

Exhibit I

Building Products & Design Standards

Daytona Beach Campus
University Planning & Construction Management



Date: March 19, 2018

Purpose

This document is meant to communicate Owner expectations and requirements to all design and construction professionals working on ERAU new construction or renovation projects. It outlines specific products and components that the University has standardized for use on all construction projects. Incorporation of these products facilitates efficient and cost-effective operations by those operating and maintaining university buildings, and is based on a history of successful use. Specification of these products, and adherences to design standards, is further expected to expedite the design process, avoid costly change orders, and ensure that the project can be within budget.

Architects and engineers are expected to challenge any standard for which, within judgment, a better product or solution exists. [Any deviation from the standardized products or procedures listed herein must be approved in writing by University Planning and Construction Management \(UPCM\) and Facilities Management \(FM\).](#)

All architects and engineers are contractually required to comply with these standards, and they must be reflected in the design documents. Failure to comply will not be a subject of later compensation for design changes.

Note to Project Team

Every subcontractor will provide Embry-riddle a final Operation and Maintenance Manual listing manufacturer name and model # for each part used in their portion in lieu of excess stock, unless otherwise noted below

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Daytona Beach Campus**

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NOTE: ERAU standards must be added to every set of standards that is produced for each project. ERAU standards must be available to be reviewed and understood by every discipline and trade associated with the project.

**Not reading ERAU's design specifications does not absolve the bidding/installing contractor from standards compliance.

**Energy Design Consumption totals must be supplied to the owner on all projects.

DIVISION 1 – GENERAL DATA

01100 – GENERAL GUIDELINES

PART 1 – General Requirements

- 1.01 These standards are for the guidance of Architects and Engineers in the technical design of new buildings and additional to buildings. They are minimum standards. Actual design should be consistent with the overall program, building quality and scope of project. The design should be in context with and in harmony with the existing buildings on campus, with sensitivity to the surrounding pallet of materials and colors.
- 1.02 These standards convey owner expectations and requirements and outline specific products and components that the University has standardized for use on all construction projects. Incorporation of these products facilitates efficient and cost-effective operations and is based on a history of successful use. Specifications of these products, and adherence to design standards, is expected to expedite the design process, avoid costly change orders, and ensure that the project can be construction within budget.
- 1.03 Embry-Riddle (ERAU) has experienced the installation of obsolete components of manufacturers without local vendor representation, making it difficult (and in some cases impossible) to obtain replacement parts. Components accepted for installation must be of the latest production model running line, with spare parts readily obtainable.
- 1.04 If the Architect and/or the Engineer desires to make any exceptions to the Design Standards, written approval from University Planning & Construction Management (UPCM) and Facilities Management (FM) must be obtained. Electronic mail communication to request the exceptions is acceptable.
- 1.05 ERAU's standard Wiring Requirements for Information Technology including telephone, data, fiber optic, computers and telephone/I.T. rooms are available in Exhibit II. Standardized Wiring Requirements.
- 1.06 All architects and engineers are contractually required to comply with these standards, and the Standards must be reflected in the design documents.
- 1.07 All subcontractors to provide Embry-Riddle with a final Operation and Maintenance Manual listing manufacturer name and model # for each part used in their portion in lieu of excess stock. All documentation to be submitted in electronic format, no paper copies required.
- 1.08 All Contractor's (General or otherwise) and Sub-Contractors of General Contractor's or otherwise, employed through Embry-Riddle Aeronautical University (ERAU) to perform construction work on the Main Campus at 600 S. Clyde Morris Blvd, Daytona Beach, FL 32114.
- 1.09 The facilities & grounds located, as described above, are regulated within the scope of safety regulations governed by the Occupational Safety & Health Act within CFR 29 1910. General Industry Regulations and incorporated into the ERAU comprehensive safety policies. Paragraph 1910.12 (Construction Work) adopts the standards prescribed in CFR Part 1926 as Occupational Safety & Health Standards under Section 6 of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in construction work. Each employer shall protect the employment and places of employment of each of his employees engaged in construction work by complying with the appropriate standards prescribed in this paragraph. Thus, the standards (substantive rules) published in Subpart C and the following subparts of part 1926 of this chapter are applied.

NOTICE TO ALL CONTRACTORS ON JOBSITE

Attention All, Contractors Subcontractors and Employees of Such

Hazardous Materials Are Used

In this Workplace!

You have the right and obligation to read about these materials before using them or being exposed to them.

Copies of this program are maintained at each Department/Area.

A Safety Data Sheet (SDS) should be on file for each chemical or hazardous material used.

If you become aware of a situation where an SDS is not on file, please tell us immediately so that we can order it and have it available to you.

Take time to review the SDS file.

Know the hazards and characteristics of every material you use.

Contractors: Should there be Hazardous Materials used by your company at any University work site, SDS's must be provided to the University prior to work commencing.

THIS NOTICE TO BE POSTED

DIVISION 2 – SITE CONSTRUCTION

02490 - TREES, SHRUBS, ANNUALS, SOD, AND GROUND COVERS

PART 1 - GENERAL

1.01 - Description of Work

A. Provide trees, shrubs, annuals, and ground covers as specified. The work includes:

1. Soil preparation as determined by the plant type.
2. Installation of trees, shrubs, annuals, ground covers and sod.
3. Planting mixes.
4. Mulch and planting accessories.
5. Maintenance.

B. Related work

1. Section 02100: Site Preparation.

1.02 - Quality Assurance

A. Plant names indicated comply with “Standardized Plant Names” as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature (see Section 4.0 for the ERAU Preferred Plant List). Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

B. Plant material shall be graded Florida No. 1 or better as outlined under Grades and Standards for Nursery Plants, State Plant Board of Florida.

C. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that larger plants will not be cut back to size indicated.

1.03 - Submittals

A. Submit the following material samples:

1. Mulch
2. Planting accessories
3. Topsoil
4. Planting mix

B. Submit certifications for the following materials:

1. Topsoil and planting mix source and PH value
2. Peat moss
3. Plant fertilizer, nutrients.
4. Sod

1.04 - Delivery, Storage, & Handling

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by

law shall accompany each shipment invoice and order to stock and on arrival, the certificate shall be filed with the Owner, Grounds Foreman, and Landscape Architect. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner, Grounds Foreman, and Landscape Architect. Water heeled-in plants daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicle with a protective covering to prevent windburn.

1.05 - Project Conditions

- A. Work notification: Notify Owner, Grounds Foreman and Landscape Architect at least 5 working days prior to installation of plant material.
- B. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations. Damage to existing utilities, paving, and facilities will be immediately repaired at the Landscape Contractor's expense.
- C. A complete list of plants, including a schedule of sizes, quantities, and other requirements is to be shown on the project drawings. ERAU Standard Landscape plant list is found in Section 4.01. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
- D. If the irrigation system is to be changed, or is new, this system will be installed prior to planting. Locate, protect, and maintain the irrigation system during the planting operations. Repair irrigation system components damaged during planting operations, at Landscape Contractor's expense.

1.06 - Warranty

- A. Warranty plant material to remain alive and in healthy and vigorous condition for a period of one year after completion and acceptance of entire project.
- B. Inspection of plants will be made by the Owner, Grounds Foreman, and the Architect at completion of planting. A full count of planting materials shall be done at this time.
- C. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Owner, Grounds Foreman, and Landscape Architect, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the contractor's negligence. The cost of such replacement (s) is at Contractor's expense. Warrant all replacement plants for one year after installation.
- D. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 50 miles per hour, winter kill caused by extreme cold and severe winter conditions not typical of planting area: acts of vandalism or negligence on the part of the Owner.
- E. Remove and immediately replace all plants, as determined by the Owner, Grounds Foreman and the Landscape Architect, to be unsatisfactory during the initial plant installation.

PART 2 - PRODUCTS

2.01 - Materials

- A. Plants: Provide plants typical of their species or variety: with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestations. All plants shall have a fully developed form without voids and open spaces.

1. Dig ball and burlap plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standards for Nursery Stock." Cracked or mushroomed balls are not acceptable.
2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
 - a. No plants shall be loose in the container.
 - b. Container stock shall not be pot bound.
3. Plants planted in row shall be matched in form.
4. Plants larger than those specified in the plant list may be used when acceptable to the Owner, Grounds Foreman and the Landscape Architect.
 - a. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.
5. Shrubs shall meet the requirements for spread and height indicated in the plant list.
 - a. The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.
 - b. Single stemmed or thin plants will not be accepted.
 - c. Side branches shall be generous, well twigged, and the plant as a whole well bushed to the ground.
 - d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

2.02 - Accessories

- A. Topsoil or planting mix for Planting Beds: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained arable site, reasonable free from clay, lumps, coarse sands, stones, plants roots, sticks, and other foreign materials, with acidity range of between pH 6.0 and 6.8 unless otherwise indicated by type of plant.
 1. Identify source location of topsoil or planting mix proposed for use on the project.
 2. Provide topsoil or planting mix free of substances harmful to the plants, which will be grown in the soil.
- B. Peat Moss: Brown to black in color, weed and seed free granulated raw peat or baled peat, containing not more than 9% mineral on a dry basis.
- C. Fertilizer:
 1. Plant Fertilizer Type: Commercial type approved by the Owner, Grounds Foreman and the Landscape Architect, containing 12% nitrogen, 0% phosphorus, and 12% potash by weight, $\frac{1}{4}$ in form of ammonia salt, and $\frac{1}{2}$ in form of organic nitrogen unless otherwise indicated by type of plant.
- D. Mulch: Pure Cypress Mulch. Furnish in bulk.
- E. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by Contractor.

PART 3 - EXECUTION

3.01 - Inspection

- A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.02 - Preparation

- A. Planting shall be performed only by experienced workmen familiar with planting procedures under the direction of a qualified supervisor.
- B. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plants locations have been selected.
- C. Excavate circular plant pits with vertical sides, except for plants specifically indicated for planting in beds. Provide shrub pits at least 12" greater than the diameter of the root system, and 24" greater for Palms. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 4". Remove excavated materials from the site. Prior to any tree or shrub plantings, percolation tests shall be performed on 10% of the pits. Plant pits shall be inspected by the Grounds Foreman prior to planting to ensure non desirable materials do not exist within the plant's future root growth area. Note: The University has had numerous runways, roads and buildings located on site in the past which can impact the survivability of the plants.
- D. Provide pre-mixed planting mixture for use around the balls and roots of the plants consisting of 5 parts planting topsoil to 1 part peat moss and ½ lb. plant fertilizer for each cubic yard of mixture, as specified in 2.02.C.1 unless otherwise indicated by plant growing requirements. Backfill the palms with existing soil only unless otherwise indicated by the Grounds Foreman. Do not backfill the palms with the pre-mixed planting mixture.

3.03 - Installation

- A. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plum, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 1" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling.
- B. After ball and burlap plants are set, muddle planting soil mixture around bases of balls and fill all voids. Create watering ring with backfill material at edge of root ball.
- C. Mulching:
 - 1. Mulch tree and shrub planting pits and shrub beds with required mulching material 3" deep immediately after planting. Keep mulch 3 to 5 inches away from stems and trunks. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

3.04 - Maintenance

- A. Maintain plantings until completion and acceptance of the entire project.
- B. Maintenance shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
 - 1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
 - 2. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
- C. The Contractor shall provide to the Owner and Grounds Foreman monthly inspection reports regarding the landscape materials for the duration of the one-year warranty period.
- D. The Contractor shall supply to the Owner and Grounds Foreman a complete maintenance manual specifically prepared for this project, which outlines all necessary procedures for the proper and complete maintenance of all plant material specified on this project. The manual shall address weeding, pruning, fertilizing, mowing of lawns, application of insecticides, rotation of annual plantings and any other items necessary for the proper maintenance of the landscape.

3.05 - Acceptance

- A. Inspection to determine acceptance of planted areas will be made by the Owner, Grounds Foreman and the Landscape Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
 - 1. Planted areas will be accepted provided all requirements, including maintenance, have been compiled with and plants materials are alive in a healthy and vigorous condition.
- B. Upon acceptance, the Owner will assume plant maintenance.

3.06 - Cleaning

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials soil, debris, and equipment. Repair damage resulting from plating operations.

3.07 – Site Safety

- A. During the entire project, safety of the worksite is of utmost importance. At no time shall work areas be left unattended or unsecured where hazardous conditions exist.

PART 4 – PLANTS

4.01 - ERAU Standard Plant List

In accordance with the City of Daytona Beach Land and Development Code, Article 18, Section 2, the Florida Friendly Landscaping Guide to Plant Selection and Landscape Design shall be utilized to identify potentially acceptable plants. By no means is this a complete list of all potential plants that can be utilized. Other plants may be acceptable on a case by case basis. Final plant selection and size shall be approved by the Grounds Foreman based on current environmental conditions and maintenance equipment availability.

Suggested Plant List

Common Names	Botanical
Trees	
Japanese Yew (Maki)	Podocarpus macrophyllum
Ligustrum Tree	Ligustrum Lucidum
Bottle brush	Callistemon: citrinus, rigidus, viminalis
Crapemyrtle	Select variety for disease resistance
Nellie R. Stevens Holly	Ilex X'Nellie R. Stevens
Olive	Olea europaea
Poinciana	Caesalpinia spp. and cvs
Powderpuff	Calliandra haematocephala
Yaupon Holly	Ilex Vomitoria
Palms	
Cabbage Palm	Sabal palmetto
Cardboard Plant	Zamia furfuracia
Chinese Fan Palm	Livistona chinensis
Coontie	Zamia floridana

European Fan Palm	Chamroeps humilus
Pindo Palm	Butia capitata
Pygmy Date Palm	Phoenix robellini
Sylvester Palm	Phoenix sylvestris
Windmill Palm	Trachycarpus fortune
Shrubs	
Assorted Azaleas	Rhododendron sp.
Bush Allamanda	Allamanda schottii
Dwarf schefflera (variegated)	Heptapleurum arboricola
Firebush	Hamelia aatens
Firecracker	Russelia equisetiformis
Heavenly Bamboo	Nandina domestica
Hibiscus	Mallows
Japanese Aralia	Fatsia japonica
Japanese Yew (Maki)	Podocarpus macrophyllum
Philodendron	Philodendron
Plumbago	Plumbago auriculata
Thryallis	Galphimia glauca
Variegated Ginger	Costus speciosus Variegata

02800 – IRRIGATION

- 1.01 Hunter Pro-C exterior timers, with smart port, wall or pedestal mount as required, electric 120 volts for standard wired systems.
- 1.02 Hunter ACC exterior timers, with smart port, wall or pedestal mount as required, electric 120 volts for 2 wire systems.
- 1.03 Use Irritrol Series 200 solenoid valves or Hunter ICV solenoid valve with Hunter decoders as appropriate or necessary.
- 1.04 With 2 wire systems wire shall be jacketed.
- 1.05 In a standard system run at least 3 extra wires from furthest valve to time clock for future zones.
- 1.06 Rain sensors on all time clocks.
- 1.07 Hunter I-40 sprinkler heads on all athletic fields.
- 1.08 Hunter brand sprinkler heads for the rest of the campus.
- 1.09 PVC schedule 40 pipe for all mains and branches. No thin wall pipe. No tubing longer than 2' at sprinkler heads.
- 1.10 Use purple PVC schedule 40 pipe on reclaimed water.
- 1.11 All pipe and fittings are to be primed before gluing. Use purple primer.
- 1.12 Use flex hose from pipe to sprinkler head. No swing joints.
- 1.13 Use soaker hose to water any plants located in front of any windows.
- 1.14 All irrigation lines shall be at least 12" below finished grade.
- 1.15 If more than one pipe is in a trench it must be separated by at least 3", no pipes touching one another to make for easy repairs.
- 1.16 All irrigation under roads and sidewalks shall be sleeved.

- 1.17 All new irrigation wells shall be pressurized with cycle stop valves, pressure tank and pressure switch, and submersible pumps.

02900 – LANDSCAPING AND DESIGN GUIDELINES

1. St. Augustine Floratam: sod ONLY. (No plugs.)
2. Certified 419 Hybrid Bermuda: Athletic Fields.
3. Common Bermuda hydro-mulch or sod will be utilized instead of Bahia sod or seed.
4. Final plant selection shall be approved by the Grounds Foreman based on current environmental conditions and maintenance equipment availability.
5. Mowing clearance must be maintained at a minimum of 10 feet from any tree to curb, sidewalk, building, etc.
6. Final growth canopy of the tree shall be a minimum of 10 feet from a building, sign, or light pole.
7. Plants, shrubs and trees to be grade #1 Florida stock ONLY.
8. Cypress mulch to be grade #1.
9. Final growing height of any palm tree shall not exceed a clear trunk of 56 feet.
10. The following link establishes guidelines which will be followed in the design, installation, and maintenance of all landscaping on Embry-Riddle property.
<http://hort.ifas.ufl.edu/woody/powerpoints.shtml>

DIVISION 3 – CONCRETE

03300 - SIDEWALK CONSTRUCTION REQUIREMENTS

1. Sidewalks, bike paths, ramps, and driveways aprons shall be constructed of plain Portland cement concrete with fiberglass reinforcement, having a maximum slump of three inches, a minimum developed compressive strength of 3000 psi in 28 days, and a minimum uniform thickness of six (6) inches.
2. The top of the concrete shall follow the natural grade of the adjacent land. The finished concrete shall be at an elevation no more than 1 inch above, nor lower than the adjacent land. At points where the sidewalk meets other concrete surfaces it shall transition at a 12 to 1 slope to meet that grade.
3. Isolation joints (Type A Joints) shall be provided between existing slabs or structures and fresh concrete, to separate pedestrian sections from sections which will encounter vehicle traffic, to separate fresh placement from concrete which has set for more than 60 minutes, and no farther apart than 100 feet in sidewalks and bike paths. Joint material shall be rubber, plastic, or other owner approved non-biodegradable elastomeric material. Wood and Decca-drain style pool drains are strictly prohibited.
4. At each isolation joint where the new concrete meets the existing sidewalk there will be a pin system installed to prevent shifting. Six inches from each edge and no more than 1 foot apart in the width of the sidewalk, #5 rebar will be drilled into the existing sidewalk no less than 4 inches and extend out no less than 10 inches into the repair area.
5. Control Joints (Type B Joint) shall be tooled into the fresh concrete to a depth equal to $\frac{1}{4}$ the slab thickness and spaced apart a distance equal to the width of the slab or five (5) feet, whichever is greatest.
6. The slab surface shall be broom finished to be slip resistant and shall match, as closely as possible, the finish of existing adjacent slabs, and all edges shall be tooled to eliminate sharp corners.
7. The bearing subsurface shall have all organic, loose, and deleterious matter removed, and the remaining clean soil shall be smooth, sound, and solid. Any fill material shall be compacted with a

vibratory or impact compaction machine twelve (12) inch lifts or compacted with a hand tamper in maximum four (4) inch lifts.

8. The contractor shall be responsible for protecting the finished slab from all damage and vandalism until the owner accepts or approves the slab, after which time the owner of the abutting land shall be responsible for the slab in accordance with the city code. Any slab section damaged or vandalized prior to acceptance or approval shall be cut out between joints and replaced. Repairs are not acceptable.
9. All forms and excess concrete debris shall be removed prior to acceptance or approval and the disturbed ground shall be backfilled, graded, and sod installed on disturbed areas exceeding 8 inches from the edge of the finished concrete
10. One (1) number five (#5) rebar (6" overlap required) shall be installed longitudinally and centered within the depth of the slab along each edge of all bike paths and sidewalks. This is being done to control differential movement at all joints due to tree roots and differential settlement beneath.
11. Each sidewalk repair area along Clyde Morris Blvd. and Richard Petty Blvd. will match existing sidewalks in both thickness and width.

DIVISION 6 - WOODS & PLASTICS

06410 - CUSTOM CASEWORK

- 1.01 Flush mount all storage unit and cabinet doors and drawers. Locks, where appropriate, are to be desk-style locks, not cam-style locks.

DIVISION 7 - THERMAL & MOISTURE PROTECTION

07480 - EXTERIOR WALL SYSTEMS

- 1.01 Consider using load-bearing masonry construction with lightweight concrete roof deck. No curtain walls. Consider storm shutters on windows.

07500 – ROOFS

- 1.01 Consult UPCM prior to design for campus standards. Multi-ply is acceptable. Use Suprema products only, not GAF.

DIVISION 8 - DOORS & WINDOWS

08250 – DOORS

- 1.01 Interior - solid core, wood stave type I, glue with birch finish with hollow metal frames only and stainless steel ball bearing hinges.
- 1.02 Exterior - STEEL - Allied or Amwell
- 1.03 Exterior - all weather doors. Special-lite, Inc. Tubular frame aluminum, urethane foam core and fiberglass reinforced polyester panels
- 1.04 Overhead doors electrically operated
- 1.05 Any exterior door using a mag-lock card swipe access locking system requires a minimum of 7" - 0" in height to allow clearance for the card swipe mechanism.
- 1.06 Exterior door hinges – ball bearing, stainless steel, continuous gear (several brands e.g. Roton) – tested for 2 million cycles.

08400 - STORE FRONTS (Stationary Windows)

- 1.01 Kawneer - Trifab 450/451 – (or equivalent such as YKK) designed to withstand 110-mph winds
- 1.02 Aluminum storefront doors – Wide stile ONLY!
- 1.03 Door closers – LCN – various options – most reliable NO Concealed Door closures.
- 1.04 Panic devices – Von Duprin – most reliable
- 1.05 Hinges – continuous gear (several brands, ie. Roton) –make sure it has been tested for 2 million cycles.
- 1.06 Door handles – not specified

08700- BUILDERS HARDWARE

Part 1 Closures – Surface only. No Concealed:

- 1.01 Overhead - LCN 4040
- 1.02 LCN 4041
- 1.03 LCN 1461
- 1.04 Handicapped/ADA electric door openers only. No pneumatics. LCN Electric Auto-Equalizer series 4630/4640.

Part 2 Locks:

- 2.01 Schlage “ND” series, 6 pin (RHO) rhodes style, lever, type 26D finish, on all applications, unless otherwise indicated on specs
- 2.02 All doors NRP butt hinge or secure hinge
- 2.03 Rim lock Schlage, 6 pin (solar-bronze or nickel silver to match framing)
- 2.04 Exit device - Paneline conceal vertical rod
- 2.05 2-3/4" setback on locking doors
- 2.06 All locks to be ordered zero bitting from manufacturer, unless otherwise stated
- 2.07 Check for proper keyway before starting work
- 2.08 Use Schlage Primus removable core “EP” keyway throughout facility with ERAU sidebar configuration, unless otherwise specified.
- 2.09 Install electrical strikes (Von Duprin #6211 US32D 24VDC FSE) in lieu of electrical locks for card access or mag locks (Schlage 350+xD5M X MBS) on storefront.

PART 3 Keying Systems

- 3.01 Schedule a keying meeting for developing a master key system that is unique to the project;
 - Director of University Planning and Construction Management
 - Director of Facilities
 - Director of Safety or representative
 - ERAU Staff
 - University Locksmith
 - Eagle Card manager
 - Life Safety representative
 - General Contractor
 - Hardware Supplier
 - Architect
 - ERAU Department Representatives of building under construction
- 3.02 Key orders shall not be processed until approval process is completed and written execution directive is provided by General Contractor for project.
- 3.03 Use DHI standard coding systems.
- 3.04 Use ONLY original Schlage key blanks for all areas
- 3.05 Use Primus “F” Keyway blanks for all student dorm rooms. They must be stamped “DO NOT DUPLICATE.”
- 3.06 See University Locksmith for master key code, keyway types and keying level before starting work.
- 3.07 Mechanical/electrical rooms, building maintenance storage and cleaning service storage shall be c keyway Primus with ERAU side milling O-Bitted.
- 3.08 Supply legible key records to University Locksmith with building floor plans which include door numbers, bitting codes, flow charts and expanded Bittings.(Schlage Port #50-123)
- 3.09 Provide four (4) each Permanent Core Master Keys (Part #48-101-1CX)
- 3.10 Provide two (2) each Permanent Core Control Keys (Part #35-053)
- 3.11 Provide three (3) each Change Keys per Cone
- 3.12 Provide fifty (50) each blank E-Primus Key Blanks (Part # 35-053) with ERAU slide milling per one hundred (100) doors.
- 3.13 Supply keys to University Locksmith stamped with appropriate codes and in envelopes listing their key or lock code and room location in an orderly manner.

- 3.14 Consult the Locksmith and UPCM Project Manager when in doubt or if any question should arise during any phase of the project.
- 3.15 All Cubicle Partition door locksets shall be capable of being keyed into new or existing Master Key System (i.e. Primus). If not, then passage only sets shall be installed.
- Each keyed area of the facility must be brought out to a keying level, which allows a minimum of 3 complete lock combination changes.
- Check with the Locksmith when and if removable core locks are recommended; if so, supply 4 each control keys to the University Locksmith (if applicable).
- Copy UPCM Project Manager on any transmittals to University Locksmith. Keep written minutes of all meetings.

PART 4 Finish Hardware

4.01 GENERAL

- A. Work Included
1. This section includes furnishing of all items of finish hardware as hereinafter specified or obviously necessary to complete the building, except those items that are specifically excluded from this section of the specification.
- B. Related Work Specified Elsewhere
1. Hollow metal doors and frames
 2. Aluminum doors and frames
 3. Wood doors and frames
- C. Description of Work
1. Furnish labor and material to complete hardware work indicated, as specified herein, or as required by actual conditions at building.
 2. Include all necessary screws, bolts, expansion shields, and other devices, if necessary, as required for proper hardware application. The hardware supplier shall assume all responsibility for correct quantities.
 3. All hardware shall meet the requirements of federal, state and local codes having jurisdiction over this project, notwithstanding any real or apparent conflict herewith in these specifications.
 4. Fire-Rated Openings
 5. Provide hardware for fire-rated openings in compliance with A.I.A. (NBFU) Pamphlet No. 80, NFPA Standards NO. 101, UBC 702 (1997) and UL 10C. This requirement takes precedence over other requirements for such hardware. Provide only hardware that has been tested and listed by UL for the types and sizes of doors required, and complies with the requirements of the door and doorframe labels.
 6. Where panic exit devices are required on fire-rated doors, provide supplementary marking on door UL label indication fire door to be equipped with fire exit hardware and provide UL label on exit device indication "Fire Exit Hardware."
 7. Fasteners
 8. Hardware as furnished shall conform to published templates generally prepared for machine screw installation.
 9. Furnish each item complete with all screws required for installation (typically, all exposed screws installation).
 10. Insofar as practical, furnish with Phillips flat head screws, finished to match adjacent hardware.
 11. Install door closers and exit devices with close head through bolts (sex bolts).
- D. Quality Assurance
1. The supplier must be a directly franchised distributor of the products and have in their employ an AHC (Architectural Hardware Consultant). This person is to be available for consultation to the architect, owner and general contractor at reasonable times during the course of work.
 2. The finish hardware supplier shall prepare and submit to the architect 6 copies of a complete schedule identifying each door and each set number, following the numbering system and not creating any separate system. The finish hardware supplier shall submit

the schedule for review, make corrections as directed and resubmit the corrected schedule for final approval. Approval of schedule will not relieve contractor of the responsibility for furnishing all necessary hardware, including the responsibility for furnishing correct quantities.

3. No manufacturing orders shall be placed until detailed schedule has been submitted to the architect and written approval received.
 4. After hardware schedule has been approved, furnish templates required by manufacturing contractors for making proper provisions in their work for accurate fitting, finishing hardware setting. Furnish templates in ample time to facilitate progress of work.
 5. Hardware supplier shall have office and warehouse facilities to accommodate the materials used on this project.
 6. Hardware manufacturers are to supply both a pre-installation class as well as a post-installation walk-thru to ensure proper installation and provide for any adjustments or replacements of hardware as required.
- E. Delivery, Storage and Handling
1. Wrap to protect finishing hardware items for shipment. Deliver to manufacturing contractors' hardware items required for their application; deliver balance of hardware to job; and store in designated location. Each item shall be clearly marked with its intended location.
- F. Warranty
1. Furnished material shall be warranted for 1 year after installation or longer as the individual manufacturer's warranty permits.
 2. Overhead door closers to be warranted in writing by manufacturer against failure due to defective materials and workmanship for a period of 10 years commencing on the date of final completion and acceptance. In the event of failure, the manufacturer is to promptly repair or replace the defective with no additional cost to the owner.

PART 5 Products

5.01 Acceptable Manufacturers

- A. To the greatest extent possible, obtain each kind of hardware from only ONE manufacturer.
- B. All numbers and symbols used herein have been taken from the current catalogues of the following manufacturers.

PRODUCT	ACCEPTABLE MANUFACTURERS	ACCEPTABLE SUBSTITUTE
Hinges - Interior	Roton	Equal
Hinges - Exterior	Roton	Meets spec 08250-1.06
Locks & Latches	Schlage	None (No Substitution)
Cylinders, Keys, Keying	Schlage (Primus)	None (No Substitution)
Exit Devices	Von Duprin	None (No Substitution)
Door Closers	LCN	None (No Substitution)
Sentronic Closers	LCN	None (No Substitution)
OH Stops/Holders	Glynn Johnson	Rixson
Magnetic Hold Opens	LCN	Door-O-Matic
Wall Stops/Floor Stops, Flushbolts	Glynn Johnson	Rockwood, Ives
Kick Plates	Rockwood	
Threshold/Weather-Strip	National Guard	Pemko, Zero
Silencers	Glynn Johnson	Rockwood, Ives

C. If material manufactured by other than that specified or listed herewith as an equal is to be bid upon; permission must be requested from the owner 7 days prior to bidding. If substitution is allowed, it will be so noted by addendum.

5.02 Finish of Hardware

- A. Exterior hinges to be stainless steel (32D); interior hinges to be stainless steel. Door closers to be brushed aluminum. Locks to be brushed aluminum, exit devices to be anodized aluminum (313AN). Overhead holders and flat goodsand thresholds to be mill finish aluminum.

5.03 Hinges and Pivots

- A. Exterior butts shall be stainless steel. Butts on all out swinging doors shall be furnished with non-removable pins (NRP).
- B. Interior butts shall be as listed.
- C. Doors 5' or less in height shall have 2 butts. Furnish 1 additional butt for each 2'6" in height or fraction thereof. Dutch door shall have 2 butts per leaf.

5.04 Keying /Cylinders

- A. All exterior locks and cylinder cores shall be 6-pin Schlage Primus key system (Level 3), interior locks and cylinder cores shall be 6-pin Primus Schlage Lock Company.
- B. All locks and cylinders to be provided with full-size IC Construction Cores (Part #23-030-1CX)
- C. Schlage Primus Permanent Full Size IC Cores provided for all cylinders (Part #20-740)
- D. Keying shall be performed at the factory per approved keying schedule and mailed direct to owners address on Primus Face Sheet provided by ERAU Lock Department.

5.05 Locksets

- A. Locksets shall be heavy-duty cylindrical type, unless specified otherwise, in "ND" series, Rhodes design as manufactured by Schlage Lock Company.
 - 1. Acceptable substitutions: None (match existing).

5.06 Exit Devices

- A. All devices shall be Von Duprin 98 series in types and functions specified. All devices must be listed under "Panic Hardware" in accident equipment list of Underwriters Laboratories. All labeled doors with "Fire Exit Hardware" must have labels attached and be in strict accordance with Underwriters Laboratories.
 - 1. Acceptable substitutions: None (match existing).

5.07 Door Closers

- A. All closers shall be LCN (see above) having non-ferrous covers, forged steel arms separate valves for adjusting backcheck, closing and latching cycles and adjustable spring to provide up to 50% increase in spring power. Closers shall be furnished with parallel arm mounted on all doors opening into corridors or other public spaces and shall be mounted to permit 180 degrees door swing wherever wall conditions permit. Furnish with non-hold open arms unless otherwise indicated.
- B. Door closer cylinders shall be of high-strength cast iron construction to provide low- wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum 10,000,000 cycles must be provided.
- C. Door closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120 degrees Fahrenheit to -30 degrees Fahrenheit, without requiring seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperatures stabilizing fluid that complies with the standards UBC 7-2 (1997) and UL 10C.
- D. Door closers shall incorporate clogging from particles within the closer. Closers shall have separate and independent screw valve adjustments for latch speed, general seep, and hydraulic backcheck. Backcheck shall be properly located so as to effectively slow the swing of the door at

a minimum of 10 degrees in advance of the dead stop location to protect the doorframe and hardware from damage. Pressure relief valves (PRV) are not acceptable.

1. Acceptable substitutions: None (match existing).

5.08 Trim and Plates

- A. Kick plates, mop plates, and armor plates, shall be .040 gauge. Kick plates to be 8" high; mop plates to be 4" high. All plates shall be 2" less full width of door.
- B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be shown in the hardware schedule.

5.09 Doorstops

- A. Doorstops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls or fixtures. Wall bumpers equal to Glynn Johnson 60W Series are preferred but, where not practical, furnish floor stops equal to Glynn Johnson FB13 and FB19X series. Where conditions prohibit the use of either wall or floor type stops, furnish surface-mounted overhead stops equal to Glynn Johnson, 450 Series.

5.10 Threshold and Weather-strip

- A. Furnish rubber door silencers equal to Glynn Johnson GJ64 for all new interior hollow metal frames, 2 per pair and 3 per single doorframe.

PART 6 Execution

6.01 Installation

- A. All hardware shall be applied and installed in accordance with the Finish Hardware schedule. Care shall be exercised not to mar or damage adjacent work.
- B. Contractor to provide a secure lock-up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items that are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.
- C. No hardware is to be installed until the hardware manufacturers have provided a pre-installation class, to ensure proper installation of the specified products.

6.02 Adjusting and Cleaning

- A. Contractor shall adjust all hardware in strict compliance with manufacturer's instruction. Prior to turning project over to owner, contractor shall clean and make any final adjustments to the finish hardware.

6.03 Protection

- A. Contractor shall protect the hardware, as it is stored on construction site, in a covered and dry place.
- B. Contractor shall protect exposed hardware installed on doors during the construction phase.

6.04 Hardware Schedule

- A. The following schedule is furnished for whatever assistance it may afford the contractor; it is not entirely inclusive. Should any particular door or item be omitted in any scheduled hardware group, provide door or item with hardware same as required for similar purposes. Quantities listed are for each pair of doors or for each single door.

DIVISION 9 - FINISHES

09500 - CEILING

1.01 Ceiling Tile - 2'x 2' Armstrong #704A (white). Any change to be approved by FM.

1.02 Ceiling Tile Grid – Armstrong.

09650 – BASE

- 1.01 Hallways and High Traffic areas – 6" X 1/8" thick Vinyl Cove Base – Johnsonite.
- 1.02 Classrooms and offices, 4" X .080 Vinyl Cove Base- Johnsonite, unless otherwise stated.
- 1.03 All Cove Base – Roll Goods only. NO Stick Base.
- 1.04 Stainless Steel Kick Plates 12" - all interior doors.
- 1.05 Push plates 6" x 18" stainless.

09680 - FLOOR COVERING -

- 1.01 **CARPET** - For all Administrative and Academic areas, carpet tiles to meet Appearance Retention Rating CRI TM101 (as specified per plan). Heavy rating in offices and conference areas, and Severe rating in classrooms and other common areas where carpet is indicated.
- 1.02 Carpet throughout this contract shall be of the same type and manufacturer. Fiber to be Invista type 6,6 nylon or equal.
 - 1.02.1 **Yarn:** 100% Antron type 6,6 bulk continuous filament (BCF) nylon. Hollow filament fiber shapes for optimum soil hiding capability. Polymer type identification to AATCC TM 20. No substitutions allowed.
 - 1.02.2 **Static Control:** By permanent means (i.e. antistatic filaments) and without chemical treatment. Static generation below 3.5 kilovolts using AATCC TM 134 [Electrostatic Propensity (Step)].
 - 1.02.3 **Construction:** Tufted, level or multi-level loop pile with maximum pile height variation of 1/32 inch.
 - 1.02.4 **Dye Method:** 100% Solution dyed or 100% Yarn dyed or combination of both as long as all requirements in this document are met.
 - 1.02.5 **Pile Weight:** Minimum 20 oz./sq. yd., ASTM D5848 test method.
 - 1.02.6 **Pile Density:** Minimum 5500 for heavy or severe traffic. Pile density = 36 x pile weight (oz./sq. yd.)/pile thickness (inches) (Pile thickness: ASTM D6859 test method or ASTM D7241 test method).
 - 1.02.7 **Primary Backing:** Tufted – 100% woven or non-woven synthetic
 - 1.02.8 **Secondary Backing:** High performance modular backing system. Manufacturer's representative to supply detailed information on performance properties.
 - 1.02.9 **Resistance to Delamination:** ASTM D3936 test method: minimum 10 lb. /inch, no delamination.
 - 1.02.10 **Tuft Bind:** ASTM D1335 test method. Must resist a minimum of 10 lbs. force, but prefer 20 lb. tuft bind, wet or dry.
 - 1.02.11 **Dimensional Stability:** Aachen method / ISO 2551. Maximum change +/- 0.20%
 - 1.02.12 **Flammability:**
 - Critical Radiant Flux:** ASTM E648 test method, blue down. Must meet NFPA Class I (>0.45 watts/cm²) and/or federal, state or local requirements.
 - Smoke Density:** ASTM E662 test method, rating to be less than 450 Dm in flaming mode (or to State Code).
 - Federal Flammability Standard:** CPSC FF 1-70 (Methenamine Pill test, ASTM D2859 test method). Must pass.
 - 1.02.13 **Colorfastness to Light:** AATCC TM 16 part 3 to 200 AFU; minimum rating of 3-4 using AATCC Gray Scale for Color Change.
 - 1.02.14 **Colorfastness to atmospheric contaminants:** AATCC TM 164 (resistance to fade from oxides of nitrogen) and AATCC TM 129 (resistance to fade from ozone) for 2 cycles; minimum rating of 3-4 using AATCC Gray Scale for Color Change.

- 1.02.15 **Colorfastness to crocking:** AATCC TM 165 minimum rating of 4 using the AATCC Chromatic Transference Scale.
- 1.02.16 **Stain Resistance:** AATCC TM 171 (HWE) for 2 cleanings to simulate removal of topical treatments by hot water extraction, followed by AATCC TM 175 Stain Resistance test; minimum rating of 8 using AATCC Red 40 Stain Scale.
- 1.02.17 **Soil Resistance:** DuraTech soil resistance treatment.
- 1.02.18 **Coloration/Patterning:** Minimum 5 color hues. Recommended: Hue values to be in medium to medium-dark range with random or complex patterning for optimum soil hiding capability.
- 1.02.19 **Texture Retention Rating:** Vettermann Drum test method, ASTM D5417, for 22,000 cycles with a minimum rating of a 3.0 [hexapod test method, ASTM D5252 for 12,000 cycles (8.4 lb. tumbler) with a minimum rating of a 3.5]. Rating using the appropriate Commercial Reference Scale for the construction per ASTM D7330 test method. Testing without underpad or brushing.
- 1.02.20 **Sustainability:** Must be certified at a minimum of Silver Level in accordance with NSF/ANSI 140 to Sustainability Assessment for Carpet.
- 1.02.21 **Moisture Barrier:** Moisture penetration by Impact Test. No penetration of backing after 10,000 impacts at 10 psi.
- 1.02.22 **Recycling:** Prefer all used carpet be recycled regardless of manufacturer, fiber type or construction. Reclamation Agency and Carpet Remover shall certify in writing that Used Carpet was removed and recycled.
- 1.03 **Adhesives:** to be quick release or adhesive free installations.
- 1.04 **Warranties:** Lifetime.
- 1.05 **Final Selection:** ERAU reserves the right to choose the appropriate product, based on weighted evaluation. Final selection of style / face weight dependent upon conditions and approval of UPCM and FM. (FM approval of final flooring selection to insure products, colors and styling are appropriate for given applications (i.e. type of traffic and soiling) and the ability to maintain in the given environment (e.g. hours of operation, etc.) within the acceptable scope of contract maintenance programs and budgets.
- 1.06 **Manufacturers to include:** Mannington, Masland, Milliken, Lees (a division of Mohawk), Tandus and Bentley, Bolyu, Shaw.
- 1.07 **For Housing areas ONLY,** use an Invista Lumina or DSDN product with bondlock or UPS backing. Final selection by UPCM and Facilities.
- 1.08 **Carpet on stairs** is highly discouraged. However, if carpeted, the lead edge must have slip resistant nose treads. For safety reasons, recommend full sized slip-resistant treads instead of carpet.
- 1.09 **Resilient Flooring-**
- 1.09.01 **Subfloor condition-** Insure subfloor is smooth to insure no telegraphing of subfloor irregularities through resilient flooring. This may require float work before installation. Insure all expansion joints are filled.
- 1.09.02 **LVT Specifications-** Final selection to be approved by Facilities.
- High Traffic Areas: (e.g. classroom building hallways, common dining areas, etc.)
 Classification ASTM F1700 Class I Type B,
 Total Thickness: 0.120" (3.0 mm)
 Wear Layer Thickness: N/A, Solid Vinyl Tile
 Warranty: 20-year Limited Commercial Wear Warranty
- Medium Traffic Areas: (e.g. classrooms)
 Classification ASTM F1700 Class III Type B,
 Total Thickness: 0.120" (3.0 mm)
 Wear Layer Thickness: Minimum 30 mil (0.76 mm)
 Warranty: 20-year Limited Commercial Wear Warranty

Light Traffic Areas: (e.g. Residential Living Areas, inside Apartments)
Classification ASTM F1700 Class III Type B,
Total Thickness: 0.120" (3.0 mm)
Wear Layer Thickness: Minimum 20 mil (0.5mm)
Finish: Polyurethane reinforced
Warranty: 10-year Limited Commercial Wear Warranty

- 1.09.03- LVT- Include first maintenance procedure.
- 1.09.04- LVT Suggested Manufacturers- Centiva, Mannington, J&J, Shaw and Bolyu.
- 1.09.05- VCT- in service area only such as mechanical rooms, janitorial closets, etc. NOT to be used in other areas. Installers to provide first maintenance to include strip, seal and finish top layer.
- 1.10 **High-Traffic Areas** - non-slip/ slip-resistant resilient tile where slip/fall incidents may prevail. Subfloor to be smooth (see section above). Coordinate prior to selection.
- 1.11 **Heavy cart traffic** – (i.e. mail rooms, sports hallways, etc.) use Quartz tile (e.g. UPO Floor Quartz Tile 24" X 24")
- 1.12 **Vending Areas** – due to the weight and the vibration of the units, use Black (if possible) UPO Quartz Tile, 24" X 24"..
- 1.13 **For high-traffic, dining areas or other "wet" areas** such as team dressing rooms, etc. – use Flotex Flooring or similar product.
- 1.14 **For Food Services areas** - use seamless safety flooring (e.g. Altro Maxis), flash coved and all seams welded. Final approval by FM and Food Service Contractor.
- 1.15 **Porcelain Floor Tile** - dark color grout only. See FM for final color selection.
- 1.16 **Surplus Materials** - contractor to provide the following on completion of the job:
 - A. Broadloom Carpet – provide 2% of total job. Carpet to be rolled on carpet tube and wrapped in plastic protection and side-marked with job name.
 - B. Carpet Tiles – provide 5% of total job. Tile to be boxed in original cartons and marked as to contents and job name.
 - C. Resilient Tiles – 1 carton for every 100 cartons ordered. Tile to be boxed in original carton.
 - D. Porcelain Materials – 1 carton for every 100 cartons used. Tile to be boxed as appropriate for storage.
 - E. Vinyl Cove Base- 10 ft for every 500 feet used, rolled and in original box.
- 1.17 **Installation** of all flooring materials – Use manufacturers recommended installation methods and adhesives ONLY. Installers must be certified by the manufacturer.
- 1.18 **Maintenance**- Manufacturer's instructions to be followed by cleaning contractor.

09900 - PAINT

1.01 PAINT PRODUCTS

- A. Interior - NO FLAT PAINT - Class A fire rated
 - 1. Hallways, classrooms- Satin Finish
 - 2. Offices- Satin or Eggshell
 - 3. Service Areas (Mechanical, custodial, closets, etc)- Semi-gloss
- B. On CONCRETE use:
 - 1. 1st Coat - 43-11 pigmented masonry sealer
 - 2. 2 Finish Coats – 22 or 60-line semi-gloss

1.02 On GYPSUM DRYWALL use:

- A. First Coat – 40-11 vinyl primer
- B. Two Finish Coats - tuff walls satin finish.

1.03 Exterior - New Concrete, Stucco & Masonry

- A. Base - 1 coat Southern #43-11 pigmented masonry sealer or 21-11 quick-dry primer/sealer to prevent alkali burn (depending on PH reading).

1.05 Finish - 2 coats 410-line (100%) acrylic house paint.

Note: If concrete block is used for the base, 20-11 block filler must be used; however, 20-11 block filler cannot be used on stucco or masonry.

1.05 Masonry Surfaces

- A. On any masonry, skim coated or plaster surface, surface must be dry and read in the green or acceptable range of an approved electronic moisture meter before the application of any coatings. The pH level must be in the range of 6–10; if the pH is higher than 10, special primers or preparations are necessary. A manufacturer or distributor representative must be contacted to test these surfaces with a moisture meter and a pH pencil before the application of any coatings.

1.06 Metal doors and frames:

- Polyurethane semi-gloss enamel. DTM. Minimum 2 coats over sanded and cleaned surface.

Note: Contact UPCM for epoxy systems and urethane systems

09950 – WALL COVERING – Class A fire rated

1.01 Wall coverings in wet kitchen areas to be Lasco fiberglass 4' X 8' wall panels; color to be coordinated with UPCM.

1.02 Ceramic Tile - 4" AFF on all walls in all Restrooms a minimum of the height of the dividers, or to the ceiling.

1.03 Wall Construction in all “wet” areas shall be constructed of cement board 4” above finished floor in lieu of drywall

1.04 No Wallpaper.

DIVISION 10 - SPECIALTIES

010100 - VISUAL DISPLAY BOARDS

1.01 All whiteboards to be ceramic finish.

1.02 All office and classroom doors to have small, consistent bulletin boards to preclude damage to painted surfaces and finished wooden doors. (Type and style to be determined by UPCM.)

1.03 Common areas to have adequate bulletin boards to post messages to preclude damage to painted walls. (Type and style to be determined by UPCM.)

1.04 Both whiteboards and bulletin boards to be installed by contractor.

010150 - TOILET COMPARTMENTS

1.01 In high student traffic Restrooms, use only Santana or Comtec solid plastic toilet partitions, with full-length continuous wall brackets.

1.02 In low traffic Restrooms, plastic, high pressure laminate toilet partitions are acceptable. Coordinate with UPCM.

010260 - WALL AND CORNER GUARDS

- 1.01 Built-in, low profile corner guard systems in all common areas (including hallways and high traffic areas) to preclude wall damage. OR, 16 gauge surface mounted paintable metal, no sharp edges, primed and painted to match wall color. Corner guards to be installed ABOVE cove base molding.
- 1.02 Chair rails in classroom.

010400 - IDENTIFYING DEVICES

- 1.01 Signs to be fabricated or furnished by ERAU; installed by contractor.

010500 – EMERGENCY DEVICES

- 1.01 Emergency Telephone (Blue Phone) to be installed in all new or reconfigured parking lots, or near new athletic facilities:
 - A. Spec: Talk-A-Phone Model. ETP-400 Telephone flush-mounted on handicapped accessible concrete foundation using included mounting hardware; includes Talk A Phone ETP-MT/R; Requires 120VAC. Pedestal unit is ETP-MT/R(Radius tower mount w/ Blue light/strobe 10" x 12" x 9"2" Emergency sign on pedestal in white)
 - B. Obtain price from and order through ERAU Safety Department
 - C. Uses one 6-pair PE-89 OSP Cable

010700 - EXTERIOR SHUTTERS

- 1.01 Consider the use of hurricane shutters.

010800 - TOILET & BATH ACCESSORIES

Please notify Facilities at least 30 days prior to the need for dispensers and ERAU will check with suppliers about the possibility of the University acquiring the appropriate dispenser(s) free of charge. There are no guarantees that the University will be able to make a "cost free" agreement with the supplier.

- 1.01 Paper Towel Dispensers: Surfaced mounted –Unisource U24081 Paper Towel Dispenser, lever action, roll – Smoke. (14 ¼" X 11" X 9 ¾") in ALL restrooms. NO ELECTRIC HAND DRYERS.
- 1.02 Waste Receptacles - Bobrick #277 Surface Mounted Stainless Steel in ALL restrooms. One per each paper towel dispenser, mounted directly underneath.
- 1.03 Liquid Soap Dispensers – Georgia Pacific Mechanical Soap Dispenser Model #53053, 1200 ML Translucent Smoke (5.6" w X 4.6" d X 10.7" h) units in ALL restrooms. Soap dispensers are NOT to be placed directly over faucets.
- 1.04 Hand Sanitizer Dispenser: Same as mechanical soap dispenser above.
- 1.05 Toilet Tissue Dispensers:
 - A. High Student Traffic Restrooms - Georgia Pacific Compact Quad coreless tissue dispenser #56744 Translucent Smoke (16.75" (w) X 6.9" (d) X 13.25" (h))
 - B. Remaining Restrooms - - use Georgia Pacific Compact Side-by-side Double Roll Coreless Tissue Dispenser #56784, Translucent smoke (10.12" (w) X 6.75 (d) X 7.12" (h)) dispenser.
- 1.06 Sanitary Napkin Disposal Units in Women's Rooms– Bobrick – Model #B-270. Surface mounted, type-304 stainless steel with all-welded construction, exposed surfaces shall have satin finish.
- 1.07 Bathroom Shelving – Quartet shelf rack, 24", black – 20402 provide blocking.
- 1.08 Baby Changing Stations – in both Men's and Women's Rooms: Prefer horizontal when space allows. Rubbermaid #117458. If vertical application is required, see UPCM.

DIVISION 11 - EQUIPMENT

011130 - AUDIO VISUAL EQUIPMENT

1.01 Overhead projectors and monitors provided by Owner. Screens specified by Owner; provided by contractors. All projectors, monitors and screens to be installed by Contractor

1.02 Overhead Projector and Screen Mounting Assumptions:

- A. All screens are 8 feet wide.
- B. All screens to be centered on the appropriate wall in the room.
- C. Projectors need to be placed 15 to 19 feet from the screen: Target area is defined as a space 6 inches wide and 15 to 19 feet from the center of the screen placement. The top of the projector lens must be at the same height as the top of the screen. Pipe needs to run from the ceiling to the desired projector location

1.03 Primary Mounting Solution and Structural Ceiling Plate:

- A. Peerless Unistrut Model CMJ 300 or CMJ 310 and Structural Ceiling Plate designed for attachment to standard Unistrut (1 5/8 x 5/8) or to a structural ceiling.
- B. Mounting Solution if Truss is Present: Peerless Model #ACC 550 Unistrut Adapter for Truss Ceiling. Designed for use with 1 5/8" x 1 5/8" 12 gauge Unistrut.
- C. Peerless Extension Column Connector Model #ACC 109. To be used with connected pipe segments, if required.
- D. Peerless Fixed Length Extension Column to connect Unistrut and structural ceiling plate.
- E. Peerless Vector Pro LCD Projector Mounts. IT to provide.
- F. Peerless Escutcheon Ring – Model #ACC 640. Enhances suspended ceiling installations by covering the extension column opening in the ceiling tile.

1.04 Consult Campus Safety Department when security hardware is required.

DIVISION 12 - FURNISHINGS

012500 - WINDOW COVERINGS (Curved PVC)

1.01 PVC - virgin vinyl with anti-static coating. Thickness no less than .050" and beaded edge .003". (Final color selection to be approved by UPCM)

1.02 Track - G71 style metal scissors or equal. (NO plastic scissors.)

1.03 Track Format - 1-15/16" width, 1-3/8" height wall average 0.050" and material of clear anodized aluminum alloy 6063-T5.

1.04 Carriers - G71 style - acetol rod & pinion carrier system.

1.05 Manufacturer's warranty

- A. 10 years on fixed parts (scissors, carrier, track, etc.).
- B. 1 year on all parts & labor.

012670 - RUGS AND MATS

1.01 All entrance matting (both exterior and interior) to be recessed mat systems. Coordinate with UPCM.

1.02 Interior matting systems to be, Lees, Tandus or Anderson. (Recessed to be direct glued to sub floor to minimize height difference.)

- A. High traffic areas to be minimum 12' long.
- B. Medium traffic areas to be 8'-10' long.
- C. Low traffic areas to be sized according to use, but no less than 6' long.

1.03 Exterior matting systems

- A. Areas exposed to direct rain to be “scrapper” mats ONLY (no absorbent materials).
- B. Areas with overhangs may include UV stable absorbent textiles (i.e., drying mats).

1.04 Consider Anderson Systems.

DIVISION 13 - SPECIAL CONSTRUCTION

013825 - SECURITY SYSTEMS

- 1.01 Not model or product specific. See Director of Safety for current systems in use.
- 1.02 All security systems should tie into the Safety Department Communication Center.
- 1.03 Emergency Phones – Talk-A-Phone current production model.
- 1.04 Hold Up/Panic Alarms - current UL certified equipment.

013835 - ELEVATOR MONITORING CONTROL SYSTEMS

- 1.01 Emergency phones - one button emergency phone compatible with current “Talk-A-Phone base station”.
- 1.02 Elevators specified must be non-proprietary.

013845 - ALARM DETECTION SYSTEMS

- 1.01 See Security Systems

013850 - ACCESS CONTROL SYSTEMS

- 1.01 Honeywell ProWatch System
 - 1.01.2 Honeywell PW-6000 Intelligent Controller; PW6K1IC
 - 1.01.3 Honeywell PW-Series Remote Enclosure; PW5K1ENC3101.4 PW-Series dual reader module; PW6K1R2
 - 1.01.5 HID RM-40 Readers or HID R-15 Mullion Reader
 - 1.01.6 Altronix AL600ULACM power supply
- 1.02 Schlage AD-400 Wireless Locks
 - 1.02.1 AD400CY70 MI RHO 626 JD MULTI TECH i CLASS RDR;
 - 1.02.2 RS-485 Interface Module; PIM 400-485102.3 Wireless AD-400 Communication Kit; SCHLAGE COM400L
 - 1.02.4 Omni-directional antenna; Lenel ANT400 REM Ceiling
- 1.03 All Electronic Hardware needs to run on 24VDC
 - 1.03.1 Von Duprin Electronic Strike In Frame Mount, Part# 6211-32d-24VDC-FSE
 - 1.03.2 Von Duprin Electronic Strike Surface Mount, Part # 6112-32D-23 VDC-FSE
 - 1.03.3 HES (Assa Abloy) 9600 Series Electric Strike, Part # 9600-12/24-630
 - 1.03.4 Dortonics W5286+P23DAXE1 or pneumatic equivalent.
 - 1.03.5 Schlage 490P+ Series Mag/Locks or BEA 10MAGLOCK 1 ULDS
 - 1.03.6 Windy City Wire Cable, Part # 4461030-s500
 - 1.03.7 Bosch DS150i Request to Exit Detector or Honeywell IS10WH
 - 1.03.8 Sentrol 1078 Magnetic Contact; Sentrol 1078C-G

1.05 Wireless (Wifi) Cylindrical door locks

- 105.1 SCHLAGE NDE Locks; NDE80J RHO 626 13-047 10-131

013900 - FIRE SUPPRESSION AND SUPERVISORY SYSTEMS

- 1.01 Notifier Fire Alarm Panels Models 320, 640, 2020 and 3030 currently in use. With battery backup system.
- 1.02 Notifier Network adapter module. Onyxworks current operating (control) system.
- 1.03 2-Strand of multi-mode fiber optics cable
- 1.04 Addressable devices compatible with Notifier Fire Alarm system, heat and smoke detectors, pull stations, duct detectors and other associated equipment compatible with network.
- 1.05 Addressable analog photoelectric smoke detectors and bases
- 1.06 ADA horns and strobes
- 1.07 Extinguishers – ANSUL 5lb and 10lb ABC with a minimum rating of 2A:10B:C Other specific extinguishers may be needed depending upon the location and specific fire hazard.
- 1.07.1 Fire Extinguishers are to be located and mounted in accordance with section 906 of the Florida Building Code
- 1.08 Use schedule 40, CPVC or any other pipe as required by Manufacturer.
- 1.09 Clean Agent Systems – Shall be installed and tested in accordance with Section 904.10 of the Florida Building Code and NFPA 2001
- 1.10 Kitchen Hood Systems
- 1.11 Automatic Fire Sprinklers - Shall be installed accordance with NFPA 13 and maintained accordance with NFPA 25
- 1.12 Fire Pumps - Shall be installed accordance with NFPA 20

DIVISION 14 - ELEVATORS / CONVEYING SYSTEMS

014000 – ELEVATORS

- 1.01 All Elevators designs and elevator modernizations shall be in accordance the following codes and guidelines:
 - ANSI A17.1 National Elevator Code
 - ADA Guidelines
 - Florida Statutes
- 1.02 In addition to the above requirements, all ERAU elevator designs, construction, and modernizations shall adhere to the following without exception:
 - 1.02.1 The following providers are pre-approved ERAU suppliers (subject to these guidelines):
 - Mowrey Elevator
 - Thyssen Krupp Elevator
 - Otis Elevator
 - Kone Elevator
 - Schindler Elevator
- 1.03 Low Rise Elevators:
 - 1.03.1 Hydraulic elevators shall be used with direct acting hydraulic plunger(s). The plunger(s) shall be either standard under the car arrangement or twin jack design.
 - 1.03.2 Oil viscosity control shall be included in each elevator and modernizations.
 - 1.03.3 Two gate valves shall be installed in the hydraulic line. One in the pit and one adjacent to the hydraulic valve in the machine room.
 - 1.03.4 All new elevators or elevator modernizations shall be equipped with a battery back-up alarm bell/audible device in each cab.
 - 1.03.5 All new elevators shall be constructed with a machine room. “Machine- Room- Less” (Hydraulic, Traction, etc.) elevators are prohibited.

Note: Inverted or telescopic pistons or cantilever designs are prohibited.

1.04 High Rise Elevators:

- 1.04.1 Overhead geared traction elevators shall be used.
- 1.04.2 Traditional hoist cables shall be used.
- 1.04.3 AC Vector regenerative drives shall be used.

1.05 Control Systems:

- 1.05.1 Modernization and new elevators shall be installed with non-proprietary control systems.
- 1.05.2 Approved control manufacturers are limited to:
 - Smart Rise Engineering
 - Motion Control Engineering
 - Elevator Controls Corporation
- 1.05.3 Contractor shall provide ERAU all special tools, programs and back-up software, and passwords required for maintenance.
- 1.05.4 Contractor shall provide ERAU complete documentation including wiring diagrams and manuals.
- 1.05.5 Provided support to DCPS Annual Service Elevator Contractor.

1.06 Definition for non-proprietary:

- Free technical support will be available at no charge to ERAU Annual Service Elevator contractors.
- Complete documentation including full wiring diagrams and technical manuals will be provided to the owners.
- Diagnostic and programming display will be incorporated in the control panel.

Other:

All new elevators shall be constructed with a machine room. "Machine- Room- Less" (Hydraulic or Traction) elevators are prohibited.

1.07 Machine Room:

- 1.07.1 Provide GFCI power receptacle.
- 1.07.2 Self closing door.
- 1.07.3 Provide fire extinguisher.
- 1.07.4 Lighting shall produce an average of 30 FC. Lighting fixtures shall be 4' long, T-8 fluorescent lamps.
- 1.07.5 Fused disconnect switch on dedicated 20 Amp, 120V circuit for elevator cab lights and control.
- 1.07.6 Fused disconnect switch for elevator power. Fuses shall be sized for values as recommended by elevator manufacturer. For fully sprinkled building, provide shutdown of power to the elevator prior to application of water in elevator machine room or hoistway. Provide heat detection system with sufficient sensitivity that operate prior to the activation of the sprinklers.
- 1.07.7 Power shutdown may be accomplished by using Bussmann power module switch in lieu of fused disconnect switch.
- 1.07.8 For elevator equipment room with exterior door, provide wall mounted weatherproof light outside room, photo cell control.
- 1.07.9 Provide connection for telephone line. (2) Category 6 cables meeting DCPS Technology Standards.
- 1.07.10 Provide temperature and humidity control. Maintain humidity and temperature in the range specified by elevator equipment manufacture.
- 1.07.11 Elevator Recall: Hoist heat detectors, machine room smoke detector, elevator lobby smoke detector. If elevator lobby condition is not suitable for smoke detector, provide heat detector.

1.08 Elevator Pit:

- 1.08.1 Provide sump pit and electric submersible sump pump, with oil separator (or alarms) in elevator pit meeting ASME A17.1. Sump Pit shall be covered. The cover shall be secured and level with pit floor. Provide a dedicated power circuit to supply power to pump.
- 1.08.2 Lighting in pit shall provide an illumination of not less than 10 fc at the pit floor. Provide 4' long T8 fluorescent fixtures, vapor tight. Provide light switch near elevator pit ladder.
- 1.08.3 Provide 20 Amp GFCI duplex receptacle "dedicated circuit" in elevator pit.

1.09 Use only Non Proprietary Controller

DIVISION 15 - MECHANICAL

015400 - PLUMBING

- 1.01 Floor mounted toilets only. No wall hung toilets.
- 1.02 Use Kohler, American Standard or Pro Flo.
- 1.03 Faucets on lavatories to be Moen 4" center Model #8413 only.
- 1.04 MOEN M62370 for ADA M8342.
- 1.05 Grid strainers on all lavatories.
- 1.06 Flush valves to be Sloan or Zurn 6000 Series.
- 1.07 B&G or Grundfos water circulators. Bronze only.
- 1.08 Elkay water fountains with manual (hand control capability.)
- 1.09 Rheem, A O Smith or State water heaters.
- 1.10 Josam or Zurn drains
- 1.11 All wall hung urinals and lavatories require proper carrier or mounting system.
- 1.12 No "waterless" urinals.
- 1.13 Provide isolation full port ball valves for each room with water service. Valves should be readily accessible at ground level with locking access panel.
- 1.14 All concealed valves, trap primers, air chambers and other mechanical devices require stainless steel, hinged access panels located in an accessible area.
- 1.15 Floor grade to all shower and floor drains must be sufficient to allow drainage from entire floor area to the drain.
- 1.16 Drainage piping in labs where chemicals are used should be caustic or acid resistant.
- 1.17 All copper water lines to be type L copper only.
- 1.18 No PVC piping to be used for domestic water inside any building. Copper only. With the exception of supply tubes from the stop to fixture.
- 1.19 Lead free solder only.
- 1.20 All trap primers to have separate shut-off valve for repairs.
- 1.21 P-traps to be installed with trap adapters only. Do not solder in the P-traps.
- 1.22 Install two backflows in parallel for the domestic water supply to building to keep the water on to test and repair the backflow assemblies.
- 1.23 All backflow devices for domestic water for ¾"-2" use Wilkins 975XL. For 2 ½ and larger use Wilkins 375ASTY.
- 1.24 No cross tees on lavatories and urinal drains. Single stack tee only.
- 1.25 Isolation ball valve for all hose bibs.

- 1.26 All cleanouts should be accessible and located in a corridor or other area that does not disrupt classes. Do not locate them in classrooms or offices. There should also be enough room to operate a drain cleaner if needed.
- 1.27 All hot water circulating pumps are to have a shut-off switch at the pump location.
- 1.28 All water heaters are to have a disconnect at the water heater location.

015500 - HVAC

Section #1 STANDARDIZED EQUIPMENT

- 1.01 Window/wall a/c and heating units-slide out chassis only. Prefer Amana PTAC units with seacoast protection.
- 1.02 Adjustable frequency drives and soft starts-ABB with bypass.
- 1.03 Ice makers-Hoshizaki.
- 1.04 Lochinvar natural gas boilers (condensing high-efficiency).
- 1.05 Mitsubishi ductless mini splits.
- 1.06 Liebart computer room air conditioners.
- 1.07 Desert Aire commercial dehumidifiers.
- 1.08 Hanging wall a/c and heating units-Bard.
- 1.09 Air compressors - Ingersoll-Rand

Section #2 - MINIMUM STANDARDS-DETAILS

- 2.01 HVAC systems-copper tube Freon coils.
- 2.02 Cooling towers –all stainless steel construction-minimum 304 grade. Motor out of air stream. Include all access platforms for service.
- 2.03 All chilled and hot water piping to accessories 2 inches and smaller to be brass or copper.
- 2.04 Outside air handlers-Double wall stainless steel interior and drain pan. With copper tube and copper fins or Luvata electrofin e-coat (other coatings must be approved by ERAU HVAC Department).
- 2.05 Standard air handlers-double wall stainless steel interior and drain pans.
- 2.06 Chilled and hot water control valve actuators- have manual control option installed when possible.
- 2.07 No French drains for condensate lines. Run separate line to retention area when possible.
- 2.08 Air conditioning systems should maintain building for comfort cooling no higher than 60% relative humidity and 74 degrees. Computer rooms should be no higher than 50% relative humidity and 70 degrees.
- 2.09 Install UV Lights air handlers to prevent mold.
- 2.10 All equipment installed shall have a parts and service center within a 90 mile radius of Daytona Beach Florida.
- 2.11 No fiberglass insulation on chilled water piping or equipment use foam glass.
- 2.12 Use textured aluminum jacket on all exterior pipe/equipment insulation and plastic jacket on interior piping.
- 2.13 Access panels to be adequate size to perform work on equipment.
- 2.14 All pumps and motors should have provisions for lubrication.
- 2.15 All heating and chilled water valves –pressure independent.
- 2.16 All exterior hardware and equipment- Nuts, bolts, pipe hangers, and misc. hot dipped galvanized, stainless, or aluminum.

- 2.17 When possible on air cooled condensers use copper fin and copper tube or factory coating to prevent corrosion.
- 2.18 Split systems- air cooled heat pumps minimum 5 year parts and 1 year labor minimum warranty.
- 2.19 All equipment should be installed with factory service recommendation clearances and shall be installed in an area that will provide reasonable and safe access without the need for special equipment.
- 2.20 All underground HVAC piping shall be at least three feet deep and have means of tracing. Minimum of 12 gauge copper wire with jacket exposed and marked at ends. Pipe materials shall be consistent to pipe that is currently installed.
- 2.21 Use mechanical dehumidifiers for primary dehumidification. No heat pipes or heat wheels.

Section #3 – ENERGY MANAGEMENT

- 3.01 Install high efficiency equipment when possible.
- 3.02 All HVAC energy management controls to be Bacnet and software accessible through existing controls system. Coordinate with Facilities Management Department.
- 3.03 Connect all new buildings to energy management system.
- 3.04 Investigate Florida Power and Light rebates on all new equipment installed (HVAC, lighting, water heaters, roof insulation, green equipment, etc.)

Section #4 – CHILLED WATER LOOP

- 4.01 Connect new buildings and renovations of existing buildings to chilled water loop if possible.

Section #5 – DESIGN CONSULTATION

- 5.01 Consult with Facilities Management HVAC and Energy Management departments during design phase of new construction and renovations.

Section #6 – DOCUMENTS

- 6.01 Provide mechanical as built drawings and operation and maintenance manuals at the completion of each new building, renovation of existing building and new HVAC system installed.

DIVISION 16 - ELECTRICAL & COMMUNICATION

016000 – ELECTRICAL

PART 1 NOTE: Contact UPCM for input prior to, and during the design of, all electrical systems. Confirm any changes with UPCM.

- 1.01 Copper wire only, no aluminum. Type THHN.
- 1.02 Use LED type fixtures per architects or electrical engineers requirements.
- 1.03 Use parabolic diffusers/lenses or indirect lighting in heavy to moderate computer areas; lens must be approved by UPCM.

- 1.04 Square "D," GE, Siemens or ITE switch gear ONLY.
- 1.05 Sta-Rite sprinkler pumps.
- 1.06 Fire alarm system – Notifier has to be used to allow integration with University Fire Alarm Network. The system needs two strand multi-mode fiber optics cables for connections to network. Consult with Life Safety System Office, Security Department.
- 1.07 Fire suppression systems – Wet pipe sprinkler systems are used in ordinary hazard areas. Areas requiring special protection (simulators, data rooms, computer server rooms) Suppression agents such as FM 200, Cleanguard DuPont FE036, will be used. High Hazard areas such as Flight Maintenance Hangar use wet foam suppression system. Consult with Safety Department and UPCM prior to design.
- 1.08 Access control/security system – ATT/Blackboard card access system. Ingersoll Rand Schlage AD Series. AD 200 and 400 series access controls. See System Manager Eagle Card Office and Life Safety systems Officer, Security Department.
- 1.09 Emergency lights – 120-277v or Lithonia E42 LED M12 with 1.5 hr illumination capability.
- 1.10 Exit lights - 120-277 volt, ONLY. Energie-Lite Preceptor L.E.D. Series – LEDPXN, Face No. 1, red, top mount or Lithonia LQM SW3R 120/277v ELN.
- 1.11 Type of street lighting, poles etc. varies. Refer to 1.30. No exterior junction boxes mounted on light poles. Consult with UPCM. LED heads preferred.
- 1.12 Underground Boxes- Quazite or Concrete
- 1.13 Provide spare conduit or stub-outs from interior building power and lighting panels to exterior of building for future power and lighting requirements.
- 1.14 1 quad receptacle for each workstation/desk.
- 1.15 Receptacle plates, including switches, blanks, data, etc. - White ONLY,
- 1.16 Emergency power – emergency power generator desirable. Natural gas fuel.
- 1.17 Provide Sleeves under walks and roadways for future power and lighting additions.
- 1.18 Limited use of motion sensors; if used, provide override switching and coordinate use with UPCM. No motion sensors in bathrooms.
- 1.19 If under floor duct management systems are used in new construction or remodeling, ensure all surface dog boxes, monuments, or lush service fittings are metal (brass, aluminum, or bronze.) No Plastic.
- 1.20 No bollard fixtures.
- 1.21 No plastic louvers or exposed glass/plastic covers. All louvers are to be metal. Use "Lithonia-KBD8 series" with cast aluminum Louvers and dome tops, or equal. Consult with UPCM.
- 1.22 Exterior above ground boxes (junction boxes, etc.) to be PVC, stainless steel or fiberglass ONLY. No regular steel.
- 1.23 Conduit sleeves for data and phone outlets to be ¾ inch minimum.
- 1.24 Conduit home runs for all panels to be ¾ inch minimum.
- 1.25 Lightning Protection Systems shall be installed on structures by experienced installers in compliance with provisions of code for Lightning Protection Systems as adopted by the National Fire Protection Association and Lightning Protection Institute. Installers shall be LPI (Lightning Protection Institute) certified Mater and Journeyman in accordance with LPI Standards or of equal qualifications as approved by Engineer. A LPI label for the system shall be required.
- 1.26 Material shall comply in weight, size and composition with the requirements of the Lightning Protection Institute and the National Fire Protection Code relating to this type of installation, and shall be LPI Labeled. All materials, where available by any one manufacturer, shall be cast. All bolts shall have hexagonal heads; no screw heads will be permitted.
- 1.27 Provide override switching for all photo cell circuits for all exterior/interior or parking lot lighting.

1.28 Wire all buildings for satellite/cable TV (satellite for campus, Brighthouse for Dorms.)

1.29 Enclose all exterior switchgear/panels, etc. in weatherproof stainless steel cabinets. (i.e. athletic fields e.g. Crotty Tennis Court Gear)

1.30 No fiberglass poles. Concrete, steel or aluminum only.

016700 – TELECOMMUNICATIONS

1.01 See 10500 – Emergency Devices for Blue Phone specs.

1.02 See Exhibit II: Structured Wiring Specifications.

016740 – NETWORK CABLING

1.01 See Exhibit II: Structured Wiring Specifications.

END OF DOCUMENT