



Cleveland State University

Office of the University Architect

A/E DESIGN GUIDELINES

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END OF SECTION

DIVISION 00 – PROCUREMENT AND CONTRACTING

00 21 00 BIDDING

- 002100.1 Architect/Engineer (A/E) shall modify and prepare the Solicitation – Notice to Bidders (NTB) and advertisement from Office of the University Architect (OUA) template documents. A/E shall confirm advertising and bid dates with OUA to insure compliance with Ohio Revised Code (ORC) and Ohio Facilities Construction Commission (OFCC) requirements, and coordinate with OUA schedules. Dates for the first advertisement must coincide with the date documents are ready to be purchased by bidders.
- 002100.2 The NTB and advertisement must contain the date, time, and place of the pre-bid meeting. This meeting will be chaired by the A/E, who will produce minutes of the meeting and issue them as Addendum #1 within 3 working days of the pre-bid meeting. Questions, answers, and a copy of the sign-in sheet from the meeting shall be included in the addendum.
- 002100.3 A/E shall use the blueprinting company designated by OUA. This company shall provide printing for plan approval submission (if not submitted electronically), copies of bid sets for OUA and A/E, addenda, and conformed drawings for the construction site and prime contractors. They shall also provide delivery of the above. The expenses of these documents shall be paid directly to the printing company by OUA.
- 002100.4 Contractors must purchase the complete set of bid documents. Unsuccessful bidders' documents are not to be sent to OUA, and no refunds will be given.
- 002100.5 A/E shall review the number of conformed drawings that will be provided without cost to each of the prime contracts with OUA. These quantities shall be documented in the owner's requirements section of the specifications.
- 002100.6 A/E shall review all addenda with OUA before release to bidders. All addenda shall be printed and sent to contractors by OUA's designated blueprint company, who will provide confirmations. The number of addenda, volume of printing, and delivery expenses shall be kept to a minimum to contain costs. Letter format and partial plans shall be utilized whenever possible to allow for fax and/or email delivery. Express/overnight delivery shall only be ordered after OUA has approved it; the cost of delivery may be assigned to the A/E if prior approval has not been granted.
- 002100.7 A/E must consult with OUA regarding the issue of last-minute addenda. OUA reserves the right to determine if the bid date will be delayed or to assess and assume the risk of not issuing the addenda. A bid extension is mandatory per OFCC requirements if an addendum is issued within 72 hours of the bid time (excluding Saturdays, Sundays, and legal holidays). Bid extension is required to be a minimum of 7 days.
- 002100.8 A representative from the A/E shall be present at the bid opening. OUA shall prepare the bid form and read the bids. A/E will be responsible for recording the bids. All bids are to be received at CSU's Purchasing Services Department, Parker Hannifin Hall, 2258 Euclid Avenue, Room PH 118.

00 31 43 PERMIT APPLICATION

- 003143.1 A/E shall prepare a draft of the application for plan approval and statement of special inspections and review the information with OUA before submitting the drawings and specifications for plan

approval.

003143.2 Payment of fees for the plan approval shall be made by OUA directly to industrial compliance via credit card unless otherwise stipulated in the A/E scope of services. A/E shall make the electronic submittal and forward the electronic invoice, including the permit and invoices numbers required to allow OUA PM to make the electronic payment.

003143.3 A/E shall schedule the submittal for plan approval so that partial plan approval is completed prior to releasing the project documents to bidders.

00 41 00 BID FORM

004100.1 A/E shall modify the bid form and coordinate it with other contract documents to insure that all contract work is included in the bids, and that the scope of work for each contract is clear and nothing is duplicated or omitted.

004100.2 A/E shall include allowances on the bid form by contract so that those amounts can be added to the total bid amount.

004100.3 A/E shall include alternates on the bid form by contract so that those amounts can be added to the total bid amount if selected and approved by the University.

004100.4 A/E shall include unit prices on the bid form by contract and shall include the estimated quantities so that the unit prices can be extended and those amounts can be added to the total bid amount.

00 51 00 BID AWARD

005100.1 A pre-award meeting will be scheduled by OUA for prime contract. A/E and OUA will meet with apparent low bidders' representatives to validate that the bid includes all of the contract work. Procedures for bid evaluation and award, as delineated in the NTB, shall be followed. A/E shall be responsible for conducting the technical scope review with the apparent low bidder, OUA PM shall be responsible for conducting contractual and University policy compliance review.

005100.2 When successful bidders have been selected, A/E shall immediately produce a letter of recommendation for bid award, addressed and delivered to OUA.

END OF SECTION

DIVISION 01 – GENERAL REQUIREMENTS

01 00 00 PERFORMANCE

010000.1 All work is subject to the General Conditions and Specifications as published by the State of Ohio and “Owner’s Requirements” as written by the A/E and approved by OUA. A/E’s office standards do not justify deviation from the performance required by this Outline Specification Guide. A/E may submit requests to OUA for deviation from standards. Any deviations must be approved in writing by the OUA PM.

01 10 00 SUMMARY OF THE WORK

011000.1 A specification section entitled “Summary of the Work” shall be included in the project manual which provides a general description of all work, including exterior work, is required for each trade. Although brief, this description must be complete enough to indicate the full scope of work for each contract. The proposed use for the building should be explained. Concurrent occupancy of adjacent buildings, or parts of a renovated building should be noted. Specific details and requirements for the project should be noted here. The overall construction schedule and milestone dates should be specified here. Individual specifications’ work scope must be coordinated with this overall summary.

011000.2 If additional work outside the scope of the prime contracts will be performed concurrently with the project, by other contractors or the Owner, advise the contractors that coordination and cooperation with this work will be required.

011000.3 University furnished items and any related work required of the prime contractors must be identified. Items to be salvaged or removed from existing structures by the Owner, and items to be salvaged by the Contractor then turned over to the Owner must be identified on the drawings. OUA will advise A/E regarding how/where contractor is to deliver salvaged materials.

011000.4 Project conditions such as occupation of buildings, limited scheduling for utility connections, and special events of the University must be defined.

01 21 00 ALLOWANCES

012100.1 The general provisions of the contract apply to all work specified under allowances.

012100.2 The net cost, including applicable taxes, of all materials and equipment delivered and unloaded at the project site shall be included in the allowance.

012100.3 The contractor’s handling costs on the site, labor, installation, overhead, profit, and other expenses contemplated for the allowance shall be included in the contract sum, not the allowance.

01 22 00 UNIT PRICES

012200.1 The general provisions of the contract apply to all work specified under Unit Prices.

012200.2 Unit prices shall be employed when exact quantities cannot be determined from the drawings due to existing or hidden conditions, where appropriate for phased work, or as directed by OUA.

- 012200.3 A/E must provide estimated quantities for all unit prices so that the unit prices can be extended and included in the total cost of the bid, and to insure that funds are set aside for the work.
- 012200.4 Unit prices will be for both added and deducted quantities. Multiple levels of a unit prices should be included to allow for quantity based pricing if large variations in the total quantity, phasing, or change of scope are anticipated.

01 23 00 ALTERNATES

- 012300.1 A limited number of alternates may be used to insure that the base bid will be within the construction cost estimate and to fully utilize project funds.
- 012300.2 Deduct alternates are prohibited unless special project conditions exist, and must be approved by OUA.

01 31 00 PROJECT COORDINATION

- 013100.1 A pre-construction meeting will be scheduled by OUA after the award of contract. Successful bidder and the A/E will attend. A/E will record the meeting and distribute minutes within 3 working days of the meeting.
- 013100.2 Weekly progress meetings will be scheduled by A/E and OUA with the General Contractor (GC) and major subcontractors. The time and day of the meeting will be established by A/E and OUA in cooperation with the GC. A/E will record the meetings and distribute minutes within 3 working days of the meeting. The frequency of this meeting may be decreased or increased as project conditions warrant. Contractor's authorized representatives are required to attend these meetings. If the project is Construction Manager at Risk (CMR) then the scheduling of the meetings and all meeting minutes may be the responsibility of the CMR depending on the scope of services as defined in the A/E's and/or CMR's contract scope of services.
- 013100.3 Weekly coordination meetings will be scheduled by the GC with major subcontractors. The time and day of the meeting will be established by the GC/CRM. The GC/CRM will record the meetings and distribute minutes within 3 working days of the meeting.

01 31 70 SPECIAL PROJECT CONDITIONS

- 013170.1 Wage Rate Requirements:
- A. The Contractor shall pay the prevailing wage rates of the Project locality, as issued by the Ohio Department of Commerce, Wage and Hour Bureau to laborers and mechanics performing work on the Project. The prevailing wage rates are available at the Ohio Department of Commerce's web site: <http://com.state.oh.us/>
 - B. The Contractor shall comply with the provisions, duties, obligations, and is subject to the remedies and penalties of Ohio Revised Code ("ORC") Chapter 4115.
 - C. The Contractor shall submit all payroll reports in compliance with the requirements of ORC Chapter 4115 for all of the employees of the Contractor and of the Contractor's Subcontractors.
 - D. By executing a Contract, the Contractor certifies that it based its Bid upon the prevailing rates of wages as ascertained by the Ohio Department of Commerce, Wage and Hour Bureau for the Project as provided in ORC Sections 4115.03 through 4115.14.
 - E. A/E shall be responsible for obtaining the wage rates along with any updates from the

Ohio Department of Commerce, Wage and Hour Bureau's website at: <http://198.234.41.198/w3/webwh.nsf/wrlogin/?openform> Registration and login may be required. A/E shall obtain wage rates for all classifications for Cuyahoga County and they shall be included in the specifications.

013170.2 Building / Room Access: Contractors working on site and requiring building, freight elevator or room access shall be required to submit a "Keybox Access Request Form" (see Appendix F). The form must be submitted a minimum of five (5) days prior to the start of any work activity requiring access to any of the above areas. Refer to Appendix E "Keybox Access Rules & Regulations".

013170.3 Parking: Onsite parking, staging, dumpster and storage of materials is limited and must be approved by the University. All CSU and/or City of Cleveland parking requirements and restrictions must be followed during the duration of the project. Visit <http://www.csuohio.edu/parking> for additional parking information.

A. CSU Parking & Transportation Services offers the following options for contractors and construction workers who choose to park on campus.

1. Purchase a contractor hangtag. This hangtag will have an expiration date based on the needs of the patron and will be accepted for parking in any CSU parking facility except at meters or in Lot 22, Prospect or South Garage. Contractor hangtags cost approximately \$50.00 per week and the full fee is charged for any partial week unless the purchase is made after 12:00 noon on a Friday.
2. Purchase scratch off hangtags which permit access to parking on a per-day basis. Contractor Scratch off Hangtags are approximately \$8.00 each and are good for only one day of parking.

B. Contractor hangtags or scratch off hangtags must be purchased from the office of Parking & Transportation Services located in Euclid Commons at the corner of East 24th and Euclid. The office is open Monday through Friday 8 AM to 5 PM.

C. All vehicles parked outside a fenced staging area on university property must display a valid CSU Parking hangtag permit unless parked at a meter.

D. Loading and unloading is exactly as stated. Thirty (30) minutes is the maximum time allowed for loading and unloading. Special requests regarding loading/unloading must be authorized by Parking & Transportation Services. Failure to comply may result in a citation and/or towing.

E. Contractors who must park in any prohibited location in order to discharge their duties while on campus may request an official dashboard pass when registering for the parking hangtag. The request must be accompanied by details regarding the specific nature of their duties. Dashboard passes must be displayed in tandem with a prepaid hangtag or scratch-off and are intended for **short-term use** related to the defined duties – **not for all day parking**.

F. CSU Contractors are subject to CSU Parking Rules and Regulations. Violations of these rules are subject to issuance of parking citations and/or vehicle impound. Persons cited for parking infractions have the right to appeal by following the written instructions on the parking citation.

G. Contractors and construction workers may also find parking options within the CSU neighborhood. Information about these options can be found on the parking website at <http://www.csuohio.edu/parking>

013170.4 Rules of the Workplace:

A. The Contractor shall be responsible for cleaning and removal of all construction and packaging material and debris.

B. Use of CSU dumpsters is not allowed.

- C. At a minimum, the Contractor is responsible for the professional behavior of its personnel and must adhere to the following rules. No eating, drinking, or storing food or beverage in any work area unless so designated. No radios or other unnecessary noise on the premises.

013170.5 Cleveland State University has a tobacco free campus policy.

A. Policy Statement:

1. Cleveland state university has a vital interest in maintaining a safe, healthy and respectful learning and working environment for members of the university community. The university seeks to set a model for a tobacco free workplace and promotion of healthy lifestyles now and in the future. Research findings show that use of tobacco products in general constitutes a significant health hazard.
2. Tobacco use, including the sale, advertising, sampling and distribution of tobacco products and tobacco related merchandise is prohibited in all university facilities, on all university grounds, whether leased or owned, and at university-sponsored events, regardless of the venue.
3. Tobacco industry and related company sponsorship of athletic events and athletes is prohibited.

B. Definitions:

1. "Tobacco " - Tobacco is defined as all tobacco-derived or containing products, including, but not limited to, cigarettes, (clove, bidis, kreteks), e-cigarettes, cigars and cigarillos, hookah-smoked products, and oral tobacco (spit and spitless, smokeless, chew, snuff, snus).
2. "University facilities" - University facilities are defined as any facility or property that is owned, leased, used or occupied by the university, including but not limited to: classrooms, restrooms, auditoriums, offices, lounges, dining areas, recreational facilities, parking lots, parking garages, rooftops, storage areas, service shops, garages, walkways, enclosed bridges, thoroughfares, facilities operations areas, athletic facilities, extension locations, all university vehicles (owned or leased), and personally owned or rented vehicles when used to transport university faculty, staff or students on any school-related business, academic or student life activities.
3. "Members of the university community" are defined as anyone on campus including but not limited to faculty, staff, students, visitors, consultants, vendors, volunteers and contractor employees.

C. Exceptions and Limitations:

1. Tobacco use may be permitted for controlled research with prior approval of the provost, and in the case of smoking, the review and recommendation of the department of environmental safety and health.
2. Tobacco use may be permitted for educational, clinical, or religious ceremonial purposes with prior approval of the Provost and in the case of smoking, the review and recommendation of the department of environmental safety and health.
3. Tobacco use is permitted on primary public traffic and pedestrian thoroughfares.
4. Tobacco use may be permitted on properties the university owns, but leases or otherwise conveys an interest (e.g. an easement) to a non-university party for non-university purposes, according to the provisions of the applicable lease or agreement.
5. Tobacco use in facilities that are not owned, leased, or controlled by the university, are subject to the non-tobacco policies applicable to those particular facilities, and are exempt from this regulation.

D. Compliance and Enforcement:

1. The responsibility for the enforcement and communication of this policy depends on the thoughtfulness, consideration and cooperation of all members of the university community.
 2. University administration will develop administrative guidelines and procedures as necessary to implement this policy by the beginning of the fall semester 2013, including provisions for notification, communications, training, signage, complaint procedures, disciplinary consequences, and enforcement.
- E. Tobacco Usage Cessation: The University shall make available to faculty, staff and students comprehensive tobacco usage cessation programs including no cost or low cost counseling and medication based solutions

013170.6 Protection of Property: The Contractor shall be responsible for maintaining every reasonable level of care to assure that the University premises and property shall be protected from any damage, accident or otherwise, while the contractor is entrusted with such property or on such premises. Contractor access to University property for any project activity is subject to prior University approval.

A. At minimum the Contractor shall:

1. Not disengage or dismantle anything permanently attached to any part of the building or grounds without prior written consent of the University as conveyed by the PM.
2. Not disconnect or connect any utilities unless otherwise directed by the Scope of Work or the PM. Notification of disruption must be given in writing to the PM 48 hours prior to work.
3. Remove or discard any piece of equipment without prior approval from the PM.
4. Use protective material to protect areas not affected by the work from damage.

B. If due to any act on the part of the Contractor, its agents or employees, any property that is owned or controlled by Cleveland State University is lost or damaged during the performance of these requirements, the Contractor shall be responsible to the University for such loss or damage. The University, at its option, may in lieu of payment therefore, require the Contractor to repair/replace at the Contractor's expense, all property lost or damaged.

013170.7 Security: The Contractor shall take all reasonable precautions necessary to insure CSU Property is secured daily. The Contractor shall institute procedures to minimize the risk of loss, damage, theft, or any other condition detrimental to University property while work is under way. All interior and exterior doors that are designated as secure or restricted access areas shall remain locked at all times. Contractors are not to prop open any doors. Contractors who fail to comply may be removed from campus.

013170.8 Safety: Refer to Section 01 35 23 Owner Safety Requirements.

01 33 00 SUBMITTALS

013300.1 Construction progress schedule is the ultimate responsibility of the GC/CMR. The schedule must be prepared according to the specifications regarding content, software, format, project milestones, phases, and completion/occupancy dates. A preliminary schedule will be presented to the other prime contractors for their input. The GC/CMR will adjust his schedule and present it at a following meeting. After approval by A/E, the schedule will be submitted to OUA for approval.

013300.2 Project inspection reports shall be performed in the OAKS system on all capially funded projects

and as otherwise directed. A/E shall prepare this report and submit to OUA twice monthly. The reports shall be submitted no later than the 14th and 28th days of each month. If these dates fall on weekends or holidays, the report shall be submitted on the first working day thereafter. Each project inspection report shall include:

- A. Contractor reports with the percentage of work complete and a short description (i.e. “3rd floor concrete placed”, “building under roof”, etc.).
- B. Total project report including percentage of completion for the total project, scheduled completion date, and weeks ahead or behind schedule. Briefly describe the reasons for variation in the schedule. If the project is behind schedule, describe the methods which will be used to put the project back on schedule.

013300.3 Shop Drawings and Submittals:

- A. During production of final specifications, A/E shall develop a list of required submittals and review with OUA for approval. Following contract award, A/E shall provide this list to contractors. Shop drawings and samples shall be submitted to A/E as soon as possible after award of contract. All submittals requiring OUA selection or approval must be coordinated. Actual finish and color samples must be provided for review. OUA will not make selections based off of electronic color charts.
- B. GC/CMR shall submit a schedule to A/E indicating dates that shop drawings and other requirements will be submitted. Dates scheduled shall not impede the progress of the work. A/E shall approve the submittal schedule.
- C. GC/CMR shall forward all submittals to A/E by electronic files in PDF format.
- D. A/E shall forward all approved submittals to GC/CMR by electronic files in PDF format.
- E. A/E shall forward all approved submittals to OUA by electronic files in PDF format at time of approval and not held until the end of the project.
- F. Specifications for ornamental work which requires models or patterns will stipulate that the models or patterns become the property of the University after the work has been installed.

013300.4 Layouts for structure coordinates, site improvements, utilities, elevations, etc. shall be performed by a licensed engineer or surveyor employed by the contractor performing the work. This information shall be verified periodically by A/E as the work progresses.

013300.5 GC/CMR will establish all grade lines, levels, and benchmarks.

- A. Sturdy batter boards at all corners of the building will be maintained by GC/CMR.
- B. Benchmarks at each level will be established by GC/CMR
- C. Exact partition locations on floors will be established by GC/CMR as guides to other trades.

01 35 23 OWNER SAFETY REQUIREMENTS

013523.1 All contractors are required to follow and abide by the “CSU Contractors Handbook” – refer to Appendix B.

013523.2 All contractors, subcontractors, and personnel that will be working on the jobsite are required to view the department of Environmental Health & Safety’s 20 minute training video prior to any work being performed. Coordinate viewing times with EH&S at (216) 687-9306.

013523.4 All contractors, subcontractors, and personnel that will be working on the jobsite are required to obtain a photo ID badge to be worn at all times while working on campus. Refer to Appendix C “Notice to Contractors” and Appendix D “Contractor Badge Request Form”. Badges can be obtained at the same time and location as viewing the EH&S training video.

013523.3 All contractors are required to complete a “Contractor Job Safety Worksheet” (included in the “Contractors Handbook” Appendix B). Completed worksheets must be turned in at the time of viewing the EH&S training video, prior to any work being performed on campus.

01 40 00 QUALITY CONTROL

014000.1 Each contractor will be required to include the cost of services by certain specialists in the bid. A/E shall observe the performance of these services, review the reports, document results in the project administration records, and furnish copies of the reports to OUA.

014000.2 Each respective specification section will contain the details of the type of service required, methods and frequency of investigations, number and type of reports required, and the method of payment for the specialist’s services.

014000.3 The following services and other required by the application for plan approval will be performed by qualified independent testing agencies, who will be contracted by OUA or A/E as specified in A/E’s contract.

A. General Contract

1. Soil compaction
2. Piling and caisson inspection and tests
3. Concrete sampling and tests
4. Sound transmission tests
5. Radiation tests

B. Plumbing Contract

1. Supervision of gas piping purging
2. Water piping sterilization
3. Sound control tests

C. HVAC Contract

1. Air and water systems balancing
2. Soil corrosion analysis for cathodic protection
3. Sound control tests

D. Electrical Contract

1. Communication systems tests
2. Signaling systems tests
3. Sound control tests

01 50 00 TEMPORARY FACILITIES

015000.1 Utility Connections:

- A. The University will permit contractors to connect to existing utilities when they are available and shall not charge for electricity, water, natural gas, or steam used (if steam is used as a temporary utility, all condensate shall be returned to the system). The University reserves the right to charge if excessive consumption usage occurs. When utilities are not available, the contractor responsible for the temporary utility shall arrange with the local utility company for installation of temporary utility service and shall pay all costs involved.
- B. Connections to University utilities shall be arranged by A/E through Facilities Management (FM). A/E shall obtain drawings for existing utilities and include information concerning connections in the contract documents.
- C. Utility company installation of temporary services shall be reviewed with OUA.

- 015000.2 Temporary utilities will be provided as follows. Any utility connection must be coordinated with FM.
- A. HVAC: Contractor shall provide heating required by the work or trade as needed, until weather-tight enclosure of the building. Contractor shall provide temporary heating, ventilation, and dehumidification after weather-tight enclosure of the building.
 - B. Temporary Drainage: GC/CMR shall provide temporary drainage for the building excavation including trenches, sumps, pumps, or other items as required to provide satisfactory working conditions for the execution, completion, and protection of all work. Water shall be directed or pumped to existing sewage systems and shall not be permitted to run across the surface of the ground. Upon completion of basement slab, first level floor, and foundation backfill, temporary sanitary sewer shall be provided by the contractor.
 - C. Temporary drainage for trenches shall be provided by the respective contractor.
 - D. Water Service: provided by the University.
 - E. Sanitary Sewer: provided by the University.
 - F. Electrical Service: provided by the University.
 - G. Internet Service: Where available, the University will provide guest access to internet services via the university's wireless system for contractor's use during construction. Where not available, contractors are required to provide for their own service via outside providers or by cellular/broadband series at their expense. A/E shall coordinate availability with OUA and indicate the status in the contract documents.
- 015000.3 Hoisting facilities for the project shall be provided by the contractor requiring it.
- A. New elevators may not be utilized for transportation of workers and materials.
 - B. Existing elevators may not be used for construction unless approved by FM.
- 015000.4 Noise and dust control shall be provided by GC/CMR. Specific materials and methods shall be specified by A/E. Other means of dust and noise control shall be required as construction operations dictate. Work within occupied buildings shall require the contractor to perform daily cleaning of adjacent areas that may be impacted by construction activities. If contractors fail to perform cleaning to the satisfaction of FM and/or OUA, the University reserves the right to back charge contractor for any cleaning costs that may be incurred.
- 015000.5 Site Access:
- A. Entrances and exits for the public must be maintained during periods of joint occupancy.
 - B. A secure 6 foot high construction fence, chain link with vision slats or tarps with top and bottom rails, hinged gates, and OSHA approved "No Trespassing" signs shall be erected at the perimeter of the project. The fence location shall be approved by OUA and shall be shown on the site plan. Barbed wire is prohibited. Gates shall be double locked with contractor padlock and CSU furnished padlock to allow emergency access off hours. The site shall be secured by contractor after working hours.
 - C. Keys or key cards may be provided to GC/CMR by Access Control for renovation projects. GC shall be responsible for coordination of access by all trades and shall return keys upon project completion.
 - D. Vehicular access to the site shall be provided and maintained by GC/CMR. Permits must be obtained from Parking Services.
 - E. Delivery and loading areas will be limited to the building site when space permits. Any delivery to an existing building must be coordinated with FM. All construction deliveries are the responsibility of the contractor. University personnel will not accept or be responsible for any construction related deliveries.

- F. Traffic flow shall be maintained at all times. If traffic flow must be interrupted, the contractor will notify A/E and OUA a minimum of two (2) weeks prior to the work. Contractor is required to post the construction area with warning signs which comply with the State Highway Signage Manual. Contractor is responsible for obtaining street and sidewalk closures per City of Cleveland's requirements. All temporary signs shall be removed after the pavement is fully restored.
- G. Street debris including mud and spillage caused by the work shall be removed immediately. Failure to clean public and University rights of way may result in the University performing the work and back charging the contractor.
- H. Repair of damaged streets, roads, or other facilities shall be the responsibility of the contractor causing the damage, at no expense to the University. Work shall be performed to the satisfaction of OUA, FM and/or City of Cleveland.
- I. Protection of trees and existing landscaping is paramount. OUA will make arrangements for repair and remedial treatments for damage caused by the contractor, who shall bear the cost of these services.
- J. Washout of concrete equipment or contamination by any construction products anywhere on University property is strictly prohibited.

015000.6 Project identification sign requirements of the GC/CMR may be waived by OUA for small projects or renovations. Otherwise, contractor will provide the sign including shop drawing submittal for approval.

- A. The location of the project sign, if required, will be approved by the University and will be shown on the site plan.
- B. The sign format shall be approved by OUA and provided by the GC/CMR as illustrated on the drawings.

015000.7 Field Office:

- A. GC/CMR's representative shall be present in the job office or on the building site, or otherwise readily available by phone at all times during the work.
- B. A/E shall consult with OUA to determine whether the GC/CMR is required to furnish a job office trailer with sufficient conference space for all prime contractors' representatives, OUA representatives, and A/E's field representative to hold project meetings.
- C. The securable office trailer facilities shall include:
 - 1. Office space for GC/CMR's superintendent and staff.
 - 2. File storage space and layout space for use of working drawings, specifications, and shop drawings.
 - 3. Internet connections, a copy machine, and fax equipment.
 - 4. A separate office space shall be provided for A/E's field representative which shall include a desk, plan rack, plan table, and 5-drawer file cabinet. Space for the A/E representative shall be at least 80 sq. ft.
 - 5. A/E representative shall be provided with free use and access of the internet connections, copy machine, and fax equipment.
 - 6. A/E shall be entitled to use the conference space to meet with contractors and other parties to the work.
- D. GC/CMR shall provide a private office space for each of the major prime contractors on the project, and shall be permitted to back charge the cost of the office space and utility costs prorated on a SF basis. Each contractor may provide its own field office trailer if site area permits.
- E. Offices within the building may be established if the project size warrants, provided that this use does not adversely affect progress. OUA/Space Manager must approve use of the building for temporary office use by the contractors.

015000.8 Materials and Equipment:

- A. The University will not sign for, pay for, or otherwise accept materials for contractors. All shipments are to be addressed and delivered to the project site. Deliveries which arrive at the University supply center will be returned to the sender.
- B. Transportation and handling is the responsibility of the contractors. A/E, in concert with the GC/CMR, shall by visual observation and checking of the contractor's estimate for partial payment, control deliveries to the site to avoid congestion of storage and work areas with materials which cannot be installed in a reasonable time.
- C. Storage and protection of building materials and equipment is required of each contractor and will include weather-tight sheds of sufficient size to store all materials which might be damaged by the weather. All outdoor storage (when permitted by the specification) must be limited to the area within the construction fence. Small sheds shall be painted with one coat of paint in color as selected by OUA. Small identification signs are permitted. Large banners or company advertisement of any kind are not allowed on University property unless specifically approved by OUA.
- D. Storage of materials within the building shall not obstruct any of the work or entrances and exits of the building. Material storage within the building must be agreeable to all contractors. Storage locations may require review by the University Fire Inspector and/or OUA.
- E. Storage of University equipment or furnishings may be required shortly before substantial completion. GC/CMR shall make available large rooms at or near grade level for this use.
- F. Protection of University equipment stored on site is required of all contractors, similar to the protection afforded other contractor's materials and equipment.

01 60 00 PRODUCTS

- 016000.1 Three manufacturers for each product should be specified (with the exception of standard products or systems as directed by OUA). Any deviation must receive written approval from OUA.
- 016000.2 Specified manufacturers must be provided unless a substitution of equivalent value and performance is approved by A/E in writing and issued by addendum prior to receipt of bids.
- 016000.3 Single manufacturers, when specified, are products or systems with the University maintains with its existing parts inventory or uses exclusively due to contract or service agreements.
- 016000.4 The following list of certifications and other submittals is required as a minimum, in addition to guarantees, to assure quality of materials and workmanship; A/E to review all items in the specifications with OUA and add to this list as directed by OUA:
 - A. General Contract:
 - 1. Reinforcing steel – mill certificate
 - 2. Insulating concrete decks – manufacturer's certificate
 - 3. Face brick – efflorescence test results
 - 4. Masonry restoration – subcontractor's record of experience
 - 5. Steel joists – manufacturer's certificate
 - 6. Metal decking – manufacturer's certificate
 - 7. Caulking and sealants – subcontractor's record of experience
 - 8. Metal windows – performance reports
 - 9. Reflective insulating glass – performance reports
 - 10. Finish hardware – submit samples
 - 11. Fire rated ceilings – installer's certificate

12. Resilient flooring and carpet – manufacturer’s certificate
 13. Painting – manufacturer’s and installer’s certificates
 14. Fire resistive coatings – manufacturer’s certificate
 15. Laboratory equipment – manufacturer’s financial statement
 16. Radiation protection – installer’s certificate
 17. Elevators – maintenance service
- B. Plumbing Contract:
1. Soil, waste, and vent piping – inspection certificate
 2. Underground services piping – test reports
 3. Interior piping – test reports
 4. Gas service and piping – recording line charts
 5. Fire protection – test reports
- C. HVAC Contract:
1. Boilers – safety and function tests
 2. Refrigerant lines – certificate of compliance with USA Standards
 3. Fans – test performance seals
 4. VFD’s – start-up installation test report
 5. Air, Water, Hydronic Systems – balance reports
- D. Electrical Contract:
1. Primary cable installation – high voltage d-e proof tests
 2. Cable splicing – installer’s certificate
 3. Lightning protection – UL master label
- E. Data and Communications:
1. Installed cable system – cable certification test reports

01 73 29 CUTTING AND PATCHING

017329.1 Each trade is responsible for their own cutting, patching, sealing, fire/smoke-proofing, and weatherproofing openings they make or existing openings they use for installation of their work. All work shall be performed by individuals trained and experienced in the work. The general trades contractor shall be responsible for structural reinforcement of all holes requiring structural framing indicated on the drawings by notes, schedules, or specific structural details. Structural openings that a contractor requests for his convenience that are not required or shown on the drawings shall be at that contractor’s cost, but performed by a qualified general trades contractor. Any utility connection must be coordinated with FM.

01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

017419.1 The University seeks to maximize the diversion of construction and demolition waste away from landfills and incinerators. Where possible, waste materials are to be reused on site, salvaged, or recycled, to meet or exceed the goal of a 75% construction/demolition waste diversion rate.

01 77 00 PROJECT CLOSEOUT

017700.1 Final cleanup of the project shall be assigned to the GC/CMR and shall include cleaning of all horizontal surfaces, windows (inside and outside), light fixtures, convactor cabinets, exposed piping and structure, equipment, HVAC grilles, and plumbing fixtures.

A. A competent janitorial subcontractor experienced in construction site cleaning shall be employed to perform final cleanup.

B. Carpeting shall be spot cleaned and vacuum cleaned; hard surface floors shall be wet mopped

(unless prohibited by the manufacturer).

- C. Final cleanup shall be complete and suitable for immediate occupancy by the University.
- 017700.2 Equipment demonstrations shall be scheduled by the respective contractors with the A/E and OUA.
- A. A/E shall attend each demonstration with the engineer responsible for the design of the system. OUA will invite interested University personnel.
 - B. An explanation of mechanical, electrical, and control system operations shall be composed by the engineer in layman's terminology. Multiple copies of this explanation shall be distributed to all persons at the demonstration.
- 017700.3 Final inspection procedures shall be as defined in Article 10 – Contract Completion in the General Conditions of the specifications and in the Section 01 35 00 Owner's Requirements.
- 017700.4 Affidavits, bonds, and guarantees are required in addition to the standard forms required by the contract documents. These documents should be included in the Operating and Maintenance (O&M) manuals which are to be submitted by each contractor. Include similar statements in the specifications as are listed with the following item:
- A. Affidavits and Warranties:
 - 1. Resilient flooring – from manufacturer and installer
 - 2. Carpet – from manufacturer and installer
 - 3. Hazardous waste delivery – from abatement contractor
 - B. Bonds:
 - 1. Roofing – 10 year guarantee from manufacturer, 5 year guarantee from installer
 - 2. Steel metalwork – 5 year guarantee
 - 3. Membrane waterproofing – 10 year guarantee
 - C. Extended Guarantees:
 - 1. Caulking and sealants – 5 year guarantee
 - 2. Metal windows – 2 year guarantee for windows, 5 year guarantee for weatherstripping
 - 3. Wood doors – lifetime guarantee
 - 4. Tinted and insulating glass – 5 year guarantee
 - 5. Chalk and marker boards – 20 year guarantee
 - 6. Water chillers – 5 year guarantee
 - 7. Air cooled condensers – 5 year guarantee
- 017700.5 O&M Manuals:
- A. One preliminary review manual shall be submitted to A/E for approval.
 - B. Upon approval by A/E, contractor shall provide (3) hard copies [OUA Plans Room, Facilities Management, Building/Manager] and (1) electronic PDF copy to OUA for distribution.
 - C. Manuals shall be bound in a hard cover, high quality, three-ring binder. The binder shall include a transparent vinyl sleeve on the front cover and the binder spine to protect labeling. The manual shall be labeled on the front as well as the spine with the A/E, project name, project number, date, and the trade covered (i.e. "Plumbing", "HVAC", etc).
 - D. Maintenance manuals shall include the following at a minimum:
 - 1. Cover sheet with A/E name, project name, project number, and contractor.
 - 2. Table of contents, organized by specification section.
 - 3. Tabbed sections for each topic included in the table of contents.
 - 4. Contractor and subcontractor contact and phone list.
 - 5. Contractor warranty, indicating date of final acceptance.
 - 6. Each applicable section of the specification shall direct the contractors to include data in the O&M manuals, included but limited to:

- a. Elevators – O&M instructions and project specific wiring diagrams
 - b. Piping systems – printed diagrams showing tagged valves
 - c. HVAC controls – printed diagrams and operating instructions
 - d. Valves – typed directory of tagged valves
 - e. Communications – point-to-point wiring diagrams and operating instructions
 - f. Motor control centers – overload heater charts
 - g. Equipment – operating instructions
7. Complete equipment list with model numbers, serial numbers, and final operating parameters (CFM, pressures, GPM, etc.).
 8. A list of local suppliers and contact information for supplied equipment.
 9. All final submittals to indicate actual device provided, not general product information. All included options shall be clearly indicated.
 10. Total air and water balance (TAB) report.
 11. Original copies of all warranties and certificates shall be included under a separate tab at the end, with an index listing all documents and the details of each.

017700.6 As-Built Documents:

- A. A/E shall prepare the record documents based upon information provided by the GC/CMR. A/E shall verify and revise drawings to show as-built conditions, including the revision date and the words “as-built”.
- B. A/E shall provide one full size set of prints to OUA. The first and last page of the set shall be laminated to protect against extended use. A letter shall accompany this set certifying that as-built conditions are shown.
- C. A/E shall provide OUA with electronic files of drawings in AutoCAD. If the project was completed in Revit, the appropriate Revit files shall also be provided.
 1. All xref layers associated with the project (including but not limited to title blocks, backgrounds, key plans, logos, etc.) shall be integrated into the drawing file. No external xrefs will be allowed for final record documents.
 2. All applicable fonts, pen weights, and line types (.ctb files) shall be included.
- D. A/E shall provide OUA with electronic files of drawings in PDF format with correct plotting line weights.
- E. Electronic files shall be named for ease of recognition, not simply by sheet number.
- F. A/E shall provide OUA with electronic files of specifications in both Word and PDF format.
- G. The contractor’s responsibilities regarding as-built drawings are stipulated in Article 31 of the General Conditions.

071100.7 As-Built Documents for Outside Utilities: The University shall be provided with as-built drawings on all outside utilities. Notes for these drawings shall be made in the field by GC/CMR during installation and verified by A/E.

01 81 13 SUSTAINABLE DESIGN REQUIREMENTS

018113.1 The University promotes energy efficient, green design, construction and building operation. Where possible, materials are to be specified to meet or exceed the latest version of the USGBC’s LEED rating system Silver level or better as discussed with the OUA.

018113.2 Provide a minimum of 10 percent requirement for Regional Materials as defined by the current version of USGBC’s LEED rating system.

018113.3 Refer to Site Work General Requirements for Construction Activity Pollution Prevention

recommendations.

- 018113.4 All buildings during construction and final occupancy shall meet “Environmental Tobacco Smoke Control” prerequisites in the most current version of USGBC’s LEED rating system. All onsite personnel are required to abide by the University’s Tobacco Free policy.

END OF SECTION

DIVISION 02 – EXISTING CONDITIONS

02 00 00 GENERAL REQUIREMENTS

- 020000.1 A/E shall consult OUA during the early planning stage of the project concerning site work, excavation, grading, landscaping, removal of obstructions, alterations to existing campus drives, parking areas and walkways, removal of trees and shrubs, and access to and from the site.
- 020000.2 The site survey shall include information on underground utilities and structures (if required by the contract).
- 020000.3 A/E shall be responsible for preparing a subsurface investigation report which consists of test borings, laboratory testing and engineering analysis.
- 020000.4 Existing utility locations shall be determined by A/E in the preparation of plans for boring locations. A/E shall locate borings to avoid these utilities. Notify OUA to schedule the work.
- 020000.5 Boring locations and sections showing all soil conditions shall be shown on the drawings. The specifications shall state that the information is for the contractor's use and shall hold the University harmless for the accuracy of the information.
- 020000.6 A/E shall consult with OUA during early planning stages of the project to consider emergency vehicle access, service vehicle access, student disability services vehicles, snow removal, public transportation, parking, and pedestrian access including construction and staging areas.
- 020000.7 A/E shall indicate on drawings that the Ohio Utilities Protection Services (OUPS) does not locate utilities on campus nor does University personnel. Specifications should require contractor to hire utility location contractor services.

02 41 00 SITE DEMOLITION

- 024100.1 Remove existing foundations in open areas to a minimum depth of 5 feet below finish grade. If portions of the existing foundations remain, they must be shown on the "as-built" drawings.
- 024100.2 Indicate the extent of demolition on drawings where new structures will replace existing.
- 024100.3 Existing slabs scheduled to remain under fill for new structures shall be broken to provide for drainage. Slabs are to be broken into pieces no larger than 50 sq. ft.
- 024100.4 OUA reserves the right to remove and salvage items in areas to be demolished. OUA may remove items with their own forces or may want the contractor to remove items and turn them over to the University. Coordinate requirements on a project specific basis with OUA.
 - A. Historical items, relics, and similar items including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques and other items of interest of value to the University which may be encountered during demolition remain the property of the University. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the University.
- 024100.5 Underground utilities scheduled to be demolished shall be removed in entirety unless otherwise directed by OUA.

02 41 01 EXCAVATING AND BACKFILLING

- 024101.1 Removal of excavated materials from the site shall be reviewed with OUA during the design phase.
- 024101.2 Backfill only with acceptable materials that can be compacted, without containment, to the densities specified herein. Backfill under roads shall be per City of Cleveland's construction standards.
- 024101.3 Waste materials shall be disposed of offsite according to applicable jurisdiction.
- 024101.4 Compaction control requirements shall be specified for all fill, backfill, and embankments on site.
- A. Compaction Requirements: Specify that soils are to be compacted to the following minimum densities, as determined by Standard Proctor Test (ASTM D-698) within an optimum moisture content range for the soils.
1. 93% - Lawn, yard, planting beds, and unpaved areas.
 - a. Trench and utility backfill away from paved areas.
 2. 98% - Zones within an area below an imaginary line drawn downward and outward at a 2 horizontal to 1 vertical slope from the outside edge of footings of buildings, walls, or edges of shoulders of paving and slabs on grade.
 - b. Backfill on inside of buildings, under slabs on grade, paving, pads, stairs, and similar items.
 - c. Trench and utility backfill under paving and within 10 feet of paved areas.
 - d. Backfill around manholes, drainage structures, and underground structures.
 3. 100% - Top 12 inches of sub-grade under roadways, drives, parking areas, foundations, backfill, footings, pads, paved pedestrian walks and courts, loading docks, and paving primarily for vehicle traffic.
- 024101.5 Field compaction tests and related laboratory (ASTM member) analysis shall be performed by a registered Professional Engineer (PE) specializing in soils engineering. All soil used on this project shall be analyzed and approved by PE for each application prior to placement. A testing laboratory representative shall "spot check" during placement and compaction operations. Tests shall be made in sufficient quantity to assure uniform compaction and density of each course of fill.
- 024101.6 Payment for reimbursables shall be assigned to A/E. The testing laboratory will be under the direction of the A/E and will provide written reports to A/E and GC. A/E shall provide copies to OUA.
- 024101.7 Site utilities excavation shall be performed by each contractor including excavation, trenching, and backfill associated with the respective work. All work is subject to all requirements of Division 2 of the specifications including earthwork, excavating, backfilling, compaction, testing, and payment for testing. Include references to Division 2 in all other specification divisions when applicable.
- 024101.8 Rough grade lawn area to a maximum of 1 foot vertical to 4 foot horizontal. Steeper grades will require ground cover planting. Provide roundings at top and bottom of banks and at breaks in grade.
- 024101.9 Scarify sub-grade to a minimum depth of 5 inches before placement of topsoil. Remove all waste material.

- 024101.10 Minimum depth for topsoil shall be 6 inches for grass and adequate depth for other planting materials.
- 024101.11 Protect new grade areas from the elements. Repair all settlement and erosion and re-establish grades to the required elevations prior to acceptance.
- 024101.12 All erosion control must comply with "Rainwater and Land Development – Ohio's Standards for Storm Water Management, Land Development, and Urban Stream Protection" for all sediment control, silt fences, and storm drain inlet protection.

02 41 02 CLEARING, GRUBBING, AND TOPSOIL REMOVAL

- 024102.1 Strip all objectionable growth. Remove from the site all debris resulting from the stripping operations at frequent intervals to prevent accumulation of material. On-campus disposal of material is prohibited.
- 024102.2 Strip topsoil to its full depth from entire area to be graded. Stockpile where directed and where it will not interfere with construction activities. Topsoil to be reused shall be free from roots, brush, and debris. Excess topsoil shall be deposited and/or spread on University property as directed unless otherwise approved by OUA.
- 024102.3 Protection of trees and shrubs scheduled to remain shall be assigned to the GC and shall include tops, trunks, and roots. A/E shall indicate on the drawings boxes, fences, or other protection required because of proximity to the work. Do not permit heavy equipment or material stockpiles within drip line. Any pruning required shall be with the approval and direction of OUA. GC shall be responsible for the survival of protected trees for 2 years after the date of substantial completion. GC shall be responsible for any tree that is considered to be in declining health (by a certified arborist) due to improper protection as documented during construction. An appraisal for determining a monetary opinion of the value of a tree shall be obtained by a certified arborist. Several methods for determining the value of a tree, including the replacement cost method or the trunk formula method, shall be used.
 - A. Replacement Cost Method: Applies to smaller trees with a trunk size up to 8 inches in diameter. The appraised value shall be determined by combining: price quote + transportation + planting + other costs, and apply the condition and location values to the trees. The sum of this is the appraised replacement cost.
 - B. Trunk Formula Method: Applies to trees that are too large for practical replacement and shall be appraised by determining the basic tree value by specific condition and location ratings. The appraised value shall be determined by the Ohio Chapter of the International Society of Arboriculture. All trees with a trunk larger than 8 inches in diameter when measured at 4 feet above natural grade shall be calculated in this manner.
 - C. If any contractor disregards the tree protections and procedure, the penalty as stated shall apply. GC shall be responsible for the survival of protected trees for 2 years after the date of substantial completion. GC shall be responsible for any tree that is considered to be in declining health (by a certified arborist) due to improper protection. The tree(s) in question shall be replaced by trees of the same species and caliper. For all trees over 3 inch caliper, the replacement shall be two 3-inch caliper trees at the location as directed by OUA. All associated costs for the removal of the declining tree(s) and any required professional assessment shall be the responsibility of the GC.
- 024102.4 Tree protective fencing should be 6 feet high, 2 inch mesh chain link fence with top rail and bottom

tension wire and installed under the direction of OUA. Tree protection fence locations shall be shown on all site plans. Trees to be saved shall be labeled on all site plans including, but not limited to, demolition and grading plans. Tree protection limits shall be determined and verified by OUA. At a minimum, tree protection fence shall be 8 feet from the edge of tree canopy. No equipment or materials shall enter this area.

02 41 03 FOUNDATIONS

- 024103.1 Types of foundations shall be determined by A/E in consultation with his structural engineer based upon the types of soil encountered and other conditions. If pile foundations are necessary, A/E must thoroughly examine adjacent interior features and installations. At A/E's option, foundations may be a system of pre-case or cast-in-place concrete piles, concrete caissons, steel piles, or a combination of piles and caissons.
- 024103.2 Wood foundation systems are prohibited.
- 024103.3 Design of foundation systems shall be by an Ohio registered Professional Engineer (PE). All structural drawings shall bear the seal and signature of PE.
- 024103.4 Continuous inspection of pile and caisson installation shall be performed by an independent laboratory in cooperation with PE to assure compliance with contract documents.
- 024103.5 Payment for testing laboratory services shall be as specified by A/E.
- 024103.6 Quantity and location of test piles will be determined by the laboratory in cooperation with PE. The laboratory will locate the test piles such that if the test piles meet the project requirements, they may be used in the building foundation system.
- 024103.7 Test reports for the test and permanent piles shall include all information necessary by A/E. A copy shall be submitted to OUA.
- 024103.8 Drilled caissons shall be continuously inspected by the testing laboratory and PE during excavation, casing installation, and concrete placement.
- 024103.9 Data reports for caissons shall include all information as deemed necessary by the A/E. A copy shall be submitted to OUA.
- 024103.10 Basis of payment for base bid price shall be noted in the specifications as the depth and quantities of piles and caissons shown on the working drawings and on soil boring data. The form of proposal shall include separate lines for the unit price of material furnished and installed per lineal foot, to be added to or deducted from the base bid for depths differing from those indicated. State that payment will not be made for extra pilings that may be driven for the execution of the work. A/E must certify the depths of piles or caissons upon which the contractor's price is based.

END OF SECTION

DIVISION 03 – CONCRETE

03 00 00 GENERAL REQUIREMENTS

- 030000.1 Specification format shall follow the State Architect's Handbook if design requires engineering by a structural engineer. Otherwise, a short-form specification suited to job conditions is acceptable.
- 030000.2 Short-form specifications for small projects limited to patching of, or filling holes in existing concrete, may include job mixing of portland cement concrete. Patented cementitious patching compounds may also be included. Floor underlayment compounds will be specified in finish floor specification sections.
- 030000.3 Coordinate specifications with the requirements of the Portland Cement Association, especially concrete patching.
- 030000.4 Concrete floors shall be thermally isolated from exterior walls in compliance with current applicable building codes.
- 030000.5 Exposed concrete floors shall be specified with integral finish and hardener treatment. Separate topping is prohibited. A/E shall specify clear VOC-compliant water based sealant in Division 9. Non-floating fibermesh shall be used on interior exposed concrete flooring.
- 030000.6 All concrete slabs shall be fiber-reinforced at a minimum rate of 3 lbs. per cu. yd. with Fibermesh 650 by Propex or equal where welded wire mesh is not being used. 1-1/2 lbs. per cu. yd. of Fibermesh 300 is to be used on interior slabs where welded wire mesh is present.
- 030000.7 Provide a minimum compressive strength of 3,000 PSI at 28 days for general use. For slabs on grade and paving, use 4,000 PSI minimum.
- 030000.8 Concrete specified for filling excavations over footing may be 2,500 PSI minimum.
- 030000.9 Air Entrained Concrete: An air-entraining admixture shall be used for all flatwork concrete exposed to weather (to achieve 5-1/2 percent +/- 1-1/2 percent).
- 030000.10 Non-Slip Surfacing: Ramps, treads, and platforms of stairs shall have a non-metallic, non-slip surface with light broom finish when not covered with finish flooring materials.
- 030000.11 Structural design of slabs should include consideration of exposed construction which can be used for finished ceilings.
- 030000.12 Tests will be performed by a testing laboratory which has been approved by the A/E. The laboratory shall perform tests for wet density, dry density, and compressive strength for each specimen. Refer to Division 1 Testing Requirements for costs of tests and contracts. On projects using state funds, costs of tests may be as an allowance or reimbursable to A/E. Contractor to notify testing agency 24 hours in advance, prior to placement.
- 030000.13 Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Obtain one sample for each day's pour of each concrete mix exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof. A minimum of four test cylinders shall be

taken during each day's pour, and written reports of tests shall be sent directly to A/E.

- 030000.14 On-Site Construction Administration: A/E shall have a representative visit the site at appropriate intervals to observe the work and determine if the work is in accordance with the contract documents. A/E shall keep the Owner informed and will endeavor to guard against defective work. Report any non-compliance with the specifications to OUA.
- 030000.15 Addition of water to concrete during delivery, at project site, or during placement is prohibited, except as specified by the design mix on ticket.
- 030000.16 Placement Schedule: Contractor to submit concrete placement schedule before start of concrete placement operations. Include location of all joints including construction joints. Provide minutes of pre-installation conference.
- 030000.17 Specify only non-staining types of curing, sealing, and hardening products which are compatible with flooring materials. Take necessary precautions to prevent odor from entering adjacent occupied buildings.
- 030000.18 Sawed Joints: Cut joints into concrete when cutting action will not tear, abrade, or otherwise damage surface. Joints to be sawed within 24 hours of placement of concrete. A/E to specify joint width and depth.
- 030000.19 Joint Fillers: Prepare, clean, and install joint filler according to manufacturer's written instructions. Defer joint filling until concrete has aged at least 6 months. Do not fill joints until construction traffic has permanently ceased.
- 030000.20 Parking Garage Structures:
- A. Parking spaces in garages shall be 8'-6" wide for stalls at 90 degrees. Parking spaces designated for handicapped shall comply with current ADA guidelines. Parking garages shall be designed to have a minimum of 7 feet clear height throughout, no exceptions. Signage, piping, ductwork, and other objects shall not be below 7' AFF.
 - B. Exposed steel or structural pre-cast concrete frames are prohibited.
 - C. Structural slabs for parking garages and other concrete to be subjected to deicing salts shall include micro-silica, corrosion inhibitor, and epoxy-coated reinforcing steel. Micro-silica concrete mix design shall be based on 6,000 PSI compressive strength and shall be moisture cured. Broom finish concrete in vehicular traffic areas.

03 30 00 CAST-IN-PLACE CONCRETE

- 033000.1 Concrete Mixing: Contractor to provide batch ticket for each ready-mixed batch discharged and used in the work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.
- 033000.2 Vapor Retarder: Under building floor slabs, install, protect, and repair vapor-retarder sheets (minimum of 6 mil, reinforced) according to manufacturer's specifications. Place sheets in position with longest dimension parallel with direction of pour. Lap joints 6 inches and seal with manufacturer's recommended tape. Cover vapor retarder with fine graded granular material, moisten and compact with mechanical equipment to elevation tolerances of plus 0" or minus 3/4".
- 033000.3 Steel Reinforcement: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing,

and supporting reinforcement. Repair damage and reseal vapor retarder before placing concrete.

033000.4 Concrete Protection and Curing: Protect and cure in compliance with ACI recommendations.

033000.5 Formwork: Chamfer exterior corners and edges of permanently exposed concrete.

03 33 00 ARCHITECTURAL CONCRETE

033300.1 Definition: Concrete that is exposed to view on surfaces of the completed structure or building and that requires special concrete materials, formwork, placement, or finishes to obtain specified architectural appearance.

033300.2 Sample Panel: Architectural cast-in-place concrete specifications shall include a minimum of 4'x8' sample panel to be erected at the site. The sample panel shall be protected from construction operations, but shall be exposed to the elements.

A. The sample panel may be incorporated into final work if approved by OUA.

B. The sample panel shall remain on site until all architectural concrete has been approved by OUA.

033300.3 Provide temporary protection for nosings on interior concrete steps. Treads of concrete steps shall be provided with non-slip surface.

033300.4 Reinforcement Accessories – Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcing bars, and welded wire fabric in place. Where legs of wire bar supports contact forms, use as appropriate: a) all-plastic, b) CRSI Class 1 plastic-protected, or c) CRSI Class 2 stainless steel bar supports.

033300.5 Concrete Mixing: Refer to 033000 Cast-In-Place Concrete.

033300.6 Formwork: Fabricate forms for easy removal to prevent damage to concrete surfaces.

033300.7 Concrete Placement: Refer to 033000 Cast-In-Place Concrete.

033300.8 Concrete Curing: Refer to 033000 Cast-In-Place Concrete.

03 41 00 PRE-CAST CONCRETE

034100.1 Pre-cast concrete design and specifications for structural concrete and concrete panels shall be based upon recommendations of the Pre-Stressed Concrete Institute.

034100.2 Sample Panel: Refer to 033300.2

034100.3 Fabrication Qualifications: Engage a firm experienced in producing architectural pre-cast concrete units. Fabricator must participate in the Pre-Cast/Pre-Stressed Concrete Institute's (PCI) Plant Certification Program and be designated a PCI certified plant for Group A1 – Architectural Concrete at the time the project is bid.

03 52 16 LIGHTWEIGHT INSULATING CONCRETE

035216.1 Review use with OUA.

03 53 00 FLOOR TOPPING

035300.1 Project Conditions:

- A. Place concrete floor topping per temperature recommended by manufacturer.
- B. Close areas to traffic during topping application and after application.
- C. Protect from weather until curing is complete.

035300.2 Preparation:

- A. Examine substrates, with installer present, for conditions affecting performance of concrete floor topping.
- B. Mechanically remove contaminants from existing concrete that might impair bond of floor topping.
- C. Start floor topping application in presence of manufacturer's technical representative.

03 54 00 CAST UNDERLAYMENT

035400.1 Comply with manufacturer's recommendations and refer to project conditions and preparations in 035300 Concrete Floor Topping.

END OF SECTION

DIVISION 04 – MASONRY

04 00 00 GENERAL REQUIREMENTS

- 040000.1 Allowances for masonry materials to match existing are not permitted. A/E will determine the manufacturer, texture, and color of masonry units and mortar to match existing prior to bidding. Approval must be obtained from OUA. This information will be provided to the bidders in the contract documents.
- 040000.2 Where the phrase “or approved equal” or “approved substitution” occurs in the contract documents, do not assume that material, equipment, or methods will be approved as equal by A/E unless the item has been specifically approved for this work by OUA. Color choices will be one of the determining factors for approval of masonry.
- 040000.3 Match existing coursing, bonding, color, and texture of existing masonry unless otherwise approved by OUA.
- 040000.4 Waterproofing shall be applied to all exterior materials which are not inherently water resistant. Use water resistant mortar additive in walls which will not receive applied waterproofing.
- 040000.5 Dampproofing shall be applied to all walls below grade which are not otherwise sealed to prevent water entry.
- 040000.6 Sample Panels: Build sample panels to verify selections to demonstrate aesthetic effects. Build sample panels to approximately 4’x5’ by full thickness.
- 040000.7 Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by A/E in writing.
- 040000.8 Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day’s work. Cover partially completed masonry when construction is not in progress.
- 040000.9 A/E shall specify factory blending for exposed unit masonry to produce a uniform blend of colors and textures.

04 01 20 MAINTENANCE

- 040120.1 A/E shall review all restoration and cleaning specifications with OUA.
- 040120.2 A/E shall schedule and coordinate testing of cleaning agents to be used prior to bidding.
- 040120.3 A/E shall specify cleaning to be performed from the bottom up.
- 040120.4 Specify pre-cleaning conference and test area.
- 040120.5 Brick and mortar selection for renovations or additions to buildings shall match the closest freshly cleaned adjacent wall unless otherwise approved by OUA.

040120.6 Face brick mortar shall be tinted to match adjacent building joints in addition work, or as otherwise approved by OUA in all other work.

04 05 00 COMMON WORK RESULTS

040500.1 Mortar for laying masonry may be ready-mix or job mix. Specify by types according to ASTM C270.

040500.2 Face brick mortar shall be tinted to match adjacent building joints in addition work, or as otherwise approved by OUA in all other work.

040500.3 Tooled joints shall be standard concave joints unless otherwise required to match adjacent existing joints.

040500.4 Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

040500.5 Cold-Weather Mixture: Non-chloride, non-corrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

040500.6 Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather condition, to ensure that mortar color is consistent.

040500.7 Protect stone and cast stone from masonry cleaners. Masonry cleaning to be scheduled to be performed immediately following grout set.

040500.8 Source Quality Control: A/E shall specify requirements for masonry mortar testing. Refer to Division 1 for testing.

04 05 19 MASONRY ANCHORAGE AND REINFORCING

040519.1 Masonry Joint Reinforcement: ASTM A951.

040519.2 Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods per structural engineer's recommendation.

040519.3 Masonry Joint Reinforcement for Multi-Wythe Masonry:
A. Ladder type with 1 side rod at each face shell of hollow masonry units more than 4 inches (100 mm) in width, plus 1 side rod at each wythe of masonry 4 inches (100 mm) or less in width.
B. Tab type, either ladder or truss design, with 1 side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe but with at least 5/8 inch (16 mm) cover on outside face.

040519.4 Hot-dip galvanized, carbon-steel wire or steel sheet.

040519.5 Wire, steel sheets, steel plates, shapes and bars.

040519.6 Stainless steel bars for stone trim or pre-cast concrete trim.

040519.7 Corrugated metal ties are prohibited.

040519.8 Reinforcing Bar Positioners: Galvanized wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells.

04 05 23 MASONRY ACCESSORIES

040523.1 A/E to indicate all control and expansion joints on exterior elevation. Control joints shall be designed at one side of every opening and sill and at a maximum 20 foot horizontal spacing. Expansion joints shall be as designed by A/E.

040523.2 Stainless steel preferred. Review all other types with OUA. Isolate

040523.3 Weep Hole Wicking Material: Absorbent rope made from cotton 1/4" to 3/8" in diameter.

040523.4 Cellular Plastic Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8" (3 mm) less than depth of outer wythe, in color selected from manufacturer's standard. Install at heads and sills of all openings and top and bottom of wall.

040523.5 Cavity Draining Material (Mortar Net); Free-draining mesh, made from polymer stands that will not degrade within the wall cavity.

040523.6 Loose-Granular Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

040523.7 Extruded-polystyrene board insulation, ASTM C578. Minimum R value to comply with current Ohio Energy Code.

04 20 00 UNIT MASONRY

042000.1 A/E shall determine unit compressive strength and weight classification of CMU.

042000.2 Exposed exterior CMU assemblies shall only use Grade A washed, crushed limestone aggregate and washed limestone sand. Units shall have integral water repellent.

042000.3 All exposed CMU outside corner assemblies (including at doors, windows, and wall offsets) shall be constructed with bullnose units.

04 21 00 CLAY UNIT MASONRY

042100.1 Modular brick coursing, 3 courses to 8 inches, is required unless existing conditions are different or as approved by OUA.

042100.2 Stack bond is prohibited unless approved by OUA for limited architectural effect.

042100.3 Split coursing is prohibited at the head of any opening.

042100.4 Efflorescence test certificate must be submitted to OUA prior to approval of selection indicating no efflorescence when tested in accordance with ASTM C67.

042100.5 Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

042100.6 Brick Surface Coating: Brick with colors or textures produced by application of coatings are prohibited.

04 21 23 STRUCTURAL CLAY TILE MASONRY

042123.1 Structural clay facing tile shall be select quality, ceramic glaze, 8"x16" face. Reinforcing clay facing tile assemblies in alternating courses with approved truss-type reinforcing.

042123.2 Provide special shapes where required for corners, jambs, coved bases, sills, and other special conditions indicated, including applications that cannot be produced by sawing standard units.

042123.3 Provide bullnose units for outside corners, unless otherwise indicated, and coved internal corners. Provide recessed, coved base units.

04 43 00 STONE MASONRY

044300.1 Limestone shall be Buff Indiana limestone except where other types may be required to match existing surfaces. Backs and bonding faces shall be dampproofed with a water barrier as approved by the Indiana Limestone Institute of America (ILIA). Limestone shall not be installed lower than 4 inches above grade when adjacent to lawns or planted areas.

044300.2 Non-staining sealant or acrylic-based compounds shall be used for sealing stonework. Silicon-based compounds are prohibited for limestone.

044300.3 Handling, protection, and installation shall comply with the recommendations of ILIA.

044300.4 Limestone, ASTM C568 classification, 2 Medium density minimum. Comply with recommendations in ILIA handbook.

04 72 00 CAST STONE MASONRY

047200.1 All cast stone shall be minimum 6,500 PSI concrete. All exposed corners shall be eased.

047200.2 Embedded anchors and other inserts shall be fabricated from stainless steel.

047200.3 A/E shall specify cleaner that is compatible with cast stone.

END OF SECTION

DIVISION 05 – METALS

05 00 00 GENERAL REQUIREMENTS

050000.1 Refer to front end documents for domestic steel requirements.

05 10 00 STRUCTURAL METAL FRAMING

051000.1 Specifications shall be complete for this part of the work in addition to the structural engineer's notes on the drawings. A/E is responsible for complete coordination of statements in the specifications with notes on the drawings.

051000.2 Comply with American Institute of Steel Construction (AISC) for all structural steel.

051000.3 Erect structural steel within the tolerances stipulated in the AISC code of standard practice for buildings designed with future vertical expansion provisions.

051000.4 Specifications will require the erection subcontractor to provide an affidavit at the completion of the job which states that the structural steel frame is plumb and level within normal tolerances specified in the AISC code.

051000.5 Submit shop drawings in accordance with all applicable provisions of these specifications. A/E to review shop drawings for conformance with overall design intent.

051000.6 Shop prime all interior structural steel with oxide-rich primer.

051000.7 Hot dip galvanize all exterior or wet location steel. Repair all damage to galvanized coatings.

051000.8 An independent testing agency shall verify and report the strengths of all high strength, bolted connections, and welded connections. A/E to verify with OUA testing agency payment procedure.

05 21 00 STEEL JOISTS

052100.1 Manufacturer's certificate of compliance with Steel Joist Institute specifications is required.

052100.2 Shop prime coat and field touch-up painting are adequate for joists except where subject to moisture or exposed to view.

052100.3 Clean all joist members prior to acceptance by Owner. Verify that proper finishes have been applied to all faces of joist members.

05 30 00 METAL DECKING

053000.1 Manufacturer's certificate of compliance with Steel Deck Institute specifications is required.

053000.2 Galvanized decking shall be installed for all roof decks and all other moisture-prone floor slabs such as mechanical rooms, kitchens, and bathrooms. Coordinate with OUA.

05 40 00 COLD-FORMED METAL FRAMING

- 054000.1 This section pertains to load-bearing assemblies. Refer to Division 9 Finishes for non-load bearing metal stud assemblies.
- 054000.2 C-Shape Studs: Provide and install manufacturer's standard load-bearing metal studs of size, shape, and gauge indicated or as determined by design requirements with 1.625 inch minimum flange and flange return lip.
- 054000.3 Patented metal framing systems which are required for the support of plaster or gypsum board ceilings should be specified in this section and approved by OUA.

05 50 00 METAL FABRICATIONS

- 055000.1 Design shall be complete for all required metal fabrications. Contractor designed metal fabrications are prohibited (this includes stairs, ladders, and railings).
- 055000.2 Specify that GC will provide and install lintels for all openings through walls shown on drawings for all other prime trades.
- 055000.3 All exterior lintels, exterior gratings, and interior wet location ferrous metals shall be hot-dip galvanized after fabrication. Repair all damage to galvanized coatings. Fasteners shall be galvanized. Welded connections shall be re-galvanized to prevent rust.
- 055000.4 All exterior handrails and guardrails on concrete stairs or walks shall be steel (not galvanized) with black powder coat finish over oxide primer. Railings are to be set in concrete base outside of stair cheek wall. Refer to standard detail.
- 055000.5 For all exterior steel, use of powder-coated metals is preferred. Verify with OUA before specifying.
- 055000.6 Interior metal stairs for public access shall not be exposed concrete. At a minimum, cover all concrete treads and risers with rubber stair tread materials.
- 055000.7 Exterior metal stairs are discouraged; when necessary, they shall be constructed of hot-dipped galvanized members. Fully weld all rails, handrails, attachments and supports, and repair welds with galvanizing repair paint. Stair treads and landing shall be perforated or grating type material to allow drainage. A/E to verify ADA compliance.
- 055000.8 Bilco "Ladder Up" or approved equivalent safety device is required at all roof ladders through the roof hatches. A/E to locate roof ladders in custodial closets or mechanical rooms.
- 055000.9 Metal expansion joint covers shall be aluminum and are required at all joints in traffic planes.
- 055000.10 Gratings shall be standard size, galvanized, and painted after fabrication. Provide galvanized hardware under all areaway gratings.
- 055000.11 All exterior gratings exposed to public pedestrian traffic shall be ADA compliant and safe for walking with shoes with narrow heels (1/4" maximum gap). Grating shall also be structurally rated for vehicular traffic. Refer to Division 2 for specific manufacturers and model numbers.

END OF SECTION

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

06 10 00 ROUGH CARPENTRY

- 061000.1 Always provide and install fire-treated lumber unless otherwise directed by OUA. Back up all wall and ceiling mounted accessories with wood blocking (especially wall mounted door stops, grab bars, shelving standards, window treatment hardware, and wall cabinetry). Install only true, straight pieces.
- 061000.2 All lumber in contact with masonry, concrete or roof termination details shall be “ground contact” preservative treated to meet AWPA standards. All fasteners, anchors, plates and hardware shall be hot dipped galvanized or stainless steel to withstand the corrosiveness of preservative treatments.
- 061000.3 Truss shop drawings shall include a complete design analysis of structural components. On all roof projects, design fall protection anchor points. Data shall bear the seal and signature of an Ohio-registered professional architect or engineer certifying that the design of the trusses complies with the requirements of the building code. A/E shall review shop drawings to verify conformance with design intent.
- 061000.4 A/E shall verify grade stamps of all lumber installed.
- 061000.5 A/E shall verify and specify code-required wood fastening requirements.

06 20 00 FINISH CARPENTRY

- 062000.1 Conform to Architectural Woodwork Institute (AWI) Specifications for custom quality work.
- 062000.2 Back prime all exterior trim prior to installation. Spot prime ends.
- 062000.3 Shelving shall be 3/4 inch 5-ply plywood; no particleboard. Hardwood plywood shelves with hardwood edge may be stained, or shelves may be completely covered (all six faces) with plastic laminate. Melamine surfaces and T-edge molding is approved for spans 4 feet and under. Support shelves on heavy-duty adjustable steel standards and brackets unless otherwise indicated; Knap & Vogt or equal.
- 062000.4 Provide fire treated plywood telephone and electrical/data backboards where specified; paint gray. Verify size of plywood backboard with OUA.
- 062000.5 A/E shall specify “tamperproof” or “vandal resistant” fasteners in areas that are subject to vandalism by the general public. These fasteners shall have a “snake eyes” head.

06 40 00 INTERIOR ARCHITECTURAL WOODWORK

- 064000.1 Flush door and drawer design preferred on custom casework. Pre-manufactured cabinets are acceptable if construction will withstand use. Refer to Division 12.
- 064000.2 In wet areas (restrooms, kitchens, window sills, and similar locations), solid surface counter material is preferred if the budget allows.
 - A. Provide auxiliary support under counters to withstand sitting loads.

- 064000.3 Counter tops may be fabricated off site, but back and end splashes should be shipped loose for field installation. All countertop laminates to have a backer sheet. Carbonite countertops preferred for all laboratories. Specify scratch and abrasion resistant colors, textures, and finishes for abusive installations, such as geology rock labs, areas with fossil work, etc.
- 064000.4 ADA compliant cabinet hardware (drawer and door pulls) specifications should be included in this section for installation by the manufacturer/installer.
- 064000.5 All casework and countertop particleboard shall be LEED certified or equivalent formaldehyde-free sheet material such as "Wheatboard".
- 06 80 00 GLASS FIBER REINFORCED PLASTIC**
- 068000.1 A/E to review all products with OUA.

END OF SECTION

DIVISION 07 – THERMAL MOISTURE PROTECTION

07 10 00 WATER RESISTANCE AND DAMPROOFING

- 071000.1 Membrane water resistance shall be a heavy duty permanent water-resistant type capable of adjusting to building movement without breaking the membrane seal.
- 071000.2 Preferred system is tar or asphalt impregnated fiberglass fabric. A/E to recommend preferred system. A ten-year experience clause is required in the specification.
- 071000.3 Fully detail all conditions on the drawings to prevent seepage from exterior sources. Concrete foundation walls around elevator pits and basements, from grade to footings, shall be treated with membrane water resistance.
- 071000.4 A/E shall determine compatibility with water stop materials as may be required at joints.

07 11 00 DAMPROOFING

- 071100.1 Bituminous dampproofing shall be installed on all walls where interior surfaces are scheduled to receive applied finishes.
- 071100.2 Install dampproofing prior to installation of interior finishes.

07 19 00 WATER REPELLENTS

- 071900.1 Exposed surfaces of exterior brick, concrete block, cut stone, and pre-cast concrete shall be coated with a penetrating, colorless, non-staining, mildew resistant water repellent.
- 071900.2 Water repellent coatings should be specified for all new and restored brick, concrete masonry, and architectural pre-cast concrete. Products specified should be breathable silanes or siloxanes as appropriate for the surface to be coated. Film forming surface coatings such as silicones, acrylics, mineral gum resins, and blends should not be used. Products specified should be those which have an estimated life expectancy of 10 to 15 years.
- 071900.3 Specify that adjacent and nearby surfaces be protected from spillage or overspray from repellents. Require that live plants, grass, windows, and other areas be covered.
- 071900.4 Coordinate water repellents with graffiti-resistant coatings to ensure compatibility and warranty requirements. Ideally these products should be from the same manufacturer.

07 22 00 ROOF INSULATION

- 072200.1 Roof deck insulation including cant strips and tapered edge strips shall be non-hygroscopic. Hygroscopic materials are prohibited in any part of the roof system.
- 072200.2 Minimum gap between roof insulation boards shall be the minimum as required by the manufacturer. This requirement is especially important around roof penetrations and projections.
- 072200.3 Daily installation of roof insulation materials shall be limited to that amount which can be covered with the roofing membrane prior to the end of the day or prior to the onset of inclement weather.

072200.4 Anchor roof insulation in accordance with manufacturer's recommendations for fastener type, size, placement, and density. Installation shall comply with Factory Mutual 1-90 rating against uplift.

07 21 00 BUILDING INSULATION

072100.1 On vertical surfaces, set units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.

A. If not indicated, extend insulation to footer depth.

072100.2 Protect below-grade insulation on vertical surfaces from damage during backfilling and site work by applying protection board.

07 24 00 EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

072400.1 Use of EIFS shall be limited and only as approved by OUA.

07 26 00 VAPOR BARRIERS

072600.1 Under floors use minimum 6 mil polyethylene sheet. If a crawl space occurs, protect the vapor barrier with a 3 inch (min.) concrete slab; where utilities occur, utilize a 2,000 PSI strength concrete.

072600.2 In exterior walls and ceilings under roofs which are scheduled to be finished gypsum board, use 6 mil fiber-reinforced polyethylene sheet.

07 27 00 AIR BARRIERS

072700.1 Provide building air infiltration barrier (building wrap) where appropriate; Tyvek or equal.

07 30 00 ROOFING SYSTEMS

073000.1 General Requirements:

A. Flat roofs shall be designed to provide a minimum 1/4 inch per foot slope as required by code. Increased slope up to 1/2 inch per foot is preferred to prevent standing water on roofs. Dead level roofs are prohibited. Slope shall be accomplished by copped structural members whenever possible or tapered insulation if necessary (except for coal tar). Additional tapered insulation should be used at strategic locations to create saddles, crickets, and additional taper around equipment, perimeter areas, curbs, valleys, and other potential problem areas. Scupper openings and overflow roof drains shall be discussed with OUA.

B. Provide roofing membrane manufacturer approved walkway pads around all rooftop equipment and in areas subject to traffic.

C. On re-roofing projects, drainage should be assessed and, if necessary, provisions should be added to improve drainage. Consult with OUA for maintenance issues.

D. Rooftop piping, conduits, and equipment shall be mounted on supports specifically manufactured for roofing. Wood blocking is not an acceptable means of support.

073000.2 Roof System Selection:

A. The roof system selected shall be determined on a project-by-project basis. Although there is no single roof system requirement, the University requires that the following criteria be considered in selecting a roof system. Re-roofing projects shall include tear-off of old roofing

systems to original substrates.

1. **Built-Up Roofing Systems:** Built-up roofing (BUR) systems are preferred and should be utilized on all projects unless there is a project specific reason not to use them. BUR systems should be 4-ply coal tar or asphalt. Coal tar is preferred to asphalt. On projects where the fumes from hot tar are of concern, asphalt BUR should be specified. If the asphalt fumes are still more than the project can tolerate, other systems should be considered. On projects where staging a hot kettle would be a problem, or on small roofs where BUR is not feasible, a modified bitumen system should be considered.
2. **Modified Bitumen Roofing System:** Modified bitumen roof systems should be considered when built-up roof systems are not appropriate. Modified bitumen systems are composed basically of factory fabricated reinforced rolls of asphalt that have either SBS (rubber) or APP (plastic) polymer modifiers. SBS systems typically can be hot mopped torch applied, or cold adhered. APP systems are traditionally torch applied. Torch applied systems should be used over buildings with concrete decks, or where mopping is not appropriate (high rise, small areas, etc.). Extra precautions need to be taken to ensure protection from fire hazard, especially at blocking locations. If fire hazard concerns cannot be resolved, cold adhered systems should be considered.
3. **Single-Ply Membrane System:** Single-ply membrane systems should not be specified without specific approval from OUA. Only in the event that project conditions make a built-up or modified system inappropriate (as in areas of kitchen exhaust), single-ply systems should be considered. The type of single-ply membrane being considered should be based on project conditions. Reinforced and thicker (60 mil) membranes are preferred. Reinforced thermoplastic membranes (EP, TPO, PVC, CPA) are preferred over vulcanized elastomer membranes (SPDM) or non-vulcanized membranes (CSPE, CPE).

- 073000.3 **Project Management and Coordination:** Review methods and procedures related to roofing systems including, but not limited to, the following:
- A. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
 - B. Review roof drainage during each stage of re-roofing and review roof drain plugging and plug removal procedures.
 - C. Review structural loading limitations of deck during re-roofing.
- 073000.4 **Pre-Installation Conference:** Before starting roofing installation, A/E shall conduct a meeting with the roofer and job superintendent, roofing material manufacturer's representative, and owner's representative to review roofing materials and procedures. Record discussions and furnish copy of meeting notes to each participant.
- 073000.5 **Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.** Prevent debris from entering or blocking roof drains and conductors. Use roof drain plugs specifically designed for this purpose. Remove roof drain plugs at end of each work day, when no work is taking place, or when rain is forecast.
- A. If roof drains will be temporarily blocked or unserviceable due to roofing systems removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- 073000.6 **Built-Up Coal Tar Roofing:** Store liquid materials in their original containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer.

Protect stored liquid material from direct sunlight.

- A. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- B. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt with joints and edges sealed.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

07 31 00 SHINGLES AND ROOFING TILES

- 073100.1 Overlapping unit roof systems (shingles and tiles) shall not be used unless roof slope exceeds 3-1/2 units of rise per 12 units of run.
- 073100.2 Asphalt or fiberglass shingles shall be minimum fire resistive UL Class C, wind resistive type, 30 year guaranteed.
- 073100.3 Associate shall verify all fasteners are compatible with substrates and accessories and have adequate protrusions below sheathing. No staples shall be used.
- 073100.4 Water-resistant membrane shall be detailed in at valleys, roof edges, and other areas where ice build-up may cause water to enter the roof system.

07 41 00 METAL ROOF PANELS

- 074100.1 Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
- 074100.2 Finish Warranty Period: This warranty is project specific per product specified (how many years from date of contract completion).
- 074100.3 Review metal fastening system with OUA.

07 50 00 MEMBRANE ROOFING

- 075000.1 Factory Mutual: Materials and workmanship shall conform to 1-90 wind uplift resistance.
- 075000.2 Manufacturer's Warranty: After final inspection and approval by roofing manufacturer's representative, provide written warranty signed by manufacturer of primary roofing materials and his authorized installer, agreeing to replace/repair defective materials and workmanship as required to maintain roofing system in water-tight condition.
 - A. Warranty period is 20 years from date of contract completion.
- 075000.3 Contractor's Warranty: Submit two executed copies of the Contractor's Roofing Warranty, signed by the installer (roofer), agreeing to warrant the roof system. Review Manufacturer's Warranty with OUA.
 - A. Warranty period is 2 years from date of contract completion.
- 075000.4 Flashing shall be uncured neoprene sheet of not less than .60 mils (0.60 inch) thick of required shapes and sizes to suit project conditions. Flashing materials shall be furnished by the manufacturer of the sheet roofing membrane.

- A. Pipe seals shall be pre-manufactured neoprene boots.
- B. All flashings and counter-flashings, including pipe seals, shall be installed by the roofing contractor to assure a complete water-resistant installation.

075000.5 Wood members used in conjunction with roof system shall be pressure treated with water-borne preservatives for above ground use in compliance with AWPB LP-2.

075000.6 Minimum term for warranty shall be 20 years with no dollar limit, unless standard manufacturer's warranty exceeds this term. The general contractor, roofing subcontractor, and manufacturer shall furnish the written guarantee bearing their three signatures for the complete roof installation (including installation of items supplied by other contractors).

- A. The manufacturer's guarantee for sheet membrane material shall be executed and submitted with the general contractor's guarantee.
- B. The GC will submit the guarantee(s) in triplicate to A/E and the term shall begin upon contract completion.
- C. The primary responsibility for executing guarantee work shall lie with the GC.
- D. The guarantee shall include, at no cost to the University, all labor and materials required to repair or replace the entire roof system including insulation, membrane, slashing, sheet metal, coping, and roofing accessories as may be caused by faulty workmanship or materials.

07 62 00 SHEET METAL FLASHING AND TRIM

076200.1 All flashing and sheet metal work shall be as recommended by the sheet roofing membrane manufacturer and shall be included in the roof guarantee.

076200.2 All metal shall be compatible with surrounding systems.

076200.3 Gutters and downspouts shall be copper, stainless steel, or factory finished color-coated metal.

076200.4 Fascias and gravel stops shall be extruded aluminum, copper, stainless steel, or color-coated metal.

076200.5 The top of flashing (bottom of counter-flashing) shall be a minimum of 8" above the roof plane.

076200.6 The use of pitch pans is strongly discouraged. Items penetrating roof should be flashed with pre-formed accessories, secured to the roof and penetrating items.

076200.7 Relief vents shall not be installed unless roof no longer is under warranty and vents are recommended by the manufacturer of the sheet roofing membrane. For roofs beings constructed under warranty, all wet insulation shall be replaced.

076200.8 Walkways shall be provided to all major pieces of mechanical equipment and around all equipment that requires servicing. Provide elastomeric roof treads as recommended by the manufacturer of the sheet roofing membrane.

076200.9 Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricators or manufacturers of dissimilar metals.

07 72 00 ROOF ACCESSORIES

077200.1 Fasteners: Same metal as metals being fastened or non-magnetic stainless steel or other non-corrosive metal as recommended by the manufacturer. Match finish of exposed fasteners with finish of material being fastened.

077200.2 Provide tie-off connections for life safety lines. Review locations with OUA.

07 81 00 FIREPROOFING

078100.1 Sprayed-on fireproofing shall be 100 percent asbestos free. Sprayed-on fireproofing shall be a cementitious type. Specify higher density products if needed based on project requirements. Sprayed fiber type products are prohibited.

078100.2 Specify field quality control testing of sprayed-on fireproofing by an independent testing agency to verify that installed fireproofing complies with specified thickness, density, and bond strength prior to ductwork installation.

078100.3 Specify that installed fireproofing which is damaged during construction shall be repaired to original condition. On multiple prime projects, require that the contractor that disturbs the fireproofing be responsible for having it corrected.

078100.4 Coordinate the extent of fireproofing between structural and architectural documents. Specify that structural steel to receive fireproofing shall not be prime painted. Such steel shall be properly stored and protected to prevent surface rust. Require that applicators prepare steel in accordance with fireproofing manufacturer's recommendations to ensure proper bond.

07 92 00 JOINT SEALANTS

079200.1 The term "caulk" or "caulking" may be used in the documents to indicate joint sealants. The drawings, however, shall not indicate the specific type of sealant. Specifications shall define the types of sealants to be used for each specific condition and adjacent materials. NOTE: "Caulking" is correctly used for interior applications only. The sealant specifications shall include all accessories such as seals, water stops, backer rod, bond break tape, and primer.

079200.2 Sealants shall be specified for all exterior applications and those interior applications where caulking compounds are not suitable.

079200.3 For horizontal joints in concrete pavements or walks, use pourable urethane base sealant.

079200.4 Five years experience of applicator shall be certified to A/E prior to the installation of any sealants.

079200.5 Acceptance of conditions for application of sealant materials shall be solely the responsibility of the sealant subcontractor.

A. If substrate is not ready or cannot be made ready for application of these materials, the subcontractor shall notify the GC and A/E.

B. After sealant materials are installed, this subcontractor assumes all responsibility for the satisfactory installation of sealants.

079200.6 Installation of sealant materials shall be as late in the project as possible, but between cleaning operations and paint application. Do not install sealants when the temperature is below 40 degrees F unless approved by the manufacturer and Associate.

079200.7 A written guarantee for all joint sealants shall be provided by the GC and the sealant subcontractor agreeing to replace all materials which fail within 5 years after acceptance. Replacements shall be at no cost to the University. Guarantee shall be submitted to A/E in triplicate and shall be signed by the GC and the sealant subcontractor.

END OF SECTION

DIVISION 08 – OPENINGS

08 00 00 GENERAL REQUIREMENTS

- 080000.1 The minimum size for all doors shall be 3'-0" x 7'-0" x 1-3/4", except for chase access and other special doors. Mechanical room doors must be 42"W single leaf or 60" pair.
- 080000.2 Labeled construction shall be specified where required by code.
- 080000.3 ADA compliant access is required throughout the entire building except where specified by code. In storefront situations, provide 5" minimum high head frame for door operators. Run power through frame head to operator. Coordinate conduit and wiring pathways for operators, electric strikes, and access systems. Keep ceiling high enough so that there is ample space above the door for the operator.
- 080000.4 Multiple exterior doors shall be organized in pairs (latch to latch) and shall have fixed jamb separations between leafs except that at least one pair of doors shall have a keyed, removable mullion for large equipment access. Install locking device on one door leaf only.
- 080000.5 When possible, design a porch or overhang to protect exterior doors, card swipe readers, and pedestrians from snow and rain.
- 080000.6 Exit Doors: Coordinate conduit for operators, power, access systems, and stand alone or on-line security.
- 080000.7 All door frames to be tagged with room/door number. Refer to CSU Signage Standards.

08 11 13 HOLLOW METAL DOORS AND FRAMES

- 081113.1 All exterior doors, including exterior mechanical room doors, shall not be less than 16 gauge galvanized steel insulated doors with the top channel turned "web up" to eliminate dirt pockets.
- 081113.2 Interior doors and mechanical room doors shall not be less than 18 gauge metal. Solid grout head and jambs in high traffic or abuse locations.
- 081113.3 Door frames shall be one piece welded assemblies of not less than 16 gauge metal. Frames in interior walls of up to 8 inch thickness shall be full thickness of wall where wall finish protection is needed. Coordinate with OUA. Knock down frames may not be used unless otherwise approved by OUA.
- 081113.4 Frames in exterior walls and interior masonry shall be back primed with "Rhino Coat", recessed to inside face of wall and grouted solid.

08 11 16 ALUMINUM DOORS AND FRAMES

- 081116.1 Aluminum doors shall be medium or wide stile, thermal break construction with 10 inch bottom rail to accommodate wheelchairs.
- 081116.2 Heads of door frames shall be a minimum of 5 inches high.

- 081116.3 Standard finishes are clear anodized or bronze anodized aluminum. Any other manufacturer colors or custom colors shall not be specified unless approved by OUA.
- 081116.4 If custom colors are approved and specified, attic stock for doors, window stops, etc. shall be required in quantities of 200 feet per building.

08 14 00 WOOD DOORS

- 081400.1 Wood doors shall be solid core (particleboard preferred) with hardwood veneer; door shall be reinforced for all hardware including closers; prime or seal all hardware cutouts and top and bottom of door. Laminate clad doors may be preferred in some locations. All doors shall be prefinished unless otherwise approved by OUA.
- 081400.2 Bi-fold and bi-passing doors are prohibited.
- 081400.3 Exterior wood doors are prohibited unless specifically approved by OUA.
- 081400.4 Guarantee shall be a lifetime guarantee.
- 081400.5 Face veneers shall be book-matched. Rotary cut is prohibited. Coordinate door veneers with existing adjacent doors, if any. Verify door veneer selection with OUA.

08 33 00 COILING DOORS

- 083300.1 Upward acting doors shall be insulated metal or fiberglass with heavy duty track, electric operator, and weather-stripping. Verify spring duty cycle requirements for each installation. Motors shall be mounted to structure. (Clips in guides shall be cast metal, not stamped metal.)
- 083300.2 Multiple control locations may be required for operators. Include wall penetrations, pathways, stubs, pavement penetrations, and exterior conduit for exterior controls. With "foreseeable" future exterior controls, provide pathways including pavement knockout panels.
- 083300.3 Outside key switch or card swipe shall be coordinated with security requirements.
- 083300.4 Controls shall be up/down/stop.

08 51 00 ALUMINUM WINDOWS

- 085100.1 All habitable rooms shall have at least one operable window, or section of window (awning type preferred) unless otherwise approved by OUA. Verify screening requirements with OUA.
- 085100.2 In general, window frames shall be thermally broken 2" x 4-1/2" heavy commercial aluminum, flush dry glazed from the interior; bronze anodized finish.
- 085100.3 Spandrel panels shall be insulated units.
- 085100.4 Prior to acceptance by the University, proposed manufacturers must provide to the A/E copies of test reports by an independent laboratory which certify that the proposed window units meet or exceed current performance standards. Verify current standards with OUA. The following standards were current when this Guideline was issued:

- A. Air infiltration of an assembled sash and frame shall not exceed 0.70 cubic feet of air/minute/foot (ASTM E783-93) of sash perimeter when subject to the static air pressure developed from a wind velocity of 50 miles per hour.
 - B. No water leakage to the interior side of the window shall be present when tested according to the Metal Curtain Wall Manual Test C1.
 - C. Approved manufacturers: Vistawall, Kawneer, and Special-Lite.
- 085100.5 Written guarantee shall state that all components will meet specified performance requirements for a period of two years following acceptance.
- A. Weather-stripping shall be guaranteed for a period of five years.
 - B. Guarantee shall certify that all work is in accordance with the specifications and that defects will be repaired during the term of the guarantee at no cost to the University.
- 085100.6 Install windows in wall to positively drain to the exterior. Insure proper head flashing details.
- 085100.7 If custom colors are specified, attic stock stops for doors or windows shall be required in quantities of 200 feet per building.
- 085100.8 University standard finish colors are clear or bronze anodized, or other colors as approved by OUA.

08 52 00 WOOD WINDOWS

- 085200.1 Wood windows are prohibited.

08 62 00 UNIT SKYLIGHTS

- 086200.1 Unit skylights are generally prohibited because of fall protection issues. Consider clerestory windows instead of skylights.

08 70 00 HARDWARE

- 087000.1 A/E shall specify all required hardware for each opening. One manufacturer shall be scheduled with two other acceptable manufacturers listed (unless excluded by the University). All hardware shall be approved by OUA.
- 087000.2 On auto operators, electric strikes, electronic locks, and any other electronically controlled hardware device, A/E shall designate specific scopes of work for completely integrated and operational installation. OUA recommends that all control wiring be designated as the scope of the GC, and that all 120V or higher power wiring be designated as the scope of the electrical contractor.
- 087000.3 Hardware finish is to be BHMA 626 (US26D) satin chromium plated unless otherwise required to match existing hardware.
- 087000.4 All new locksets shall be part of a Card Access System in lieu of mechanical keys unless designated otherwise by OUA.
- A. Most exterior doors shall be part of an on-line, networked (hardwired) access system.
 - B. A/E shall design the exterior door hardware to integrate the electronic locks with the auto operator and security control panels. A/E shall coordinate a meeting with OUA and Access Control to determine the scope of the on-line access system.

- C. Protect exterior devices as much as possible from inclement weather.
 - D. Exterior doors shall include a proximity reader on at least one door with an auto operator.
 - E. In general, locksets will be provided by Access Control for installation by the GC. The project construction budget shall be used to purchase these materials so the A/E shall include this in his estimate. A/E shall review the specific project purchasing requirements with OUA.
- 087000.5 When metal keyed locks are to be used, specify Stanley Best Interchangeable Core (IC) locks to be provided by a factory-direct supplier only. Cylinders shall be able to accommodate Stanley Best IC 8P Master System master ring cylinder for all doors.
- A. Keying shall be done at the factory. Key all cylinders to a building master and to the existing Great Grand Master.
 - B. A minimum of three construction master keys (which will be voided once change keys are inserted into cylinders) are absolutely required.
 - C. Keying shall be determined by OUA and Access Control.
- 087000.6 Butt hinges for all interior doors shall be full mortise, 4-1/2" standard duty 3 ball bearing/5 knuckle. All exterior, mechanical room, and high traffic interior doors shall be full mortise 4-1/2" heavy duty ball bearing with non-removable pins – no pivots or cam action hinges allowed. Refer to General Requirements for paired mechanical room doors; provide surface mounted slide bolts top and bottom on fixed leaf with astragals.
- A. Acceptable Hinge Manufacturers: Stanley, Hager, and McKinney.
- 087000.7 Door stops shall be wall mounted with concealed wood blocking. Use floor mounted stops where wall mount will not protect door and wall. Use door checks on exterior doors subject to wind loads.
- 087000.8 Closers shall be LCN 4000 series for exterior doors and heavy traffic doors, and LCN 1400 series for interior doors, sized per application. Floor recessed or concealed in head closers are prohibited. Through bolting attachment of closers required at wood and hollow metal doors.
- 087000.9 Exit devices shall be Von Duprin 99 series. Single point latching is required. Exposed or concealed vertical rods are prohibited. Refer to General Requirements.
- 087000.10 Radio controlled handicapped door operators shall be compatible with the campus standard, LCN 4600 series electronic low energy door operator. Height of door head must be a minimum of 5" to accommodate mounting of unit. Provide wall button, prox reader as appropriate, and all accessories including electric strike releases and related wiring for a complete installation. Coordinate with swipe card lockset as necessary. Mount transmitter (wall push button) adjacent to opening; for pairs of doors, mount on side opposite to controlled door. NOTE: At pairs of doors, only one leaf should operate by door operator. The door operator shall function in conjunction with the on-line access system. Verify wiring diagram with OUA.
- 087000.11 Transmitters and receivers shall be multi-code with 10 dipswitches. The code shall be open, closed, open, closed, open, closed, open, closed, open, closed, to work with all other campus doors.
- 087000.12 Kick plates shall be 16 gauge, 10"H x 2" less than door width.
- 087000.13 Push/pull sets shall be 4" x 16" plates with appropriate pull. Verify pull style with OUA.
- 087000.14 Exterior doors shall be equipped complete with weather-strip, threshold, and door sweep with rubber molding on inside.

- 087000.15 Battery operated exit alarms shall be manufactured by DETEX per guidelines noted above.
- 087000.16 A coat hook shall be installed behind each office or laboratory door. A/E shall coordinate quantities and locations with OUA.
- 087000.17 Electric strikes to be HES.
- 087000.18 Retractable panic hardware to be Von Duprin.

08 80 00 GLAZING

- 088000.1 Exterior glazing shall be designed for energy conservation. In general, utilize solar cool gray glass in 1 inch insulated units.
- 088000.2 All glazing, including exterior windows, shall be tempered. If budget may restrict this item, bid this feature as an alternate.
- 088000.3 Where not required to be fire rated, interior borrowed lights shall be polished tempered or laminated glass.
- 088000.4 Glaze all windows and borrowed lights from “inside”, which will permit replacement without the use of multi-story scaffolding.

08 90 00 LOUVERS AND VENTS

- 089000.1 Architectural and mechanical louvers and vents shall be clearly identified on drawings regarding prime contractor responsibilities for providing and installation.
- 089000.2 Louver finish shall be powder coated. Review final color selections with OUA.
- 089000.3 All exterior louvers shall be specified to include 1/2” x 1/2” bird screen on the interior face.
- 089000.4 A/E shall verify elevator shaft ventilation requirements and specify those provisions accordingly.

END OF SECTION

DIVISION 09 – FINISHES

09 00 00 GENERAL REQUIREMENTS

- 090000.1 Provide minimum frame spread ratings for interior finish materials as required.
- 090000.2 A/E shall submit all technical data as required for finish certification to the building department for final plan approval.
- 090000.4 Finish Binders: A/E shall provide labeled/coded samples of all finish materials along with the Bid Set submittal. Sample codes to coincide with finish legend. Samples and legend shall be bound in a hard cover, high quality, three-ring binder. The binder shall include a transparent vinyl sleeve on the front cover and the binder spine to protect labeling. The binder shall be labeled on the front as well as the spine with the A/E name, project name, CSU project number, and "Finish Specifications". Finish samples to be mounted on 8-1/2" x 11" cardstock and protected within plastic sleeves. A/E shall provide updates as necessary so that the binder is accurate upon Record Drawing submittal.
- 090000.5 Finish Boards: A/E shall provide "presentation" boards to include labeled/coded samples of all major finish materials mounted on 24" x 36" black gatorboard. Sample codes to coincide with finish legend mounted to back of board.

09 22 00 METAL FRAMING SYSTEMS

- 092200.1 Patented ceiling systems which are required for the support of plaster or gypsum board ceilings should be specified in separate sections and noted on details.
- 092200.2 All framing shall be at a maximum of 16 inches on center minimum, 22 gauge metal studs.
- 092200.3 All door and window jambs shall show a minimum 18 gauge stud full height from floor to structural deck or top of wall, jack studs, and head framing. A/E shall indicate stud gauges on door and window details.
- 092200.4 Ceiling suspension attachment to structure above shall be designed and specified by A/E.

09 24 00 PLASTERING

- 092400.1 Plaster is permitted for ceilings and patch of existing plaster only. Coordinate application with OUA.
- 092400.2 Stucco is prohibited.

09 29 00 GYPSUM BOARD

- 092900.1 All material to be minimum 5/8" fire resistance rated gypsum board unless otherwise required for special applications. Abuse resistant gypsum board is recommended for high traffic public areas.
- 092900.2 Gypsum sheathing is required behind acrylic or fiberglass reinforced panel systems when installed over metal framing systems.

- 092900.3 All corner bead to be metal unless identified for specific details.
- 092900.4 A/E shall review the level of gypsum board finish as appropriate for specific locations with OUA relative to recommended Levels of Gypsum Board Finish GA-214-M-97. A/E shall review lighting conditions (wall wash type fixtures, paint gloss, etc.) to determine finish level required as well.
- 092900.5 Moisture resistant gypsum board guidelines for specifications/drawing notes:
 - A. All moisture resistant gypsum board or shaftwall shall be fire rated.
 - B. Moisture Resistant/Fire Rated gypsum board shall be specified for the following areas (in addition to standard practice for restrooms and other wet areas).
 - 1. All partitions and furred walls at stories below or partially below grade.
 - 2. All vertical and horizontal pipe chases, soffits, and all inaccessible areas including plumbing and heating/cooling HVAC piping.
 - C. Moisture Resistant/Fire Rated gypsum board shall be required by coordinated drawing notes, general notes, special or supplemental conditions, and other directions to the GC and/or general trades contractors in reference to:
 - 1. Scheduling work and the project's construction schedule, delays due to weather, etc.
 - 2. Phasing, sequencing, and coordination of other contractor's work, delays due to others, etc.
 - 3. Providing building enclosures, temporary heat and dehumidification, etc. so that all gypsum board installed on the project that may be exposed to moisture due to any of the above shall be installed as moisture resistant/fire rated gypsum board, whether specifically indicated on the drawings or not.
- 092900.6 Increased costs for moisture resistant/fire rated board, or replacement of previously installed gypsum board to moisture resistant gypsum board, due to delay or impediments caused by other contractors shall be back-charged to the parties causing the delay and exposure.
- 092900.7 Installation of all materials shall be as recommended by the Gypsum Association Handbook.
- 092900.8 A/E shall determine if more extensive measures (such as exterior gypsum board) are required due to project conditions or scheduling.

09 30 00 TILE

- 093000.1 Ceramic floor and wall tile is required for all restrooms and shower rooms. Tile is preferred in areas of food preparation, food serving, and other common areas of similar use as confirmed with OUA. Other suitable solid surface materials are acceptable as approved by OUA.
- 093000.2 Install floor tile flush with adjacent materials without the use of reducer strips.
- 093000.3 Provide tile backsplash and end splashes where tile is mounted on walls above counters. Bullnose all exposed edges.
- 093000.4 All floor tile grout shall be a sealed epoxy grout and wall tile grout in high traffic wet areas shall also be sealed. Grout color shall be approved by OUA.

09 51 00 ACOUSTIC CEILINGS

- 095100.1 Auxiliary support systems for acoustic ceilings should be specified within the section for acoustic

ceilings. Ceiling systems shall be supported from structure or suspension system attached to structure with toggle bolts, self-drilling anchors, or their approved system. Ceilings shall not be supported from ductwork, conduit, HVAC lines, or associated supports.

- 095100.2 Mineral fiber lay-in panels shall be 2' x 4' or 2' x 2'. Non-standard sizes are prohibited. Basis of design product: Armstrong Dune 2x2.
- 095100.3 All ceiling systems should be readily accessible. Metal ceiling systems (i.e. paraline) and concealed specialty systems should be limited to areas which will require minimal access and approved by OUA. Spline systems are prohibited.
- 095100.4 Suspension systems shall be supported directly from the building structural system and shall be supported at four corners of each lay-in fluorescent light fixture.
 - A. Lay-in fluorescent light fixtures are to be supported directly to the structural system (independent of the ceiling grid) with a minimum of two auxiliary hangers at opposite corners of each fixture. Ceiling installer to provide and install auxiliary hangers to deck. Electric contractor to attach hangers to fixtures.
 - B. A/E shall identify this separation of work in both the ceiling sections and the electrical section of the specifications.
- 095100.5 Fire rated ceiling finish materials should be gypsum board or lay-in ceiling systems which do not require clips to achieve fire ratings.
- 095100.6 In renovation situations, A/E shall specify removed ceiling tiles shall be recycled in a program by or similar to Armstrong (www.Armstrong.com/environmental).

09 65 00 RESILIENT FLOORING

- 096500.1 A/E shall specify standard testing methods for determination of relative humidity in concrete flooring, moisture vapor emissions rate of concrete subfloor, and outline GC responsibility for conducting tests prior to installation of materials.
- 096500.2 Cleaning and waxing of all resilient flooring materials (per manufacturer's recommendation) is required by the GC prior to acceptance.
- 096500.3 Resilient base shall be 1/8 inch thick by minimum 4 inch high rubber with cove/toe for all installations. Pre-molded corners are required. Internal and external corners shall be field formed with joints 18" minimum from the corners. Ends shall be beveled and rounded. Resilient base color shall be integral throughout.
- 096500.4 A/E shall specify transition strips between varying floor materials which shall meet all ADA requirements noted in ADAAG.
- 096500.5 Provide 1/8 inch rubber flooring (treads, risers, and field tile) in all stairwells and stair landings. A/E shall specify in the finish schedule that landings are to be tiles and treads are to be pre-formed. Metal stringers shall be painted.
- 096500.6 Rubber flooring material preferred for stairwells is a "hammered" speckle design in lieu of a solid, raised disc/square pattern.

- 096500.7 A/E shall coordinate areas with special flooring requirements (such as food service areas) with OUA.
- 096500.8 Homogenous linoleum sheet flooring or homogenous linoleum tile made of natural materials is acceptable when rated for extra heavy commercial traffic. A minimum of 45% post-industrial recycled content is recommended.
- 096500.9 Vinyl composition tile shall have a minimum post-consumer and post-industrial recycled content of 10%. A/E may propose resilient materials other than VCT that are advantageous to the project upon approval from OUA.

09 66 00 TERRAZZO

- 096600.1 In building renovations, effort shall be made to preserve and restore existing terrazzo whenever possible.

09 68 00 CARPET

- 096800.1 Carpet will be specified as part of the general contract unless otherwise determined by OUA.
- 096800.2 Carpet to be modular/tile, minimum 26 oz. total weight, nylon loop pile, non-latex based backing, direct glue down installation. The use of broadloom carpet must be approved by OUA and FM.
- 096800.3 Carpet shall meet the minimum specified requirements:
- A. Tufted
 - B. Fiber content: 100% solution dyed nylon
 - C. Gage: 1/8"
 - D. Face weight: minimum 26 oz.
 - E. Primary backing: woven or non-woven polypropylene or polyurethane from recycled sources
 - F. Secondary backing: woven or non-woven polypropylene
 - G. Backcoating: thermoplastic copolymer
 - H. Static control: less than 3.0 kV per AATCC 134
 - I. Recycling: carpet to contain recycled content, is recyclable, and meets LEED standards
 - J. Colorfastness to light: AATCC 16E, 200 AFU, International Gray Scale for Color Change rating min 3-4. Colorfastness to atmospheric contaminants: AATCC 164 (ozone) and AATCC 129 (oxides of nitrogen) for two cycles, International Gray Scale for Color Change rating min 3-4
 - K. Carpeting shall generally have a stain resistance and soil resistance
 - L. Warranty: must meet or exceed a 10 year warranty
 - M. Indoor air quality: maximum 0.5 mg/m²hr total VOC emissions per ASTM D5116
- 096800.4 A/E shall utilize and/or coordinate proposed carpet with carpets listed on CSU Finish Standards. Any carpet not listed on standards must be approved by OUA.
- 096800.5 Action back carpet is not acceptable. Preferred backing type is EcoWorx.
- 096800.6 Cushion back carpet tile may be used in specific locations as approved by OUA and FM.
- 096800.7 Submittals required for approval by OUA shall include:
- A. Shop drawings of seam layouts.
 - B. Manufacturer's notarized statement that carpet assembly meets the requirements of ASTM-

E84 for flame spread rating and smoke developed rating of 75 or less. Carpet shall also comply with OBC 804 and NFPA 253 – Class II 0.22 watts/cm².

- C. Certified chemical analysis of all toxic gases noted during the combustion test including relative quantities of each and degree of toxicity and irritability. Certification shall be countersigned by the installer who is responsible for compliance with the manufacturer’s requirements.
- D. Warranty: Manufacturer’s standard form in which the manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship against edge ravel, delaminating, zippering, and backing failure for a period of 10 years from date of contract completion.

096800.8 Adhesive materials, accessories, and application equipment shall be as approved by the manufacturer.

096800.9 Entry and vestibule areas shall have modular, walk-off type carpet tile, similar to Interface “Entry Level” 28 oz. solution dyed. Refer to section 12 48 00 Entrance Mats.

096800.10 In renovation situations, A/E shall specify that all removed carpet shall be recycled in a program by or similar to Shaw (<http://www.shawcontractgroup.com/Html/EnvironmentalReclamationRecycling>).

09 69 00 ACCESS FLOORING

096900.1 Accessible flooring systems shall be specified as appropriate to project specific conditions. Coordinate with OUA.

096900.2 Install system per manufacturer’s recommendations, including auxiliary structural support and accessories.

096900.3 Coordinate heights of all mechanical and electrical fixtures with floor.

096900.4 Provide ramp or other transition for disabled access (and handrails) if access floor cannot be recessed to match adjacent finish floor elevations.

09 72 00 WALLCOVERINGS

097200.1 The use of wallcovering shall be limited and only where approved by OUA. If approved, wallcovering shall only be used in public areas and upper echelon offices as budget allows.

097200.2 All marking on substrate from ink pens, markers, etc. shall be removed prior to finish.

097200.3 All substrates shall be primed, sealed, and prepared for wallcovering removal with a mildew resistant primer.

09 84 00 SOUND ATTENUATION

098400.1 A/E shall specify wall and ceiling systems to insure acoustical privacy as follows:

- A. Executive offices: STC 52 minimum
- B. Offices, conference rooms, counseling rooms, meeting rooms, janitor closets, and electrical closets containing transformers: STC 45 minimum
- C. Classrooms: STC 42-47 minimum

- D. Toilet rooms: STC 47 minimum
 - E. Sleeping rooms: STC 52-58 minimum. Exterior walls as dictated by code or meet nationally recognized sound isolation criteria.
 - F. Floors: IIC 55 minimum
 - G. Any other areas requiring confidentiality shall meet nationally recognized sound isolation criteria.
 - H. Sound isolation shall be specified and detailed as continuous sealant wherever possible.
- 098400.2 Ceilings do not require additional sound attenuation if insulated walls are continuous to the deck above. If walls are not continuous to the deck above, install a 4"W sound attenuation batt over top of insulated walls to form a continuous sound barrier.
- 098400.3 Project requirements may dictate having an acoustic consultant on the A/E's design team. Review acoustic issues with OUA and the Center for Instructional Technology and Distance Learning (CITDL).
- 098400.4 Room acoustics to be taken into consideration when planning for and designing Distance Learning rooms. A/E to consult with CITDL.

09 91 00 PAINT

- 099100.1 In lieu of attic stock of paint and sealant materials, the contractor is required to provide a detailed finish schedule denoting manufacturer, type, color, location and any other pertinent information required to match the product in future maintenance or repairs. The schedule is to be provided at project closeout to OUA.
- 099100.2 Contractor shall remove remaining paint and coatings from the job site and properly dispose of after final punch list is completed at their own cost.
- 099100.3 A/E shall prepare a schedule for all surfaces to be painted and the number of coats with dry film thickness for each. Type and number of coats is variable, but the following systems are recommended.
- A. Stained interior woodwork: 1 coat filler (for open grained wood); 1 coat stain; 2 coats satin clear finish (2.0 mil thickness minimum). Back prime all trim and fill nail holes and gaps at joints.
 - B. Painted interior woodwork: 1 coat alkyd primer; 2 coats alkyd finish (semi-gloss). Back prime all trim and fill nail holes, caulk gaps at joints.
 - C. Wood doors: For new construction, Associate shall specify factory prefinished doors only. For renovation work that requires matching existing wood doors, use 1 coat stain and 2 coats satin clear finish (2.0 mil thickness minimum).
 - D. Metal doors and frames: 1 coat factory shop primer; 2 coats semi-gloss alkyd enamel. Paint tops and bottoms of doors.
 - E. Gypsum board: 1 coat primer/sealer; 2 coats eggshell (unless noted otherwise) latex enamel.
 - F. Interior concrete block: 2 coats latex block filler; 2 coats semi-gloss latex enamel.
 - G. Interior concrete floors: 2 coats water-based epoxy for moderate exposure, clear, with gloss finish. Prepare floor per manufacturer's recommendations.
 - H. Interior ferrous metal: 1 coat shop primer; 2 coats semi-gloss alkyd enamel.
 - I. Exterior ferrous metal: 1 coat shop primer; 2 coats gloss alkyd enamel. If possible, powder coat exterior ferrous metal, refer to Section 055000 for requirements.

- 099100.4 Accent Colors: If anticipated to exceed 5% of the project, A/E shall note accent color locations/ extents to aid the bidders, and include a statement that information given in no way restricts the A/E in the selection of paint colors.
- 099100.5 Water-based interior coating paint systems such as Scuffmaster are preferred in high profile, high traffic areas in lieu of wallcovering. Review with OUA. A/E shall specify patch kits for FM.
- 099100.6 Exposed piping to be painted shall be clearly identified by A/E on the drawings and specifications. A/E shall identify proper preparation technique for the pipe to receive paint.
- 099100.7 Hollow metal frames shall be caulked where they meet adjacent surfaces. A/E shall specify this work to be performed by the painting contractor.
- 099100.8 Preferred product is Sherwin Williams Harmony, which contains the following properties:
- A. Zero VOCs
 - B. Colorants that do not add VOCs when tinted
 - C. Anti-microbial
 - D. Formaldehyde reducing technology
 - E. Odor eliminating technology
 - F. ASTM D-2486 Average Scrub Results: 1,000 cycles.
 - G. ASTM D-4828 Average Washability Results: Good/3.2
- 099100.9 Epoxy paint shall be specified for all wet area, including but not limited to restrooms, shower rooms, and janitor closets with mop sinks.
- 099100.10 All markings on substrate from ink pens, markers, etc. shall be removed prior to finish.

09 97 00 SPECIAL COATINGS

- 099700.1 Special coatings shall be limited and used only where directed by OUA. Mechanical room and other service room floors in all buildings shall be completely sealed from water and moisture penetration to the floors below. Coating shall meet current VOC requirements set by the EPA for special coatings.

END OF SECTION

DIVISION 10 – SPECIALTIES

10 11 00 CHALKBOARDS, TACKBOARDS, AND MARKERBOARDS

- 101100.1 Markerboards are preferred in general classroom areas. Chalkboards are prohibited in dust critical areas such as computer labs.
- 101100.2 Chalkboards and markerboards shall be porcelain enameled steel as follows: 2 coats porcelain enamel; 28 gauge enameling steel; 1/2" industrial fiberboard core; 0.005" thick aluminum backing sheet.
- 101100.3 Chalkboards and markerboards shall be specified with 2" minimum map rail with cork tack strip.
- 101100.4 Tackboards shall be 1/4" thick cork over 1/4" hardboard backing or fabric laminated over 1/2" fiberboard (such as Homasote). A/E shall coordinate locations for tackboards in public areas with OUA.
- 101100.5 Frames and trays shall be aluminum with concealed fastening devices. Mount boards to wall with necessary blocking in stud cavity.
- 101100.6 Guarantee shall be submitted to OUA, signed by an officer of the manufacturer, stating that all chalkboards and markerboards which do not retain the original writing quality, erasing quality, and visual acuity for 20 years after acceptance shall be replaced, including installation, at no cost to the University.
- 101100.7 For interactive whiteboards, follow mounting specifications provided by manufacturer and consult with CITDL for mounting height and location. Provide low voltage pathway back to location of room computer.

10 14 00 SIGNAGE

- 101400.1 All signage shall comply with CSU Signage Standards and ADA requirements.
- 101400.2 Room numbering shall be coordinated with OUA Planner and Access Control.
- 101400.3 Unless otherwise directed by OUA, the project shall include: exterior monument signs, exterior secondary building ID signs, building directory, floor directories, directional signs, emergency refuge area signs, code required signage (such as occupant load), room ID signs, door frame tags, and donor recognition signage.
- 101400.4 A/E shall specify sign contractor to provide a full sign schedule for review during shop drawing phase of project. A/E shall review sign schedule with OUA prior to issuance for fabrication.

10 21 00 TOILET PARTITIONS

- 102100.1 Finish shall be baked on enameled steel, phenolic core, or solid HDPE plastic. Coordinate finish selections per location with OUA.
- 102100.2 Toilet compartments shall be floor to ceiling supported with a continuous hinge, overhead braced, and with stainless steel shoes. Overhead bracing or brackets shall be aluminum or stainless steel.

- 102100.3 Urinal screens (when required) shall be stainless steel with secure mounting to withstand lateral and vertical loads.
- 102100.4 All anchors, fasteners, fittings, and required hardware (hinges, latches, etc.) shall be stainless steel, vandal-proof type.
- 102100.5 Spring loaded, hold open hinges are preferred.
- 102100.6 Associate shall indicate on drawings and specifications that toilet stalls shall comply with current ADAAG.

10 22 19 DEMOUNTABLE PARTITIONS

- 102219.1 Demountable wall systems are prohibited.

10 22 23 OPERABLE PARTITIONS

- 102223.1 Support shall be overhead with no bottom track.
- 102223.2 Typically, operation shall not be motorized except for special installations.
- 102223.3 Sound rating shall be STC 45 minimum, STC 50-55 is preferred if budget allows.
- 102223.4 Accessories shall include automatic bottom seal, jamb seals, and doors on storage pockets.
- 102223.5 Passage doors, if requested by users, through operable partitions are not recommended for primary circulation. Design spaces so required exits do not occur through operable partitions.
- 102223.6 Preferred finish is fabric. Coordinate with OUA.
- 102223.7 Coordinate tack surface or markerboard requirements, if any, with OUA.

10 26 00 WALL AND DOOR PROTECTION

- 102600.1 Coordinate required wall and corner guard locations and material selections with OUA.
- 102600.2 Typically, corner guards will only be required in public corridors and high abuse service areas.

10 28 00 TOILET ACCESSORIES

- 102800.1 A/E to insure adequate space, clearance, and blocking for installation. A/E shall indicate on the drawings mounting heights and dimensioned plan locations for all equipment to comply with the current edition of ADAAG.
- 102800.2 Solid wood blocking shall be specified behind all items. Mount with concealed fasteners wherever possible. Tamper-proof fasteners shall be used at all other locations.
- 102800.3 All dispensers to be surface mounted.

- 102800.4 Free standing waste receptacles are preferred. Design sufficient floor space in toilet room for freestanding unit (24"W x 24"D).
- 102800.5 Products:
- A. Hand soap dispenser: ChemSafe DHP-1570 white foaming dispenser
 - B. Shower soap dispenser: ChemSafe AR100
 - C. Toilet paper dispenser, Twin 9": ChemSafe R27TS
 - D. Toilet paper dispenser, Single 9": ChemSafe R26TS
 - E. Hand dryer: Xlerator XL-SI-1-1N is preferred method of hand drying where applicable. Verify substitutions and paper dispensers with OUA and FM.
 - F. Paper towel dispenser, no-touch, standard size: Kimberly-Clark KCC-09990-20
 - G. Paper towel dispenser, no-touch, narrow size: Kimberly-Clark KCC-09746 (fits standard roll)
- 102800.6 Locker room shower soap dispensers shall be ChemSafe model AR-100. This unit shall be provided by the vendor and installed by the contractor.
- 102800.7 Sanitary napkin receptacles best application is: "Safe-Use Sanitary Napkin Receptacle" model COM-1102. [Available through www.hescoinc.com, "Unit empties from the bottom so hands never touch the contents. Prevents exposure to and the spread of disease. Wall mount unit operates by pulling forward at bottom of unit and liner automatically drops into waste receptacle for safe use action. 10-5/8" x 9" x 4-5/8". White color."] Provide and install one (1) per toilet compartment in women's restrooms and unisex toilet rooms.
- 102800.8 Mirrors shall be 1/4" float/plate glass with wrap-around stainless steel frame and steel back plate. Provide mirrors above lavatories and one wall mounted full-length mirror (for disabled) per restroom outside of stalls.
- 102800.9 Garment hooks shall be compartment manufacturer's standard. Mount one per stall door with integral door bumper.
- 102800.11 Parcel shelves minimum depth to be 8". Provide one per toilet room outside of stalls.
- 102800.12 Broom/mop holders shall be installed over the mop basin in every custodial space. Provide waterproof wall finish (i.e. stainless steel or FRP) to underside of mop holder at these locations.
- 102800.13 Vending machines for sanitary napkins and condoms are not required.
- 102800.14 A/E to define all accessory types, locations, and quantities on the contract drawings.

10 44 00 FIRE PROTECTION ACCESSORIES

- 104400.1 A/E shall specify and indicate on drawings number, type, location, and size of extinguishers and cabinets per NFPA. A/E shall specify that GC shall provide all extinguishers as well as cabinets.
- 104400.2 Typically, extinguishers shall be multi-purpose (ABC) dry chemical type, minimum capacity 10#. Coordinate unique location requirements with OUA and Fire Prevention Officer. "Amerex" Brand extinguishers are not acceptable.
- 104400.3 Fire extinguisher cabinets shall be semi-recessed type with clear, protruding 'bubble' door. "Break glass to enter" type cabinets are prohibited. All cabinets shall be keyed with breakaway or

bendable latch.

- 104400.4 Fire extinguisher cabinets shall be supplied with labels on both sides indicating "Fire Extinguisher" per NFPA. Wall mounted signs are prohibited.
- 104400.5 All buildings shall include at least one "Knox Box" Rapid Entry System key holder #3270, hinged door, recessed mount. A/E shall indicate that the Knox Company requires authorization from CSU Fire Prevention Officer for order and that the box shall be keyed identically to other CSU Knox Boxes.
- 104400.6 In some instances, a Knox Locking Storz Cap #3080 will be required, keyed identically to all other CSU Knox Boxes. Coordinate with OUA and Access Control.

10 51 00 LOCKERS

- 105100.1 Material shall be enameled steel unless project requirements dictate otherwise.
- 105100.2 Size and quantity will be shown on the drawings and determined by the user program.
- 105100.3 Install lockers fully recessed into wall or with sloped top.
- 105100.4 Doors shall be vented with silencers, latch, and integral recessed hasp.
- 105100.5 Base shall be solid base with toe space and sanitary cove.
- 105100.6 Accessories shall include shelves, robe hooks and/or rods as defined by user program.

10 55 00 POSTAL SPECIALTIES

- 105500.1 In general, only residence halls require USPS approved mailboxes. The mailboxes for student residents shall be heavy duty, key-operated. Minimum size box shall be 3-1/2" x 12" with viewer window and engraved number on each door. Boxes shall be rear loading type, mounted no lower than 18" AFF.

END OF SECTION

DIVISION 11 - EQUIPMENT

11 00 00 GENERAL REQUIREMENTS

- 110000.1 The user program will identify which equipment is to be specified and which equipment is to be provided by the University. Specify all electrical and mechanical connections for University provided equipment.
- 110000.2 Specify all fixed equipment as required to respond to the program. Where applicable, OUA will advise A/E of experience with specific types and manufacturers.
- 110000.3 Moveable equipment will be specified by OUA unless specifically included in the A/E's scope of work. A/E to coordinate all necessary components for the moveable equipment to be functional upon occupancy.
- 110000.4 Submittals by A/E specified equipment suppliers shall include rough-in drawings for the other prime contractors.
- 110000.5 A/E shall coordinate all aspects of equipment installation including receiving, unloading, distribution, and trade jurisdictions.

11 32 00 UNIT KITCHENS

- 113200.1 Unit kitchens are prohibited. When serving kitchens are required, use base cabinets with drop-in appliances or with recesses for owner supplied appliances.

11 52 13 PROJECTION SCREENS

- 115213.1 Manually operated. Concealed blocking or reinforcing for mounting must be specified.
- 115213.2 Electrically operated screens for large lecture halls, auditoriums, etc. are to be specified with fully automatic operation. Two control stations (front and rear of room) are required. When controlled AV system present, screens are to be controlled automatically by the AV system. Concealed blocking or reinforcing for mounting must be specified.
- 115213.3 Refer to Division 27 for additional information.

11 53 13 FUME HOODS AND SAFETY EQUIPMENT

- 115313.1 The design of fume hoods shall be based on end use of science being performed and coordinated with OUA. Fume hood design shall include the following options and specifications:
 - A. Standard fume base of design shall be provided with a food face velocity of 100 FPM in occupied room condition and minimum of 65 FPM in an unoccupied room condition. Velocities above 100 FPM shall be reviewed with OUA. Only radioisotope and perchloric fume hoods can be designed with higher velocity rates (not greater than 125 FPM). Perchloric hoods shall be avoided.
 - B. Low flow hoods based on 85 to 65 FPM shall be reviewed with OUA and EHS. Use of low flow hoods should not be considered for any research or high toxic or heavy concentration of chemical use. Low flow hood applications have to be approved by OUA, EHS, and end users. Written sign-on shall be required.

- C. Fume hood designs should be based for VAV applications unless designed for single exhaust fan application in which case fume hood could be constant volume. Engineer shall incorporate energy reduction measures whenever possible and all control sequence of operations shall be coordinated with OUA and end user.
- D. Fume hood lab controls and room pressurization shall always be reviewed with OUA prior to selection of fume hood design. Room or hood occupancy sensors shall be used for control of fume hoods for both an occupied and unoccupied control strategy. Fume hoods shall maintain constant 100 FPM across the sash opening during occupied and 65 FPM in unoccupied room condition.
- E. Fume hoods base of design will incorporate latching hood sash positioners for horizontal sash set at 6", 18", 24", and full open positions above hood working surface. Fume hoods having a sash above 18" shall be coordinated with OUA. Vertical sash side by side hood design shall also be coordinated and shall include 100 FPM throughout the hoods whole open face area.
- F. Walk-in fume hoods shall be reviewed with OUA prior to consideration or selection.
- G. Dual sash or bi-directional fume hoods shall be coordinated with OUA.
- H. Fume hoods shall be furnished with baffle plates, audible and visual alarms devices complete with mute. Hoods shall indicate normal operation of face velocity. Face velocity readings are preferred. Indicator lights red, yellow, and green shall be optional.
- I. Fume hoods shall be of a by-pass design and shall include proximity sensors if part of a central fume hood system. If single hood with single fan, hood fan switch shall be furnished.
- J. Fume hoods shall be designed with interior lighting package and factory wired switch mounted on the outside of the hood.
- K. Fume hoods shall be reviewed for associated lab gases and all fume hood piping shall be coordinated and extended to the edge of the fume hood assembly. Pipe orientation shall be coordinated by installing contractor based on position to building services. Power wiring for fume hoods shall be of single point of connection having a j-box for final termination. All wiring within the fume hood shall be factory installed, tested, and meets NEC and UL classifications along with AHJ for state and local codes.
- L. Fume hood working surface shall be made of acid resistant material. All hood components associated with the hood shall be epoxy resin or stainless steel which is designed for the chemical in which the fume hood will be exposed. Fume hood material selection shall be coordinated with OUA. Chemical concentration level shall be required from end user along with lab operations and safety protocols to design professional. Bottom sash by-pass shall be made of stainless steel for impact and added chemical resistant. Review location and construction with OUA.

115313.2 Lab Safety Equipment:

- A. Each research or general laboratory shall be furnished with an emergency eyewash station, combination eyewash/shower, and shower. These fixtures shall meet OSHA and ANSI X358.1 and installed to ASPE, OSHA, ASSE and LABS21 guidelines and manufacturers' recommendations for both use and installation.
- B. Sanitary drainage system shall be coordinated with science and use of chemical resistant type of system shall be reviewed with OUA.
- C. Tepid domestic water system shall be utilized for any safety equipment. Temperature setting shall be reviewed with CSU safety personnel and end user of the laboratory. Written operating, testing, and maintenance program of emergency lab safety devices of system shall be required to be submitted on any system being installed. Training on proper use shall also be incorporated into the design for lab spaces. Tepid water system shall use mater mixing valve designed for use in this type of application. Lawler is the preferred mixing valve manufacturer.
- D. Emergency shutoff valves for lab gases (flammable) shall be installed for all classrooms and

research laboratory facilities. Shutoff valves are to be recessed, provided with panic button and keyed for manual override to close gas process. Isolation valves shall be UL rated for the gas type and pressure rated to meet ASTM and ANSI standards.

- E. Laboratory process gas material, cylinder system, central plants, and manifolds shall be reviewed with OUA. All piping and fittings for lab equipment shall be designed to meet ASTM and ANSI standards for all lab equipment, materials, and pressure ratings associated with the process requirements of the process gas being furnished. Quantities and storage requirements shall comply with NFPA.

115313.3 Lab Chemical Storage and Flammable Storage Cabinets and Rooms:

- A. Chemical storage cabinets shall be constructed and ventilated per manufacturer's recommendations. The exhaust from chemical storage shall be connected to the building chemical and fume hood exhaust systems. The duct connection and cabinet shall be made of such materials which can handle the chemical resistance of the materials being stored. The exact CFM quantity shall be reviewed with OUA and lab safety personnel. Engineer shall provide in the design a means of balancing the ventilation air from the storage device or casework.
- B. Flammable storage cabinets shall be ventilated per NFPA and manufacturer's recommendations. Flammable storage cabinet shall be UL approved for storage cabinet classification of quantities allowed to be stored according to the building classification, quantities allowed by code, AHJ, and the University. Flammable storage cabinets shall only be exhausted into an approved exhaust system designed for flammable vapors. Explosion proof ventilation system shall be used at all times. The connection, locations, size, and ventilation needs of such cabinets shall be reviewed with OUA, EHS and lab safety personnel prior to design and installation.
- C. Storage rooms for chemical or flammable liquids shall be reviewed with OUA, EHS, and lab safety personnel.

115313.4 Work tops within fume hoods shall be solid epoxy or stainless steel. Sinks shall be integral.

END OF SECTION

DIVISION 12 – FURNISHINGS

12 00 00 GENERAL REQUIREMENTS

- 120000.1 Interior furnishings will be specified by A/E unless directed otherwise by OUA.
- 120000.2 Furniture Binders: A/E shall provide furniture photos, specifications, fabrics, finish materials, schedules and plans bound in a hard cover, high quality, three-ring binder along with the Bid Set submittal. The binder shall include a transparent vinyl sleeve on the front cover and the binder spine to protect labeling. The binder shall be labeled on the front as well as the spine with the A/E name, project name, CSU project number, and “Furniture Specifications”. Samples to be mounted on 8-1/2” x 11” cardstock and protected within plastic sleeves. Two sets of binders shall be provided: one for OUA and one for the client. A/E shall provide updates as necessary so that the binders are accurate upon Record Drawing submittal.

12 20 00 WINDOW TREATMENTS

- 122000.1 A/E will specify window treatments to be included in base bid work.
- 122000.2 The preferred product for interior sun control is manually operated shading fabric such as MechoShade Series 1300. Coordinate shading density and material selections with OUA.
- 122000.3 1” horizontal aluminum slat blinds with jamb channels are acceptable when matching existing window treatments within a renovation project.
- 122000.4 Vertical blinds are prohibited.
- 122000.5 Use blackout treatment in audio visual areas when required.
- 122000.6 Coordinate motorized blind requirements with OUA. Specify electrical connections and controls clearly within electrical contract. For rooms with AV controls, tie in control of the shades with AV system.
- 122000.7 Specify all concealed blocking or reinforcing as required for secure installation of the window treatment.

12 35 53 LABORATORY CASEWORK AND FIXTURES

- 123553.1 Utility fixtures and fittings shall be at least of the quality specified for the plumbing, mechanical, and electrical prime contractors. Associate shall verify corrosive resistant materials are required.
- 123553.2 Water faucets with hose connections shall be specified with vacuum breakers.
- 123553.3 Ducts for fume hoods shall be specified with non-corrosive lining.
- 123553.4 Laboratory casework and countertop material selection shall be coordinated with OUA.

12 48 00 ENTRANCE MATS

- 124800.1 Entrance mats to be modular, walk-off type carpet tile, 28 oz. solution dyed. Preferred product is

Interface "Entry Level" in Black. Deviations must be approved by OUA and FM.

124800.2 Use of recessed mats supported on aluminum extrusions are discouraged.

124800.3 Floor drains below entrance mats are prohibited.

124800.4 Recessed mats, if specified, will be readily removable for cleaning.

12 61 00 AUDITORIUM SEATING

126100.1 Specify that all seats are to have articulating tablet arms.

126100.2 Ten to twelve percent of the seats should have left hand tablet arms.

126100.3 Minimum size of tablet arm shall be sufficient to completely support a laptop computer.

126100.4 Provide multiple locations and writing surfaces for wheelchairs within the fixed seating area.

126100.5 Pre-approval of fixed seating by OUA is required. A full size sample showing all features, materials, and finishes shall be provided.

12 93 00 SITE FURNISHINGS

129300.1 A/E shall consult with OUA during early planning stage of project regarding site furnishings. A/E to verify with OUA what street furnishings shall be included in the construction documents.

129300.2 All site furnishings to be powder coated. Furnishings shall be bolted or securely anchored.

129300.3 Benches: LandscapeForms Gretchen, with back, no arms, 72" length, Polysite slats (wood-look recycled plastic), Silver powdercoat finish.

129300.4 Trash Receptacles: LandscapeForms Gretchen, with cover/side hole, 30 gallon capacity, Polysite slats (wood-look recycled plastic), Silver powdercoat finish.

129300.5 Signs: per CSU Signage Standards and Division 10.

129300.6 Warranties:

A. Contractor shall provide the University with the manufacturer's warranty.

B. Contractor shall warranty installation of site furnishings for one year from the date of the Certification of Contract Completion.

END OF SECTION

DIVISION 13 – SPECIAL CONSTRUCTION

13 00 00 GENERAL REQUIREMENTS

- 130000.1 Each item of this division of work will require specific approvals from OUA.
- 130000.2 Items to be approved include: air supported structures, cable and fabric structures, sound rooms, cold rooms, clean rooms, integrated ceilings, stand-alone shelters, saunas, steam baths, radiation protection, pre-engineered building systems, swimming pools, and other similar items.

13 34 00 PRE-ENGINEERED STRUCTURES

- 133400.1 Specify that analysis of framing and structural components be submitted to A/E for approval.
- 133400.2 The signature and seal of an Ohio registered professional architect or structural engineer shall be on the analysis, certifying that the structure meets the requirements of the specifications and the Ohio Basic Building Code.
- 133400.3 Copies of this data shall be submitted to OUA.

13 34 13 GLAZED STRUCTURES

- 133413.1 Comply with all glazing specification sections.
- 133413.2 Integral drainage system shall be specified to positively drain the glazing system.
- 133413.3 Access shall be designed around the structure to permit maintenance for the structure as well as for adjacent equipment.
- 133413.4 Design structure to support mechanical and electrical items which may be suspended from the structure, as well as loading which may occur during repair/maintenance of structure.

13 49 00 RADIATION PROTECTION

- 134900.1 Materials and equipment shall conform to the recommendations of the National Council on Radiation Protection and Measurements.
- 134900.2 Materials and equipment shall be furnished and installed in strict conformity with the Code of Federal Regulations, Title 21, Department of Health, Education, and Welfare, FDA Division, and the manufacturer.

END OF SECTION

DIVISION 14 – CONVEYING SYSTEMS

14 20 00 ELEVATORS

- 142000.1 A planning conference shall be scheduled by A/E with OUA to determine elevator requirements. For “service” or “freight” type elevators, A/E shall verify type of freight and method of moving (i.e. pallet jack) to determine state elevator code requirements and floor load design criteria. If the elevator shall be dual use (passenger and freight), a variance may be required and A/E shall apply for the variance at the time of plan approval. Extent of upgrades to existing elevators shall be discussed at same meeting. A/E is encouraged to bring existing elevators into current compliance if possible.
- 142000.2 Elevator cab size shall be nominally 7’W x 5’D and be able to accommodate a paramedic stretcher cot (76” x 23”) in the fully reclined position for emergencies.
- 142000.3 Entrances shall be fully automatic except for “freight only” elevators. Avoid the use of double sided entrances whenever possible.
- 142000.4 Full accessibility is required for the disabled including features for the hearing and vision impaired, per ADA requirements.
- 142000.5 Elevator cab shall be assigned a room number on the first floor plan. Coordinate number with OUA Planner and Access Control during design development.
- 142000.6 Cab finishes shall be specified on the room finish schedule. Floor finish shall be resilient, hard tile (ceramic, porcelain, or quarry), or walk-off type carpet tile. Doors and jambs shall be brushed finish stainless steel; painted finishes are prohibited. Wall panels shall be plastic laminate or solid surface with stainless steel rails on three walls. The ceiling system and lighting shall be vandal resistant with no exposed lamps within reach inside the cab. An inspection certificate frame shall be mounted in the cab with tamper resistant screws. Review with OUA for approval.
- 142000.7 Coordinate numbering designations of floor levels at cab buttons and door locations with OUA.
- 142000.8 A/E shall specify protective moving blankets and associated hooks as part of the base bid.
- 142000.9 If building generator is not required/provided, the elevator machine shall include battery back-up lowering device.
- 142000.10 A/E shall verify code requirements for fireman’s emergency return system, shunt trip devices at elevator pit and machine room.
- 142000.11 A/E shall specify that the fireman’s service key shall be keyed alike to University standard.
- 142000.12 Processors or other equipment which can only be serviced by the manufacturer are prohibited. All equipment is to be non-proprietary and non-restrictive.
- A. The following paragraph MUST be included in the specification verbatim: “Components of the microprocessor logic control shall be serviceable by the owner’s selected elevator maintenance contractor. The owner’s maintenance contractor shall be able to access on board diagnostics and be able to interpret all fault codes and make routine programming adjustments without specialized equipment (diagnostic tool, hand held programmer, etc.). The elevator contractor

shall provide all software, access codes, and/or keys to allow the maintenance as indicated above.”

- 142000.13 Elevator pit shall be complete with ladder, light, sump, sump cover, sump pump, oil interceptor (for hydraulic elevators), and all electrical and drainage connections. A/E shall insure lighting levels in the pit comply with the elevator code requirements. Consider providing additional fixture(s) in the pit.
- 142000.14 Provide quantity of light fixtures in the elevator pit and machine room necessary to insure code required lighting levels are met in all areas (corners) of the room.
- 142000.15 Any and all bracing and connections required by the elevator contractor shall be provided by the GC under the miscellaneous metals portion of the contract.
- 142000.16 Elevator Shaft Requirements: A/E shall verify code requirements for pressure relief vents and smoke dampers and clearly specify which contract is to provide and/or install louvers and/or vents.
- 142000.17 A/E shall indicate tolerances for shaft plumb and maximum size of “ledges” and protrusions allowed by code.
- 142000.18 Telephone shall be compatible with CSU elevator telephone system.
- 142000.19 The telephone service shall not be continuously hardwired into the elevator machine. A two outlet faceplate shall be installed on wall of the elevator machine room. One outlet shall be connected to the elevator machine and the second outlet shall be connected to the telecom closet.
- 142000.20 Elevator contractor shall perform and confirm all programming is correct CSU BACC upon completion.
- 142000.21 Elevator contractor shall coordinate dialing and identification requirements with OUA.
- 142000.25 Mechanical Level Security Requirements: If an elevator cab has a stop that enters only into a mechanical space, security measures are required. The elevator shall require a key or electronic card swipe access to allow access to that level. The key shall match CSU mechanical room master key with master ring cylinder.
- 142000.22 Miscellaneous security requirements may be required by program. Coordinate with OUA.
- 142000.23 Residence Hall Security Measures: In some instances, an elevator in a residence hall will require a access systems magnetic card swipe to allow entrance to resident-only floors. The necessary “traveler” cable shall be provided and installed by the elevator contractor. Coordinate final details with Residence Services.
- 142000.24 A pre-installation conference shall be scheduled with the GC, elevator contractor, fire protection contractor, HVAC contractor, and electrical contractor (and fire alarm subcontractor) to coordinate layout and requirements of all related systems. The State requirements checklist shall be verified and signed off at this meeting.
- 142000.25 All permit fees including inspection and first operation permit are to be included in the elevator specifications/subcontract. Subsequent re-inspection fees shall be paid by the GC; a deduct change

order will be issued to the parties responsible for initial failed inspection.

- 142000.26 A/E shall specify that the elevator contractor is to include an additional site visit in his base bid for the State elevator re-inspection. This presumes that the elevator will not pass the inspection on the first visit.
- 142000.27 A/E and elevator contractor shall notify the University of the date and time of the elevator inspections so that a representative from EHS and FM may participate in the inspection.
- 142000.28 A/E shall specify that the GC and elevator contractor must turn over the elevator for use by the owner immediately following successful inspection and prior to final payment.
- 142000.29 The elevator will not be used during construction for transport of materials or workmen unless approved by OUA and only if adequate protective measures are taken.
- 142000.30 Final payment for the elevator will not be made until maintenance and instruction manuals are submitted and approved by A/E. Specifically note that the project specific wiring diagrams are required before release of final payment will be approved. Generic wiring diagrams are unacceptable.
- 142000.31 A/E shall specify a mandatory preventive maintenance contract as well as a callback service agreement to be included in the base bid. The service agreement shall be for 1 year from the date of acceptance of the elevator, to include the following: regular monthly examinations and inspection; repair or replacement of worn or defective components; lubrication, cleaning, adjusting, supplies and parts for proper operation at rated speed and capacity. A/E shall also clarify that this service agreement is considered to be above and beyond the standard 1 year building warranty. Include 24-hour-per-day, 7-day-per-week emergency call back service response time within 2 hours or less.
- A. Competent and trained employees of the manufacturer will perform all maintenance.
 - B. Manufacturer must certify that a service office is located within 100 miles of the University, and that a parts warehouse is located within 150 miles of the University.
 - C. Elevator manufacturer shall provide repair parts catalogs, instruction manuals, and written directions as part of the final O&M submittal to OUA.
 - D. Notify the University in advance of inspections or maintenance trips so employees of the University may be present.

04 42 00 WHEELCHAIR LIFTS

- 044200.1 Wheelchair lifts are discouraged. A mid-level or bi-level elevator is preferred.
- 044200.2 If the program necessitates a wheelchair lift, A/E shall specify a phone jack on the lift.

END OF SECTION

DIVISION 21 – FIRE SUPPRESSION

Please coordinate with OUA and FM – information forthcoming...

DIVISION 22 – PLUMBING

Please coordinate with OUA and FM – information forthcoming...

DIVISION 23 – HVAC

Please coordinate with OUA and FM – information forthcoming...

DIVISION 25 – INTEGRATED AUTOMATION

Please coordinate with OUA and FM – information forthcoming...

DIVISION 26 - ELECTRICAL

26 00 00 GENERAL REQUIREMENTS

- 260000.1 The Ohio Revised Code requires that separate drawings and specifications be prepared for all Fire Protection, Plumbing, HVAC, and Electrical work.
- 260000.2 Safety Requirements:
- A. Contractor shall be required to comply with OSHA requirement for physical hazards, safety equipment, firefighting equipment, and protective equipment.
 - B. Belt guards, coupling guards, rails, roof fall protection, etc. shall be provided to meet OSHA requirements. Vent shafts and vertical openings shall be enclosed and comply with all OSHA requirements.
 - C. Refer to Division 1 Owner Safety Requirements.
- 260000.3 Utility Connections:
- A. Connections to the existing utilities must be prearranged for a time suitable to the University.
 - B. Contractor is required to give a minimum of three (3) weeks notice prior to any outages. Coordinate with OUA/Facilities electrical department.
 - C. Refer to Division 1 Temporary Facilities.
- 260000.4 Submittals:
- A. Equipment shop drawings shall include nameplate data, model number, and efficiency rating along with full load amps for all electrical motors.
 - B. Coordination drawings should be required at 1/4"=1'-0" or larger. All systems shall be required. GC shall prepare based on extent of work involved. All plans shall indicate potential restrictions. Use of graphics packages for coordination drawings shall be coordinate with OUA.
 - C. All major equipment (electrical distribution, lighting, metering, motors, emergency system components, surge arrestors, fire alarm systems, light fixtures, lighting controls and associated equipment, receptacles, switches, cables, raceways, etc.) shall require submittals.
 - D. Refer to Division 1 Submittals.
- 260000.5 As-Built Documents: Refer to Division 1 Project Closeout.
- 260000.6 O&M Manuals: Refer to Division 1 Project Closeout.
- 260000.7 Prohibited Construction: All plumbing and mechanical equipment, especially piping, shall be at least 3 feet away horizontally from any electrical switchgear or transformers. No hydronic lines or steam lines shall pass through telephone, transformer, switchgear, or elevator equipment rooms.
- 260000.8 Testing Results:
- A. All tests performed on electrical equipment and parts are to be documented based on industry standards and applicable codes.
 - B. All testing documents shall be submitted to the Facilities electrical department in its original format as a hard copy, or electronic format.
- 260000.9 Inspections:
- A. Contractor is responsible for following current guidelines related to electrical safety and installation inspections.
 - B. Inspections are to be conducted through the State of Ohio and /or City of Cleveland governing

jurisdiction bodies.

- C. All inspections are to be documented and final approval forms must be submitted to the Facilities electrical department.

260000.10 Commissioning:

- A. Commissioning of all new and existing equipment must be done within NFPA, OSHA, and NEC guidelines.
- B. Facilities electrical department is required to approve all commissioning procedures. Commissioning procedures are to be submitted for approval at least three (3) business days prior, accompanied by all supporting documents.
- C. Contractor will not be allowed to proceed with commissioning of equipment unless approval has been received by Facilities electrical department.

260000.11 Warranty:

- A. A copy of original manufacturer warranty for all equipment shall be submitted to the Facilities electrical department.
- B. All contractor workmanship warranties shall be submitted to the Facilities electrical department.
- C. Refer to Division 1 Project Closeout.

260000.12 A/E must contact CSU Information Services & Technology (IS&T) for all "Installation Requirements" applicable to this project.

26 10 00 TRANSFORMERS

261000.1 General Specifications:

- A. This section covers transformers that are both medium and low voltage in nature.
- B. Medium Voltage (MV) is defined as 1000V up to 38kV class equipment.
- C. Low Voltage (LV) is defined as 120V up to 1000V class equipment and is divided into two categories:
 - a. Under 1000V and equal to or above 250V.
 - b. Under 250V and equal to or above 120V.
- D. Control transformers are not defined under this section.
- E. CSU requires all transformer installation to be indoors and be of a dry-type nature. Outdoor installations are prohibited.
- F. Installations shall be based on the latest adopted NEC by the State of Ohio.

261000.2 Medium Voltage (MV) Transformers:

- A. CSU only deals with MV transformers with 11.4kV as the primary voltage and an equipment class of 15kV.
- B. All transformers with 4.16kV as the primary voltage shall be rated for 5kV class.

261000.3 Low Voltage (LV) Transformers:

261000.4 Equipment Naming Convention:

- A. All normal power transformers will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 2"H x 4"W x 1/16"D with black lettering on white background.
- B. All emergency power transformers will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 2"H x 4"W x 1/16"D

with black lettering on red background.

- C. Tags will have three lines of text: 1st line will be transformer name, 2nd line will be primary and secondary voltages, 3rd line will be primary power source.
- D. Transformer will be named starting with "XFMR-" followed by (7) characters using a combination of letters and numbers.
 - a. Characters 1 and 2 = two letter building identification.
 - b. Character 3 = "M" for MV transformers, "L" for LV transformers.
 - c. Characters 4 and 5 = two digit/letter identification for floor where located. Use "BL" for basement level, "LL" for lower level, and "GL" for ground level.
 - d. Character 6 = one digit identification for sequential numbering order.
 - e. Character 7 = one letter identification for "sub" equipment.

26 20 00 DISTRIBUTION EQUIPMENT

262000.1 General Specifications:

- A. This section covers all distribution equipment that is not considered a panelboard for the purposes of branch circuit distribution.
- B. Medium Voltage (MV) is defined as 1000V up to 38kV class equipment.
- C. Low Voltage (LV) is defined as 120V up to 1000V class equipment and is divided into two categories:
 - a. Under 1000V and equal to or above 250V.
 - b. Under 250V and equal to or above 120V.

262000.2 New Installations:

262000.3 Modifying Existing Distribution Equipment:

262000.4 Equipment Naming Convention:

- A. All distribution equipment serving normal power loads will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 1"H x 3"W x 1/16"D with black lettering on white background.
- B. All distribution equipment serving emergency power loads will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 1"H x 3"W x 1/16"D with black lettering on red background.
- C. Tags will have one lines of text showing the distribution equipment name.
- D. Distribution equipment will be named starting with "MDP-" followed by (7) characters using a combination of letters and numbers.
 - a. Characters 1 and 2 = two letter building identification.
 - b. Character 3 = "M" for MV distribution, "H" for distribution equipment that falls in LV category a, and "L" for equipment that falls in LV category b.
 - c. Characters 4 and 5 = two digit/letter identification for floor where located. Use "BL" for basement level, "LL" for lower level, and "GL" for ground level.
 - d. Character 6 = one digit identification for sequential numbering order.
 - e. Character 7 = one letter identification for "sub" equipment.

26 24 16 PANELBOARDS

262416.1 General Specifications:

- A. Panelboards in this section are defined as circuit breaker distribution centers with a dead front assembly, used for local area branch circuit loads such as lighting and power.

- B. Certain existing distribution centers with fuse blocks or screw-in fuses may also fall under the panelboard category, used for local area branch circuit loads such as lighting and power.
- C. Any other definition of a panelboard that differs from the NEC or items A and B above will not be accepted.
- D. All installations shall be based on the latest adopted NEC by the State of Ohio.
- E. Any deviation from the requirements in this section require prior approval by OUA and Facilities electrical department.

262416.2 New Installations:

- A. New installations shall only be allowed in rooms designated as Electrical rooms.
- B. New panelboards shall be installed with a count of 24, 30, or 42 circuit breakers configuration only. A minimum of 20% space circuits will always be provided.
- C. Minimum 100A main circuit breaker configuration is required.
- D. Panelboards shall only be mounted in a surface configuration.
- E. Circuit breakers will be installed to match the manufacturer of the panel.
- F. Provide panelboard identifying tag per CSU requirement.
- G. Installation of mini breakers are prohibited.
- H. "CSU Standard Panelboard Schedule" shall be used as an insert on inside of panelboard door. See Appendix H.

262416.3 Modifying Existing Panelboards:

- A. Circuit breakers shall be installed to match the manufacturer of the panel. Electrical characteristics of the breaker shall match existing breakers in the panel.
- B. Installation of mini breakers are prohibited.
- C. Certain existing screw-in fuse boards may be required to be retrofitted with new circuit breaker panelboard installation. Coordinate with OUA and Facilities electrical department.
- D. "CSU Standard Panelboard Schedule" shall be used as an insert on inside of panelboard door. See Appendix H. Form is available in Excel format from Facilities electrical department.

262416.4 Equipment Naming Convention:

- A. All distribution equipment serving normal power loads will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 1"H x 3"W x 1/16"D with black lettering on white background.
- B. All distribution equipment serving emergency power loads will be identified using 2-ply, high contrast, durable engraved plastic mounted via screws equipment tags. Tag dimension to be 1"H x 3"W x 1/16"D with black lettering on red background.
- C. Tags will have one lines of text showing the distribution equipment name.
- D. Panelboards will be named starting with "PNL-" followed by (7) characters using a combination of letters and numbers.
 - a. Characters 1 and 2 = two letter building identification.
 - b. Character 3 = "H" for 480/277V panels and "L" for 208/120V panels..
 - c. Characters 4 and 5 = two digit/letter identification for floor where located. Use "BL" for basement level, "LL" for lower level, and "GL" for ground level.
 - d. Character 6 = one digit identification for sequential numbering order.
 - e. Character 7 = one letter identification for "sub" equipment.

26 50 00 LIGHTING

265000.1 General Specifications:

- A. All new lighting designs shall incorporate only LED luminaires.

265000.2 Lighting Design:

- A. All lighting shall be designated to footcandle levels as outlined in Appendix J “CSU Photometrics” by area and function. Areas and functions that are not specified in the appendix shall default to IES standards.

265000.3 LED Luminaire:

265000.4 HID Luminaire:

265000.5 Fluorescent Luminaire:

265000.6 Incandescent Luminaire:

END OF SECTION

DIVISION 27 – TELECOMMUNICATIONS

27 00 00 GENERAL REQUIREMENTS

270000.1 A/E must contact CSU Information Services & Technology (IS&T) for all “Installation Requirements” applicable to this project.

27 40 00 A/V SYSTEMS

274000.1 While difficult to specify “one size fits all” solutions for AV integration into various room types due to the unique nature of each room and ever evolving instructional technology, this section attempts to provide general expectations of the functionality of each room type. Due to this complex nature of integrated AV systems, it is therefore critical to involve the Center for Instructional Technology and Distance Learning (CITDL) early on in the design process starting from schematic design. Involvement with CITDL at the beginning phases will ensure the proper planning and coordination of the room layout and infrastructure necessary to create optimal technology enhanced learning environments.

274000.2 The OUA and/or consulting architect firms are to collaborate with CITDL starting from the schematic design phase for any project where audio/video equipment will be installed.

274000.3 All state building codes and American’s with Disabilities Act (ADA) standards are to be adhered to when designing and specifying the equipment, location, and installation method.

27 41 13 ARCHITECTURALLY INTEGRATED A/V EQUIPMENT

274113.1 Reach Limits:

- A. Where wall mounted controls are present, all mounting heights shall comply with ADA.
- B. Where wall mounted or freestanding tech boxes are used, any equipment that the user is to interact with, including controls, inputs, media openings, cables, or drawers, shall comply with ADA reach limits.
- C. Where Lecterns/Teaching Stations are present, height adjustable furniture is to be used to allow for ADA accessible use of the work surface. Additionally, any inputs or controls mounted to the work surface shall comply with ADA reach limits.

274113.2 Projector / Display Mounting:

A. Location:

1. Coordinate location and height with CITDL and Users.
2. Avoid Placing near HVAC equipment that could cause vibrations, especially where longer mounting pipes are required.
3. For wall or ceiling mounted displays, comply with ADA requirements regarding protruding objects.

B. Method:

1. Projectors:
 - a. Mounts are to be of the type that allow for fine tuning the pitch, roll, yaw.
 - b. Projectors are to be able to allow for lens shifting.
2. Displays:
 - a. Consult with CITDL for best mounting method on a case by case basis.

274113.3 Lecture Capture / Demonstration Camera Mounting:

A. Location:

1. Coordinate with CITDL and Users.
 2. Avoid Placing near HVAC equipment that could cause vibrations
 3. Ceiling mounted is preferred, however wall mounted is acceptable only when the camera would be completely out of reach to prevent it from being tampered with.
- B. Method:
1. Provide an enclosure with a dome when the camera is placed in a room that is generally unsecured or would be easily within arm's reach.
 2. Use ceiling recessed cameras when ceilings are 8'-6" or lower.
- 274113.4 Screen Mounting and Type:
- A. Fixed vs Retractable: Retractable screens are to be used in locations where the screen will cover up a portion of the wall that would otherwise be usable for a whiteboard, mounting service, or other educational tool. For instances, for large lecture halls where the screen will be up higher on the wall and there is no need for it to be retracted, use a fixed screen with black boarder.
- B. Manual vs. Electric:
1. Electric screens are required, except as a last result in those rooms that are intended primarily for discussion where projected images are rarely needed.
 2. All manual screens are to be of the type that slowly retracts for the last 10% of the screens in order limit damage to the equipment.
- C. Mounting Location For Retractable Screens:
1. All screens, whether electric or manual, are to be ceiling recessed with no exposed mounting brackets or hardware.
 2. In cases where a ceiling recessed screen is not practical due to the height of the ceiling and a fixed screen also is impractical, a surface mounted electric screen is acceptable. Provide adequate in wall blocking.
 3. Comply with ADA requirements regarding protruding objects.
- D. Screen Surface: Matt white with approximately a 1.0 gain
- E. Size:
1. Aspect ratio to be 16"x10".
 2. Screen size to be scaled appropriately to the room. Screen drop to be no more than 3'-0" AFF. Consult CITDL for screen size for each room.
- 274113.5 Speaker Mounting:
- A. Consult with CITDL for location and number for each room.
 - B. Extron ceiling mounted speakers preferred in classrooms.
- 274113.6 Cabling:
- A. For all video and control wiring, use plenum-rated (CMP) shielded cable when running through a plenum.
 - B. For HDMI cable lengths greater than 13', use shielded 24 AWG minimum.
- 274113.7 Security: Provide SonicShock 5 alarm with remote alarm contacts for projectors and displays. Provide PC tabs on switchers and computers. Tie into CSU security back bone. SonicShock requires a 5.5k resistor built into the remote alarm circuit contact. Comprotec has made this modification to these units before and understands what the CSU spec is. The monitoring voltage needs to pass through a 5.5k end-of-line resistor. Alarm to be keyed #530.

27 41 16 INTEGRATED A/V SYSTEMS AND EQUIPMENT

- 274116.1 PTZ Cameras:
- A. Must have minimum optical zoom of 18x for classrooms; greater in lecture halls.
 - B. Must be able to receive RS232 controls.
 - C. Resolution of 480i or 1080p.
- 274116.2 Projectors:
- A. Must be ceiling mounted
 - B. Resolution: Minimum 1280x800
 - C. Lumens: Minimum 3500 ANSI
 - D. Contrast Ratio: 600:1
 - E. Zoom Range: 2:1
 - F. Lens Shift capabilities
 - G. Must be professional grade and be able to receive RS232 controls.
 - H. Projector decibel level not to exceed 34dB in video conferencing rooms or distance learning rooms.
- 274116.3 Displays: Must be professional grade and be able to receive RS232 controls.
- 274116.4 Standard Functionality to be included based on Room Type (consult CITDL for current standard equipment):
- A. Basic A/V Classroom:
 1. Wall Rack
 2. Basic connectivity for devices using:
 - a. RCA Composite
 - b. VGA + Stereo Mini Audio
 - c. HDMI
 - d. USB input to room computer
 3. Switcher/Scaler
 4. Ceiling mounted projector
 5. DVD/VCR
 6. Ceiling Recessed Electric Screen (refer to 27 41 31)
 7. Ceiling mounted speakers
 8. When required, rack mountable ultra slim desktop PC. Refer to IS&T standard equipment.
 9. Room A/V controls
 10. Network drops. One each for the following:
 - a. Controller
 - b. Courtesy user facing RJ-45 jack
 - c. Built-in Computer (if present)
 - B. Advanced A/V Classroom with SMART Podium & Lecture Capture Functionality, including Lecture Halls:
 1. Height adjustable Lectern and integrated equipment rack
 2. Basic connectivity for devices using:
 - a. RCA Composite
 - b. VGA + Stereo Mini Audio
 - c. HDMI
 - d. USB input to room computer
 3. Switcher/Scaler
 4. Ceiling mounted projector
 5. DVD/VCR

6. Ceiling Recessed Electric Screen (refer to 27 41 31)
7. Ceiling mounted speakers
8. Rack mountable "Research Model" computer. Refer to IS&T standard equipment.
9. Room A/V controls
10. Network drops. One each for the following:
 - a. Controller
 - b. Courtesy user facing RJ-45 jack
 - c. Built-in Computer
 - d. Touchlink Panel
11. SMART Podium on adjustable swing arm, Screen size: 18.5"
12. PC Capture cards for video and content
13. Voice Audio Reinforcement provided by
 - a. Gooseneck microphone
 - b. Lavalier microphone
14. Audio mixer with two XLR outputs
15. PTZ camera
16. 10" Touch panel control with video preview. Vendor shall collaborate with CITDL in the design, layout, and functionality of the Touchlink controls and GUI to ensure standards and interface are consistent throughout campus.

27 41 43 A/V CONFERENCING

274143.1 Design Considerations based on Room Type:

A. Seminar Rooms & Conference Rooms

1. Layout: For preferred conference room table layout configurations (refer to "Bretford's Guide to Successfully Planning a Video Conference Room, (pp.4-11). www.rbha.net/Library/Video_Conf_Guide.pdf)
2. Basic Connectivity via wall mounted inputs:
 - a. VGA + Stereo Mini Audio
 - b. HDMI
3. Functionality:
 - a. Provide solution for Skype, Lync, or other standards based video-conferencing. Consult with CITDL.
 - b. Camera: Where possible, align camera as close to far-site screen as possible to roughly achieve the appearance of eye contact.
 - c. Microphone
 - d. Screen/Displays
4. Controls: To eliminate the need for remote controls, provide wall mounted controls for input selection, on/off, and volume.
5. When required, provide an ultra slim desktop PC. Refer to IS&T standard equipment.

B. Distance Learning rooms:

1. Refer to CSU CITDL IVDL Room Design guidelines for further recommendations.
2. Acoustics: In order to limit outside sound transmission into the room and reduce reverberation within the room, the design consultant is required to bring in an acoustic engineer to design a solution for acoustic treatments for all distance learning rooms. Collaborate with CITDL.
3. Layout: Room should be laid out such that the distance from the students to the instructor & screens is minimized, and that all students are still within the field of view of the camera at the front of the room.

4. Functionality:
 - a. Microphones:
 - i. Allow for “Push to Talk” functionality allowing the microphone to become active and the camera to zoom in on the active participant at the push of an integrated button.
 - ii. Instructor to be an omni-directional mic.
 - b. Screens/Display:
 - i. Front of Room:
 - A. Content:
 1. Two screens mirroring the content at the front of the room required where poor viewing angles or sightlines would impede the student’s experience with a single display.
 2. Where space is limited, content screens are to be the predominate feature and larger than the far site screen.
 - B. Far Site: Centered on seating area.
 - ii. Back of Room:
 - A. Content
 - B. Far Site
 - C. Confidence monitor (if not provided elsewhere)
 - iii. Refer to section 27 41 13 for additional information regarding screen size, location, and type.
 - iv. In situations where a display of adequate size can be used in place of a projector and screen, a display is preferred due to its lower sound dB operating levels and improved brightness.
 - v. Confidence monitor (a monitor/screen/display allowing the instructor to see which source is being projected to the far site). Provide means for a confidence monitor by any of the following means: through the touch panel display, a separate screen on the desk, a picture in picture on the back of room content monitor, or through a dedicated display in the back of the room.
 - c. Speakers: Stereo forward facing speakers at the front of the room are required. Ceiling mounted downward facing speakers are unacceptable due to the potential for audio feedback with the microphones on the student desks.
 - d. Controls:
 - i. 12” Touch Panel Control with video preview
 - ii. Vendor shall collaborate with CITDL in the design, layout, and functionality of the Touchlink controls and GUI to ensure standards and interface are consistent throughout campus.
 - iii. Extron Touchlink Pro (w/ link license) required where program dictates third party user interface (browser, iOS, and Android devices).
 - e. Basic Connectivity:
 - i. RCA Composite
 - ii. VGA + Stereo Mini Audio
 - iii. HDMI
 - iv. USB input to room computer

- f. Rack mountable “Research Model” computer. Refer to IS&T standard equipment.
- g. PC Capture cards for video and content
- h. Document Camera
- i. SMART Podium Screen size: 18.5”
- j. Network drops. One each for the following:
 - i. Controller
 - ii. Courtesy user facing RJ-45 jack
 - iii. Built-in Computer
 - iv. Touchlink Panel
 - v. Codec
 - vi. DMP Audio Processors (1 per 8 microphones)
 - vii. Video/Audio encoder
 - viii. Auxiliary

274143.2 Furniture:

- A. Work surface to be a lighter reflective color with a matte or semi-matte finish, but not glossy.
- B. Instructor: Ample work surface area to accommodate the touch link panel, document camera, displays, keyboard, mouse, and instructional materials required. Consult with CITDL for the configuration and layout of the furniture and equipment.
- C. Student: Tables are to include an integrated cable management raceway for concealment of microphone wiring.
- D. Cabling Pathways:
 - 1. Raised floor with accessible panels where possible for the front of room.
 - 2. Sufficient conduit diameter where raised floors are not used with pull string for future reconfiguration or expansion.

274143.3 Refer to Cisco Telepresence Design Palette Guide for acceptable background paint colors.

274143.4 Where possible, minimize equipment, doors, cabinets, and visual clutter from camera field of view behind participants.

374143.5 Where windows are unavoidable, provide light blocking shades.

374143.6 Lighting:

- A. Indirect lighting is preferred. Fixtures are to disperse the light and provide no glare from the lamp for the students, instructor, or cameras.
- B. Pendant lights are unacceptable.
- C. Acceptable Kelvin Temperature range: 4000 to 4100.
- D. Facial lighting of 200 to 400 lux.
- E. For adequate distribution of light, a greater quantity of smaller fixtures are preferred over fewer larger fixtures.
- F. Indirect asymmetric fixtures are preferred for lighting participants but will limit light from spilling onto screens/displays or directly into the cameras.

END OF SECTION

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

28 13 00 ACCESS CONTROL SYSTEMS

281300.1 Work Includes:

- A. Access Control Panels
- B. Card Readers
- C. Door Monitoring and Control Equipment
- D. Input/Output Devices
- E. Enclosures
- F. Power Supplies
- G. Cabling

281300.2 Related Work Specified Elsewhere:

- A. Technology General Provisions
- B. Cabling Systems Administration
- C. Technology Pathway Hardware
- D. Structured Cabling System
- E. Intrusion Detection System
- F. IP Based CCTV System
- G. Door Intercom System

281300.3 Description of Work:

- A. The Access Control System shall consist of all Access Control Panels, Network Controllers, Door Controllers, Card Readers, Biometric Readers, Request to Exit devices, Door Contacts, and all other devices and cabling needed to form a complete access control system.
- B. The Access Control System is an extension of the existing enterprise wide Access Control system in use at this facility and as such must be capable of integrating with all other existing systems.
- C. Technology, Electrical, Architectural, HVAC, Structural, Civil and all other Drawings as well as the Specifications for all the Divisions shall be defined as the Contract Documents. Contractor shall review the entire set of Contract Documents prior to bidding.
- D. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown, or shown but not specified, shall be performed or furnished as though mentioned in both the Specifications and the Drawings.
- E. Visit the site of the work and become familiar with the conditions affecting the installation. Submission of a proposal shall presuppose knowledge of the conditions and no additional compensation shall be allowed where extra labor or materials are required because of ignorance of these conditions.
- F. Proposal shall include and special phasing requirements related to the construction work as described in the Division 1 Specifications.
- G. Extra costs which might result from deviations from the Drawings, so as to avoid interferences, shall be considered a "Job Condition", and no additional compensation shall be considered applicable. In the event that such interferences occur in course of the Work, due to an error, omission, or oversight by the Contractor, no additional compensation shall be allowed.
- H. Interferences that may occur during the course of construction shall be brought to the immediate attention of the Architect and Engineer, and the Architect and Engineer's decision, confirmed in writing, shall be final.

281300.4 Submittals:

- A. Drawings: Shop drawings to provide details of proposed system and the work to be provided. These include scaled plan drawings of device locations, cable routing and quantities, point-to-point drawings of systems and wiring and mounting diagrams of individual devices.
- B. Specification Sheets: Submit equipment specification sheets for all materials specified.
- C. Submit quantity breakdown of all proposed equipment.

281300.5 Contractor Qualifications:

- A. The Contractor shall be fully qualified to perform installations as described on the Contract Drawings and within these Specifications.
- B. The Contractor shall have been active in bidding, being awarded, and performing work consistent with that which is indicated on the Contract Documents for a period not less than five (5) years.

281300.6 Work Includes:

- A. The Security Contractor is responsible for all work scope defined in the Security Contract Documents, unless otherwise indicated. Coordinate required systems rough-in work and equipment power requirements with the Electrical Contractor.
- B. The Contractor shall review the Electrical and Technology Contract Documents to fully understand the scope of work requires. Any questions shall be submitted to the Engineer in writing prior to the bid submission. After this time, the Owner, Engineer and Architect shall not be liable for additional Work required due to the misunderstanding or misinterpretation of these requirements.
- C. Include all labor, material, equipment, services and permits necessary for the proper completion of all work shown. Items omitted, but necessary, to make the Technology Systems complete and workable shall be understood to form part of the work.
- D. Material for work required by the Contract Drawings and Specifications such as earthwork, concrete, masonry, and reinforcing steel patching and painting shall be provided as specified in other applicable Divisions covering such work.
- E. It is the purpose of the Drawings to indicate the approximate location of all equipment and devices. Ascertain exact locations, and arrange work accordingly. The right is reserved by the Engineer to effect reasonable changes in the location of devices up to the time of roughing-in, without additional cost to the Owner. Changes in location of devices, or equipment necessitated by interference with the work of other trades shall be made only with the consent of the Architect's or Owner's Representative, and at no additional cost. Changes in location of devices resulting from the Contractor's failure to comply with the Drawing or Specification requirements shall be made at no additional cost to the Owner.

281300.7 Codes and Standards: The installation shall comply with all applicable code requirements. Code requirements and their amendments will include, but are not limited to:

- A. NEC, Article 800 Communication Circuits.
- B. ANSI/IEEE 241, Recommended Practice for Electric Power Systems in Commercial Buildings.
- C. ANSI/NEMA 250, Enclosures for Electrical Equipment.
- D. Safety Rules, U.S. Department of Health and Human Services.
- E. CSU Environmental Health and Safety Rules.

281300.8 Guarantee and Warranties:

- A. Warrant that all equipment and work is installed in accordance with good engineering and installation practices. Furthermore, warrant that all equipment will meet the requirements

specified, as well as other criteria which may not be explicitly documented in these Specification, but which are accepted as industry standards, as published by ANSI, EIA/TIA, IEEE and BICSI.

- B. Any device or equipment failing to perform or function as specified shall be replaced with complying equipment without cost to the Owner.
- C. Guarantee against defects in workmanship and materials: repair or replace any defective work, material or equipment within two (2) years from date of formal written acceptance by the Owner. An additional product warranty provided by individual equipment manufacturers shall supersede this two year workmanship and materials guarantee for installation of the appropriate equipment, as described in the individual section.
- D. The Contractor, within ten (10) business days of project completion shall fully complete and submit all documentation to the manufacturer as required to implement the extended warranty period. Coordinate guarantee and warranty requirements with the Division 1 Specifications.

281300.9 System or Service Shutdowns:

- A. The existing electrical, network, telephone, CATV and other technology systems, related to this work shall be maintained throughout the construction period. Any system or service shutdowns that may be required shall be scheduled through the Owner, and shall be done at a time as directed by the Owner. No additional compensation shall be allowed for these shutdown periods even though premium time work may be required. Provide temporary services to equipment or systems that cannot be shutdown, as determined by Owner.
- B. Provide a minimum of one week's notice to the Owner before any system or service shutdown is scheduled

281300.10 Equivalent Products: Only products listed as approved shall be utilized. Substitutions, under normal circumstances, shall not be allowed. However, in unusual cases, substitutions may be unavoidable. All requests for product substitutions must be approved by the Engineer prior to the bid submission. Loss of certification by the Contractor, or unavailability of product to the Contractor that is not of a market wide nature, shall not be construed as an unavoidable circumstance. The request for product substitution and supporting documentation must be submitted, in writing, along with any samples requested by the Engineer. Written approval for product substitution must be submitted with the bid.

281300.11 Products:

- A. Networked Door Controllers: Keyscan CA 8500
- B. Power Supplies: 12VDC 7Ahr Battery, 16 VDC 40VA, 12DVAC Transformers
- C. Card Readers: KN 0000
- D. HID 6125C Wall mount Card Reader RP40 Dual Tech Black
- E. HID 6145C CKN 0000 Mullion Mount Card Reader RP15 Dual Tech Black
- F. Request to Exit Device: PIR motion sensor. Honeywell 320
- G. Mag Lock Override Keyswitch : Best1W7J1 on 1 gang SS plate.
- H. Door contacts: Sentrol 1078D
- I. Magnetic Locks: Securitron M62D
- J. Lock Power Supplies: Alarmsaf Beacon
- K. Cable:
 - 1. Composite Access Control Cable, West Penn LS251822, consisting of:
 - a. 1 West Penn 253270B, 6 cond. 22 AWG stranded shielded card reader cable.
 - b. 1 West Penn 25241B, 4 cond. 22 AWG stranded, unshielded request-to-exit cable.
 - c. 1 West Penn 25221B, 2 cond. 22 AWG stranded, unshielded door contact cable.
 - d. 1 West Penn 25244B, 4 cond. 18 AWG stranded, unshielded lock cable.

2. Elevator I/O control cable: West Penn 25753B, 4 pair 18 AWG unshielded cable.
3. Card Reader Cable: West Penn 253270B, 6 cond. 22 AWG stranded shielded cable.
4. Horn/Strobe cable: West Penn 25224B, 2 cond. 18 AWG stranded unshielded cable.
5. RS485 Data Cable: West Penn D25510B, 2 pair, 22 AWG stranded shielded cable.
6. Network Cable: General GenSPEED 6500.

281300.12 Installation:

- A. Install all equipment and materials in accordance with current recommendations of the manufacturer. The work shall also be in accordance with
 1. Installation criteria defined in these specifications and in the construction documents.
 2. Factory Representative's requirements.
 3. Approved submittals.
 4. Applicable requirements of referenced standards.
- B. No head-end security hardware is to be installed until location is determined by a representative the Access Control and Security Systems department.
- C. All Access Control Panels and Power Supplies shall be installed in technology rooms.
- D. All Access Control Panels and Power Supply enclosure shall be equipped with tamper switches to alert security personnel to unauthorized access.
- E. All Access Control Panels and Power Supplies shall be connected to generator backed up, emergency power circuits dedicated solely to security systems equipment.
- F. All Access Control Panels and Power Supplies shall be equipped with battery backup for four hours of normal operation.
- G. All enclosures for access control equipment shall be keyed alike to E005.
- H. Door power supplies shall be monitored by the access control system controller for battery management.
- I. Door supply panels must be on the same AC circuit as the controllers so that if the AC circuit loses power, the controller will send an alert.
- J. An interface shall be provided to the Fire Alarm system to release all magnetically held open doors in the event of a Lock-down or active shooter condition.
- K. An interface shall be provided from the Fire Alarm system to release all magnetic locks in the event of a fire alarm.
- L. An interface to the elevator controls shall be provided which will read on occupant's card and accept dry contact closure inputs to determine the floor selected. The access control system will then determine whether the occupant can access the selected floor and send a dry contact closure to the elevator controller to allow the floor selection.
- M. Proximity readers shall be included with the Aiphone video door intercom stations. These readers shall be connected to the access control system.
- N. Provide input points to accept dry contact outputs from the Aiphone AX door Intercom system for door release and alarm shunt functions.
- O. Door function programming shall conform to drawing notes and instruction from the representative of the Access Control and Security Systems Department (AC&SS).
- P. Request-to-exit key switches shall be equipped with cores that conform to the building's master key plan. Interchangeable cores shall be used.
- Q. Where card readers are used on the secure side of a door, their function shall be to activate a contact closure that is sent to the intrusion detection panel which disables all alarms for the associated area. Prior to departing the area, the last person out shall present their key card to activate the intrusion detection alarms for the area after a pre-programmed egress delay period. Key pads shall be used by CSU AC&SS personnel for maintenance and programming only.
- R. The Intrusion system contacts shall never be wired into the Access system ACU and the Access contacts shall never be wired into the Intrusion/ Burg system control panel.

- 281300.13 Programming:
- A. Programming system configuration parameters (hardware and software, zone/circuit numbers, communication parameters).
 - B. Programming operational parameters such as opening/closing reports and windows, system response text (custom English) displays of events, activation of relays that drive auxiliary devices, and identifying types of zones/loops.
 - C. Programming User Ids and Passwords according to the authorities and functions defined by the Owner.
 - D. Programming of system graphics is the responsibility of the Contractor.
 - E. Other system programming tasks required by the Owner. These additional programming requirements shall be coordinated between the Owner and the Contractor.

- 281300.14 Testing:
- A. The Contractor shall test each and every access control device for proper operation. The Contractor will also test each and every door for proper function and interoperability of associated components. A test report shall be prepared and submitted prior to system commissioning listing each component and system, the tests performed, and any discrepancies. Any device or system found to be unacceptable shall be corrected or replaced until every device and system is functioning properly. Details of the resolution of any discrepancy shall be provided as part of the test results.
 - B. Hard-copy System Printout: The contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panel/units have passed the test criteria set forth by the manufacturer.

281300.15 Training: The Contractor shall provide a minimum of (2) 4 hour in-service training session with this system. These sessions shall be broken into segments that will facilitate the training of individuals in the operation of this system. Operation manuals and user guides shall be provided at this time. Contractor to record training sessions and provide (2) copies on DVD to owner.

281300.16 Commissioning: The Contractor shall certify completion in writing and schedule the commissioning walk-through. The Contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

28 16 00 INTRUSION DETECTION SYSTEM

- 281600.1 Work Includes:
- A. Intrusion Detection Panels Motion Sensors
 - B. Keypads
 - C. Miscellaneous Input Devices
 - D. Strobes and Horn/Strobes
 - E. Power Supplies
 - F. Enclosures
 - G. Cabling

- 281600.2 Related Work Specified Elsewhere:
- A. Technology General Provisions
 - B. Cabling Systems Administration
 - C. Technology Pathway Hardware
 - D. Structured Cabling System

- E. Access Control System
- F. IP Based CCTV System
- G. Door Intercom System
- H. AV Systems

281600.3 Description of Work:

- A. The Intrusion Detection System shall consist of all Alarm Panels, Network Controllers, Motion Sensors, Miscellaneous monitored inputs, Property theft alarm devices, Safe monitoring points, duress buttons, alarm signaling devices, enclosures, power supplies and cabling to make a complete system. The contractor shall provide and install any and all required devices to form a complete system, whether or not they are specifically mentioned in these specifications or shown on the drawings.
- B. The Intrusion Detection System is an extension of the existing enterprise wide Intrusion Detection system in use at this facility and as such must be capable of integrating with all other existing systems.
- C. Technology, Electrical, Architectural, HVAC Structural, Civil and all other Drawings as well as the Specifications for all the Divisions shall be defined as the Contract Documents. Contractor shall review entire set of Contract Documents prior to bidding.
- D. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown, or shown, but not specified, shall be performed or furnished as though mentioned in both the Specifications and the Drawings.
- E. Visit the site of the work and become familiar with the conditions affecting the installation. Submission of a proposal shall presuppose knowledge of such conditions and no additional compensation shall be allowed where extra labor or materials are required because of ignorance of these conditions.
- F. Proposal shall include any special phasing requirements related to the construction work as described in the Division 1 Specifications.
- G. Extra costs which might result from deviations from the Drawings, so as to avoid interferences, shall be considered a "Job Condition", and no additional compensation shall be considered applicable. In the event that such interferences occur in course of the Work, due to an error, omission, or oversight by the Contractor, no additional compensation shall be allowed.
- H. Interferences that may occur during course of construction shall be brought to the immediate attention of the Architect and Engineer, and the Architect and Engineer's decision, confirmed in writing, shall be final.

281600.4 Submittals:

- A. Drawings: Shop drawings to provide details of proposed system and the work to be provided. These include scaled plan drawings of device locations, cable routing and quantities, point-to-point drawings of systems and wiring and mounting diagrams of individual devices.
- B. Specification Sheets: Submit equipment specification sheets for all materials specified.
- C. Submit quantity breakdown of all proposed equipment.

281600.5 Contractor Qualifications:

- A. The Contractor shall be fully qualified to perform installations as described on the Contract Drawings and within these Specifications.
- B. The Contractor shall have been active in bidding, being awarded, and performing work consistent with that which is indicated on the Contract Documents for a period not less than five (5) years.

281600.6 Work Includes:

- A. The Security Contractor is responsible for all work scope defined in the Security Contract Documents, unless otherwise indicated. Coordinate required systems rough-in work and equipment power requirements with the Electrical Contractor.
- B. The Contractor shall review the Electrical and Technology Contract Documents to fully understand the scope of work requires. Any questions shall be submitted to the Engineer in writing prior to the bid submission. After this time, the Owner, Engineer and Architect shall not be liable for additional Work required due to the misunderstanding or misinterpretation of these requirements.
- C. Include all labor, material, equipment, services and permits necessary for the proper completion of all work shown. Items omitted, but necessary, to make the Technology Systems complete and workable shall be understood to form part of the work.
- D. Material for work required by the Contract Drawings and Specifications such as earthwork, concrete, masonry, and reinforcing steel patching and painting shall be provided as specified in other applicable Divisions covering such work.
- E. It is the purpose of the Drawings to indicate the approximate location of all equipment and devices. Ascertain exact locations, and arrange work accordingly. The right is reserved by the Engineer to effect reasonable changes in the location of devices up to the time of roughing-in, without additional cost to the Owner. Changes in location of devices, or equipment necessitated by interference with the work of other trades shall be made only with the consent of the Architect's or Owner's Representative, and at no additional cost. Changes in location of devices resulting from the Contractor's failure to comply with the Drawing or Specification requirements shall be made at no additional cost to the Owner.

281600.7 Codes and Standards: The installation shall comply with all applicable code requirements. Code requirements and their amendments will include, but are not limited to:

- A. NEC, Article 800 Communication Circuits.
- B. ANSI/IEEE 241, Recommended Practice for Electric Power Systems in Commercial Buildings.
- C. ANSI/NEMA 250, Enclosures for Electrical Equipment.
- D. Safety Rules, U.S. Department of Health and Human Services.
- E. CSU Environmental Health and Safety Rules

281600.8 Guarantee and Warranties

- A. Warrant that all equipment and work is installed in accordance with good engineering and installation practices. Furthermore, warrant that all equipment will meet the requirements specified, as well as other criteria which may not be explicitly documented in these Specification, but which are accepted as industry standards, as published by ANSI, EIA/TIA, IEEE and BICSI.
- B. Any device or equipment failing to perform or function as specified shall be replaced with complying equipment without cost to the Owner.
- C. Guarantee against defects in workmanship and materials: repair or replace any defective work, material or equipment within two (2) years from date of formal written acceptance by the Owner. An additional product warranty provided by individual equipment manufacturers shall supersede this two year workmanship and materials guarantee for installation of the appropriate equipment, as described in the individual section.
- D. The Contractor, within ten (10) business days of project completion shall fully complete and submit all documentation to the manufacturer as required to implement the extended warranty period. Coordinate guarantee and warranty requirements with the Division 1 Specifications.

281600.9 System or Service Shutdowns:

- A. The existing electrical, network, telephone, CATV and other technology systems, related to this work shall be maintained throughout the construction period. Any system or service shutdowns that may be required shall be scheduled through the Owner, and shall be done at a time as directed by the Owner. No additional compensation shall be allowed for these shutdown periods even though premium time work may be required. Provide temporary services to equipment or systems that cannot be shutdown, as determined by Owner.
- B. Provide a minimum of one week's notice to the Owner before any system or service shutdown is scheduled

281600.10 Equivalent Products: Only products listed as approved shall be utilized. Substitutions, under normal circumstances, shall not be allowed. However, in unusual cases, substitutions may be unavoidable. All requests for product substitutions must be approved by the Engineer prior to the bid submission. Loss of certification by the Contractor, or unavailability of product to the Contractor that is not of a market wide nature, shall not be construed as an unavoidable circumstance. The request for product substitution and supporting documentation must be submitted, in writing, along with any samples requested by the Engineer. Written approval for product substitution must be submitted with the bid.

281600.11 Products:

- A. Alarm Panel: DSC Security Maxsys PC4020 Control Panel.
- B. Input Expander: DSC Security PC4116 Zone Expander.
- C. Relay Output Module: DSC Security PC4204 Relay Output Module.
- D. Keypad: DSC Security LCD4501T LCD Keypad.
- E. Motion Sensor: DSC Security BV-502 360 PIR Motion Sensor
- F. Horn/Strobe: Federal Signal 50GC-024BG horn with UTM Tone Module, FG Grille, and FBL Flush Back Box, Federal Signal VALS-024B Blue Strobe.
- G. Strobe: Federal Signal VALS-024B Blue Strobe mounted on 2 gang SS plate.
- H. Holdup Button: United Security Products HUB2-USP
- I. Duress Button: Dortonics 5211 Call Button. Provide clear plastic security cover to prevent accidental activation.
- J. Flat-Screen Theft Alarm: Pc-Tab Security Sensor with PCT-T56 Terminator.
- K. Projector Theft Alarm: Sonic Shock Plasma with optional Remote Output Module.
- L. Power Supplies: Altronix AL1024ULXPD16
- M. Cable:
 - 1. Motion Sensor: West Penn 25241B, 4 cond. 22 AWG stranded unshielded cable.
 - 2. Alarm Contacts: West Penn 25221B, 2 cond. 22 AWG stranded unshielded cable.
 - 3. Horn/Strobe Cable: West Penn 25224B, 2 cond. 18 AWG stranded unshielded cable.
 - 4. RS485 Data Cable: West Penn D25510B, 2 pair, 22 AWG stranded shielded cable.
 - 5. Network Cable: general GenSPEED 6500.

281600.12 Installation:

- A. Install all equipment and materials in accordance with current recommendations of the manufacturer. The work shall also be in accordance with:
 - 1. Installation criteria defined in these specifications and in the construction documents.
 - 2. Factory Representative's requirements.
 - 3. Approved submittals.
 - 4. Applicable requirements of referenced standards.
- B. No head-end security hardware is to be installed until location is determined by AC&SS.
- C. All Alarm Panels and Power Supplies shall be installed in technology rooms.

- D. All Alarm Panels and Power Supply enclosure shall be equipped with tamper switches to alert security personnel to unauthorized access.
- E. All Alarm Panels and Power Supplies shall be connected to generator backed up, emergency power circuits dedicated solely to security systems equipment.
- F. All Alarm Panels and Power Supplies shall be equipped with battery backup for four hours of normal operation.
- G. Provide a supervised alarm input to AED Defibrillator enclosure(s) located in the building.
- H. Provide a supervised alarm input to the safe located in the work area 544. Coordinate alarm input with safe supplier.
- I. Provide an alarm input to each Flat-Screen display as shown on the drawings. Cabling shall terminate at the AV connection panel adjacent to the device. A 2-conductor modular telephone cable shall connect the PC-tab sensor mounted on the device to the 2C6P jack on the AV plate.
- J. Provide an alarm input to each projector as shown on the AV drawings. Cabling shall terminate at the AV connection panel adjacent to the device. A permanently mounted remote output module shall connect the Sonic Shock device to the alarm cabling. A 2-conductor modular telephone cable shall connect the Sonic Shock Plasma mounted on the projector to the 2C6P jack on the AV plate.
- K. Provide a Key Systems SAM 64 slot Key Cabinet. Install at location as shown on drawings. Key cabinet requires 120 VAC power and an Ethernet connection to the CSU network.
- L. Duress buttons shall be installed as shown on the drawings. Cabling shall home run to the DSC alarm panel. Activating a duress button shall activate a wall mounted strobe outside the room. Activation of a duress button shall also activate a horn/strobe at the receptionist or nurses' station adjacent to the button location. The universal tone module in the horn shall be adjusted to provide a tone which is acceptable to the occupants of the area. The volume of the horn shall be adjusted to 10 dB SPL, A-weighted, above ambient noise level at the monitoring workstation.
- M. The Intrusion system contacts shall never be wired into the Access system ACU and the Access contacts shall never be wired into the Intrusion/ Burg system control panel.

281600.13 Programming:

- A. Programming system configuration parameters (hardware and software, zone/circuit numbers, communication parameters).
- B. Programming operational parameters such as opening/closing reports and windows, system response text (custom English) displays of events, activation of relays that drive auxiliary devices, and identifying types of zones/loops.
- C. Programming of Intrusion Zone Labels and Point ID labels in both the local Intrusion system and the head end DSC database, and the Monitoring program, Continuum, is the responsibility of the Contractor.
- D. Other system programming tasks required by the Owner. These additional programming requirements shall be coordinated between the Owner and the Contractor.

281600.14 Testing:

- A. The Contractor shall test each and every access control device for proper operation. The Contractor will also test each and every door for proper function and interoperability of associated components. A test report shall be prepared and submitted prior to system commissioning listing each component and system, the tests performed, and any discrepancies. Any device or system found to be unacceptable shall be corrected or replaced until every device and system is functioning properly. Details of the resolution of any discrepancy shall be provided as part of the test results.

- B. Hard-copy System Printout: The contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panel/units have passed the test criteria set forth by the manufacturer.

281600.15 Training: The Contractor shall provide a minimum of (2) 8 hour in-service training session with this system. These sessions shall be broken into segments that will facilitate the training of individuals in the operation of this system. Operation manuals and user guides shall be provided at this time. Contractor to record training sessions and provide (3) copies on DVD to owner prior to completion.

281600.16 Commissioning: The Contractor shall certify completion in writing and schedule the commissioning walk-through. The Contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

28 23 00 IP BASED CCTV SYSTEMS

282300.1 Work Includes:

- A. Cameras
- B. Camera Mounts
- C. Power Supplies
- D. Network video recorders
- E. Network storage devices
- F. Video management software
- G. Patch panels
- H. Cabling

282300.2 Related Work Specified Elsewhere:

- A. Technology General Provisions
- B. Cabling Systems Administration
- C. Technology Pathway Hardware
- D. Structured Cabling System
- E. Access Control System
- F. Intrusion Detection System
- G. Door intercom system

282300.3 Description of Work:

- A. The IP Based CCTV System consists of all cameras, mounts, cabling, patch panels, Network Video Recorders, network storage devices, software, power supplies, and any other equipment to form a complete system, the Contractor shall provide and install any and all required devices to form a complete system, whether or not they are specifically mentioned in these specifications or shown on the contract drawings.
- B. The IP Based CCTV system is an extension of the existing university-wide CCTV System in use at these facilities and as such must be capable of integrating with all other existing systems.
- C. Technology. Electrical, Architectural, HVAC, Structural, Civil and all other drawings as well as the specifications for all the divisions shall be defined as the contract documents, Contractor shall review entire set of contract documents prior to bidding.
- D. Drawings and specifications are to be considered as supplementing each other. Work specified but not shown, or shown but not specified, shall be performed or furnished as though mentioned in both the specifications and the drawings.

- E. Visit the site of the work and become familiar with the conditions affecting the installation. Submission of a proposal shall presuppose knowledge of such conditions and no additional compensation shall be allowed where extra labor or materials are required because of ignorance of these conditions. Proposal shall include any special phasing requirements related to the construction work as described in the Division 1 Specifications.
- F. Extra costs which might result from deviations from the drawings, so as to avoid interferences, shall be considered a "job condition" and no additional compensation shall be considered applicable. In the event that such interferences occur in course of the work, due to an error, omission, or oversight by the Contractor, no additional compensation shall be allowed.
- G. Interferences that may occur during the course of construction shall be brought to the immediate attention of the architect and engineer. And the architect and engineer's decision, confirmed in writing, shall be final.

282300.4 Submittals:

- A. Drawings: Shop drawings to provide details of proposed system and the work to be provided. These include scaled plan drawings of device locations, cable routing and quantities, point-to-point drawings of systems and wiring and mounting diagrams of individual devices.
- B. Specification Sheets: Submit equipment specification sheets for all materials specified.
- C. Submit quantity breakdown of all proposed equipment.

282300.5 Contractor Qualifications:

- A. The Contractor shall be fully qualified to perform installations as described on the Contract Drawings and within these Specifications.
- B. The Contractor shall have been active in bidding, being awarded, and performing work consistent with that which is indicated on the Contract Documents for a period not less than five (5) years.

282300.6 Work Includes:

- A. The Security Contractor is responsible for all work scope defined in the Security Contract Documents, unless otherwise indicated. Coordinate required systems rough-in work and equipment power requirements with the Electrical Contractor.
- B. The Contractor shall review the Electrical and Technology Contract Documents to fully understand the scope of work requires. Any questions shall be submitted to the Engineer in writing prior to the bid submission. After this time, the Owner, Engineer and Architect shall not be liable for additional Work required due to the misunderstanding or misinterpretation of these requirements.
- C. Include all labor, material, equipment, services and permits necessary for the proper completion of all work shown. Items omitted, but necessary, to make the Technology Systems complete and workable shall be understood to form part of the work.
- D. Material for work required by the Contract Drawings and Specifications such as earthwork, concrete, masonry, and reinforcing steel patching and painting shall be provided as specified in other applicable Divisions covering such work.
- E. It is the purpose of the Drawings to indicate the approximate location of all equipment and devices. Ascertain exact locations, and arrange work accordingly. The right is reserved by the Engineer to effect reasonable changes in the location of devices up to the time of roughing-in, without additional cost to the Owner. Changes in location of devices, or equipment necessitated by interference with the work of other trades shall be made only with the consent of the Architect's or Owner's Representative, and at no additional cost.

Changes in location of devices resulting from the Contractor's failure to comply with the Drawing or Specification requirements shall be made at no additional cost to the Owner.

- 282300.7 Codes and Standards: The installation shall comply with all applicable code requirements. Code requirements and their amendments will include, but are not limited to:
- A. NEC, Article 800 Communication Circuits.
 - B. ANSI/IEEE 241, Recommended Practice for Electric Power Systems in Commercial Buildings.
 - C. ANSI/NEMA 250, Enclosures for Electrical Equipment.
 - D. Safety Rules, U.S. Department of Health and Human Services.
 - E. CSU Environmental Health and Safety Rules
- 282300.8 Guarantee and Warranties:
- A. Warrant that all equipment and work is installed in accordance with good engineering and installation practices. Furthermore, warrant that all equipment will meet the requirements specified, as well as other criteria which may not be explicitly documented in these Specification, but which are accepted as industry standards, as published by ANSI, EIA/TIA, IEEE and BICSI.
 - B. Any device or equipment failing to perform or function as specified shall be replaced with complying equipment without cost to the Owner.
 - C. Guarantee against defects in workmanship and materials: repair or replace any defective work, material or equipment within two (2) years from date of formal written acceptance by the Owner. An additional product warranty provided by individual equipment manufacturers shall supersede this two year workmanship and materials guarantee for installation of the appropriate equipment, as described in the individual section.
 - D. The Contractor, within ten (10) business days of project completion shall fully complete and submit all documentation to the manufacturer as required to implement the extended warranty period. Coordinate guarantee and warranty requirements with the Division 1 Specifications.
- 282300.9 System or Service Shutdowns:
- A. The existing electrical, network, telephone, CATV and other technology systems, related to this work shall be maintained throughout the construction period. Any system or service shutdowns that may be required shall be scheduled through the Owner, and shall be done at a time as directed by the Owner. No additional compensation shall be allowed for these shutdown periods even though premium time work may be required. Provide temporary services to equipment or systems that cannot be shutdown, as determined by Owner.
 - B. Provide a minimum of one week's notice to the Owner before any system or service shutdown is scheduled
- 282300.10 Equivalent Products: Only products listed as approved shall be utilized. Substitutions, under normal circumstances, shall not be allowed. However, in unusual cases, substitutions may be unavoidable. All requests for product substitutions must be approved by the Engineer prior to the bid submission. Loss of certification by the Contractor, or unavailability of product to the Contractor that is not of a market wide nature, shall not be construed as an unavoidable circumstance. The request for product substitution and supporting documentation must be submitted, in writing, along with any samples requested by the Engineer. Written approval for product substitution must be submitted with the bid.
- 282300.11 Products:
- A. Recorder: PELCO DSSRV180-US

- B. Video Management Software: PELCO DS Controlpoint
- C. Video Encoder(when required) PELCO ENC-5416 16 channel.
- D. Indoor ceiling/wall mount H.264 Camera: Axis M3006-V 3-megapixel camera
- E. Outdoor wall mount H.264 camera: Axis P3346-VE 3-megapixel camera
- F. Outdoor PTZ corner mount: Factory manufactured mount arms and enclosures designed for camera type, exact model to be decided prior to installation by CSU.
- G. Outdoor PTZ parapet mount: Factory manufactured mount arms and enclosures designed for camera type, exact model to be decided prior to installation by CSU.
- H. Outdoor PTZ power supply: PELCO WCSLI-4
- I. Cable:
 - 1. PTZ Camera Power Cable: 2 cond. 18 AWG stranded, unshielded CMP Cable.
 - 2. Network cable: General GenSPEED 6500, CAT6, Plenum Rated Cable, green jacket

282300.12 Installation:

- A. Install all equipment and materials in accordance with current recommendations of the manufacturer. The work shall also be in accordance with:
 - 1. Installation criteria defined in these specifications and in the construction documents.
 - 2. Factory Representative's requirements.
 - 3. Approved submittals.
 - 4. Applicable requirements of referenced standards.
- B. No CCTV cameras to be mounted or aimed without approval of AC&SS Manager. Failure to do so may result in rework and repairs to finishes at the CCTV contractor's expense.
- C. No head-end security hardware is to be installed until location is physically marked by the AC&SS Manager.
- D. Network video recorders are to be located in a dedicated server rack in room specified unless otherwise approved by the CSU department of access control and security.
- E. All network video recorders and PTZ camera power supplies shall be connected to generator backed up, emergency power circuits dedicated solely to security systems equipment.
- F. All Network Video Recorders and PTZ camera power supplies shall be equipped with battery backup for four hours of normal operation.
- G. Provide a PELCO NETS404T H.264 Encoder for conversion of analog video signals from the Aiphone door intercom system to H.264 for connection to the PELCO NVR.
- H. Network cameras shall have H.264 video compression capability for transmission of signal to the recording device to minimize impact on network traffic.
- I. With the exception of exterior PTZ cameras, all cameras shall utilize Power Over Ethernet (POE) for a power source. POE network switches are not always available on existing network infrastructure, and may be required to be added to existing infrastructure to facilitate commissioning of the system. Coordination regarding POE requirements with the CSU Information Services & Technology Department (IS&T) will be the responsibility of the Contractor.

282300.13 Programming: Programming of the system shall include the following tasks:

- A. Setting up Ethernet addresses of all cameras and NVR's based upon information provided by IS&T department.
- B. Programming camera titles, display screens, mapping camera responses to alarm inputs, motion detection zones, recording schedules, alarm schedules.
- C. Other system programming tasks required by the Owner. These additional programming requirements shall be coordinated between the Owner and the Contractor.

282300.14 Testing:

- A. The Contractor shall test each and every access control device for proper operation. The Contractor will also test each and every door for proper function and interoperability of associated components. A test report shall be prepared and submitted prior to system commissioning listing each component and system, the tests performed, and any discrepancies. Any device or system found to be unacceptable shall be corrected or replaced until every device and system is functioning properly. Details of the resolution of any discrepancy shall be provided as part of the test results.
- B. Hard-copy System Printout: The Contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panels/units have passed the test criteria set forth by the manufacturer.

282300.15 Commissioning: The Contractor shall certify completion in writing and schedule the commissioning walk-through. The Contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

282300.16 Installation:

- A. Install all equipment and materials in accordance with current recommendations of the manufacturer. The work shall also be in accordance with:
 - 1. Installation criteria defined in these specifications and in the construction documents.
 - 2. Factory Representative's requirements.
 - 3. Approved submittals.
 - 4. Applicable requirements of referenced standards.
- B. No CCTV cameras to be mounted or aimed without approval of AC&SS Manager. Failure to do so may result in rework and repairs to finishes at the CCTV contractor's expense.
- C. No head-end security hardware is to be installed until location is physically marked by the AC&SS Manager.
- D. Network video recorders are to be located in a dedicated server rack in room specified unless otherwise approved by the CSU department of access control and security.
- E. All network video recorders and PTZ camera power supplies shall be connected to generator backed up, emergency power circuits dedicated solely to security systems equipment.
- F. All Network Video Recorders and PTZ camera power supplies shall be equipped with battery backup for four hours of normal operation.
- G. Provide a PELCO NETS404T H.264 Encoder for conversion of analog video signals from the Aiphone door intercom system to H.264 for connection to the PELCO NVR.
- H. Network cameras shall have H.264 video compression capability for transmission of signal to the recording device to minimize impact on network traffic.
- I. With the exception of exterior PTZ cameras, all cameras shall utilize Power Over Ethernet (POE) for a power source. POE network switches are not always available on existing network infrastructure, and may be required to be added to existing infrastructure to facilitate commissioning of the system. Coordination regarding POE requirements with the CSU Information Services & Technology Department will be the responsibility of the Contractor.

282300.17 Programming: Programming of the system shall include the following tasks:

- A. Setting up Ethernet addresses of all cameras and NVR's based upon information provided from CSU IS&T department.
- B. Programming camera titles, display screens, mapping camera responses to alarm inputs, motion detection zones, recording schedules, alarm schedules.

- C. Other system programming tasks required by the Owner. These additional programming requirements shall be coordinated between the Owner and the Contractor.

282300.18 Testing:

- A. The Contractor shall test each and every access control device for proper operation. The Contractor will also test each and every door for proper function and interoperability of associated components. A test report shall be prepared and submitted prior to system commissioning listing each component and system, the tests performed, and any discrepancies. Any device or system found to be unacceptable shall be corrected or replaced until every device and system is functioning properly. Details of the resolution of any discrepancy shall be provided as part of the test results.
- B. Hard-copy System Printout: The Contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panels/units have passed the test criteria set forth by the manufacturer.

282300.19 Commissioning: The Contractor shall certify completion in writing and schedule the commissioning walk-through. The Contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

28 26 00 A/V DOOR INTERCOM SYSTEM

282600.1 Work Includes:

- A. Door Stations
- B. Master Stations
- C. Central Exchange Unit
- D. Power Supplies
- E. Cabling

282600.2 Related Work Specified Elsewhere:

- A. Technology General Provisions
- B. Cabling Systems Administration
- C. Technology Pathway Hardware
- D. Structured Cabling System
- E. Access Control System
- F. Intrusion Detection System
- G. IP Based CCTV System

282600.3 Description of Work:

- A. The Door Intercom System consists of all Door Stations, Master Stations, Central Exchange Units, Power Supplies, and any other equipment to form a complete system. The Contractor shall provide and install any and all required devices to form a complete system, whether or not they are specifically mentioned in these specifications or shown on the contract drawings.
- B. The Door Intercom System must be capable of integrating with the Access Control System and the IP Based CCTV System for control of doors and video monitoring.
- C. Technology, Electrical, Architectural, HVAC Structural, Civil and all other Drawings as well as the Specifications for all the Divisions shall be defined as the Contract Documents. Contractor shall review entire set of Contract Documents prior to bidding.
- D. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown, or shown, but not specified, shall be performed or furnished as though mentioned in both the Specifications and the Drawings.

- E. Visit the site of the work and become familiar with the conditions affecting the installation. Submission of a proposal shall presuppose knowledge of such conditions and no additional compensation shall be allowed where extra labor or materials are required because of ignorance of these conditions.
- F. Proposal shall include any special phasing requirements related to the construction work as described in the Division 1 Specifications.
- G. Extra costs which might result from deviations from the Drawings, so as to avoid interferences, shall be considered a "Job Condition", and no additional compensation shall be considered applicable. In the event that such interferences occur in course of the Work, due to an error, omission, or oversight by the Contractor, no additional compensation shall be allowed.
- H. Interferences that may occur during course of construction shall be brought to the immediate attention of the Architect and Engineer, and the Architect and Engineer's decision, confirmed in writing, shall be final.

282600.4 Submittals:

- A. Drawings: Shop drawings to provide details of proposed system and the work to be provided. These include scaled plan drawings of device locations, cable routing and quantities, point-to-point drawings of systems and wiring and mounting diagrams of individual devices.
- B. Specification Sheets: Submit equipment specification sheets for all materials specified.
- C. Submit quantity breakdown of all proposed equipment.

282600.5 Contractor Qualifications:

- A. The Contractor shall be fully qualified to perform installations as described on the Contract Drawings and within these Specifications.
- B. The Contractor shall have been active in bidding, being awarded, and performing work consistent with that which is indicated on the Contract Documents for a period not less than five (5) years.

282600.6 Work Includes:

- A. The Security Contractor is responsible for all work scope defined in the Security Contract Documents, unless otherwise indicated. Coordinate required systems rough-in work and equipment power requirements with the Electrical Contractor.
- B. The Contractor shall review the Electrical and Technology Contract Documents to fully understand the scope of work requires. Any questions shall be submitted to the Engineer in writing prior to the bid submission. After this time, the Owner, Engineer and Architect shall not be liable for additional Work required due to the misunderstanding or misinterpretation of these requirements.
- C. Include all labor, material, equipment, services and permits necessary for the proper completion of all work shown. Items omitted, but necessary, to make the Technology Systems complete and workable shall be understood to form part of the work.
- D. Material for work required by the Contract Drawings and Specifications such as earthwork, concrete, masonry, and reinforcing steel patching and painting shall be provided as specified in other applicable Divisions covering such work.
- E. It is the purpose of the Drawings to indicate the approximate location of all equipment and devices. Ascertain exact locations, and arrange work accordingly. The right is reserved by the Engineer to effect reasonable changes in the location of devices up to the time of roughing-in, without additional cost to the Owner. Changes in location of devices, or equipment necessitated by interference with the work of other trades shall be made only

with the consent of the Architect's or Owner's Representative, and at no additional cost. Changes in location of devices resulting from the Contractor's failure to comply with the Drawing or Specification requirements shall be made at no additional cost to the Owner.

- 282600.7 Codes and Standards: The installation shall comply with all applicable code requirements. Code requirements and their amendments will include, but are not limited to:
- A. NEC, Article 800 Communication Circuits.
 - B. ANSI/IEEE 241, Recommended Practice for Electric Power Systems in Commercial Buildings.
 - C. ANSI/NEMA 250, Enclosures for Electrical Equipment.
 - D. Safety Rules, U.S. Department of Health and Human Services.
 - E. CSU Environmental Health and Safety Rules

- 282600.8 Guarantee and Warranties:
- A. Warrant that all equipment and work is installed in accordance with good engineering and installation practices. Furthermore, warrant that all equipment will meet the requirements specified, as well as other criteria which may not be explicitly documented in these Specification, but which are accepted as industry standards, as published by ANSI, EIA/TIA, IEEE and BICSI.
 - B. Any device or equipment failing to perform or function as specified shall be replaced with complying equipment without cost to the Owner.
 - C. Guarantee against defects in workmanship and materials: repair or replace any defective work, material or equipment within two (2) years from date of formal written acceptance by the Owner. An additional product warranty provided by individual equipment manufacturers shall supersede this two year workmanship and materials guarantee for installation of the appropriate equipment, as described in the individual section.
 - D. The Contractor, within ten (10) business days of project completion shall fully complete and submit all documentation to the manufacturer as required to implement the extended warranty period. Coordinate guarantee and warranty requirements with the Division 1 Specifications.

- 282600.9 System or Service Shutdowns:
- A. The existing electrical, network, telephone, CATV and other technology systems, related to this work shall be maintained throughout the construction period. Any system or service shutdowns that may be required shall be scheduled through the Owner, and shall be done at a time as directed by the Owner. No additional compensation shall be allowed for these shutdown periods even though premium time work may be required. Provide temporary services to equipment or systems that cannot be shutdown, as determined by Owner.
 - B. Provide a minimum of one week's notice to the Owner before any system or service shutdown is scheduled

- 282600.10 Equivalent Products: Only products listed as approved shall be utilized. Substitutions, under normal circumstances, shall not be allowed. However, in unusual cases, substitutions may be unavoidable. All requests for product substitutions must be approved by the Engineer prior to the bid submission. Loss of certification by the Contractor, or unavailability of product to the Contractor that is not of a market wide nature, shall not be construed as an unavoidable circumstance. The request for product substitution and supporting documentation must be submitted, in writing, along with any samples requested by the Engineer. Written approval for product substitution must be submitted with the bid.

- 282600.11 Products:

- A. Door Intercom Station: Aiphone Flush Mount Door Station AX-DVF-P
- B. Master Intercom Station: Aiphone Master Station AX-8MV
- C. Central Exchange Unit: Aiphone AX248C
- D. Power Supply: Aiphone PS-2420UL
- E. Network Cable: General GenSPEED 6500, CAT6, CMP Cable.

282600.12 Installation:

- A. Install all equipment and materials in accordance with current recommendations of the manufacturer. The work shall also be in accordance with:
 - 1. Installation criteria defined in these specifications and in the construction documents.
 - 2. Factory Representative's requirements.
 - 3. Approved submittals.
 - 4. Applicable requirements of referenced standards.
- B. No CCTV cameras to be mounted or aimed without approval of Cleveland State University Director of Access Control and Security Systems. Failure to do so may result in rework and repairs to finishes at the CCTV contractor's expense.
- C. No head-end security hardware is to be installed until location is physically marked by the Cleveland State University Director of Access Control and Security Systems.
- D. Central Exchange Unit is to be located in a dedicated security equipment rack located in room 003 (UN-00)
- E. Power supplies shall be connected to generator backed up, emergency power circuit dedicated solely to security systems equipment.
- F. Connect the video outputs of the Aiphone door intercom system to the Pelco NET5404T H.264 for conversion of analog video signals from the Aiphone cameras to H.264 for connection to the Pelco NVR.
- G. Connect the door release relay outputs of the central exchange unit to inputs on the Andover Continuum Access Control System for door release functions to be activated by the master station operator.
- H. Card Readers mounted on the door intercom stations operate independently of the door intercom system and are to be cabled separately as are all other card readers in the Access Control System.

282600.13 Programming: Programming of the system shall include the following tasks:

- A. Initial Programming of the system will have all door intercom stations routed to all intercom master stations.
- B. Other system programming tasks required by the Owner. These additional programming requirements shall be coordinated between the Owner and the Contractor.

282600.14 Testing: The Contractor shall test each and every access control device for proper operation. The Contractor will also test each and every door for proper function and interoperability of associated components. A test report shall be prepared and submitted prior to system commissioning listing each component and system, the tests performed, and any discrepancies. Any device or system found to be unacceptable shall be corrected or replaced until every device and system is functioning properly. Details of the resolution of any discrepancy shall be provided as part of the test results.

282600.15 Training: The Contractor shall provide a minimum of (2) 4 hour in-service training session with this system. These sessions shall be broken into segments that will facilitate the training of individuals in the operation of this system. Operation manuals and user guides shall be

provided at this time. Contractor to record training sessions and provide (2) copies on DVD to owner prior to completion.

282600.16 Commissioning: The Contractor shall certify completion in writing and schedule the commissioning walk-through. The Contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

28 31 11 DIGITAL ADRESSABLE FIRE ALARM SYSTEM

283111.1 The fire alarm system work is to be bid by the electrical contractor but the specifications and drawings are to be written such that the fire alarm system work is bid as three alternates. The Base Bid specification is to be written around a Simplex system. The first Alternate is for a Notifier system; the supplier of the Notifier system equipment shall be NESCO (Notifier Engineered System Company) certified. The second Alternate will be for an Edwards system. This will give the University the flexibility to pick any of the lowest bidders for any given Alternate.

283111.2 All fire alarm main panels shall have an additional printer port installed in the main FACP utilizing RS-232.

283111.4 All new fire alarm systems shall have voice capability and the A/E shall pay special attention to the latest audibility requirements; more audible notification devices at lower wattage taps.

283111.5 All fastening hardware shall be tamperproof.

283111.6 All devices shall be red with white lettering.

283111.7 Manufacturer shall provide various adaptor skirts.

283111.8 The fire alarm control panels (FACP) shall be an addressable, microprocessor-based fire alarm system with initiating devices, notification appliances, and monitoring and control devices. The system must have the ability to receive an auxiliary input from the University's public address system and then utilize the fire alarm system amplifier and speakers to transmit the message throughout the building.

283111.9 The fire alarm system shall allow for loading and editing instructions and operating sequences as necessary. The system must be capable of on-site programming to accommodate system expansion and facilitate changes in operation. All software operations shall be stored in a non-volatile programmable memory. Loss of primary and secondary power shall not erase the instructions stored in memory.

A. The system shall provide a means to recall alarms and trouble conditions in a chronological order for the purpose of recreating an event history.

B. Automatically route alarm, supervisory, and trouble signals to the University's central monitoring system. FACP shall be equipped with a serial DACT. Every monitored and controlled point to report via the serial DACT to the third University's central monitoring system. DACT shall be configured to simultaneously dial both a CSU line (4 digit extension) and an outside line (business-type multi-digit extension (8-1-800-xxx-xxxx)).

C. FACP shall have the capability to provide remote access through a dial-up service modem using the public switched telephone system or a private switched telephone system.

283111.10 Drill Switch: a manual evacuation switch shall be provided to operate the notification appliances without causing other control circuits to be activated.

- 283111.11 Walk-Test: the system shall have the capability of (8) programmable passcode protected one-person testing groups, such that only a portion of the system need to be disable during testing. The actuation of the “enable one person test” program at the control unit shall activate the one-person testing mode as follows:
- A. The city circuit connection and suppression release circuits shall be bypassed for the testing group.
 - B. Control relay functions associated to one of the (8) testing groups shall be bypassed.
 - C. The control unit shall indicate a trouble condition.
 - D. The alarm activation of any initiating device in the testing group shall cause the audible notification appliances to sound a voice announcement to identify the device.
 - E. The unit shall automatically reset itself after signaling is complete.
 - F. Any momentary opening of an initiating or notification appliance circuit wiring shall cause the audible signals to voice announce sound for 4 seconds indicating the trouble condition.
- 283111.12 Amplifier: FACP shall have voice capabilities with pre-recorded digital messages. The system shall be configured to allow voice paging. The operator shall be able to make announcements via a push-to-talk paging microphone over the pre-selected speakers.
- A. The digital messages shall include a tornado/severe weather message.
 - B. FACP shall allow for silencing of audible notification devices while visual notification devices continue to run.
 - C. Amplifiers shall be sized for minimum 25 percent expansion.
- 283111.13 Pull Stations: all pull stations will be double action (push-pull) with “stoppers” installed over them where required and/or requested.
- 283111.14 Smoke Detectors: shall be individually monitored for calibration, sensitivity, and alarm condition. FACP shall maintain a moving average of the sensor’s smoke chamber value to automatically compensate for dust, dirt, etc. Shall also indicate when a sensor needs cleaning.
- 283111.15 All room smoke detectors will have sounder bases.
- 283111.16 Battery: FACP system shall have battery backup sized to provide a minimum 4 hours of normal supervisory mode and then 15 minutes of alarm operation. Audio and visual circuits to be installed to 75 percent of maximum capacity to allow for future expansion.
- 283111.17 Visual notification devices shall be synchronized.
- 283111.18 All cabinets to be sized for 25 percent expansion.
- 283111.19 Wiring: system connections for initiating (signaling) circuits and notification appliance circuits shall be Class B.
- 283111.20 Circuit faults shall be indicated by trouble signal to the FACP.
- 283111.21 All duct detectors shall have a remote test station (RTS) with an alarm LED, reset capability, and a test switch. This RTS shall be located remote from the detector in an accessible location approved by the University’s fire marshal.
- 283111.22 The fire alarm system shall be tested in its entirety prior to the final acceptance test. This pre-test

shall be scheduled and witnessed by the University's fire marshal. Once the University fire marshal OK's the system then the contractor shall schedule the final acceptance test with the State fire marshal. The fire alarm system manufacturer's technician, the electrical contractor, and the University fire marshal will be required to be present for both system tests. When testing is complete, the manufacturer shall turn over a copy of the FACP program along with the as-built device list to the University fire marshal.

END OF SECTION

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 00 00 GENERAL REQUIREMENTS

- 320000.1 A/E shall consult OUA during the early planning stage of the project concerning site work, excavation, grading and landscaping, removal of obstructions, alterations of existing campus drives, parking areas and walkways, removal of trees and shrubs, and access to and from the site.
- 320000.2 A/E shall consult with OUA during early planning stage of the project to consider emergency vehicle access, service vehicle access, Student Disability Services vehicles, snow removal, public transportation, parking and pedestrian access, and construction staging areas.
- 320000.3 The site survey shall include information on underground utilities and structures (if required by the contract).
- 320000.4 A/E shall be responsible for preparing a subsurface investigation report which consists of test borings, laboratory testing, and engineering analysis.
- 320000.5 Existing utility locations shall be determined by A/E in the preparation of plans for boring locations. A/E shall locate borings to avoid these utilities. Notify OUA to schedule the work.
- 320000.6 Boring locations and sections showing all soil conditions shall be shown on the drawings. The specifications shall state that the information is for the contractor's use and shall hold the University harmless for the accuracy of the information.
- 320000.7 A/E shall indicate on drawings that the Ohio Utilities Protection Services (OUPS) does not locate utilities on campus nor does University personnel. Specifications should require contractor to hire utility location contractor services.

32 84 00 IRRIGATION SYSTEMS

- 328400.1 This Section includes the following:
- A. Piping.
 - B. Sleeving for piping.
 - C. Automatic control valves.
 - D. Miscellaneous piping specialties.
 - E. Sprinklers.
 - F. Quick couplers.
 - G. Drip irrigation specialties.
 - H. Controllers.
 - I. Boxes for automatic control valves.
- 328400.2 Definitions:
- A. Circuit Piping: Downstream from control valves to sprinklers during flow.
 - B. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
 - C. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.
- 328400.3 Performance:

- A. Irrigation zone control shall be automatic operation with controller and automatic control valves.
- B. Retain one of first two paragraphs below. Retain first paragraph if complete system design and calculations are in the Contract Documents.
- C. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.
- D. This work includes all required permits and inspections. All plumbing and electrical work must comply with all local building code requirements. All associated interior and exterior plumbing and electrical work, including controller connections, must be finished to complete the system.
- E. Contractor to include one (1) full day to review the operation of the irrigation system with the Owner's Representative once the system is one hundred percent (100%) operational.

328400.4 Submittals:

- A. Product Data: Submit electronic copies of manufacturer's product data and installation instructions for each of the system components including all sprinkler heads, automatic valves, controllers, and quick coupling valves to be used on the project.
- B. Shop Drawings: Submit to the Owner drawings showing all deviations from the plans, including layout of piping, heads, valves, zones, control systems, and wiring prior to installation.
- C. Qualification Data: For qualified Installer.
- D. Operation and Maintenance Data: Submit operation and maintenance manuals along with as-built drawings. Maintain record drawings current with actual construction on a daily basis during installation of system. Contractor shall provide an accurate, reproducible drawing of the entire irrigation system to the Owner prior to final payment.

328400.5 Quality Assurance:

- A. Installer Qualifications: Minimum of five (5) years experience installing underground irrigation systems of comparable size. All work to be performed under the supervision of a qualified superintendent.
- B. Obtain Owner's Representative's acceptance of installed and tested underground sprinkler system before installing backfill materials.
- C. Construct the system to grade and in conformance to all areas and locations designated on the drawings.
- D. Irrigation products listed as a specific manufacturer's product are intended to establish the level All of quality and significant characteristics for the purposes of evaluating comparable products. The substitution of comparable products shall comply with Division 01 section "Substitution Requirements" and with the Division 00 Standard Subcontract Form.
- E. Coordinate this work with that of all other trades on the Project.
- F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

328400.6 Delivery, Storage, and Handling

- A. Deliver all system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
- B. Provide secure locked storage for valves, sprinkler heads and similar components that cannot be immediately replaced to prevent installation delays.
- C. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

328400.7 Products:

- A. Pipes, Tubes, and Fittings:

1. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
 2. PE Pipe: ASTM D2239, SDR 11.5, PE23 rated at 100 psi, NSF approved. Polyethylene pipe is not to be used.
 3. PVC Pipe, Mainline: PVC pipe three (3") inch in diameter and larger shall be ASTM D 2241, Schedule 40 PVC ring-tite (gasket) pipe.
 - a. Fittings: Ductile iron fittings with gasket joints required on 3" or larger mainline. Use Harco or approved equal.
 4. PVC Pipe, Laterals: PVC pipe two and one-half (2 ½") inches in diameter and smaller shall be ASTM D 2241, Schedule 40 PVC solvent weld.
 - a. Fittings: Schedule 40 PVC, ASTM D2466 molded fittings suitable for solvent weld.
 5. Drip Irrigation: As shown on plans.
- B. Piping Joining Materials
1. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656. Primer to be purple in color. Solvent to be appropriate for pipe and fitting type and weather conditions.
 2. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.
- C. Plastic, Automatic Control Valves:
1. Manufacturers: Subject to compliance with requirements, see drawings.
 2. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.
- D. Sprinklers: Designed for uniform coverage over entire spray area indicated at available water pressure. See drawing legend for each type required.
- E. Quick Couplers: Manufacturers: Subject to compliance with requirements, provide products as noted on drawings, including lock feature.
- F. Drip Irrigation Specialties: Manufacturers: Subject to compliance with requirements, see plans.
- G. Controllers:
1. Manufacturers: Subject to compliance with requirements, see plans.
 2. Wiring: UL approved for direct burial.
 - a. Splicing Materials: Low voltage wire connectors to be made using wire nuts and 3M DBY/DBR connectors or equal; suitable for direct burial. One hundred and twenty (120) volt or heavier splices made underground to use wire nuts and 3M brand DBY.

328400.8 Boxes for Automatic Control Valves:

- A. Plastic Boxes:
1. Manufacturers: Subject to compliance with requirements, provide products by the following, or approved equal:
 - a. Carson Industries LLC
 - b. Rain Bird Corp.
 2. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
 3. Size: Single valves shall be installed using a ten (10) inch round box. Two valves shall be installed using an eighteen (18) inch by twelve (12) inch rectangular box. Three valves shall be installed using a Jumbo Valve box.
- B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches

maximum.

328400.9 Execution:

A. Preparation:

1. Examine final grades and installation conditions. Do not start underground sprinkler system work until finished grades are established and unsatisfactory conditions have been corrected.
2. Layout and stake the location of each pipe runs and all sprinkler heads and sprinkler valves. Obtain Owner's Representative's acceptance of layout before excavating.

B. Earthwork:

1. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."
2. Excavating shall be considered unclassified and shall include all materials encountered, except materials that cannot be excavated by normal mechanical means. Excavate trenches of sufficient depth and width to permit proper handling and installation of pipe and fittings. Excavate to depths required to provide two (2") inch depth of earth fill or sand bedding for piping when rock or other unsuitable bearing material is encountered.
3. All mainline and continuously pressurized pipe is to be installed using open trenches. Lateral pipe may be installed by "plowing" if soil conditions permit and soils do not contain gravel, rock, construction debris or other potentially damaging material.
4. The top ten (10") inches of backfill shall be topsoil, free of rocks, subsoil or trash. Any special soil mixture shall be replaced to the original condition it was prior to irrigation installation.
5. Fill to within six (6") inches of final grade with approved excavated or borrows fill materials free of lumps or rocks larger than two (2") inches in any dimension.
6. Provide approved fine grained earth fill or sand to a point four (4") inches above the top of pipe, where soil conditions are rocky or otherwise objectionable.
7. Fill to match adjacent grade elevation with approved earth fill material. Place and compact fill in layers not greater than eight (8") inches in depth.

C. Piping Installation:

1. All mainline and contiguously pressurized pipes are to be installed using open trenches.
2. Install PVC piping in dry weather when temperature is above 40 degrees Fahrenheit. Allow glued joints to set at least twenty-four (24) hours at temperatures above 40 degrees Fahrenheit before pressure is applied to the system.
3. Store pipe such that it is protected from oil and grease and from prolonged exposure to sunlight and excessive heat.
4. Minimum depth of cover over lateral pipe shall be twelve (12") inches and over mainline pipe shall be twenty-four (24") inches for 3" & larger main. (18") depth is sufficient for 2.5" or less.
5. Install plastic pipe in accordance with manufacturer's installation instructions.
6. Where mainline pipe crosses piping related to the subgrade system drainage, the mainline piping shall go over the subgrade drainage, provided the mainline pipe is not installed with less than eighteen (18") inches of cover. Otherwise install mainline pipe at twenty-four (24") inches buried depth, beneath drainage system.
7. Option in first paragraph below may be withdrawn. If selecting, verify availability.
8. Revise first two paragraphs below to suit Project; delete if not required.
9. Install piping in sleeves under parking lots, roadways, and sidewalks.
10. Install sleeves made of ASTM D 2241, Schedule 40 PVC pipe and socket fittings, and solvent-cemented joints. Minimum size of sleeves to be three (3) inches; all sleeves

shall be minimum of two times the size of the pipe being sleeved.

D. Joint Construction:

1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
3. PE Piping Fastener Joints: Join with insert fittings and bands or fasteners according to piping manufacturer's written instructions.
4. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - b. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.

E. Valve Installation:

1. Electric valve installation shall be as indicated on the drawings. All electrical and manual valves shall be enclosed in a minimum ten (10") inch width valve box. Add extensions as required to prevent soil settlement around the valve. Set box flush with finish grade and aligned with adjacent boxes and/or adjoining site work.
2. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box. Support box with block or notch box to protect pipe under box.

F. Sprinkler Installation:

1. Install fittings and sprinkler heads in accordance with manufacturer's instructions, except as otherwise indicated.
2. Provide pop-up spray heads and three-quarter (3/4") inch with the "funny pipe" flexible swing pipe or equivalent.
3. Provide all quick coupling valves and one (1") inch IPS sprinklers with three (3) elbow swing joints. Use Lasco one (1") pre-fabricated 'O' Ring joints as detailed on the drawings.
4. Set sprinkler heads perpendicular to finished grades, except as otherwise indicated and positioned to prevent contact with grounds maintenance equipment. Locate sprinkler heads to assure proper coverage of indicated areas. Do not exceed sprinkler head spacing distances indicated.

G. Automatic Irrigation Control System Installation:

1. Equipment Mounting: Install controller as directed, location approved by General Contractor.
 - a. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - b. Install anchor bolts to elevations required for proper attachment to supported equipment.
2. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas. (wire sleeve not shown on drawings)

H. Field Quality Control:

1. Perform tests and inspections. Inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
2. Flushing and Testing:
 - a. The sprinkler main shall be tested under normal water pressure for a period of

- twelve (12) hours.
- b. If leaks occur, repair and repeat the test. Give the Owner's Representative twenty-four (24) hours notice prior to testing.
 - c. Adjustment of the sprinkler heads and automatic equipment shall be done by the contractor upon completion of installation to provide optimum performance. The contractor shall make minor adjustment during the guarantee period.
 - d. After all new sprinkler piping are in place and connected for a given section and all necessary division work has been completed, and prior to the installation of sprinkler heads, all control valves shall be opened and a full head of water used to flush out the system.
 - e. Testing of the system shall be performed after completion of each section or completion of the entire installation. Any necessary repairs shall be made, at the contractor's expense, to put the system in good working order before the owner shall make final payment.
- I. Startup Service: Irrigation contractor to perform (1) Spring startup and (1) Fall winterization service.
 - J. Guarantee:
 1. Guarantee underground sprinkler system against defects in workmanship and materials for one (1) year from date of substantial completion.
 2. Guarantee includes contractor returning to the site for Fall winterization and Spring start-up service.
 3. Guarantee that all trenches and other disturbed areas shall be free from heaving and/or settling by more than one-quarter (1/4"). If necessary, adjust the grade, re-grade the trench, and re-seed. This no settlement guarantee shall extend over the entire one-(1) year guarantee from date of acceptance.
 - K. Cleaning: Flush dirt and debris from piping before installing sprinklers and other devices.

32 92 00 LAWNS

329200.1 Schedule:

- A. If the project completion date falls outside of the specified planting times, OUA may require extending the landscaping portion of the contract to allow for optimum planting conditions and plant health. The dates for this "extension" shall be specified by A/E in the contract documents.
- B. For lawn areas, the contractor shall be required to fine grade the area and install temporary mulch to prevent the tracking of dirt into the new project. After the planting season arrives, the contractor shall remove the straw, seed the area, and mulch.
- C. For planting beds, the contractor shall fine grade the area and install the mulch specified for that area. After the planting season arrives, the contractor shall remove the mulch, plant the landscaping, and mulch.

329200.2 Fine grading of areas to receive lawn:

- A. Lawn areas to include 6 inches topsoil. Soil below topsoil shall be rototilled to 6 inch depth prior to placement of topsoil.
- B. Contractor shall rake the top layer of lawn areas prior to seeding to remove all rocks over 1/2 inch diameter.
- C. All lawn areas abutting curbs shall be properly compacted and prepared to prevent settlement of lawns behind curbs. A/E shall inspect this situation with OUA during punch list.

329200.3 Reconditioning lawns:

- A. Soil compaction by construction equipment, staging, or storing shall be pulverized to a depth of 12 inches by disking or plowing prior to placing topsoil.
- B. Soil contamination by oil drippings, sand, stone, gravel, or other contaminants into the topsoil shall be removed to a depth of 12 inches, disposed of off-site, and replaced with new planting soil.
- C. Remove diseased or unsatisfactory lawns; do not bury into soil.
- D. Where substantial but thin lawn remains, rake, serrate if compacted, and cultivate soil; fertilize and seed.
- E. Water newly seeded areas. Maintain adequate moisture until new grass is established.

329200.4 Preparation of soil and beds prior to planting:

- A. Contractor shall locate all existing utilities. Any damage shall be repaired at the contractor's expense.
- B. Contractor shall lay out planting locations, mark with stakes, adjust locations if requested, and obtain A/E and OUA approval before proceeding.
- C. Planting areas to include a minimum 12 inches of topsoil. Soil below topsoil shall be rototilled to 12 inch depth prior to placement of topsoil.

329200.5 Soils:

A. Topsoil for lawns:

- 1. Topsoil shall be fertile agricultural-type soil, free of subsoil, rocks larger than 1/2 inch in diameter, clay, toxic matter, plants, weeds, and roots.
- 2. Topsoil shall contain at least 6 percent organic matter and have an acidic reaction between 5.5 and 7.0 – inclusive. It shall have the following mechanical analysis:

Sieve Size	Percent by Weight
1"	99-100
1/4"	97-99
No. 100 mesh	40-60
No. 200 mesh	20-40

- B. Bed mix soil shall have a minimum of at least 8 percent organic matter. Mixture shall be approximately 1/3 topsoil, 1/3 decomposed leaf humus, and 1/3 coarse sand.

329200.6 Soil amendments: Fertilizer; 18-24-12 for all applications.

329200.7 Seeding of lawn:

- A. Contractor shall submit seed vendor's certification of required seed mixture, indicating percentage by weight and percentages of purity, germination, and weed seed for each grass species. Contractor shall also submit evidence of State certification. Contractor shall submit certification to A/E and A/E shall submit to OUA for review prior to returning to the contractor.
- B. Contractor shall notify A/E at least seven working days prior to start of seeding operations.
- C. Planting time for seed shall be April 1 to May 15 for spring and August 15 to October 1 for fall.
- D. Contractor shall restrict traffic from lawn areas until grass is established. This will include signs and barriers (blunt safety top 30 inch posts with rope between).
- E. A/E shall review seed mix locations with OUA.
- F. Sun/part sun seed mix shall be a tall fescue blend (90 tall fescue/10 bluegrass); Oliger Tall Fescue Mix.
- G. Shady area seed mix shall be Oliger Fairlawn "Shady" Mix.
- H. Hydro-seeding may be used at contractor's option. A/E to verify with OUA. Wood cellulose fiber mulch shall be dyed green to facilitate visual inspection for uniformity of seed

distribution.

- I. Seed shall be delivered to the site in sealed containers bearing the producer's name and required formula. Seed shall be fresh stock, labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act and with the State of Ohio Department of Agriculture.
- J. Wet or moldy seed shall be rejected.
- K. Before construction begins, precautionary measures shall be taken by the contractor to protect all existing lawn areas that are to be trucked over or staged upon. This may include stripping and stockpiling of topsoil. Any existing lawn areas that have been damaged by the contractor shall be restored to the satisfaction of OUA at no additional cost.
- L. Seed shall be placed at a rate of 6 pounds per 1,000 square feet or per manufacturer's recommendation. Seeding out of season may require heavier seeding or multiple seedings.
- M. When seeding occurs after acceptable seeding dates, over-winter protection shall consist of applying 5 bales of clean straw per 1,000 square feet. Anchor mulch by commercial mulch netting or 20 pounds per 1,000 square feet cellulose fiber. Contractor shall remove netting when directed by OUA.
- N. Provide commercial mulch netting on slopes as required to prevent rain washout of seed.

329200.8 Sod:

- A. Sod shall only be utilized in the bottom of drainage ditches where establishing lawn is difficult due to water flow and in areas as directed by the University.
- B. Sod shall be well-rooted Kentucky Bluegrass, *Poa Pratensis*, containing a growth of not more than 10 percent of other grasses and clovers, free of obnoxious weeds, and cut below the root line. A/E to approve compatibility of soils.
- C. Deliver to the site within 24 hours after nutting and install the same day as delivered to the site.
- D. Areas to receive sod shall not be fertilized less than 48 hours prior to installation.
- E. Place sod smoothly, edge to edge, with staggered end joints. Lay sod on slopes with long dimension running parallel to contour lines, starting at the bottom. Stake in alternating rows with stakes staggered. Water sod and tamp to eliminate air pockets.

32 93 00 PLANTS

329300.1 Planting of trees and shrubs:

- A. According to the kind of trees, planting time for trees and shrubs shall be March 15 to May 15 for spring and October 15 to November 30 for fall.
- B. Plants shall be typical of their species and variety, have normal growth habits, well developed branches, densely foliated and vigorous fibrous root systems.
- C. Plants shall be free from defects, injuries, plant diseases, and insect infestations.
- D. All plants of each particular variety shall be reasonably uniform in size and configuration.
- E. Plants shall be freshly dug and nursery grown, have been transplanted and root pruned at least once in the past 2 years, and been grown under similar climatic conditions to those of the project locality.
- F. All trees shall be balled and burlapped while shrubs may be container grown or balled and burlapped. Burlap shall be unwrapped and laid back prior to backfilling the soil.
- G. All new trees shall have straight trunks with full symmetrical crowns.
- H. Form a watering basin of mulch around trunk holding at least 5 gallons of water for trees and 2-1/2 gallons for shrubs.
- I. Prune dead or broken branches with sharp instruments.

- 329300.2 Planting of ground cover, plants, and perennials:
- A. Planting time for ground cover, plants, and perennials shall be March 15 to May 15 for spring and October 15 to November 30 for fall.
 - B. Ground cover, plants, and perennials shall be typical of their species and variety, have normal growth habits, well-developed branches, densely foliated, and vigorous fibrous root systems.
 - C. Ground cover, plants, and perennials shall be free from defects, injuries, plant diseases, and insect infestations.
 - D. All ground cover, plants, and perennials of each particular variety shall be reasonably uniform in size and configuration.
 - E. Ground cover, plants, and perennials may be container grown or balled and burlapped. Burlap shall be unwrapped and laid back prior to backfilling the soil.
 - F. Space plants as indicated on drawings.
 - G. Excavate holes to accommodate roots, place plants at proper elevation, and backfill with planting soil, working carefully to avoid damage to roots and leave no voids.
 - H. Water thoroughly immediately after planting. Do not wash soil into crowns of plants.
- 329300.3 Decorative mulch:
- A. Shredded hardwood mulch for planting areas and tree rings shall be free of deleterious material and suitable for top dressing of plants.
 - B. Apply mulch 2-4 inches thick in planting beds and tree rings.
- 329300.4 Initial maintenance of lawn areas:
- A. Lawns shall be maintained by the contractor after final planting until final acceptance by A/E.
 - B. Contractor shall water regularly for healthy plant growth. The University will provide a water source when available. A/E to verify.
 - C. Contractor shall mow a minimum of 2 times prior to acceptance by OUA.
 - D. Contractor shall apply 1 application of 18-24-12 fertilizer per manufacturer's recommendations.
 - E. Re-grade and re-sod areas if necessary to correct rutted or damaged or improperly graded areas.
- 329300.5 Initial maintenance of trees and shrubs:
- A. Trees and shrubs shall be maintained by the contractor after final planting until final acceptance by A/E.
 - B. Contractor shall water regularly for healthy plant growth. The University will provide a water source when available. A/E to verify.
 - C. Contractor shall remove weeds, replace mulch, and restore eroded watering basins around trunks if needed.
 - D. Contractor shall remove all plant identification tags and labels.
 - E. Contractor shall apply insecticides and fungicides if necessary to prevent or correct insect infestation or disease.
 - F. Contractor shall dig up and correct any trees that are not plumb.
- 329300.6 Initial maintenance of ground cover and plants:
- A. Ground cover and plants shall be maintained by the contractor after final planting until final acceptance by A/E.
 - B. Contractor shall water regularly for healthy plant growth. The University will provide a water source when available. A/E to verify.
 - C. Contractor shall remove weeds and replace mulch as directed by A/E.
 - D. Contractor shall remove all plant identification tags and labels.

- E. Contractor shall apply insecticides or fungicides if necessary to prevent or correct insect infestation and disease.

329300.7 Inspection for acceptance:

- A. Inspection of planting to determine completion of contract work shall be made by A/E and shall include representatives from OUA. A/E shall confirm that all landscaping conforms to quantities and sizes listed in the planting schedule.
- B. Contractor shall give at least 7 days notice requesting the inspection.
- C. A/E will prepare a punch list and work found not in accordance with plans and specifications shall be subject to re-inspection.
- D. Basis of lawn acceptance shall consist of lawns uniform in texture, density, and color; substantially weed free; without gaps or bare spots; and with vigorous growth of proper species and variety. Scattered bare spots up to 6 inches in diameter will be accepted up to a maximum of 3 percent of the lawn area.

329300.8 Warranties:

- A. New trees, shrubs, perennials and ground covers shall be guaranteed for 1 year from the date of substantial completion.
- B. Warranty shall cover death and improper planting, unsatisfactory growth, neglect or damage by others excluded.
- C. Contractor shall replace unsatisfactory plant materials with healthy, vigorous materials, planted only during the next specified planting season.
- D. Borderline plants shall be replaced.

END OF SECTION

DIVISION 33 – UTILITIES

33 11 00 SITE WATER SERVICE PIPING

- 331100.1 Water service piping from 5 feet outside the building to utility connection shall be installed by site contractor and coordinated with all prime contractors.
- 331100.2 The building water service piping starting at 5 feet outside the building shall be installed by the plumbing contractor.
- 331100.3 When combination water/fire services are installed, the fire protection contractor shall install from water purveyor to inside of the building to subdivision between fire and potable water system. Use of Post indicator valves shall be reviewed with OUA and local fire department having jurisdiction. Plumbing contractor shall connect at subdivision within the building complex. All deviations from this shall be coordinated with OUA.
- 331100.4 General Installation Requirements:
- A. Whenever possible, the water service connection shall be bade to University’s master meter system. When not possible, A/E shall comply with local codes and requirements.
 - B. Water meters with BAS communication are required on all systems to allow water conservation efforts. Sub-meter all cooling tower makeup or outdoor water features to allow sewer rate deduct billing. Coordinate meter types and options required for communication with the Johnson Controls Metasys Automation System. Typically Neptune turbine temperature compensated to read in cubic feet with TRI-CON E3 reader.
 - C. A standard clockwise-to-close curb stop shall be provided at the connection to the street main.
 - D. Plans shall include a grade profile of the water line to insure adequate coverage (5 feet minimum). Design shall consider sloping for air and water drainage; coordinate with city or local authority.
 - E. City or other local authority’s standard requirements shall be followed whenever possible. A meeting shall be arranged by A/E with the city or local authority.
- 331100.5 Plans and specifications shall be submitted to the City of Cleveland building department or local authority for review when system is connected to city or local authorities main piping. Provide reference set of drawings if connected to the University’s main distribution system. Reference set shall be sent to the city or local authority at the same time as final approvals are submitted to the State of Ohio industrial compliance division.
- 331100.6 Contractor shall pay for all tap-in fees and contact the city or local authorities for inspections of the water service line.
- 331100.7 Utilization fees, excavation permits, etc. associated with the water service piping shall be paid for within the project budget.
- 331100.8 Chlorination of domestic water mains on campus is by the City of Cleveland water department. Coordination and cleaning shall meet city or local authority’s requirements. Chlorination taps are provided by the City of Cleveland with a minimum 2 week time duration.

33 30 00 SANITARY SEWER PIPING

33 40 00 STORM SEWER PIPING

- 334000.1 Site storm and sewer service piping from 5 feet outside the building to utility connection shall be installed by the site contractor and coordinated with all prime contractors.
- 334000.2 The building storm and sanitary sewer systems shall be install by the plumbing contractor.
- 334000.3 General Installation Requirements:
- A. Wherever possible, the storm or sanitary service connection shall be made to the University storm and sanitary sewer systems. When not possible, A/E shall comply with the local codes and requirements. Storm systems shall use EPA – National Pollution Discharge Elimination System (NPDES) best management practices where possible. Review with OUA for additional requirements.
 - B. Plans shall include a grade profile of the storm and sanitary line to insure adequate coverage and sloping for air and water drainage. (Minimum 3 feet cover required unless otherwise approved by OUA.)
 - C. City of Cleveland or local authority’s standard requirements shall be followed whenever possible. A meeting shall be arranged by A/E between the city or local authority building department and OUA as soon as the preliminary plans are complete. The purpose of the meeting will be to familiarize A/E with the requirements as well as informing them of the project scope.
- 334000.4 Plans and specifications shall be submitted to the City of Cleveland building department or local authorities for review only when connection is to a county or city main. Submit reference set to the city if connecting to the University’s distribution system. The submission to the city or county shall occur at the same time as final approvals are submitted to the State of Ohio industrial compliance division. All correspondence shall be reviewed with OUA prior to submission.
- 334000.5 Contractor shall pay for all tap-in fees and contact the city or county for inspections of the storm or sanitary service line.
- 334000.6 Utilization fees, excavation permits, etc. associated with the storm and sanitary piping shall be paid for within the project budget.

END OF SECTION

CLEVELAND STATE UNIVERSITY

Pipe Line Identification

<u>PIPELINE</u>	<u>COLOR</u>	<u>ICI/Glidden NUMBER</u>
Chill & Tower Water	Light Green	DC 5574
Domestic Water	Safety Green	DC 9700
Hot Water	Safety Yellow	DC 9400
Steam	Aluminum	DC 9020
Compressed Air	Cobalt Blue	DC 4752
Vacuum	Violet	DC 4752
Fire	Safety Red	DC 9000
Conduit (below 600V)	Black	DC 9990
Drain	Medium Gray	DC 2534
Cen-Vac	International Orange	DC 6900
A/C Units 1,2,3,4	White	DC 1000
Water Holding Tank	Safety Green	DC 9700
Pumps & Motors	Medium Gray	DC 2534
High Voltage (600V and up)	International Orange	DC 6900
Condensate	Aluminum	DC 9020
Acid & Chlorine	International Orange	DC 6900
Pool Water	Light Blue	DC 4100



Cleveland State University

Department of Facilities and Safety

CONTRACTORS HANDBOOK

Contractors Must Read and Sign

Updated 12/2014

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All contractors and their employees performing work activities in facilities or on properties of Cleveland State University shall be issued a copy of this guide as part of the pre-bid material for bidding and construction purposes prior to starting work on campus.

Important Phone Numbers:

Campus Emergency	911
Campus Police	216-687-2020
Campus Watch	216-687-3842
Campus Escort Service	216-687-2020
EHS	216-687-9338
AC&SS	216-687-5238
Physical Plant Dispatch	216-687-2500

Asbestos

Many of the CSU buildings have asbestos or presumed asbestos-containing material. These locations will be made known to the CSU Project Manager. The CSU Project Manager will make known the asbestos hazards in the work area before work is initiated.

All renovations or demolitions have to be approved by the CSU Project Manager and the Department of Environmental Health & Safety prior to any project start up.

Trained and certified contract workers will handle all asbestos projects.

Automatic Sprinkler Work

The Manager of Access Control & Security Systems must approve all plans for contract work involving fire suppression equipment and Campus Police will be notified before work starts. No hot work permits will be issued for the contracted work area until fire suppression work has been completed.

Barricades and Guardrails

Hazardous areas must be cordoned off with barricades or tape to notify workers, general public, and CSU staff and students of hazardous work areas. All guardrails must meet OSHA standards for guardrail construction and all other standards for fall protection of workers. When barricades, guardrails or opening covers must be removed for work to proceed, permission to remove them must be obtained from the CSU Project Manager and Department of Environmental Health & Safety. Some type of fall protection device must protect workers in the affected area and it must be tied to a substantial structural member. Barricades, guardrails and covers must be replaced immediately after work is completed.

Blasting Operations

Advance notification of blasting operations must be provided to the CSU Project Manager, the Department of Environmental Health & Safety, Campus Police Department, Cleveland Fire Department and local officials. The contractor is solely responsible to obtain all necessary permits from the appropriate agencies to conduct these operations and must also supply a copy of these permits to the CSU Project Manager prior to project initiation. Final authority to proceed must be granted by the CSU Project Manager immediately prior to the operation.

All explosives and detonation caps must be removed from the CSU property at the end of each workday unless the contractor has made arrangements with the CSU Project Manager, the Manager of Access Control & Security Systems and the CSU Police Department, and blasting equipment must be stored in an approved magazine while on CSU property.

Break Rooms

Contractors are only allowed access to break rooms to be determined by the CSU Project Manager.

Burning, Welding or Cutting

A hot work permit must be obtained from the Department of Environmental Health & Safety before any burning, welding or cutting operations. Non-combustible, flame-proof shields or screens must be provided to protect CSU employees, general public, and students from direct rays and/or arc flash. A fire watch must be maintained and all adjacent combustible materials must be removed from the area or protected. All precautions must conform to those of the American Welding Society as well as the instructions on the hot work permit. Contractors must furnish their own 10 pound ABC rated fire extinguisher.

Chemicals

Contractors must assure the safe use and disposal of any chemicals, tools, equipment or other materials with which they are working. Under no circumstances are chemicals to be emptied into drains.

Contractor must provide the CSU Project Manager with a list of chemicals to be used on CSU property and a copy of the Material Safety Data Sheet (OSHA Form 20 or equivalent.) The MSDS must be accessible at all times when contractors are working with said chemical(s). Each chemical container that is brought on CSU's property must be labeled with the identity of the chemical, any hazard rating, the name of the contractor and any subcontractor using the chemical. Contractors must follow the safety procedures recommended by the manufacturer of any chemicals, tools and equipment or other materials used on CSU property, including but not limited to the procedures set forth in the material safety data sheet, those described in literature distributed with the items used, and those described in labels attached to the items or containers.

Combustion Engines

LP or any combustion-type engine may be used with restrictions. Permission must be obtained from the CSU Project Manager before using such equipment on, around, or near any CSU building.

Compressed Air

Compressed air shall not be used to clean dust from a worker's clothes or body.

Compressed Gas Cylinder

All compressed gas cylinders, whether in use or in transit, must be fastened securely in an upright position by a chain, suitable strap or a rigid retaining bar or structure. Compressed gas cylinders shall be secured on approved carriers or holders. Cylinders must always be maintained in an upright position.

Regulators are required to reduce compressed gases to safe operating pressures. If a leak develops in a cylinder, it shall be immediately removed to a safe location outside. The supplier of the cylinder shall be notified if necessary. Cylinders must be permanently marked or stenciled to identify the type of gas in the cylinder in accordance with the requirements of ANSI Standards.

Confined Space Entry Permits

A confined space is a space that: (1) Contains or has a potential to contain a hazardous atmosphere. A hazardous atmosphere is an atmosphere that may expose employees to the risk of death, incapacitation, or impairment of ability to self-rescue that is, escape unaided from a permit space, injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor or mist in excess of 10 percent of its lower explosion limit (LEL).
 - Combustible dust at a concentration that meets or exceeds its LEL (approximated to a visibility of 5 feet or less).
 - Atmospheric oxygen concentration below 19.5% or above 23.5%.
 - Atmospheric concentration of any substance for which a dose or permissible exposure limit has been established.
 - Any other atmospheric condition that is immediately dangerous to life or health.
1. (2) Contains a material that has the potential for engulfing an entrant such as water, sand, and soil; (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) Contains any other recognized serious safety or health hazard.

The contractor must have a copy of their Confined Space Entry Program on site and have all necessary equipment for entry. Prior to entering, the contractor must notify the Department of Environmental Health & Safety of their intent to enter a confined space. A contractor may not enter any confined space until authorized to do so by Environmental Health & Safety. Once approved, Environmental Health & Safety will issue the entry permit.

Contractor Access

For security reasons, a contractor's access to CSU buildings is restricted to designated entrances. Emergency exits shall only be used in the event of an emergency. Doors locked from the outside (emergency exits) are not to be propped open without the prior approval of the CSU Project Manager.

2. Before work starts:
3. New contractors must view EHS Contractors safety video before commencement of work
4. Contractors must provide key loss insurance up to \$250,000.00
5. Contractors who will be working with asbestos must show certification of attendance to an approved asbestos awareness course for all workers prior to commencement of work.
6. Contractors must provide PPE (personal protective equipment) for their workers at all times.
7. Contractors must provide evidence of safety training.

Electrical

All electrical installations must comply with the requirements of the National Electrical Code, NFPA 70E and CSU's Electrical Standards. Whenever work is to be performed on systems exceeding 600 volts, special instructions must be obtained and followed from the Department of Mechanical & Electrical Operations. All equipment being worked on at CSU will be at a zero state for energy potential. Contractor must coordinate access/shutdown of any electric system with the Department of Mechanical & Electrical Operations. New equipment will use the same labeling used on existing equipment. Proposed grounding must be approved by the Department of Mechanical & Electrical Operations. The CSU Project Manager will obtain from the contractor and provide to the Department

of Environmental Health & Safety for their review and approval a copy of the contractor's Lockout/Tag out Program before the project starts.

Emergency Equipment

CSU fire or emergency equipment must not be moved or blocked or access otherwise restricted, unless specific permission to do so has been granted. This permission may be granted on a case-by-case basis. The Department of Environmental Health & Safety is the only entity able to give this permission. Fire protection and detection systems must not be moved, modified or disabled without the permission of the Department of Environmental Health & Safety.

Excavation and Trenches

Before beginning any excavation work, the existence and location of all underground pipes and equipment must be determined. The OSHA construction standard for excavation must be followed in all excavation projects.

Eyewash and Safety Shower

Water supply to eyewash and safety shower stations must be assured at all times.

Facilities

The use of CSU-owned equipment such as electrical trucks, machinery, and power/hand tools is not permitted except where specifically authorized by the CSU Project Manager. Contractor personnel are not to operate valves or controls to shutdown, isolate, start or adjust operating systems or equipment without specific permission of the CSU Project Manager. When working on systems which could be activated or on isolated sections of active systems, the isolation device must be locked and tagged out. The CSU Project Manager will arrange the notification and scheduling of Lockout/Tag out with affected CSU areas in accordance with the project specifications.

Fall Protection

All safety belts and lanyards must be OSHA certified. Both the belt and the lanyard must carry an OSHA label. When a lanyard is a wire rope or nylon webbing, a shock absorber must be used.

Fire

1. Contractors shall preview work areas to identify components of the fire alarm detection, notification and activation devices, sprinkler and or special suppression systems. Contractors shall make necessary provisions to reduce accidental damage or activation of all life safety systems.
2. Contractors requiring a sprinkler or fire alarm system to be deactivated or put into test mode shall give a minimum of 48 hours' notice prior to commencement of their work.
3. Only contractors licensed to work on fire alarm and or sprinkler systems shall initiate any modifications to the system, including but not limited to new installations, relocations, or

removals of any and all system components or equipment. Contractors will provide their own fire extinguishers and apply for a “hot work” permit as applicable.

4. Contractors will know how to call CSU Police in the event of an emergency.
5. Contractor who need a hot-work permit must plan work accordingly and provide 48 hour notice before permit is issued.

First Aid Kits

Every contractor is required to have a first aid kit and contractor employees shall be made aware of its location. All injuries requiring first aid assistance by local hospitals must be reported to the CSU Project Manager.

Hot Work Procedure

1. Obtain a blank hot work permit from the CSU Project Manager.
2. Fill out the form as completely as possible by checking items applicable to the project.
3. If fire alarms need to be taken out of service or if any modification to fire prevention systems is deemed necessary to safely perform hot work, contact the CSU Project Manager for assistance in this process and approval of fire watch measures. **The signature of authorized fire safety personnel is required for permit to be issued.**
4. Verify applicable precautions have been taken by signing the form.
5. Bring to the CSU Project Manager who will forward to the Department of Environmental Health & Safety for their review and approval.
6. After signing, Department of Environmental Health & Safety will make a copy for documentation and recordkeeping purposes.
7. Post and maintain permit in work area throughout the duration of the hot work activity.
8. Additional permits are required should work extend twenty-four (24) hours beyond the start time indicated on the permit. A permit may be issued for a period of time longer than twenty-four (24) hours for longer remodeling/repair jobs but no longer than one (1) week.
9. All precautions must conform to the American Welding Society and the instructions on the hot work permit.
10. Contractors must furnish their own 10 pound ABC rated fire extinguisher

Keys

The University has installed electronic key boxes to assist you in gaining access to areas you need. A *Key Box Access Request Form* must be signed by you, your CSU Point-of-Contact, and approved by the Access Control & Security Systems Department for processing before you will be given access to a key box.

1. You may not loan, transfer, give possession of, misuse, modify, or alter CSU keys or the key ring.
2. You may not allow others to use your PIN code, nor may you use another’s PIN code.
3. Upon noticing any damage to a key, key ring, or key box, you must report it to AC&SS (x.5386) immediately.
4. Contractors must have suitable key loss insurance to the value of \$250,000.00 and must show proof of said insurance coverage.
5. You may not cause, allow, or contribute to the making of a copy/duplicate of any CSU key.

6. Loss of a key can be a significant financial responsibility for you, ranging from \$58 to \$500,000. You (and/or your company) are responsible for costs associated with replacing all locks/keys affected by your loss.
7. You are encouraged to ask the value of your particular key(s) before you sign the *Key Box Access Request Form* to ensure you are aware of your liability.
8. You must abide by the *CSU Access Control Regulations* as shown on the CSU website.
9. Upon departure from the CSU campus, contractors must return all keys and lock any doors in areas they have worked in.
10. If you have any questions, please contact AC&SS at (216) 687-5386.

Ladders

Ladders must be free of defects and all wooden ladders must not be painted. Ladders must be secured to keep them from shifting, slipping, being knocked over or blown over by climatic conditions.

Mechanical Equipment

Contractor must follow CSU ASTM 8217 Mechanical Standards. All access/shutdowns of mechanical equipment must be coordinated with the Department of Mechanical & Electrical Operations. All work must be scheduled off hours unless permission has been otherwise granted. All equipment installed must be connected to the Building Automation System, and all electrical connections must comply with CSU ASTM 8217 electrical safety requirements.

Mercury Bulbs

All fluorescence light bulbs and high intensity mercury lights will be recycled by a licensed bulb recycler. All broken bulbs will be handled as hazardous waste. For further information, contact the Department of Environmental Health & Safety.

Mercury Spills

Every effort should be made to prevent all spills of metallic mercury. For mercury spills of any volume, all personnel shall leave the area and contact the Department of Environmental Health & Safety to arrange for cleanup. The spill area must be roped, taped or barricaded to prevent accidental exposure. The contractor who caused the spill shall be responsible for the cost of cleanup and disposal.

Overhead Work

Overhead work must not be performed above CSU's employees, students or the general public. Areas affected by overhead work shall be roped off and marked.

Parking

All vehicles parked outside a fenced staging area on university property must display a valid CSU Parking permit unless parked in a pay-per-hour space (at a meter or in Lot 22, Prospect or South Garage). If parked at a meter, the meter must be paid. Use of any parking facilities for construction related activity must be approved in advance by CSU Department of Parking & Transportation

Services. CSU Parking & Transportation Services offers the following options for contractors and construction workers who choose to park on campus:

- Purchase a contractor hangtag. This hangtag will have an expiration date based on the needs of the patron and will be accepted for parking in any CSU parking facility except at meters or in Lot 22, Prospect or South Garage. Contractor hangtags cost \$40 per week, and the full fee is charged for any partial week unless the purchase is made after 12 noon on a Friday.
- Purchase scratch off hangtags which permit access to parking on a per-day basis according to the color of the hangtag. Green scratch-offs permit parking in facilities at the core of campus (\$8.00 each). White scratch-offs permit parking in facilities at the perimeter of campus (\$6.00 each).

Contractor tags or scratch off hangtags must be purchased from the office of Parking & Transportation Services located in Euclid Commons at East 24th and Euclid. The Office is open Monday through Friday 8 AM to 5 PM. The CSU Parking & Transportation Services Office accepts cash, check, Visa & MasterCard, for parking purchases. Contractors and construction workers may also find parking options in the CSU neighborhood. Information about these options can be found on the parking website at www.csuohio.edu/parking.

Parking Prohibitions: Contractors are not permitted to park vehicles in any of the following areas:

- Under the overhang of the Main Classroom building
- Sidewalks
- Plazas
- Loading Docks
- Aisle ways
- Driveways
- East 24 Street in front of Fenn Tower
- The “No Parking” area on north side of Fenn Tower
- Drive in front of Rhodes Tower on street level
- Grass
- Police, Parking, or CSU Service Vehicle designated spaces
- Along curbs
- Any other areas not marked as a parking space

Contractors who must park in any prohibited location in order to discharge their duties while on campus may request an official dashboard pass when registering for the parking hangtag. The request must be accompanied by details regarding the specific nature of their duties. Dashboard passes must be displayed in tandem with a prepaid hangtag or scratch-off and are intended for short-term use related to the defined duties – not for all day parking.

CSU Contractors are subject to CSU Parking Rules and Regulations. Violations of these rules are subject to issuance of parking citations and/or vehicle impound. Persons cited for parking infractions have the right to appeal by following the written instructions on the parking citation.

PCBs

Before starting work that involves PCBs or PCB containing material, the contractor must submit two copies of their procedures for handling, packaging, shipping and disposal of PCBs. The contractor must also label all items and containers with the appropriate labels for removal from CSU property. The

contractor must ensure that the manifest and LDR are properly completed and signed in accordance with Federal and State regulations.

The Department of Environmental Health & Safety will sign all Hazardous Waste Manifests.

Personal Protective Equipment

In certain construction and maintenance operations personal protective equipment, including but not limited to safety glasses, goggles, respirators, hardhats and other protective clothing must be worn at all times. The type of personal protective equipment (PPE) to be worn will be determined by the physical and chemical hazards of the contracted job. The contractor is responsible for the selection of PPE for their employees. The contractor is also responsible for their employees to have the necessary equipment to perform the job safely and correctly. Contractors must strictly adhere to all OSHA requirements for employee safety.

Plumbing

All plumbing work and installations must comply with the requirements in the Ohio Plumbing Code with emphasis/special importance given to:

- Backflow protection must be provided for all domestic water installations that use water for a non-potable use. For Non-health (Non-Toxic - no chemicals added cross connections) an ASSE 1015 double-check backflow preventer shall be installed. This is defined as any point on a water supply system where a polluting substance may come in contact with potable water aesthetically affecting the taste, odor or appearance of the water, but not hazardous to health.
- For Health Hazard (Toxic - cross-connections defined as any point on a water supply system where a contaminating substance may come in contact with potable water creating an actual health hazard, causing sickness or death) an ASSE 1013 shall be installed. Irrigation systems must be protected from backflow by either a Pressure Vacuum Breaker, or a Reduced Pressure backflow preventer. The device must be protected from freezing the temperature shall be maintained at 40 degrees Fahrenheit or higher inside the enclosure.
- When any mechanical, plumbing line penetrates any floor surface or a brick/block/concrete wall it must be sleeved. The sleeve shall be 2 times the diameter of the pipe penetrating the surface. Annular spaces between sleeves and pipes shall be filled or tightly caulked in an approved manner. Annular spaces between sleeves and pipes in fire-resistance rated assemblies shall be filled or tightly caulked in accordance with the Ohio Building Code.
- All Storm drains shall receive water only from the following sources rainwater, surface water, subsurface water and similar liquid wastes, no chemicals, cement, rubber/silicone based products, and paints, etc. shall be dumped in it. The maximum discharge temperature into any drain shall be 140 degrees Fahrenheit.

Refrigerants

Only certified technicians may perform work on equipment with refrigerants. The contractor must provide a copy of the technician's certifications prior to project start-up. The contractor must provide documentation to the CSU Project Manager indicating the date, type of service, amount and type of refrigerant used. All work must conform to the 40 CFR parts 82 for the protection of stratospheric ozone.

Roof Safety

At least two employees must be present during all work on campus roofs. All construction projects that have the potential for a fall hazard must comply with OSHA's 29 CFR 1926 sub part M, and 1910.23. It is the contractor's responsibility to train all of their employees on all relevant safety issues.

Safety Representative

The Contractor shall appoint a Safety Representative (holding at least a foreman position) to oversee all contract work at CSU. The foreman will perform daily job inspections and correct any unsafe conditions. It is the contractor's responsibility to train all of their employees on all relevant safety issues. The foreman must investigate any accident and report to the CSU Project Manager and Department of Environmental Health & Safety.

Safety Rules and Procedures

To report a medical emergency:

- Call 216-687-2020 or dial 911 to contact the University Police Department.
- Police will provide or arrange required services, including Cleveland Emergency Medical Services.

Security Requirements

The following items are not permitted on CSU's property: alcoholic beverages, illicit drugs, drug related paraphernalia, explosives, firearms and ammunition.

Smoking

Smoking in CSU buildings and on CSU property is prohibited. CSU is a smoke-free campus.

Solvents and Paints

The use of solvents, chemicals or paints requires prior approval of CSU. Adequate ventilation must be maintained at all times when paints, chemicals or solvents are used. Personnel must use proper respiratory protection and protective equipment when toxicity of the material requires such protection. Flammable solvents and materials must be used with caution when possible sources of ignition exist.

When flammable solvents are being used, the contractor must post signs in the area to identify the hazard(s) present in the area. Flammable paint and solvents must be stored in an approved flammable liquids storage cabinet when storage is required. Corrosives (acid, bases) and flammables must never be stored together. If a cabinet is not available, all chemicals must be removed from CSU property by the end of the workday.

Tar Pots

Tar pots are not allowed on roofs. Each pot must have its own 10 pound ABC fire extinguisher. Tar pots must be kept a minimum of 10 feet from any building. Before using a tar pot, the contractor must have approval from the CSU Project Manager.

Telephones

Use of CSU telephones is restricted to CSU business-related calls. See your foreman for phone locations.

Tools – Hand and Power

All hand tools and operation of hand tools shall conform to the OSHA construction standard 1926.302.

Vehicles

All contractor personnel shall park their vehicles in areas designated as parking areas only. Please also refer to the section titled “Parking Prohibitions” contained in this document.

Warning Signs

The contractor must provide all warning signs, barriers, barricades etc., whenever such notification is warranted. Where signs and barricades do not provide adequate protection, flagmen must be used.

Worksite Housekeeping

Waste material and debris must be removed from the job site at the end of each workday. Waste material and debris will not be thrown from any level to another. Material must be piled, stacked or otherwise stored to prevent tipping or collapse. Overhead storage of tools, equipment etc., by the contractor is prohibited. No waste material will be left by the contractor in the space above suspended ceiling panels.

The foreman will perform daily job inspections and correct any unsafe conditions. It is the contractor’s responsibility to train all of their employees on all relevant safety issues.

The Contractor agrees to provide for a safe and healthy work environment, and to maintain compliance with all applicable provisions of the Occupational Safety and Health Administration’s (OSHA) regulations as set forth in the Chapter 29 of Code of Federal Regulations pertaining to health and safety in the workplace (29 CFR 1910 and 1926). The Contractor also agrees to provide to the Department of Environmental Health and Safety evidence of applicable written programs prior to beginning work. These include but are not limited to Lockout/Tag Out (Control of Hazardous Energy), Confined Space, Hazard Communication, and Hearing Conservation.

The Contractor understands the CSU signature below represents an authorization to proceed with work activities only, and does not, nor is intended to, represent approval of plans, designs, methods, specifications and/or work practices of the Contractor.

Receipt and Acknowledgement

As an agent of the company noted below, I agree to the above outlined conditions in this book:

Signature - Contractor Authorized Representative

Date

Contractor Name

Registration No.

Signature – CSU Authorized Representative

Date

**Cleveland State University
Contractor Job Safety Worksheet**

*This form is to be filled out completely prior to performing any work activities
for all campus renovation and improvement projects*

Project Site: _____
(Building/Rooms)

Proposed Start Date: _____
Duration of Project: _____

Company Name: _____
Contact Person: _____

Contact Phone No: _____
Emergency Number: _____

CSU Project Mgr: _____
PM Phone Number: _____
Emergency Number: _____

Brief Description of the Project:

Which of the following services will be interrupted as part of the project?

	Y	N		Y	N
Air Conditioning	<input type="checkbox"/>	<input type="checkbox"/>	Security System	<input type="checkbox"/>	<input type="checkbox"/>
Data Line	<input type="checkbox"/>	<input type="checkbox"/>	Sprinkler System	<input type="checkbox"/>	<input type="checkbox"/>
Electric	<input type="checkbox"/>	<input type="checkbox"/>	Telephones	<input type="checkbox"/>	<input type="checkbox"/>
Fire Alarms	<input type="checkbox"/>	<input type="checkbox"/>	Ventilation	<input type="checkbox"/>	<input type="checkbox"/>
Gas (Natural)	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>
Heating	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	<input type="checkbox"/>	<input type="checkbox"/>

Will any hot work (cutting, welding, etc.) be done as part of the project? Y N
If hot work is to be performed, a Contractors Hot Work Permit shall be obtained from designated individual prior to any such work beginning.

Will any hazardous waste (recycle/disposal) be generated as part of the project? Y N
If yes, check all applicable:

Chemicals	<input type="checkbox"/>	Mercury	<input type="checkbox"/>
Fluorescent Lamps	<input type="checkbox"/>	PCBs	<input type="checkbox"/>

Will any work involve the use of chemicals or materials which may release vapors or odors at the work site and/or into adjacent areas? Y N
If yes, contractors are to supply copies of Material Safety Data Sheets for all hazardous chemicals used in the project to EH&S prior to beginning work.

The Contractor agrees to provide for a safe and healthy work environment, and to maintain compliance with all applicable provisions of the Occupational Safety and Health Administration's (OSHA) regulations as set forth in the Chapter 29 of Code of Federal Regulations pertaining to health and safety in the workplace (29 CFR 1910 and 1926). The Contractor also agrees to provide to the Department of Environmental Health & Safety evidence of applicable written programs prior to beginning work. These include, but are not limited to, Lockout/Tagout (Control of Hazardous Energy), Confined Space, Hazard Communication, and Hearing Conservation.

The information requested herein in no way represents CSU's approval of plans, designs, materials, methods, specifications, and/or work practices of the Contractor.

As an agent of the company noted above, I agree to the above outlined conditions:

Contractor's Authorized Representative

Date

Notice to Contractors and Subcontractors

To ensure that Cleveland State University personnel know the identity of outside contractors and subcontractors working on campus, the University is instituting a contractor photo ID badge process beginning **January 1, 2015**.

All contractors or subcontractors working on the campus after this date are required to comply with the following regulations. For the purpose of this document, contractors or subcontractors will be equally described as “contractor”.

- Contractor will obtain from the CSU project manager the Contractor Badge Request Form. Contractor to complete this form, listing all employees who will work on the CSU campus at any time during the project, and return the form to the CSU project manager before the start of construction.
- Prior to working on site, contractor’s employees will come to the Plant Services Building to view a safety orientation video and receive a photo ID badge.
- Photo ID’s are required for all contractor employees working on the CSU campus.
- Photo ID badges are good for a specific project and a specific duration of time, commensurate with the schedule of the project. This information will be noted on the photo ID badge.
- Photo ID badges must be worn on one’s outermost garment and be clearly visible at all times. Failure to wear photo ID badge is grounds for immediate removal from the CSU campus. CSU faculty or staff may request to inspect contractor badge(s). Refusal to show badge will be considered the same as having no badge and will be grounds for immediate removal from campus.
- Contractor’s employees will not be allowed back on campus without a proper photo ID badge. No extension of time will be granted to a contractor who was removed from the campus due to the absence of a photo ID badge.
- At the end of the project, the photo ID badges must be returned to the CSU project manager. Project retention funds will not be released to the contractor until all the badges for contractor’s employees are returned to the CSU project manager.

Your cooperation in this endeavor to ensure a safer and more secure campus for all is greatly appreciated.



CONTRACTOR BADGE REQUEST FORM

Department of Access Control & Security Systems

1802 E. 25th Street, PS-243

Phone: (216) 687-5386 FAX: (216) 802-3383

access.security@csuohio.edu

Company Name: _____

Supervisor Name: _____

Supervisor Signature: _____ Phone: _____

Project Number: _____ End Date: _____

CSU Point of Contact: _____

OFFICE USE ONLY

Contractor	Signature

Badge Received	Badge Returned

Office Use (date & initials):

Printed/Distributed by: _____



KEYBOX ACCESS RULES & REGULATIONS

Department of Access Control & Security Systems

1802 E. 25th Street, PS243

Phone: (216) 687-5386 FAX: (216) 802-3383

access.security@csuohio.edu

The University has a serious stance on providing a safe environment to the campus community. High investment in controlled access (key systems, access-cards systems, electronic keyboxes) is part of the University's commitment to help ensure the safety of individuals, notable assets, and priceless research that occurs at Cleveland State University.

We have installed electronic keyboxes to assist you in gaining access to areas you need. We want you to be able to get where you need to go.

Along with being a benefit, having access to a University keybox is a privilege that comes with significant responsibilities and penalties for misuse. If you are unable or unwilling to abide by all of the following, it would be in your best interest and the University's that you decline participation.

- A *Keybox Access Request Form* must be signed by you, your CSU Point-of-Contact, and approved by the AC&SS Department during processing before you will be given access to a keybox
- You may not loan, transfer, give possession of, misuse, modify, or alter CSU keys or the keyring
- You may not allow others to use your PIN (code), nor may you use another's PIN/code
- Upon noticing any damage to a key, keyring, or box, you must report it to AC&SS (x5386) immediately
- You may not cause, allow, or contribute to the making of a copy/duplicate of any CSU key; as a state entity, it is a crime to do so.
- Loss of a key can be a significant financial responsibility for you, ranging from \$58 to \$500,000. You (and/or your company, if a contractor) are responsible for costs associated with replacing all locks/keys affected by your loss. For the type/level of keys in the keyboxes, the usual value of a keyring is approximately \$10,000 to \$50,000. You are encouraged to ask the value of your particular key(s) before you sign the *Keybox Access Request Form* so that you are aware of your liability.
- You must abide by the CSU *Access Control Regulations*, found at: <http://www.csuohio.edu/offices/accesssecurity/>
- The following must be reported to CSU Police immediately (216-687-2020):
 - Loss or theft of a CSU key(s) or keyring (s)
 - Compromise of your PIN
 - Compromise or breakage of the sealed keyring
 - Damage or malfunction of the keybox
- Lost keys require a Police report from CSU Police. Falsification of a police report is a criminal offense.
- As a state entity pursuing missing property (keys), we have the right to turn-over collections to the State Attorney General for restitution. Not returning state property can be the subject of theft charges with criminal prosecution or civil recovery.
- As a key-holder to CSU property, if you notice a suspicious person in an area, contact CSU Police (x2020 or 911) before a problem may develop in an area you are responsible for.

The following are additional rules/regulations that must be followed by Contractors:

- All service personnel must contact their CSU Point-of-Contact (POC) before engaging in work
- Service personnel shall wear their Company photo ID on their outermost garment at all times while on CSU property
- All contractors providing service are subject to CSU background screening and approval
- If you are the last contractor at a site/area after-hours, contact CSU Police (x2020) to make them aware that you are no longer in the area and it is vacated
- At the first form submission from a company/vendor, one color copy of the company/vendor photo identification card will be provided to AC&SS so that CSU Police may be aware of a valid company ID
- Violations of these rules/regulations or the CSU *Access Control Regulations* by any one person of the company may jeopardize access for the entire company
- It is important that you return the keyring to the assigned slot within the allotted time period or else an alarm will be broadcasted with notifications sent to AC&SS, your POC, and Police.

If you have any questions or concerns, please contact the *Director of Access Control and Security Systems* at (216) 687-5046.

Keybox Access Rules & Regulations updated 12/04/09



KEYBOX ACCESS REQUEST FORM

Department of Access Control & Security Systems
 1802 E. 25th Street, PS-243
 Phone: (216) 687-5386 FAX: (216) 802-3383
access.security@csuohio.edu

User's Name: _____
Last First CSU I.D. #

E-mail: _____ Phone: _____

Student Faculty Staff Contractor Temp/Volunteer Department: _____

Project Name (if applicable): _____

Funding codes (if key/ring does not exist): _____

CSU Point-of-Contact (POC) approval: _____
Print signature date

Building	Floors / Rooms	Keybox/ring (office use)

Access valid: M-F Saturday Sunday Date to deactivate access: _____

It is important that you return the keyring to the assigned slot within the allotted time period or else an alarm will be broadcasted with notifications sent to AC&SS, your POC, and the following that you provide for Police to contact:

Name: _____
Last First

E-mail: _____ Phone: _____

- You will receive an e-mail from AC&SS informing you of your 5-digit keybox PIN code. If at any time you would like a PIN change, please contact Access Control and Security Systems at the above listed email or phone number.
- You are responsible for reading the "Keybox Access Rules & Regulations" document on the Access and Security webpage here: <https://www.csuohio.edu/access-security>
- Inter-office, deliver, scan/e-mail, or fax this completed/approved form to the office above.
- Your PIN code will be active in your authorized keybox within five (5) days after receipt of this form to AC&SS.

Your signature confirms reading and agreement with the "Keybox Access Rules & Regulations."

User's Signature Date

Office Use (date & initials):

Received AC&SS: _____ Activated: _____

PIN: _____
Keybox Access Request Form updated 04/22/11

CSU Standard Panelboard Schedule

PANEL - _____																					
BUILDING: _____		FED FROM: _____				KEY: H - HACR BREAKER															
ROOM #: _____		MOUNTING: SURFACE <input type="checkbox"/> RECESSED <input type="checkbox"/>				X - MISC. LOAD															
VOLTAGE: _____		ENCLOSURE: NEMA-1				R - RECEPTACLE LOAD															
PHASE: _____		CABLE ENTRY: TOP <input type="checkbox"/> BOTTOM <input type="checkbox"/> SIDE <input type="checkbox"/>				L - LIGHTING LOAD															
WIRE: _____		MCB				E - EMERGENCY LOAD															
AMPS: _____		MLO				S - SHUNT TRIP															
M - LOCKING TYPE																					
CKT NO	LOAD DESCRIPTION	LOAD TYPE	VOLT-AMPS			AMP	POLE	A	B	C	AMP	POLE	VOLT-AMPS			LOAD TYPE	LOAD DESCRIPTION	CKT NO			
			øA	øB	øC								øA	øB	øC						
1	Spare															Spare	2				
3	Spare															Spare	4				
5	Spare															Spare	6				
7	Spare															Spare	8				
9	Spare															Spare	10				
11	Spare															Spare	12				
13	Spare															Spare	14				
15	Spare															Spare	16				
17	Spare															Spare	18				
19	Spare															Spare	20				
21	Spare															Spare	22				
23	Spare															Spare	24				
25	Spare															Spare	26				
27	Spare															Spare	28				
29	Spare															Spare	30				
31	Space															Space	32				
33	Space															Space	34				
35	Space															Space	36				
SUB TOTAL VOLT-AMPS			0	0	0												0	0	0	SUB TOTAL VOLT-AMPS	
SUBTOTAL LOAD 'H': 0 VA			SUBTOTAL LOAD PHASE 'A': 0 VA			TOTAL LOAD VOLT-AMPS: 0 VA															
SUBTOTAL LOAD 'X': 0 VA			SUBTOTAL LOAD PHASE 'B': 0 VA			TOTAL LOAD AMPS: #DIV/0! A															
SUBTOTAL LOAD 'L': 0 VA			SUBTOTAL LOAD PHASE 'C': 0 VA																		
SUBTOTAL LOAD 'R': 0 VA																					
SUBTOTAL LOAD 'E': 0 VA																					
Note: Verified/Actual information in BOLD																					

This schedule is available in an editable Excel document from the Facilities electrical department.

CSU PHOTOMETRICS

Light Levels for Parking Garage Designs

Area		Minimum Horizontal Illuminance² (fc)	Minimum Max-to-Min Ratio	Minimum Vertical Illuminance³ (fc)
Basic ¹		5	5:1	3
Ramps ⁴	Day ⁵	10	5:1	5
	Night	10	5:1	5
Entrance Areas	Day ⁵	35		20
	Night	20	5:1	10
Stairways		20		10

1 = Typical conditions

2 = Measured on the parking surface without any shadowing effects.

3 = Measured 1.5m above parking surface at point of lowest horizontal illuminance (not including points on the boundaries facing outward.)

4 = Applies to clearway ramps (no adjacent parking) but not to sloping floor designs.

5 = Daylight/Photocell/Time Clocks, shall be considered in the design calculation.

Light Levels for Walkways

Area	Minimum Horizontal Illuminance² (fc)	Minimum Max-to-Min Ratio Horizontal	Minimum Vertical Illuminance³ (fc)	Minimum Max-to-Min Ratio Vertical
Basic ¹	2	5:1	3	3:1

1 = Typical conditions

2 = Measured on the walking surface without any shadowing effects.

3 = Measured 1.5m above walking surface at point of lowest horizontal illuminance.

4 = Daylight/Photocell/Time Clock, shall be considered in the design calculation.