. All ground busses shall be connected to ground rods by either (1) an approved exothermic welding process as manufactured by Erico or (2) a compression system as manufactured by Burndy known as 'Hyground'. Each rod shall be tested in the presence of the University's representative. A written record of the test results shall be prepared and signed by the contractor and University's representative. This record shall be submitted to the Architect/Engineer and supplied to the University with the "Record Drawings" and reports upon the completion of the project.

### Circuit Coordination

It is the responsibility of the Architect/Engineer to insure the proper electric circuit coordination.

#### 15KV Distribution System

All new circuit and transformer installations shall be properly coordinated with the existing electric distribution on campus. The Engineer shall furnish circuit coordination parameters including relay/fuse settings, time-current characteristic curve plots, and verification that all settings have been made.

Existing substation breaker settings and available fault current data (at FSU's substation) will be made available, upon request, from FSU's Utility Department. The Engineer must produce coordinated time current curve characteristic plots of his proposed settings for review and approval by FSU Utilities Section prior to energizing.

#### Facility Electrical Systems

The Engineer shall provide breaker settings for all new or remodeled building electrical systems. Circuit coordination parameters shall be furnished, including time-current characteristic curve plots, breaker/relay settings, and verification that all settings have been made.

#### Arc Flash Data

The Engineer shall provide arc-flash data for all electrical systems installation as required by the NEC, NFPA-70E, and all local codes.

Pertinent signs pertaining to arc-flash information shall be prominently displayed on all equipment involved, i.e. Panelboards, switchgear, motor controllers.

#### Pad-Mounted Transformers:

*In order to provide better circuit coordination in the University's electrical system, a service transformer's base rating shall not exceed 2000KVA. If additional capacity is required the design professional must consider either multiple transformers or specifying units that are dual temperature rated and equipped with forced air-cooling.*

The phase overcurrent device simulated in the SF6 switch must be compatible with the campus system's feeder breakers in order to achieve proper circuit coordination. If requested, a copy of the feeder breaker time-current characteristic curves will be furnished by FSU for use by the design professional prior to the time required for the incoming service to be energized

#### Basic description, features, accessories:

- Insulating fluid – Envirotemp FR3
- Winding Material – Copper or Aluminum
- Primary Voltage, 12470 delta – 95 KV BIL
- Taps – 2 @ 21/2 % above and 2 @ 2 ½ % below normal
- Configuration – Dead front, radial feed
- Primary Bushings – Three Wells, 15 KV, 200-amp
- Inserts – Feed through
- Secondary Bushings – Spade Terminals
- Fusing – Bay-O-Net oil immersed in series with ELS-P
- Impedance – NEMA Standard with standard tolerances
- Color – Bell Green
- Standard Features:

- MOV arrestors
- Provisions for bushing mounted CT's
- Stainless steel grounding pads in HV and LV compartments
- Removable neutral ground strap
- Standard Accessories:
  - 1" fill plug
  - 1" drain valve and sampling device in HV compartment
  - Dial type thermometer
  - Liquid level gauge
  - Pressure vacuum gauge
  - Pressure relief valve.

Acceptable manufacturers are: Cooper – Waukesha, Wisconsin; Howard – Laurel, Mississippi; or General Electric – Shreveport, Louisiana.

## MEDIUM VOLTAGE CABLE

Medium voltage cable shall be copper, 105 degrees C rated, 350 kcmil and #2 AWG minimum, EPR with 133% insulation. Cable shall be manufactured by The Okonite Company or The Kerite Company.

All new 15KV cable shall be proof tested according to manufacturer's recommendations prior to being energized.

## DUCT BANK SYSTEMS

All 15 KV cable shall be installed in duct bank system as follows:

1. All ducts shall be encased in at least 3" concrete on all sides, top and bottom.
2. Ducts may be EB-20, EB-35, or schedule 40 PVC conduit. Conduit shall be parallel and separated by appropriate spacers. Conduit shall be sized as required for the project.
3. Duct banks shall have sufficient number of conduit for the project plus a minimum of two spares. Conduits from 15 KV switches to transformers will require only one spare. If future use may require additional circuit installation, then more spare ways may need to be installed.
4. Duct banks shall be a minimum depth of 36" to the top of concrete. Where duct banks are less than 36" or in locations that require protection, a layer of 'flow fill' with red dye shall be installed over the duct bank. The flow fill layer shall come to within one foot of finished grade or, if under a paved area, to the bottom of the asphalt base or concrete pavement.
5. A 4/0 copper ground loop conductor shall be installed with all duct banks, regardless of number of ways. The ground loop conductor shall be located in the center of the top of the concrete encasement
6. All duct bank installations shall be inspected by the Engineer of Record and FSU's Utility Department Representative prior to encasing in concrete.

## MANHOLES

Manholes shall have the following basic physical description:

- Inside dimensions of 8'-0" octagonal made from minimum 2500 PSI concrete.
- Duct entrances supplied with end bells
- Minimum clearance from centerline of lowest duct entrance shall be 2'-0" to floor
- Minimum 8" thick walls, minimum 6" thick floor for sump
- Duct face at corners a minimum of 18" wide

Cable racks shall be heavy duty, galvanized, with porcelain cable saddles. Pulling irons fabricated from hot-dipped galvanized steel bars shall be provided in walls opposite duct entrances. Cables shall loop manhole prior to exiting on through-pulls and shall pass by two adjacent complete faces, as a minimum, on angle pulls.

Covers shall conform to Specification RR-F-621 with vent holes and, minimum, two pick holes. Pick holes shall be minimum ¾” diameter. Cover shall be approximately 32-½” diameter and manufactured by U.S. Foundry, or equal.

Each manhole shall contain a 4/0 ground loop, mounted 18” above the floor, bonded to a ground rod that measures 10 ohms to ground or less. Ground loop shall bond all non-current carrying conductors in each manhole and shall be bonded to the ground loop conductor routed with the duct bank systems. Bond shall be by exothermic means or compression using a Burndy “Hyground” system. No other compression system is acceptable.

## LIGHTNING PROTECTION SYSTEMS

All buildings/structures shall have appropriate lightning protection systems designed and installed in accordance with NFPA-780. Installer shall be LPI certified. Installed system shall bear a Master Label.

Expansions of existing facilities shall upgrade the existing lightning protection system as required to obtain or maintain a Master Label for the envelope.

## LIGHTING SYSTEMS

### General:

All lighting designs shall comply with the current edition of the Illuminating Engineers Society (IES) standard.

### Interior Lighting:

The standard lighting system shall utilize fluorescent T8 lamps with electronic ballasts having a total harmonic distortion (THD) of less than 10%. Interior systems that are not dimmed shall employ 28W lamps where ambient temperatures and other conditions are suitable for their application. Dimmable systems shall use 32W lamps. Wherever possible, four-foot lamps are to be used. T5 lamps may be used when required by project design.

Light fixtures in stairways shall be above the landings and not above the steps.

Automatic lighting controls shall comply with Chapter 13, ENERGY EFFICIENCY, Florida Building Code.

Emergency lighting shall be provided at all exits and in all stairways, hallways, mechanical rooms and elevators according to NFPA-101. Emergency lighting shall be powered from the building emergency generator system. Battery powered emergency lighting shall not be used unless there is no emergency generator associated with the project.

Where emergency lights are required in classrooms, a bypass switch shall be installed to permit the light to be switched off during special presentations. During actual power failures, the bypass shall be rendered inoperative.

No lights shall be installed that require scaffolding for relamping.

Exit lights shall be of the Light Emitting Diode (LED) type.

#### Classroom Lighting:

Classroom lighting shall comply with DOE requirements. Lighting in classrooms and lecture halls with seating capacity greater than 25 people shall be equipped fluorescent dimming systems.

For detail requirements for dimming and occupancy sensor systems refer to Appendix E, Design Criteria and Requirements for Classrooms at Florida State University.

#### OUTDOOR LIGHTING

Outdoor lighting on the FSU campus shall be attractive and in keeping with the standards set forth in this section. The lighting plan shall be energy efficient while maintaining appropriate light level(s) as prescribed in the latest edition of the NFPA codes and IES handbook for high activity facilities.

When outdoor lighting is associated with a building project, security lighting and parking lot lighting shall be included in the building design.

No lights are to be installed that require scaffolding for relamping. Pole mounted parking lot lights shall be bucket truck accessible.

Walkway and exterior security lighting shall be controlled by a photoelectric cell and contactor, with a manual override for maintenance.

Outdoor lighting shall be period style fixtures, pole mounted where possible. Poles and fixtures shall be:

Fixtures:

All fixtures shall use high-pressure sodium lamps. All ballasts shall be multi-voltage tapped (120,208,240, and 277-volt taps). Globes/diffusers shall be glass. Plastic is unacceptable. Precision injection-molded, UV stabilized, acrylic lens is acceptable for parking deck fixtures.

Walkway and roadway type fixtures:

Fixture trim shall be black. Acceptable manufacturers are:

- A. Holophane - Utility Series Granville with black finial or
- B. Sternberg Hometown Series with acorn glass globe.

Parking Lot Fixtures:

Fixtures shall be black. Acceptable manufacturers are:

- A. Gardco - Gullwing Series (G18 series).
- B. Lithonia Lighting – Aeris AS2 Series with decorative curved arm.

Parking Deck Fixtures:

Acceptable manufacturers are:

- A. Lithonia – PGR Series with 100HPS lamps. Fixtures shall be dark bronze with offset junction box mounting feature. (QRS is a quartz restrike option where such is desired).
- B. Gardco – Quadra Series fixture with 100HPS lamps. Fixtures shall be dark bronze with offset junction box mounting feature. (QS quartz restrike option where such is desired).

Poles:

Poles shall be 12' or 14' Holophane Mount Vernon series or Sternberg Somerset (2700-FP) series fluted aluminum for streets and walkways. Parking lot poles shall be square aluminum of appropriate height. All street and walkway poles shall be black. Parking lot poles shall be black. Poles shall be mounted on poured concrete bases. Bases shall be installed at grade level on asphalt, concrete or brick paving; at 6" A.F.G. along walkways and streets; at 30" A.F.G. in parking lots.

## PARKING DECK LIGHTING

The consultant shall evaluate the feasibility of installing lighting control systems that monitor and control the “interior” and “exterior” zones lighting according to available ambient levels. The control systems shall be field adjustable to owner’s specifications.

A control system recommendation shall be presented to the Project Manager no later than the 50% plans submittal.

## FIRE ALARM SYSTEMS

**BASIC REQUIREMENT FOR INSTALLATION:** All new buildings, and buildings undergoing major renovations, shall be equipped with a complete fire alarm system which meets Florida Building Code, Chapter 11 Accessibility Code for Building Construction (Section 11-4.28) and current code requirements. Provide all hardware necessary to tie-in with the existing campus monitoring system. Matching the existing addressable digital fire system in use in a facility is preferred.

### COORDINATION:

1. Coordinate all installations with EH&S Fire Safety Section.
2. To insure compatibility, the EH&S Fire Safety Section supervisor (or supervisor's designated representative) shall be informed of the proposed type of fire alarm control panel.

**LICENSING:** All work on fire alarm systems shall be performed by an individual, or firm, licensed as an "Alarm System Contractor I" as required by Florida Statute 489.505(a), other parts of said Statute, and complies with all other licensing requirements of relevant codes and laws. Further, this individual or firm shall be either the prime constructor on such work or a subcontractor to the prime constructor.

### PANELS:

1. Central Fire Control Panel: Provide programmable central fire control panel with programmable field devices. Fire control panel shall meet NFPA 72 detector sensitivity readout/printout requirements. A history of a minimum of 200 events shall be readable on the fire alarm control panel display (200 events for alarm and 200 events for trouble).
2. Annunciator Panel: Annunciator panel shall be located where the fire department will enter building. Annunciation panel shall duplicate all functions of the fire control panel.
3. Renovations: When the existing fire alarm control panel does not support the type of renovation being performed in a building, a second (or third) fire alarm control panel shall be installed. The fire alarm control panels installed for the renovation shall be of sufficient capacity to handle the entire building when the existing fire system(s) is (are) changed.
4. Acceptable manufacturers: Existing equipment requiring interface may be Simplex 4010 or 4100U; Pyrotronic. New equipment shall be Simplex 4020 or 4100; Pyrotronics MXL or MXLSS.

**PULL STATIONS:** Pull stations shall be single action type. Glass rods for pull stations are discouraged. In housing units pull stations shall be equipped with a protective tamper shield. The protective tamper shield shall be a clear Lexan cover that emits a loud piercing noise when disturbed. The cover shall be battery powered and shall silence itself by lowering and realigning the shield. Stopper II as manufactured by Safety Technology International, Inc. (STI), are acceptable covers. Protective shields shall only be used to protect pull stations from the elements, or in locations where vandalism is likely (such as next to exterior exits). They are not required throughout the interior of a building.

**ALARM UNITS:** Alarm units shall be combination audible alarm and strobe light. The audible alarm shall be a horn, not a bell, as a bell could be confused with a class bell. Provide separate power for horns and lights, so that lights can be checked without sounding horn.

**AIR HANDLING UNIT SHUTDOWN RELAY:** The Air Handling Unit shutdown relay shall be supervised.

**JUNCTION BOXES AND CONDUIT:** All junction boxes on the fire alarm system shall be painted fire-truck red and all conduit shall be spot painted red.

**CAMPUS MONITORING SYSTEM INTERFACE RELAYS:** Trouble contacts shall be Normally Open; Alarm contacts shall be Normally Open. Provide a Keltron- Digital Alarm Communicator Transmitter (DACT) for digital, secondary reporting to the University Police. Consult EH&S Fire Safety Section regarding the manufacturer and model required. The project shall provide and program the communicator as directed by the EH&S Fire Safety Section.

**DUCT-MOUNTED SMOKE DETECTORS:** Duct mounted detectors shall be mounted in a readily accessible location. If duct-mounted smoke detectors are not immediately visible from inside the mechanical room, then provide a remote, labeled L.E.D indicator for each detector, mounted in a convenient, visible location. Non-radioactive smoke detectors and duct detectors are preferred (i.e. photoelectric). Provide stand-alone, duct mounted smoke detectors where no fire alarm system is present. The operation shall be to shut down the unit, and provide notification.

**MAINTENANCE ITEMS:**

1. Provide a spare parts kit that shall include one of every type of field device (one pull station, one horn, one strobe).
2. Any special tools, equipment, programming devices and cables needed to maintain or repair the system shall be provided.
3. All keys or tools provided with any devices from the manufacturer shall be given to the EH&S Fire Safety Section.

**EXECUTION:**

All equipment shall be installed to provide adequate access for service and repair.

On retrofit projects that involve adding to existing wiring, the Constructor shall exactly match

the colors of the new wiring with the existing. All new wiring shall be installed in conduit unless approved by EHS Fire Safety Section.

The Constructor shall certify and tag the system after all modifications are made and prior to

Substantial Completion:

The installer and the EHS Fire Safety Systems Electronics Shop shall test the fire alarm system before any renovation or modification is made. Any part of the system not working properly shall be noted or repaired before any construction begins.

Fire alarm conductors shall be color coded as follows:

Horns: Red +, Black -

Strobes: (if separate) White + Purple -

Alarms: Blue + Yellow -

A/C Ventilation: Shut Down Brown + Orange -

Magnetic Doors: Pink + Grey -

Misc. Circuits: Violet + Tan -

Data line wiring shall be twisted shielded 18 gauge FPLP wire in a red jacket. All data wire shall meet current code requirements and manufacturer's specifications. Speaker wiring shall meet current code requirements and manufacturer's specifications, and have a different color jacket than the data wiring (minimum 18 gauge twisted shielded).

On renovations always remove existing wiring and install new, properly color coded wiring.

On renovations, in addition to the renovation prints and/or drawings, the existing prints are to be up-dated to include any changes.

Horns and lights shall be provided in machine rooms and loft/attic areas that have mechanical equipment or work areas.

All connections shall be made on terminal strips. No more than two conductors under one connection. Wires on these terminals shall be labeled.

Programming of the fire alarm shall be as specified by the University. Consult with EHS Fire Safety Office (or other appropriate University maintenance department, if directed by the FSU Project Manager) concerning the requirements. Programming includes, but is not limited to: function keys, FAAP, software zones, etc.

All fire and smoke alarm sensors shall be re-settable. Beam detectors are discouraged and must be approved by EHS Fire Safety.

Provide protection from damage caused by lightning and electrical surges.

#### OPERATION:

**AIR HANDLING UNITS:** Actuation of any fire alarm initiating device shall cause all air handlers in the building area affected to shut down. Air handling units shall shut down only in the area where the fire is detected or the area actually alarmed (floor above and below). Other air handling equipment shall remain on line. This shall not supersede any code requirement.

**ELEVATORS:** A reset procedure for resetting the elevators after an alarm shall be submitted.

TROUBLE SIGNAL: Trouble signal shall sound piezoelectric alarm on the fire alarm control panel.

STAND ALONE DUCT DETECTORS: Provide an enunciator panel to provide notification of trouble alarm and reset feature. Panel to be 120 Volts.

MAINTENANCE ITEMS:

1. Keys to the system and associated equipment shall be given to the EH&S Fire Safety Section when the system is accepted.
2. All spare parts, special tools, equipment, keys, etc. required for maintenance or operation shall be turned over to the EH&S Fire Safety Section when the system is accepted.
3. A copy of the field prints, drawings, etc. shall be given to the EH&S Fire Safety Section when the system is accepted.