



**Office of Capital Planning
and Project Management**

DIVISION 1

**GENERAL
REQUIREMENTS**

This Article on Codes, Regulation and Standards shall apply
to all Divisions of the Building Standards

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See [Building Standards Checklist 2016](#)

SECTION 01 00 10 – LEED REQUIREMENTS FOR PROFESSIONAL SERVICE CONSULTANTS

PART 1 - GENERAL

1. The University of Illinois has directed that all new construction projects and major renovations meet LEED silver. This is in line with the Green Building Guidelines for State Construction which have been mandated for all new state-funded building construction and major renovations of existing state-owned facilities. Therefore, future new construction, remodeling, and renovation projects of \$5 million or greater will be LEED® (Leadership in Energy and Environmental Design) Silver Certified. New construction, remodeling, and renovations totally less than \$5 million should comply with the LEED® Silver requirements for the appropriate LEED category to the greatest extent practicable. Therefore, buildings will be constructed to be significantly more energy efficient than the current standards and may utilize renewable energy.
2. For Projects \$5,000,000 and over the project will be registered with the USGBC and the A/E will pursue at a minimum LEED Silver Certification by the USGBC
3. For Projects that are less than \$5,000,000 the A/E will design to LEED Silver Standards to the greatest extent possible and will submit the LEED Checklist, at Design Development, 50% Construction Documents, 100% construction documents, and at the end of construction, demonstrating the LEED points that would have been obtained if the project had been registered with the USGBC
4. The LEED AP will determine the appropriate LEED category for the project:
 - a. New Construction and Major Renovations
 - b. Existing Buildings Operations and Maintenance
 - c. Commercial Interiors
 - d. Core and Shell Development
 - e. Retail
 - f. Schools
 - g. Homes
 - h. Neighbor Hood Development
 - i. Healthcare

END OF SECTION 01 00 10

SECTION 01 31 00 - WEB-BASED PROJECT MANAGEMENT SYSTEM

PART 1 - GENERAL

1.1 WORKS INCLUDES

1. Data entry, collaboration and communication using the Owners web-based project management system.

1.2 RELATED WORK

1. Specified elsewhere: Section 01 00 0- Project Requirements and Summary

1.3 DESCRIPTION

1. The intent of the web-based project management system, named PRZM (Project Resource and Information System Management) is to provide the Owner the capability to monitor quality, schedule and costs for capital projects, while providing the project team a consistent delivery process and the means to communicate, collaborate and team, to eliminate duplication of data entry, and to encourage easy access and exchange of information through a secure and paperless web-based environment.
2. System Requirements:
 - a. A personal computer with internet access (T1 or higher, ISDN, DSL or ADSL recommended), e-mail capability for team members, and a web browser (Microsoft Internet Explorer 4.0 or higher).
 - b. Other software including Microsoft Office, Project 2007, and AutoCAD viewer is recommended.
3. Training
 - a. The Owner will provide training on the PRZM system at no cost to the contractors.
 - b. Training will consist of not less than 3 full day sessions. Attendance by the contractor's project manager, office manager, data entry clerk, and other appropriate personnel is required.
 - c. Additional training will be provided as needed, at no cost to the contractor.
4. Support

- a. The Owner will provide unlimited telephone, e-mail and on-line support, without cost to the contractor.
5. Data entry will be required to support the following:
- a. General Contractor Information
 - b. Insurance Certificates data
 - c. Performance and Payment Bond data
 - d. Requests for Information
 - e. Responses to Architect's Supplemental Instruction
 - f. Request for Proposal Response
 - g. Emergency Work Authorization Response
 - h. Contractor Schedule of Values preparation and submittal
 - i. Schedule of Work Completed preparation and submittal
 - j. Stored Materials Report preparation and submittal
 - k. Wavier or Lien preparation and submittal
 - l. Payment Applications preparation and submittal
 - m. MAFBE Certification and Reporting
 - n. Employee Utilization Report preparation and submittal
 - o. Response to punch lists
 - p. Affidavit for Reduction in Retainage preparation and submittal
 - q. Substantial completion Certificate preparation and submittal
 - r. As-Built Drawings/Maintenance Manual submittal
 - s. Final Affidavit for Payment preparation and submittal
 - t. Warranty call responses

1.4 EXECUTION

- 1. Timeliness:
 - a. All data shall be entered in a timely fashion, so that it is available to the appropriate team members in real time.
- 2. Format:
 - a. All data shall be entered in the format required by the PRZM system. Check, verify and coordinate all data with construction manager.

END OF SECTION 01 30 00

SECTION 01 31 21 - 3D BIM COORDINATION DRAWINGS - CONTRACTORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- Attention is directed to Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 GENERAL REQUIREMENTS

- Each Contractor, if required by its Work scope, shall be responsible for developing coordination drawings, and participating in coordination meetings as defined herein, and shall have included the cost for such Work in its Bid Proposal. Coordination cost included in bid must be based on need to develop complete drawings with all trades involved and duration of coordination may be adjusted at the direction of the General Trades Contractor at no addition cost to the contract.
- A three-dimensional electronic coordination model is to be developed by all coordination participants. This model will be utilized to establish field installation sequence, resolve trade coordination issues prior to installation, and to make the most efficient use of installation space without sacrifice to system performance for mechanical, electrical, structural and assigned architectural systems. This method will use NavisWorks design review software as a means of documenting, identifying and resolving inter-relationships and possible interferences between all trades' Work and the architectural features.
- All Division I thru V contractors and their appropriate subcontractors, and at least one member of the design team are required to attend coordination meetings as required by the General Trades Contractor. The representative(s) from each contractor is required to be familiar with the Work and have the expertise and authority to answer questions and make decisions and changes to its systems at these meetings.
- The coordination drawings may also be used by each contractor as part of its required shop drawing and as-built drawing submittals. However, they must be made as part of a separate, formal submission.

- Each Bidder should anticipate that each floor (or zone) may require several meetings. However, in the interest of time, multiple floors or areas may be reviewed in one meeting. Development of coordination drawings will be by area and floor with order of priority established by the General Trades Contractor.

1.03 COORDINATION DRAWING PROCESS

- Kickoff – The General Trades Contractor, after the award of the Agreements, will schedule a kick-off meeting of all participating contractors. This meeting must be attended by the project manager, detailers and, if necessary, installing superintendent. During this meeting the team will review:
 1. Format of drawings to be provided to the subcontractors from BMC. Request drawings sheets to be provided prior to meeting.
 2. Division of coordination drawings and fit to standard blueprint paper size.
 3. The **Division IV – Ventilation** contractor will be designated as the Lead Coordinator and will facilitate the 3D Coordination Modeling Process. The General Trades Contractor will be the final authority on model issues. It is the responsibility of all coordination participants to resolve discrepancies pertaining to their own model.
 4. Determine file transfer medium and weekly document transfer deadlines to meet coordination meeting MEP coordination schedule.
 5. Review precedence of MEP systems and best practice conflict resolution from reports.
 6. Each contractor to provide a schedule of access/clearance required for expected equipment (lights, speakers, VAV, duct detectors, dampers, junction boxes, heat trace, cleanouts, test ports, unit heaters, AV, Fire Alarm, controls modules, exit signs, insulation, typical hangers, etc.)
 7. Provide dimensioned drawing of items indicated in ceiling and/or drywall ceiling/soffit for review by A/E for architectural intent. This is not part of overhead coordination above the ceiling but will be part of this coordination process (All item location must be verified by the A/E unless specifically noted on the contract documents).
- Weekly Coordination Meetings will be held at the General Trades Contractors site office with all participants to review the model progress per the schedule and process indicated below:
 1. All participants are required to identify those submittals required for accurate detailing of the coordination model (such as major mechanical and electrical equipment, light fixtures, etc.) and are to make those submittals a priority in

obtaining final approval so the specific information can be incorporated into the modeling process.

2. Posting of files to the web-based posting site shall be by 2:00 pm on the previous Friday.
 3. Clash reports will be posted to the web-based posting site Monday at 2:00 pm before the meeting.
 4. Coordination meetings will be held on Tuesdays at 09:00 AM .
 5. The purpose of the Weekly Coordination Meeting is the review and resolution of items on the current clash report in conjunction with the project coordination schedule. The meetings will focus on clashes that cannot be resolved by internal collaboration. The General Trades Contractor will facilitate the meeting and will make final decisions on clash resolution that are the least impact to the project as a whole. **WEEKLY COORDINATION MEETINGS WILL NOT BE USED TO RESOLVE INDIVIDUAL CONTRACTOR'S WORK. If a contractor does not post a clash-free system of its own work, that contractor will be considered unprepared for the meeting and will be responsible for any delays to the project schedule and any associated costs due to that delay.**
 6. Each team participant shall review the clash report prior to the Weekly Coordination Meeting in order to clean-up any simple clashes that can be made without review by all participants.
 7. All project participants are expected to be prepared for the meeting with new drawing work of the next area to be coordinated per the coordination schedule and any drawing changes based on the published clash report. Each participant shall have available any shop model, submittals or other materials required to solve identified or potential conflicts.
 8. It is expected the coordination schedule will be maintained and all identified conflicts are addressed and resolved per that schedule.
 9. All agreed upon corrections to identified clashes determined by the team at the Coordination Meeting are to be updated and resolved prior to the next meeting.
- When an area of the model is fully coordinated and clash-free, each participant agrees:
 1. A representative from the contractor responsible for each system will sign a coordinated set of drawings for all systems. This signature will represent that the contractor is in agreement with the contents of the coordinated drawings. A signature title block will be printed on each drawing. Additional space should be provided for the General Trades Contractor.
 2. Through active participation at the Coordination Meetings that each trades' work is fully coordinated and the associated field installation will be solely per the model and not in conflict with any other trade or system.

3. The Final Coordination Model is to be referred to for resolution of all field installation issues and RFIs. No extra compensation will be paid for relocating material whose installation deviates from the Construction Documents or Final Coordination Model. If any deviation is found, that installing contractor is responsible for the full correction of the work including costs incurred by other affected contractors and/or costs borne by the responsible contractor.
 4. Each coordination participant shall prepare (4) copies of notated, dimensioned 30 inches x42 inches plots of each system based on the sheet master format established at the beginning of the project. These files shall be sent to the A/E for review in accordance with the coordination submittal requirements.
 5. The Model is not considered to be the Final until the A/E and Owner have approved all systems and routings.
- Should a conflict arise during installation that was not foreseen or solved during the coordination effort, each coordination participant will work together with the General Trades Contractor to find a solution that is the least impact to all trades and the project. The cost of this work will be evaluated as the problems arise, however, the party responsible for the conflict will be responsible for the cost of the fix, including the additional detailing time of all parties involved.
 - The Final Coordination Model shall be kept up to date by all participants during construction to include any project updates including as-built information and submitted at the end of the project to the General Trades Contractor electronically in both the native modeling file format (i.e.: dwg format) and PDF form. Items to be included in these files include:
 1. RFI responses are required to be incorporated into the coordinated model.
 2. Equipment shall be tagged with all pertinent detailed identification information within the model. This identification information shall be the same and correspond to all other close-out documentation. This close-out documentation including O&M Manuals, Maintenance information, etc. shall be included in PDF form.
 3. Burn final documents to disk and submit (4) copies to the General Trades Contractor. The Division IV – Ventilation Contractor will generate the Completed Coordination Model based on these documents for turn-over to Barton Malow Company.
 - Participants not attending one or multiple Coordination Meetings, or failing to post their electronic drawing files per the Coordination Schedule, will relinquish the right to request changes to the model in an effort to coordinate their own work, and will execute their Work without impact to the Work coordinated at the meeting. Should this not be possible, the offending participant who has not met the Coordination Schedule will be

responsible for any additional meeting time and/or the costs associated with delaying the model development.

- A professional code of conduct is assumed of all participants. All participants' documentation will be available on the designated web-based posting site for reference by the other participants. Drawing files shall never be tampered with by non-owners of the file. If a mistake occurs and a drawing is inadvertently changed, the responsible party is required to alert all others immediately.

1.04 REQUIREMENTS OF THE LEAD COORDINATOR

- The Lead Coordinator will be the Division IV – Ventilation Contractor.
- Using the A/E's BIM Model, the Lead Coordinator shall develop and maintain the Base Architectural Model.
 1. This model shall consist of cleaned-up floor plans void of any excessive notations, leaders, bubbles/marks, grid lines, etc. that are not required for detailing development and that may potentially cause a conflict in the Base Composite Model.
 2. The Base Architectural Model is a combination of the Base Structural Model and other architectural elements. The Lead Coordinator shall receive the Base Structural Model from the Structural Steel Subcontractor. These architectural elements shall include all elevated pertinent architectural elements into a 3D format including all walls that extend to the deck including, but not limited to fire and smoke walls, soffits and associated framing to be shown as a solid, ceiling planes and establish a finish floor plan.
 3. Distribute the Base Architectural Model to all participants prior to the start of the coordination effort and update as necessary.
 4. Should there be significant changes to the A/E's contract documents, revise the Base Architectural Model and distributed to all coordination participants.
 5. Verify the Base Architectural Model accurately reflects the current contract documents.
- Maintain a web-based posting site with access for all participants. The posting site should include email notification to all project participants and shall maintain a log of user activity.
- Collation of all trades' detailing models as posted to the project's web-based posting site into a Base Composite Model thru the use of NavisWorks:

1. Establish a standard 2 inches soft tolerance within the clash detection software. This tolerance will result in a reported clash for any elements drawn closer than 2 inches to one another.
2. Generate a new Base Composite Model for each Coordination Meeting including the generation of a clash reports and distribution to all project participants per the coordination schedule.
3. At the end of the project, collect all trades' final as-built file and generate a Final Coordination Model to submit to the A/E as part of the close-out requirements.

1.05 REQUIREMENTS OF THE STRUCTURAL STEEL SUBCONTRACTOR

- Obtain from the A/E Structural CAD files to be used in the generation of the Base Structural Model and pay for any costs required by the A/E for those files.
- As indicated in the coordination schedule, the Structural Subcontractor shall develop and provide the Base Structural Model that consists of:
 1. All structural framing members in the final sizes and locations (typically referred to as a “mill order” or “procurement” model) shown in the model as objects with surfaces to be used as the basis of the Base Coordination Model used by all participating detailers. This model can be void of structural detailing but should include all major components.
 2. If required by schedule, a subsequent, final structural model will be submitted to include all detailing work.
 3. A common insertion point must be established with the General Trades Contractor and all coordination participants prior to the beginning of the structural coordination process. No detailing work shall take place until an understanding of the insertion point is decided upon.
 4. The Steel Subcontractor is responsible for resolving their own modeling issues (i.e.: steel not to scale; missing key structural components; model is missing surface data and only shows wire frame data, etc.) in order for all coordinating parties to use as a baseline model.
 5. The Steel Subcontractor is responsible to provide a steel design model in a usable format and a usable file size for all other coordination participants to use as a base design model.

1.06 DETAILING REQUIREMENTS OF ALL PARTICIPANTS

- A folder system will be established by the Lead Coordinator on the web-based posting site to be used by all coordination participants. The folder use and structure includes:
 1. Progress Drawing Folder – As each coordination participant makes progress to his model, the drawing files shall be posted and maintained in this folder. These

files are then made available to the other coordination participants for reference during their drawing progress. These files will not be used in the generation of the Base Composite Model and uploaded into the clash detection software prior to a scheduled coordination meeting.

2. Postings Folder – prior to each Coordination Meeting as per the schedule, post all progress drawing files here. These are the files that will be uploaded into the Base Composite Model for clash detection. There should be one file per trade per floor despite the area of the floor currently being coordinated. As additional areas of the floor are drawn and coordinated, the previous floor file shall be overwritten and posted here. Refer to the standard file naming conventions listed below.
 3. Completion Folder – once a floor is fully coordinated and clash free, the final coordinated drawing file shall be posted to this folder. These are the files will be used for the Final Coordination Model.
 4. Clash Report Folder – all clash reports generated by the clash detection software for the Weekly Coordination Meetings will be posted to and maintained in this folder. Two types of reports will be generated: one that only clashes the trade work, the other will include clashes of architectural elements. All clash reports will be saved in this folder as history documents.
 5. For ease of use by all coordination participants, the following file naming convention shall be used for posted electronic files.
 - a. In-progress drawing files shall be named “PROJECT-TRADE-FLOOR#”. For example, a file for Project X completed by the Ventilation contractor for Floor #1 will be titled, “ProjectX-Ventilation-01”. Do not use the coordination area in the file name. As areas by floor are coordinated, the older, less detailed file shall be overwritten.
 - b. Final, fully coordinated drawing files shall be saved as “PROJECT-TRADE-FLOOR#-FINAL”. Example name is “ProjectX-Ventilation-01-FINAL”.
 6. All coordination participants are to maintain a current control copy of their own drawing files outside of the project’s web-based posting site.
- All objects within the drawing file must use a “Bylayer” color scheme. Colors have been determined per trade as outlined below. The Lead Detailer will assign the appropriate AutoCAD color number designation. Colors will be for AutoCAD layering, only, not necessarily for plot colors.
 1. Red – Steel
 2. Cyan – TBD
 3. Blue – Plumbing
 4. Brown – Heating
 5. Green – Ventilation

6. Dark Green - Controls
 7. Orange – Electrical
 8. Dark Orange – Fire Alarm
 9. Purple – Audio Visual, Broadcast Cable and Security Pathways
 10. Light Purple – Audio Systems
 11. Red – Fire Protection
 12. Yellow – All Soft Collisions & Clearances
 13. Grey – All Base Architectural Elements (walls, soffits, ceiling & floor planes, etc.)
- Original placement of the architectural background will be established and must not be moved so that all trade drawing files overlay correctly. A reference circle on layer “Defpoints” must be placed at intersection of grids “A” & “1” or other as defined by the Lead Coordinator.
 - The common insertion point will be defined by the Design Team on both the Base Architectural and Base Structural Models distributed to all participants to use as a background to detail their work around. The origin point must not change, as it will affect the collation of the files into the Base Composite Model. No drawing work shall take place until this point is agreed upon by the team.
 - When posting drawing files for coordination:
 1. Drawing files must be sent with all necessary layers thawed. The Lead Coordinator will not thaw frozen layers. All drawing files will be uploaded into the Base Composite Model in the state they were sent.
 2. Provide only model space information; X-Refs shall be removed from posted files and models shall be purged of non-required information prior to posting.
 3. Posted drawing files should be of each Subcontractor’s system that is clash-free with its own work as well as the given architectural elements in the Base Architectural Model. The only work that should be shown are elements to be installed in the field.
 4. These files should be void of any text, dimensions or any other notations. All text, annotations and dimensions can be placed on a separate layer from model entities; for general coordination postings, this layer shall be deleted
 - Each coordination participant is required to submit (1) complete set of installation drawings prior to any work being installed in the field. These complete drawings are to be fully dimensioned and notated. Items to be noted in the final, fully coordinated drawing paper and electronic file versions of each system include:
 1. Bottom and top elevations of duct, pipe, conduit racks, cable trays etc. must be indicated (where applicable).

2. Dimensions shall be shown from the gridlines to the centerline of each element drawn (round duct, pipe, cable tray, etc.) and from finished floor
 3. Height to top of light housing assembly must be indicated.
 4. Labeling of all equipment
- During the coordination drawing effort, priority will be given to those systems that have the least flexibility. The following list is a descending order of the system priority and shall be used as a general guideline. Throughout the coordination drawing effort, adjustments and deviations to this list can be made with the approval of Barton Malow Co. 0'-3" clear above the ceiling shall be maintained for access and construction of the ceiling. Required maintenance and/or code access spaces and set-backs take precedence over all systems.
 1. Ductwork and appurtenances, except bracing which shall be relocated to accommodate local interferences
 2. Gravity Pipe: plumbing waste, roof drainage, steam condensate return and other systems that rely upon gravity for flow
 3. Cable tray
 4. Recessed light fixtures
 5. Fire protection piping and fixtures
 6. Electrical conduit over 2" in diameter or in banks of conduit larger than 2"x2" in cross section
 7. HVAC piping
 8. Plumbing vent and supply piping
 9. Electrical conduit smaller than 2" in diameter, Control Wiring, AV, Security and Audio Systems
 10. Above ceiling miscellaneous metal supports
 - Information provided by specific trades is required but not limited to the following:
 1. Fire Protection- Size, layout and routing of mains and branch piping, hanger, couplings and supports, valves, working clearances, and bottom of pipe and bottom of hanger support/coupling elevations. Sprinkler head locations shall be shown on ceiling grid / drywall ceiling coordination plan. For pitched piping, identify bottom elevation at key points and at least at every column line. For any dry systems the drum drip location must be shown and review by A/E for approval. Sprinkler heads shall be centered in the center of lay-in ceiling tiles unless approved shop drawings note otherwise.
 2. Plumbing- Size, layout and routing of piping, valves, boxes, elbow, test ports, supports, insulation, etc., for all utilities regardless of material size. Show or note all pipe sizes and working clearances/required access space around valves, etc. For pitched piping, identify bottom elevations at key points and at least every column line. Note thickness and location of all external

insulation. Bottom elevations shall be measured to the lowest point including hangers and insulation where applicable. Work is to be placed as high as possible in above ceiling areas allowing access for equipment for maintenance, repairs, connections, filters and removal without demolition of other Work.

3. Heating - Size, layout and routing of all equipment, piping, valves, boxes, elbow, test ports, supports, insulation, etc., for all utilities regardless of material size. Show or note all pipe sizes and working clearances/required access space around valves, etc. For pitched piping, identify bottom elevations at key points and at least every column line. Note thickness and location of all external insulation. Bottom elevations shall be measured to the lowest point including hangers and insulation where applicable. Work is to be placed as high as possible in above ceiling areas allowing access for equipment for maintenance, repairs, connections, filters and removal without demolition of other Work
4. Ventilation - Size, layout and routing of ducts, piping, valves, boxes, elbow, test ports, supports, insulation, etc., for all utilities regardless of material size. Show or note all duct / pipe sizes and working clearances/required access space around valves, etc. For pitched duct / piping, identify bottom elevations at key points and at least every column line. Note thickness and location of all external insulation. Bottom elevations shall be measured to the lowest point including hangers and insulation where applicable. Work is to be placed as high as possible in above ceiling areas allowing access for equipment for maintenance, repairs, connections, filters and removal without demolition of other Work.
5. Electrical - Size, layout and routing and size of conduit and wire 2 inches or larger for normal and emergency power distribution systems, than 4 inches x 4 inches x 4 inches, hangers, supports, and electrical fixtures including lights, sensors, raceways, etc. Draw all power routing to all owner supplied equipment. Size and clearance of ceiling and above ceiling mounted items shall be noted as a depth from finished ceiling to top of fixture or top of clear area required. Provide bottom elevations of conduits and equipment. Bottom elevation shall be measured from the lowest point, including hangers. All electrical shown on ceiling grid / drywall ceiling coordination. Work is to be placed as high as possible in above ceiling areas allowing access for equipment for maintenance, repairs, connections, filters and removal without demolition of other Work. Within four (4) feet of all panels, or areas where more than 4 conduits, regardless of size, are routed or grouped together, identify an easement or right of way for the groups of conduit. Also show all wall mounted items located within 12 inches of the ceiling plane.
6. Audio visual, broadcast cable and security pathways - Size, layout and routing of all conduit, raceway, cable tray, bridle ring (despite installation by trade contractor pulling wire) or any other method must be indicated regardless of

size. These drawings will be used for owner future installation and will verify all required pathways meet design/equipment needs for a complete system.

7. Audio Systems – Size and layout of all equipment. Speaker locations shall be shown in ceiling grid / drywall ceiling coordination plans.
 8. Fire Alarm -Size layout and routing of all fire alarm pathways must be indicated regardless of size. A 1-line diagram must be provided to all devices to verify operation of system and interaction with other system meets design intent (Fire/Smoke Dampers, Smoke Dampers, Smoke Detector, Duct Detectors, Smoke Control, AHU, Elevator, Security Systems and any other systems required.) This level of coordination is critical to ensure proper access of these devices are not blocked by other trades
 9. Controls – Surface mounted control locations shall be shown in ceiling grid / drywall ceiling coordination plans. Size layout and routing of all pathways must be indicated regardless of size. If wire is in bridge rings, a 1-line diagram must be provided to all devices to verify operation of system and interaction with other system meets design intent. This level of coordination is critical to ensure proper access of these devices are not blocked by other trades.)
- Within five (5) Days of the General Trades Contractor sign off sheet for each area for coordination drawings, each contractor shall provide the Lead Coordinator with four (4) color copies of their individual scope and electronic files of the same in coordinated format and pdf format. The Lead Coordinator will be responsible for creating a submittal package to be sent to the Owner, A/E, and Cx agent for review and acceptance. This package must include either hard copy or electronic file at A/E's direction of each contractor's drawing and the area collaborative drawing. Any comments by these parties must be reviewed and corrected. Concern with these comments must be reviewed with the General Trades Contractor to determine action required.

END OF SECTION - 01 31 21

SECTION 01 31 21.01 - BIM REQUIREMENTS - PROFESSIONAL SERVICES

- Please Click Link : [BIM Requirements - Professional Services](#)

END OF SECTION - 01 31 21.01

SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 SUMMARY

- Products include, but are not limited to, the following:
 1. Shop Drawings.
 2. Product Data.
 3. Samples.
 4. Quality Assurance Submittals.
 5. LEED Submittals.
 6. Informational Submittals.
 7. Other Submittals.
- Execution:
 1. Coordinating Submission Scheduling: Submit Submittals with sufficient time for review, including time for resubmittals, submittals for activities that require sequential steps, and simultaneous review for activities that are part of the same element of work. No extensions given for deadlines due to lack of sufficient time allowed by the Contractor for review.
 2. Submission and Distribution: Label submittals with information outlined, allow sufficient space for AE's stamp, and submit using a Transmittal form.
 3. AE's Actions: AE will review, mark with an Action Stamp and indicate action taken, and return submittal. Work may not proceed until submittal is approved.

1.2 RELATED SECTIONS

- [Section 01 31 00 – Web-Based Project Management System](#)
- [Section 01 31 21 – 3D BIM Coordination Drawings](#)
- [Section 01 78 23 – Operation and Maintenance Data](#)

- [Section 01 78 39 – Project Record Documents](#)

PART 2 -PRODUCTS

2.1 SHOP DRAWINGS

- Shop Drawings are documents prepared by contractors, manufacturers, suppliers, or subcontractors to illustrate details and techniques for a portion of the work, usually to show compliance with the Contract Documents or to show how specialized work will be incorporated into the project. They are not Contract Documents, or standard documentation from the manufacturer.
- Shop Drawings include, but are not limited to:
 1. Fabrication drawings.
 2. Installation drawings.
 3. Setting diagrams.
 4. Shopwork manufacturing instructions.
 5. Templates and patterns.
 6. Schedules.
- Include the following information on Shop Drawings:
 1. Equipment tags.
 2. Dimensions, including dimensions established by field measurement.
 3. Graphic Scale.
 4. Identification of products and materials included.
 5. Compliance with specified standards.
 6. Notation of coordination requirements.
 7. Construction sequences and relationships of separate components where necessary to avoid conflicts in utilization of the space available.
 8. Indication of deviation from Contract Documents, reproducible in black and white.
 9. Space for Contractor's review and action taken by AE. See [Part 3 Execution](#).
- Shop Drawings Submittal Instructions (use in conjunction with [Part 3 Execution](#)):

1. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 30 inches by 40 inches.
2. Submit _____ (__) sets of Shop Drawings (minimum one for owner).

2.2 PRODUCT DATA

- Product Data are documents that illustrate physical appearance, size, performance capabilities and limitations, and other characteristics of materials and equipment for some portion of the work.
- Product Data include, but are not limited to:
 1. Manufacturer's product specifications.
 2. Manufacturer's installation instructions.
 3. Standard color charts.
 4. Catalog cuts.
 5. Roughing-in diagrams and templates.
 6. Standard wiring diagrams.
 7. Manufacturer's performance curves.
 8. Operational range diagrams.
 9. Mill reports.
 10. Standard product operating and maintenance manuals.
- Include the following information when preparing Product Data:
 1. Equipment tags.
 2. When Product Data includes information on several similar products, some of which are not required for use on the Project, mark copies clearly to enable black and white copying to indicate which products are applicable.
 3. When Product Data must be specially prepared for required products, materials, or systems because standard printed data are not suitable for use, submit as Shop Drawings not Product Data.
 4. Manufacturer's printed recommendations.
 5. Compliance with recognized trade association standards.
 6. Compliance with recognized testing agency standards.
 7. Application of testing agency labels and seals.
 8. Notation of dimensions verified by field measurement.
 9. Notation of coordination requirements.
- Product Data Submittal Instructions (use in conjunction with [Part 3 Execution](#)):
 1. Submit _____ (__) copies of each Product Data submittal (minimum one for owner)

2.3 SAMPLES

- Samples are physical examples of materials, finishes, equipment, or workmanship that illustrate aesthetic and functional characteristics of a material or product and establish standards for Work to be done. Samples shall be retained as part of the project record documents.
- Samples include, but are not limited to:
 1. Interior Finishes:
 2. Paint chips
 3. Cloth swatches
 4. Finished pieces of woodwork trim
 5. Hardware Finishes
 6. Carpet Samples
 7. Accent finishes and casework
 8. Exposed HVAC elements with custom color finishes
 9. Exposed lighting elements with custom color finishes
- Exterior Finishes:
 1. Slate Tile, other roofing materials
 2. Brick
 3. Mortar
 4. Limestone
 5. Sealant
 6. Glazing
 7. Window Frames
 8. Door Frames
 9. Doors
 10. Metal Finishes
 11. Metal Panels
- Include the following when preparing Samples use in conjunction with [Part 3 Execution](#)):
 1. Submit full-size, fully fabricated Samples, cured and finished in the manner specified.
 2. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the AE's sample where so indicated. Include the following information:
 - a. Material or product proposed for use.
 - b. Generic description of the Sample.
 - c. Size limitations.
 - d. Sample source.
 - e. Product name or name of manufacturer.

- f. Compliance with recognized standards.
 - g. Compliance with governing regulations.
 - h. Availability.
 - i. Delivery time.
- Samples Submittal Instructions (use in conjunction with [Part 3 Execution](#))
 1. Submit _____ () Sample(s) (minimum one for owner), except as noted:
 - a. When variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit a Sample size large enough, or submit multiple Samples necessary, to show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, assembly details, connections, operation, and similar construction characteristics.
 2. Maintain Samples, as returned by the AE, at the Project Site, available for quality-control comparisons throughout the course of construction activity, except as noted:
 - a. Refer to other Specification Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be in an undamaged condition at time of use. On the transmittal form, indicate such special requests about disposition of Sample submittals.
 - b. Samples not incorporated into the Work or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
 3. Unless the AE observes noncompliance with provisions of the Contract Documents, the submittal may be used to obtain final acceptance and serve as the final submittal.

2.4 QUALITY ASSURANCE SUBMITTALS

- Quality Assurance Submittals are records that document that a facility, system or assembly meets defined objectives and criteria
- Quality Assurance Submittals include, but are not limited to:
 1. Design data.
 2. Certifications. Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

- a. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
 - 3. Manufacturer's instructions.
 - 4. Manufacturer's Field Reports.
 - 5. Inspections and Test Reports.
 - 6. Original Field Checklists. Original checklists or forms used by the factory or field technician are required.
 - 7. Test Reports.
- Include the following when preparing Quality Assurance Submittals:
 - 1. U of I Project Number and Name.
 - 2. Specification Section Number and Name.
 - 3. Equipment tags.
 - Quality Assurance Submittals Submittal Instructions (use in conjunction with [Part 3 Execution](#)):
 - 1. Submit _____ (__) copies of Quality Assurance Submittals (minimum one for owner).

2.5 INFORMATIONAL SUBMITTALS

- Informational Submittals are records that document the information the AE requires to verify performance and quality control of project requirements, but do not require approval. They are also used as verification and certification that the installed work or portion of the work meets the specified requirements.
- Informational Submittals include (but are not limited to):
 - 1. Meeting Minutes.
 - 2. Construction Photographs.
- Include the following when preparing Informational Submittals (use in conjunction with [Part 3 Execution](#)):
 - 1. U of I Project Number and Name.
 - 2. Specification Section Number and Name.
 - 3. Equipment tags.
- Informational Submittals Submittal Instructions (use in conjunction with [Part 3 Execution](#)):
 - 1. Submit _____ (__) copies of Informational Submittals (minimum one for owner).

2.6 OTHER SUBMITTALS

- Other Submittals are records that document some part or associated part of the construction Work not previously covered.
- Other Submittals may include (but are not limited to):
 1. Warranties.
- Include the following when preparing Other Submittals (use in conjunction with [Part 3 Execution](#)):
 1. U of I Project Number and Name.
 2. Specification Section Number and Name.
 3. Equipment tags.
- Other Submittals Submittal Instructions (use in conjunction with [Part 3 Execution](#)):
 1. Submit _____ (__) copies of Other Submittals (minimum one for owner).

PART 3 - EXECUTION

3.1 COORDINATING SUBMISSION SCHEDULING:

- To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 1. Allow 4 weeks for the Coordinating Contractor's and AE's review of each submittal.
 2. Allow additional time if the Coordinating Contractor and AE must delay processing to permit coordination with other submittals, due to:
 3. Activities that require sequential steps.
 - a. Activities that are part of the same element of work.
 - b. When necessary to provide an intermediate submittal, process the intermediate submittal in the same manner as the initial submittal.
 4. The Owner will not authorize an extension of time because of the Contractor's failure to transmit submittals to the Coordinating Contractor and AE sufficiently in advance of the Work to permit processing.

3.2 SUBMISSION AND DISTRIBUTION:

- Prepare Submittals as follows:
 1. Place a permanent label or title block on each submittal for identification.
 2. Indicate name of the firm or entity that prepared each submittal on the label or title block.
 3. Provide a space approximately 4 by 5 inches on the label or beside the title block to record the Contractor's review and approval markings and the action taken by the AE.

4. Include the following information on the label for processing and recording action taken.
 - a. U of I Project Number and Name.
 - b. Date.
 - c. Name and address of the AE.
 - d. Name and address of the Contractor.
 - e. Name and address of the subcontractor.
 - f. Name and address of the supplier.
 - g. Name of the manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
5. Give a unique number to the submittal as follows:
 sssssss-nn-rr
 s = specification number
 n = next sequential number
 r = revision number
 - a. Indicate unique number on both submittal and transmittal form.

- Transmit each submittal by use of a transmittal form.
- Resubmittals: Each resubmittal should indicate whether it fully replaces the previous submittal, replaces a portion of a previous submittal, or is in addition to a previous submittal.
 1. If a resubmittal replaces a portion of a previous submittal, indicate previous unique submittal number, and indicate clearly by page numbers, section numbers, or section title the portion of the previous submittal replaced.
 2. If a resubmittal is in addition to a previous submittal, indicate previous submittal by unique submittal number.
- Submit number of copies as indicated in each section of Part 2.

3.3 AE'S ACTIONS

- Except for Informational Submittals where no action and return of submittals is required, the AE will review each submittal, mark to indicate the action taken, and return.
- Action Stamp: The AE will stamp each submittal with a uniform action stamp. The AE will mark the stamp appropriately to indicate the action taken, as follows:
 1. Approved: Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final acceptance will depend on that compliance.

2. Approved as Noted: Work covered by the submittal may proceed provided it complies with both the AE's notations or corrections on the submittal and requirements of the Contract Documents. Final acceptance will depend on that compliance.
3. Revise/Resubmit or Rejected/Resubmit: Do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the AE's notations. Resubmit without delay. Repeat if necessary to obtain an "Approved" or "Approved as Noted" action mark.
4. No Action Required: When a submittal is primarily for information or record purposes or for special processing or other contractor activity, the submittal will be marked "No Action Required" and returned without review.

END OF SECTION 01 33 23

SECTION 01 35 00 - SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 FIRE PROTECTION

- **Regulations:** The Contractor shall comply with the University of Illinois Regulations regarding Fire Safety in Welding and Cutting Operations and Fire Prevention during building construction operations. Copies of these regulations can be obtained from the OCP Project Manager and shall be posted by the Contractor at the site of work.
- **Fires:** The Contractor shall prohibit the lighting of fires about the premises and use due diligence to see that such prohibition is enforced. Debris and waste materials shall not be burned at the construction site but shall be promptly removed to prevent the accumulation of combustibles on the site or within the building.
- **Smoking:** Smoking is prohibited on all University of Illinois campus, inside and outside, and on all project construction sites. The Contractor shall furnish and post "NO SMOKING" signs at appropriate locations throughout the building areas and other enclosed spaces on the site where his operations are conducted. The Contractor shall furnish and post "NO SMOKING" signs at appropriate locations throughout the project site enclosed by construction fencing on the site where his operations are conducted.
- **Welding and Cutting:** It shall be the responsibility of the Contractor to contact OCP Project Manager at the beginning of the project to obtain a "HOT PERMIT" for use during the project. It shall be the responsibility of the Contractor to notify the OCP Project

Manager at least 4 hours in advance of the work when welding or other fire hazardous work is to be performed and to take precautionary measures to prevent fire.

- **Heater:** The heaters on site shall be properly installed to protect combustible walls, floor and roof. Salamander heaters or other types of open flame heaters shall not be used except with the special permission of the AE and OCP Project Manager and then only when such salamanders or open flame heaters are maintained under constant supervision.
- **Flammables:** Gasoline and other fuels shall be kept and handled from National Board of Fire underwriter's approved safety cans and shall be stored away from hazardous work areas.

1.2 ASBESTOS REMOVAL

- **Remove Prior to Construction:** The U of I has an Asbestos Abatement Program. This program requires that any area within a U of I facility that is to be remodeled must be inspected for the presence of asbestos containing building materials (ACBMs) prior to commencement of work activities. All readily accessible asbestos should be removed before construction work proceeds. No workers or other activity should be allowed in the area containing suspected material until it has been removed or certified as not having friable asbestos.
- **Discovery During Construction:** When discovering asbestos material during construction, notify the OCP Project Manager so appropriate action may be taken.

1.3 HOISTS, SCAFFOLDS AND LADDERS

- **Hoists:** The Contractor shall furnish, erect, operate and maintain suitable hoisting equipment as may be necessary for the safe handling of material entering into the Work. Material hoists shall be constructed and maintained in accordance with all applicable federal and state laws, regulations and local ordinances. Location of hoists shall be subject to approval by the AE and the OCP Project Manager.
- **Scaffolds and Ladders:** The Contractor shall furnish, erect, maintain and move all scaffold and ladders required for his Work. Scaffolds shall be constructed and maintained in accordance with all applicable state and federal laws and local ordinances. Scaffolds and ladders shall be promptly removed after their purpose has been served.

1.4 SITE SECURITY

- **Daily Inspection:** Full-time security guard will not be specifically required, but the Contractor shall provide inspection of the building and site daily while the work is in

progress and shall take whatever measures are necessary to secure the building from theft, vandalism and unauthorized entry.

1.5 UTILITY LOCATE PROCEDURE

- **Call Before You Dig:** Before performing any excavation on the University of Illinois at Chicago, notify the OCP Project Manager at least 14 calendar days in advance. The OCP Project Manager will check with campus utilities, etc. and respond to the contractor.
- **Excavation:** Excavation means any operation in which earth, rock, or other material in or on the ground is moved, removed, or otherwise displaced by means of any tools, power equipment, and includes, without limitation, grading, trenching, digging, ditching, drilling, augering, boring, tunneling, scraping, cable or pipe plowing, and driving.
- **Required by Law:** Calling for a utility locate is required by the Illinois Underground Utility Facilities Damage Prevention Act, and is applicable everywhere in the State of Illinois.
- **White Lining of Proposed Excavation:** The Illinois Underground Utilities Facilities Damage Prevention Act requires all excavators to white-line the dig site when practical. UIC requires white-lining prior to processing a contractor's locate request. In winter months when snow is present, the use of black paint or flags is required. White-lining is the process of going to the proposed excavation site and outlining or marking the area where proposed excavation digging will occur with white paint and/or white flags prior to contacting UIC OCP Project Manager.
- **Utilities on the Campus:** The underground infrastructure of many different utility companies is present under the campus.

1.6 CAMPUS UTILITY AND BUILDING SYSTEM OUTAGE PROCEDURE

- General:
 1. **14 Days' Notice:** Outages for building systems and campus utilities shall be scheduled at least 14 calendar days in advance, at the convenience of the continuing operations of the UIC campus. Please note that outages are scheduled at the convenience of the continuing operations of the UIC campus. Research and Housing Operations may allow outages only when they are closed or during times when classes are not in session. Significant advanced planning is necessary when an outage is required.
 2. **Costs Incurred:** New construction and remodeling projects shall fund all costs incurred in operating systems to accommodate any scheduled or unscheduled outages. Small project remodeling shall have costs and funding approved by campus representatives.

- Planning:
 0. **Contact Project Manager:** The Contractor shall advise the OCP Project Manager of the need for an outage. It shall be the responsibility of the OCP Project Manager to contact the person within the Facilities Management and/or Campus Utilities that has the operating responsibility for the subject system.
 1. **Provide Necessary Information:** When requesting the outage, the Contractor shall include, as a minimum, the following:
 - a. Project contact person, including telephone
 - b. Type of outage and specific systems affected
 - c. Building or specific areas within buildings affected
 - d. Date and time of outage
 - e. Length of outage
 - f. Specific reason for outage
 2. **FM Will Evaluate Request:** Facilities Management / Campus Utilities personnel will evaluate the request and determine the magnitude of the shutdown required and its impact on the continuing operations of campus departments. The Contractor will then be advised of the schedule for the requested outage. It should be noted that many outages are required to be conducted during evening, weekends, and campus holiday periods.
- Scheduling:
 0. **Facilities Management Will Schedule:** When an available date and time are acceptable to the Project, the outage will be formally scheduled by Facilities Management / Campus Utilities.
 1. **Contacting Campus Community:** Facilities Management / Campus Utilities is responsible for contacting numerous members of the campus community when scheduling outages. Therefore, once an outage is scheduled, meeting the established schedule is of critical importance.
- Execution:
 0. **Begin Work Promptly:** The Contractor shall agree to start work promptly as scheduled.
 1. **Cancellation of Outage:** In the event that the Contractor's required material or labor is not available, or other significant problems arise at the scheduled starting time, the OCP Project Manager reserves the right to cancel the outage.

1.7 TRAFFIC CLOSURES

- **Closure Notice Required:** The contractor is responsible for notifying and obtaining any required permits for the closing of street or sidewalk. The contractor will notify the OCP Project manager 14 working days in advance of an impending closure of any streets,

bike paths, walks, parking areas, loading docks, or other traffic ways to vehicular or pedestrian traffic.

- **Two Week Notice, minimum:** Closure notice requests shall be completed and submitted for approval at least two (2) weeks prior to the actual closure date to allow public safety units, transit, and others time to plan their emergency, temporary service routes. This process should be followed as far in advance as practical.
- **Delay of Work:** Projects may be delayed if closure notice request forms are not received in a timeframe so as to provide proper lead-time.

PART 2 – PRODUCTS: **NOT USED**

PART 3 – EXECUTION: **NOT USED**

END OF SECTION 01 35 00

SECTION 01 35 43 - ENVIRONMENTAL REQUIREMENTS SITE ENFORCEMENT

PART 1 - GENERAL

1.1 APPLICABILITY

- Pursuant to the Owner's National Pollutant Discharge Elimination System (NPDES) Permit ILR400523 that authorizes discharges from its small Municipal Separate Storm Sewer System (MS4), the Owner must comply with the storm water requirements of the **(NOTE A/E to include any City of Chicago Regulations)** Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations, and the Clean Water Act. In accordance with the following Construction Site Enforcement Policy, Contractors and Professional Services Consultants are subject to enforcement by the Owner for failure to comply with these requirements.

1.2 RELATED SECTIONS

- [*Section 01 74 00 – Progress Cleaning*](#)
- Section 31 25 00 - Erosion and Sedimentation Control

1.3 SUMMARY OF ENFORCEMENT POLICY

- In most cases, good communication can foster compliance and maintain good will thereby eliminating the need for an enforcement remedy.
- If the OCP Project Manager determines that noncompliance warrants enforcement action, the OCP Project Manager will select an enforcement remedy based on the nature and severity of the violation(s), the urgency with which remedial activity must be taken, whether the subject party has taken good-faith measures to come into compliance, and whether the violation is a repeat offense.
- A repeat offense is a violation by the same Contractor of the same requirement within the same calendar year as the original violation.
- When necessary and as appropriate, the Owner will impose a Stormwater Violation Enforcement Remedy by increasing order of severity as follows:
 1. Warning
 2. Notice of Non-Compliance. Stop Work Order, Stop Payment, Back Charge.
 3. Referral to Illinois Environmental Protection Agency.
- Some of the more common violations that will trigger an enforcement remedy by increasing order of severity include:
 1. Emergency Situations.
 2. Failure to prepare a Storm Water Pollution Prevention Plan (SWPPP). Failure to comply with SWPPP measures. Failure to conduct site inspections.
 3. Failure to correct a violation.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 35 43

SECTION 01 35 46 – INDOOR AIR QUALITY PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- [*Exhibit 01 35 46-1, Example Indoor Air Quality Management Plan*](#)

1.2 SUBMITTALS

[Note to AE: Identify relevant LEED point requirements for the Project. Include requirements for the following:]

- Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality; use SMACNA IAQ Guideline for Occupied Buildings Under Construction.
 1. Submit IAQ Plan at pre-construction meeting. See [Exhibit 01 35 46-1, Example Indoor Air Quality Management Plan.](#)
 2. Identify construction activities likely to produce odor or dust.
 3. Identify areas of project potentially affected, especially occupied areas.
 4. Evaluate potential problems by severity and describe methods of control.
 5. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
 6. Describe cleaning and dust control procedures.
 7. Describe commissioning procedure.
- Identify interior finishes that generate odors, moisture, or vapors or are susceptible to absorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.
- Provide a LEED Letter Template, signed by the General Trades Contractor (or contractor with assigned subcontractors, if different) declaring that a Construction IAQ Management Plan has been developed and implemented, and including the MERV value of each air filter used during construction and at the end of construction.
- Provide 18 photographs – six photographs taken on three different occasions during construction – along with identification of the SMACNA approach featured by each photograph, in order to show consistent adherence to the LEED credit requirements.
 1. As an alternative to providing photographs, declare which of the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction which were used during building construction. Include adequate description of the design approaches employed.

PART 2 – PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 IMPLEMENTATION

[Note to AE: Provide Construction Documents to ensure the following:]

- An Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:
 1. Controls, sequences, permanent equipment/systems shall meet the Design Intent / Basis of Design in accordance with the Project's schedule without imposing hardship to the Commissioning requirements and schedule.
 2. Meet the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, Chapter 3.
 3. Protect stored on-site or installed absorptive materials from moisture damage.
 4. HVAC equipment and supply air ductwork shall not be used for ventilation during construction without meeting the following criteria as specified in the IAQ.
 - a. Meet all requirements of [Section 01 76 00 - Protecting Installed Construction](#).
 - b. Coordinate with the Ventilation Contractor to avoid the use of return air ducting.
 1. Seal return air inlets or otherwise positively isolate return air system to prevent recirculation of air; provide alternate return air pathways.
 - c. If the Permanent Design does not permit temporary isolation of Return Ducting then filtration media with a Minimum Efficiency Reporting Value (MERV) of 11 shall be used at each return air grill.
 1. Within Design parameters, operate HVAC system on 100 percent outside air.
 - d. Ensure that all air filters are correctly installed prior to starting use. Replace all filtration media at a minimum of weekly or sooner as necessary to maintain cleanliness. Replace all filtration immediately prior to occupancy. Provide filtration media having a Minimum Efficiency Reporting Value as scheduled maintaining LEED compliance.
- Prior to permanent use of return air ductwork without intake filters, clean up and remove dust debris generated by construction activities using a HEPA vacuum cleaning system.
- Do not perform dusty or dirty work after starting use of return air ducts without intake filters.
- Prevent the absorption of moisture by:
 1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
 2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.

3. Provide sufficient TEMPORARY ventilation for drying. Permanent equipment may be allowed to be used once all Contractor-submitted care provisions have been approved by Owner.
 - Begin construction ventilation only when building envelope is sealed.
 - When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.

END OF SECTION 01 35 46

SECTION 01 42 00 REFERENCES

The codes, regulations and standards represent the minimum quality and safety that should be provided. These data should not be considered as a complete or comprehensive listing and should be elaborated upon by the Architect or Engineer to secure a completed project of the quality indicated. The A/E is responsible for investigating and determining which codes are applicable at the project site, and for designing and specifying accordingly. A/E may submit written requests to the University, with full documentation, requesting deviations from the codes, or the substitutions of more stringent codes. Do not proceed with design or specifications based on deviations or other codes until written authorization is received.

This Article on Codes, Regulation and Standards shall apply to all Divisions of the Building Standards. ([Campus Construction Codes and Standards](#))

Public Act 096-0704 states that all new commercial construction after July 1, 2011, must comply with the 2006 or later editions of the International Building Code; International Existing Building Code; International Property Maintenance Code and the 2008 or later edition of the National Electrical Code (NFPA 70). This Act also requires that newly constructed commercial buildings must pass an inspection conducted by an inspector meeting the qualifications established by COB. Note that Public Act 096-0704 does not negate any other statutorily authorized code or regulation administered by State agencies. This includes, but is not limited to, the Illinois Plumbing Code, the Illinois Environmental Barriers Act, the Illinois Accessibility Code, the International Energy Conservation Code, and administrative rules adopted by the Office of the State Fire Marshal (including the NFPA Life Safety Code).

Applicable standards, codes, laws and regulations include, but are not limited to, the following list. The current edition of these documents shall apply.

| | |
|-------------|--|
| | Abbreviations and Acronyms |
| ANLA | American Nursery & Landscape Association |

| | |
|---------------|--|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| ACI | American Concrete Institute |
| ADA | Americans with Disabilities Act |
| AGA | American Gas Association |
| AGCI | Associated General Contractors of Illinois |
| AISC | American Institute of Steel Construction |
| ANSI | American National Standards Institute |
| ASHRAE | American Society of Heating Refrigeration and Air-Conditioning Engineers |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing and Materials |
| AWWA | American Waterworks Association |
| CDB | Capital Development Board |
| CPSC | Consumer Product Safety Commission (Federal) |
| DOE | Department of Education |
| DHS | Department of Human Services |
| EPA | Environmental Protection Agency |
| EHSO | Environmental Health and Safety Office |
| FED | Federal Agencies |
| FM | Factory Mutual Engineering Corp. |
| IAC | Illinois Accessibility Code |
| IAGO | Illinois Attorney General's Office |
| IBC | International Building Code |
| IBOG | Illinois Board of Governors |
| IBOHE | Illinois Board of Higher Education |
| ICE | Illinois Clean Energy |
| IDOL | Illinois Department of Labor |
| IDOT | Illinois Department of Transportation |
| IDFPR | Illinois Department of Financial and Professional Regulation |
| IDPH | Illinois Department of Public Health |
| IDRE | Illinois Department of Registration & Education |
| IEC | Illinois Energy Code |
| IEEE | Institute of Electrical and Electronic Engineers |
| IEPA | Illinois Environmental Protection Agency |
| IHPA | Illinois Historical Preservation Act |
| IPA | Illinois Purchasing Act |
| ISPE | Illinois Society of Professional Engineers |
| JULIE | Joint Utility Location Information for Excavators |
| NEC | National Electric Code |

| | |
|---------------|---|
| NEMA | National Electrical Manufacturers Association |
| NESC | National Electrical Safety Code |
| NFPA | National Fire Protection Association |
| NIH | National Institutes of Health |
| OCP | Office For Capital Programs |
| OSFM | Office of State Fire Marshal |
| OSHA | Occupational Safety & Health Act (1970) |
| OWNER | University of Illinois at Chicago |
| SCAQMD | South Coast Air Quality Management District |
| SMACNA | Sheet Metal & Air Conditioning Contractors National Association |
| SOS | Secretary of State |
| UBC | Uniform Building Code |
| UFAS | Uniform Federal Accessibility Standards |
| UI | University of Illinois |
| UIC | University of Illinois at Chicago |
| UICBS | University of Illinois at Chicago Building Standards |
| UL | Underwriters Laboratories, Inc. |

Regulatory Requirements

1. **ACGIH:** Industrial Ventilation
2. **ADA:** The Americans with Disabilities Act, Public Law 101-336, July 26, 1990.
3. **FED:**
 - a. CPSC: Architectural Glazing Materials. (Partially preempts Illinois Safety Materials Glazing Act). Coordinate.
 - b. DHS:
 - 1) Title V: Handicapped Accessibility.
 - 2) Title IX: Regulations Prohibiting Sex Discrimination in Education.
 - c. EPA: Title III Fact Sheet: Emergency Planning & Community Right-to-know.
 - d. NIH: Guide for the Care & Use of Laboratory Animals, Publication DHHS #85-23.
5. **IAC:** The Illinois Accessibility Code, 71 Illinois Administrative Code, Chapter 1, Sec. 400.
6. **IAGO:**
 - a. Illinois Environmental Barriers Act. (Coordinate with CDB "Illinois Accessibility Code").
 - b. Illinois Steel Products Procurement Act, as amended (Illinois Revised Statutes, Ch. 48, par. 1801 et seq.).
7. **IDOL:** Safety Glazing Materials Act, as amended, with interpretive statement (Illinois Revised Statutes, Ch. 111 12. par. 3101 et seq.).

8. **IDOT:** Bridge Manual, including all supplements, current at date of bidding documents, unless otherwise specified.
 - a. Design Manual, including all supplements, current at date of bidding documents, unless otherwise specified.
 - b. Road and Bridge Laws, including all supplements.
 - c. Standard Specifications for Road and Bridge Construction, including all supplements, except where otherwise specified.
 1. Change all references "Engineer" to "Architect/Engineer".
 2. References to "Method of Measurement" and "Basis of Payment" may not apply.
 - d. Manual on Uniform Traffic Control Devices for Streets and Highways.
 - e. Policy for Permits for Access Driveways to State Highways.
9. **IDPH:**
 - a. Illinois State Plumbing Code.
 - b. Cir. 19.000, Retail Food Store Sanitation.
 - c. Cir. 19.001, Food Service Sanitation.
 - d. Cir. 4.102, Minimum Sanitary Requirements for Design and Operation of Swimming Pools & Bathing Beaches.
 - e. Requirements for the Design of Wisconsin Mounds in Illinois.
 - f. Lead Poisoning Prevention Act (Dwelling Units Only).
 - g. Rules and Regulations for Recreation Areas.
 - h. Hospital Licensing Act and Requirements.
 - i. Long-term Care Facilities, Minimum Standards, Rules and Regulations.
 1. Intermediate Care Facilities.
 2. Skilled Nursing Care Facilities.
 3. Sheltered Care Facilities.
 4. For Persons Under Twenty-Two Years of Age.
 - j. Ambulatory Surgical Treatment Centers, Revised Rules, Regulations and Standards.
 - k. Clinical Laboratories and Blood Banks, Rules and Regulations.
 - l. Illinois Asbestos Abatement Act (Illinois Revised Statutes, Ch. 122, par. 1401 et seq.).
 - m. Rules and Regulations for the Asbestos Abatement Act - Title 77, Ch. I, sub Ch. p. Part 855.
 - n. Senate Bill 500, State of Illinois Smoke Free Act.
10. **IDFPR:** Illinois Roofing Industry Licensing Act, as amended (Illinois Revised Statutes, Ch. 111, par. 7501 et seq.).
11. **IEPA:** (Current editions at date of bidding documents.)
 - a. Air Pollution Standards.
 - b. Noise Pollution Standards.

- c. Water Pollution Standards.
 - d. Public Water Supplies.
 - e. Solid Waste Standards.
 - f. Illinois Recommended Standards for Sewage Work.
12. **Illinois Purchasing Act:** as amended (Illinois Revised Statutes, Ch. 127, par. 132.1 et seq.).
13. **Montreal Protocol:** compliance with the Montreal Protocol on Substances That Deplete the Ozone Layer.
14. **OSFM:**
- a. Gasoline and Volatile Oils (Illinois Revised Statutes, Ch. 17 1/2, par. 31 et seq.).
 - b. Liquefied Petroleum Gases (Illinois Revised Statutes, Ch. 104, par. 119 et seq.).
 - c. Liquefied Petroleum Gas Containers (Illinois Revised Statutes, Ch. 104, par. 113 et seq.).
 - d. Boiler and Pressure Vessel Safety Act and Rules and Regulations (Illinois Revised Statutes, Ch. 127 1/2, par. 151 et seq.).
 - e. Tactile identification on Certain Elevators (Illinois Revised Statutes, Ch. 111 1/2, par. 3901 et seq.).
 - f. Installation of Elevators (Illinois Revised Statutes, Ch. 111 1/2 par. 4001 et seq.).
 - g. Illinois Rules and Regulations for Fire Prevention and Safety.
 - h. Illinois Fire Prevention and Safety Laws and Fire Protection District Laws.
15. **SOS:**
- a. Ramp on All New or Reconstructed Curbs for Persons Using Wheelchairs. (Illinois Revised Statutes, Ch. 24, "Illinois Municipal Code", Sec. 11-80-11. Public Act 78-322, as amended.)
 - b. Environmental Barriers Act, as amended (Illinois Revised Statutes, Ch. 111 1/2, par 3701 et seq.). (Coordinate with CDB "Illinois Accessibility Code".)
 - c. Lead Poisoning Prevention Act, as amended (Illinois Revised Statutes, Ch. 111 1/2 par. 1301 et seq.). (For dwellings or dwelling units, as defined).
16. **IBC:** Laboratories for Semiconductor Research and Instruction - H6 Classification, Section 9.
17. **STANDARDS:** The following standards are complementary to specified statutorily mandated codes and standards.
- a. AAN: American Association of Nurserymen, Inc.
 - b. ACI: Manual of Concrete Practice
 - c. AGCI/ISPE: Standard Specifications for Water and Sewer Main Construction in Illinois.
 - d. ANSI:
 - 1. ANSI No. A.17.1 with Supplements, American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks.

- 2. ANSI No. A.58.1, American National Standard Minimum Design Loads for Building & Other Structures.
 - e. ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.
 - f. ASHRAE Standard 90.1-2007, Energy Conservation in New Building Design.
 - g. AWWA: American Water Works Association, Water and Sewer Main Construction.
 - h. NFPA: National Fire Protection Association, Current Fire Codes/Standards as may be appropriate to the project.
 - 1. National Electrical Safety Code, latest revision.
 - i. Uniform Building Code, Chapter 9, group H Occupancy, Division 6 Semiconductor Fabrication Facilities.
 - j. UIC Building Standards
- 18.OSFM:**
- a. "Illinois Rules and Regulations for Fire Prevention and Safety", as amended through 9 Ill. Reg. 10009, and as recodified: Comply with NFPA 101 except:
 - b. Mixed occupancies (administrative offices, maintenance areas, etc.): Comply with NFPA 101, 15-1.2, as appropriate for the respective occupancy. (Where NFPA 101 is incorporated by reference, do not incorporate later amendments.)
- 18.IHPA:** Illinois State Agency, Historic Resources Preservation Act, Ill. Rev. Stat. 1989, Chap. 127, Para. 133C21 et seq., and Its Implementing Regulations, 17ILL. Admin. Code, Chap. VI, Part 4180, Rules for the Review of State Agency Undertakings.
- 19.EHSO:** Environmental Health and Safety Office, University of Illinois at Chicago, Hazardous Waste Management Manual.
- 20.SMACNA:** IAQ Guidelines for Occupied Buildings under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
- 21.SCAQMD:**
- a. Rule #1168. Volatile organic compound (VOC) limits listed in the July 1, 2005 and rule amendment dated January 7, 2005
 - b. Rule #113. Architectural Coatings, January 1 2004.
- 22.Green Seal Standard:** Commercial Adhesives GS-36 requirements, October 19, 2000.

END OF SECTION 01 42 00

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION OF TEMPORARY UTILITY SYSTEMS

- Entire Specification at no additional expense to the Project or Owner.
- Heating System:
 1. Provide temporary heating in enclosed areas throughout construction period in order to:
 - a. Facilitate progress of work by all contractors.
 - b. Protect work and products against dampness and cold.
 - c. Prevent moisture condensation on surfaces.
 - d. Provide specified ambient temperatures for installation and curing of finish materials.
 2. Heat office areas as specified in the Contract Documents.
 3. Minimum heating temperatures:
 - a. Minimum temperatures shall be at least that specified in specific specifications sections.
 - b. Unless otherwise specified, areas in temporary enclosures shall be maintained at temperatures between 45 degrees F and 65 degrees F, 24 hours per day, seven days per week.
 - c. Unless otherwise specified, areas in permanent enclosures or during placement of interior finishes (woodwork, flooring, painting, drywall, ceilings, etc.) shall be maintained at temperatures between 60 degrees F and not to exceed 70 degrees F, 24 hours per day, 7 days per week.
- Ventilation System:
 1. Provide specified temporary ventilation in enclosed areas throughout construction period to:
 - a. Facilitate progress of work.
 - b. Protect work and products against dampness and heat.
 - c. Prevent moisture condensation on surfaces.
 - d. Provide suitable ventilation for installation and curing of finish materials.
 - e. Provide adequate ventilating to meet health regulations for safe working environment.
 - f. Prevent hazardous accumulations of dusts, fumes, mists, vapors or gases in areas occupied during construction.
 2. Duration of ventilating operations:

- a. At all times personnel occupy an area, when subject to hazardous accumulations of harmful elements.
- b. Weekly IAQ testing for contaminants may be required by the Owner to determine necessary continuing operation of ventilating system after cessation of work to assure removal of harmful elements.
- c. Continue until final air clearance (for asbestos abatement projects).
- Exterior Lighting:
 - 1. If project work requires outages of any exterior lighting, including building, sidewalk or street lighting, adequate temporary lighting shall be provided for the entire duration of the outage as part of the project.
- Temporary Meter:
 - 1. If it is not possible to use the building's meter, a temporary meter shall be installed. This temporary meter shall meet the reliability and accuracy requirements of the Owner as specified in the Contract Documents, and will be subject to verification by the Owner.

1.2 USE OF PERMANENT AIR HANDLING UNIT (AHU) SYSTEMS FOR CONSTRUCTION PURPOSES

- The use of permanently installed air handling units (AHUs) for temporary ventilating, heating and cooling during construction is only permitted as specified in the Contract Documents.
- See [Section 01 76 00 – Protecting Installed Construction](#) for basic requirements that shall be met if permanent equipment is permitted to be used.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 51 00

SECTION 01 55 00 - VEHICULAR ACCESS AND PARKING

PART 1 – GENERAL

1.1 CAMPUS PARKING AND VEHICULAR ACCESS

- Campus Parking Department: Campus construction and utility projects, by nature, occupy and disrupt various parking facilities and services across campus. The Campus Parking Department oversees such facilities owned by the University of Illinois at Chicago and is in the first floor of the Wood Street Parking Structure located at 1100 South Wood Street, Chicago, Illinois – Room 122.
- Arrangements for Use of University-Owned Parking Facilities: Any use of parking facilities on campus requires arrangements to be made in advance of space occupation. Vehicles or equipment occupying parking facilities without prior arrangement shall be subject to U of I parking regulations and enforcement.
- Arrangements for Closure of Streets, Sidewalks, or Bicycle Facilities: If a project will require closure of any streets, sidewalks, or bicycle facilities, see [Section 013500 – Special Procedures](#) for information regarding traffic closures.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 55 00

SECTION 01 56 00 - TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 SUMMARY

- Use of Barriers and Enclosures: The Contractor shall furnish, erect and maintain temporary barriers, barricades, enclosures, and temporary construction fencing as required for the following:
 1. To protect the health and safety of occupants and the general public from exposure to immediate physical harm as well as to noise, dust, and fumes. Note that this Section does not provide minimum requirements related to Indoor Air Quality.
 2. To protect new and pre-existing adjacent construction from exposure to physical damage, dust, dirt, and water.
 3. To provide security of valuable property.
 4. To protect trees and plants.

1.2 RELATED DRAWINGS

- [Drawing 01 56 00-1, Tree Protection Fencing Requirements](#)

PART 2 - PRODUCTS

2.1 GENERAL FABRICATION

- Substantial Construction: Barriers and enclosures shall be of adequately substantial construction to serve their purpose without failure throughout the duration of their use. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards.
- Rigid Fencing: The general public, as well as adjacent lawns and plantings, shall be protected from harm by the installation of continuous, durable, rigid fencing at the limit lines of each construction area.
- Tree Protection: Existing trees that are adjacent to a construction site shall be protected from damage by the installation of durable, rigid 6 foot high fencing at the drip line of each tree.

PART 3 - EXECUTION

3.1 BASIC REQUIREMENTS

- Install facilities of a neat and reasonable uniform appearance, structurally adequate for required purposes.
- Install barriers and enclosures so as to not create new hazards such as tripping or protrusions that might be a source of safety concern to pedestrians or passersby.
- Establish reasonable alternative access when necessary due to placement of barriers.
- Maintain barriers during entire construction period.
- Relocate barriers as required by progress of construction.

3.2 TREE AND PLANT PROTECTION REQUIREMENTS

- Preserve and protect existing trees and plants at site which are designed to remain, and those adjacent to site.
- Consult with OCP Project Manager for removal of agreed-on roots and branches which interfere with construction.
 1. Employ a qualified tree surgeon to remove, and to treat cuts.

- Provide temporary barriers to a height of six feet, around each, or around each group, of trees and plants. The barriers shall be placed at the drip line of each tree.
- Protect root zones of trees and plants:
 1. Do not allow vehicular traffic or parking.
 2. Do not store materials or products.
 3. Prevent dumping of refuse or chemically injurious materials or liquids.
 4. Prevent puddling or continuous running water.
- Carefully supervise excavating, grading and filling, and subsequent construction operations, to prevent damage.
- Replace, or suitably repair, trees and plants designated to remain which are damaged or destroyed due to construction operations. Any damage and any necessary replacements will be evaluated by OCP Project Manager and UIC Facilities Management.

3.3 REMOVAL

- Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by the OCP Project Manager.
- Clean and repair damage caused by installation, fill and grade areas of the site to required elevations and slopes, and clean the area.

END OF SECTION 01 56 00

SECTION 01 58 13 – PROJECT SITE SIGNAGE

PART 1 -GENERAL

1.1 SUMMARY

- The sign erected at the site of new buildings and those having major renovations and/or additions, approved by the Board of Trustees, shall receive a non-permanent sign to remain in place through construction. This sign is to be erected prior to the start of construction and removed prior to substantial completion.
- The sign shall be 4 feet by 8 feet, the project AE shall be responsible for the design of the construction sign as well as the location and method of installation, and shall be included in the bid documents
- The cost of the construction sign and the installation will be included as part of the project budget.

1.2 SUBMITTAL

- The sign copy shall be submitted to the UIC OCP Project Manager for review and acceptance.

PART 2 - PRODUCTS

2.1 GENERAL

- The copy on the construction sign shall include, at a minimum, the items listed below in order of placement on the sign.
 1. Official name of the project as approved by the Board of Trustees
 2. Date of construction (date the initial construction contracts were approved by the Board of Trustees)
 3. University of Illinois at Chicago
 4. Names of the members of the Board of Trustees serving at the time the project was approved, plus those additional members on the Board at the time construction contracts were awarded. The Governor(s) in office at the time shall be listed, with "ex-officio" following the name(s).
 5. The President of the University
 6. The Chancellor of the campus
 7. The Professional Services Consultant
 8. The General Trades Contractor (or contractor with assigned subcontractors, if different)
 9. Office for Capital Programs, Name of Project Manager, Telephone Number, E-Mail Address
 10. Sources of Financing

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 58 13

SECTION 01 61 00 - COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 ENGLISH UNITS

- All equipment, including pipe and fittings, shall be supplied in English units. The submittal of metric equivalents is not allowed.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 61 00

SECTION 01 74 00 – PROGRESS CLEANING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- These requirements supplement General Conditions. Refer to General Conditions for additional requirements. General Conditions to take precedence if requirements differ.
 1. See General Conditions and modifications specified in the Special Conditions for each individual Contractors' specific cleaning requirements.
- Each Contractor: Execute cleaning, during progress of the work and at completion of the work, as required by Contract Documents.

1.02 RELATED SECTIONS

- Cutting and Patching: Section 01 73 29.
- Cleaning for Specific Products or Work: Specification section for the work.

1.03 CLEANING AND DISPOSAL REQUIREMENTS

- Standards: Maintain project in accord with the following safety and insurance standards:
 1. Applicable Federal and State Requirements.
 2. National Fire Protection Association.
- Hazards Control: Each Contractor shall comply with the following requirements:
 1. Store volatile wastes in covered metal containers, and remove from premises daily.
 2. Prevent accumulation of wastes, which create hazardous conditions.
 3. Provide adequate ventilation during use of volatile or noxious substances.
- Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 1. Do not burn or bury rubbish and waste materials on project site.
 2. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary sewers.
 3. Do not dispose of waste into streams or waterways.
 4. Wet down dry materials and rubbish to prevent dust.
- Clean streets, highways, and private properties of all mud, earth, rubbish, rocks, refuse or other debris of any kind resulting from such work or related transportation to and from the work site.

PART 2 - PRODUCTS

2.01 MATERIALS

- Select and use cleaning materials and equipment with care to avoid scratching, marring, defacing, staining or discoloring surfaces cleaned.
- Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.
 1. Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

- Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

- Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
- Each Contractor
 1. Provide, maintain and empty 55 gallon metal and dumpster type containers for collection of waste materials, debris and rubbish. Locate containers as directed in General Conditions. These containers will be utilized by all Contractors and their subcontractors.
 - a. Provide containers with adequate capacity to accommodate anticipated needs. If containers do not have adequate capacity, increase intervals of waste removal or capacity of containers until adequate capacity is provided.
 2. At reasonable intervals during progress of Work, but in no case less than once a week, dispose of waste materials, debris and rubbish.
 3. Direct Special Attention To:
 - a. Provide non-staining layout lines and other markings on masonry and concrete. Use chalk lines wherever possible and remove when no longer needed.
 - b. Remove all stains from concrete surfaces, including floors.
 - c. Shop marks shall not appear on exposed surfaces of any item.
 - d. Remove concrete, mortar and paint spatters.
 - e. Clean both brick and concrete unit masonry.
 - f. Protect aluminum frames during construction and thoroughly clean upon completion of the installation.
 4. Clean interior surfaces before start of finish painting and continue cleaning on an as-needed basis until painting is finished.

5. Vacuum interior building areas where work is performed prior to painting and other finish work. Continue vacuum cleaning on an as needed basis until building is ready for occupancy.
- Heating/Piping/Temperature Control and Ventilation and Ductwork Contractor: Coordinate and protect interior of ductwork during construction from accumulation of dirt, dust or debris.
 - All Contractors
 1. Site: Maintain Project site free of waste materials and debris.
 2. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 3. Remove liquid spills promptly.
 4. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
 5. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
 6. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.
 7. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
 8. Clean trash from all chases and concealed spaces before final enclosure.

3.02 FINAL CLEANING

- General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
 1. Leave Project clean and ready for occupancy.
- Each Contractor: At the completion of their branch of the work, remove all surplus material, false work, temporary structures, including foundations thereof, plants of any description and debris of every nature resulting from their operations and put the site in a neat and orderly condition.
- General Trades Contractor Requirements
 1. Conform to requirements of General Conditions.

2. Employ experienced workers, or professional cleaners for final cleaning.
3. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
4. Clean exposed interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.
5. Clean each side of transparent materials, including mirrors and glass in doors, exterior glass and windows. Remove glazing compounds and other noticeable, vision obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
6. Sweep concrete floors broom clean in unoccupied spaces.
7. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
8. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior surfaces, including light fixtures and lenses; polish surfaces so designated to a shine finish.
9. Clean finishes free of dust, stains, films and other foreign substances.
10. Clean transparent and glossy materials to a polished condition; remove foreign substances. Polish reflective surfaces to a clear shine.
11. Remove temporary protection and labels not required to remain
12. Clean surfaces of equipment; remove excess lubrication.
13. Remove debris, rubbish, dirt, etc. from open concealed spaces, chases and above ceilings.
14. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
15. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
16. Remove waste, foreign matter, and debris from roofs, gutters, areaways, and drainage systems.
17. Site/Exterior Items: Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - a. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - b. Rake grounds that are neither planted nor paved to a smooth, even textured surface.
 - c. Remove tools, construction equipment, machinery, and surplus material from Project site.

- d. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.
- Plumbing Contractor: Clean plumbing fixtures to a sanitary condition.
- HVAC Contractor
 1. Clean dirt and dust from interior of air handling units before installing final filters. Wipe down the exterior surfaces of all HVAC equipment located in Mechanical Rooms and spaces.
 2. Clean permanent filters of ventilating equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.
- Electrical Contractor
 1. Clean dirt and debris from interior of all electrical panels and user accessible electrical enclosure boxes prior to installation of covers or in the case of hinged access doors, before final cleaning of adjacent space.
 2. Clean and polish lighting fixture lenses.
 3. Clean the exterior surfaces of all switchgear located in Mechanical and Electrical Rooms and spaces.
- Maintain cleaning until Final Completion.
- Prior to Final Completion, or Owner occupancy, Contractor shall conduct an inspection of sight exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION – 01 74 00

SECTION 01 74 23 - FINAL CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDE

- Coordinating Contractor: Provide all final cleaning including for the Work of assigned Contractors.
 1. At completion of work remove all waste, debris, rubbish, tools, equipment, machinery and surplus materials. Clean all sight exposed surfaces; leave work clean and ready for occupancy.

1.2 RELATED REQUIREMENTS

- Specified elsewhere:
 1. [01 35 46 – Indoor Air Quality Procedures](#)
 2. [01 74 00 - Progress Cleaning.](#)

1.3 SAFETY REQUIREMENTS

- Comply with the requirements of Authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
- Cleaning agents shall meet Green Seal GS-37 Standards.
- Floor cleaners shall comply with the California Code of Regulations maximum allowable VOC content.
- Disposable paper products, supplies and trash bags shall meet the minimum requirements of the US Environmental Protection Agency's Comprehensive Procurement Guidelines.
- If the Green Seal GS-37 Standard is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- General: Provide final cleaning. Do not conflict with related Project Sections. Resolve with AE should any conflicts arise.
- Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial

building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. If final cleaning is delayed until final acceptance, revise subparagraph and associated subparagraphs below.
 - a. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

[Note to AE: Below is a sample list of final cleaning requirements. Revise to suit Project.]

1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
4. Remove tools, construction equipment, machinery, and surplus material from Project site.
5. Remove snow and ice to provide safe access to building.
6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
8. Sweep concrete floors broom clean in unoccupied spaces.
9. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
10. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
11. Remove labels that are not permanent.
12. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

13. [Note to AE: Revise seven subparagraphs below to suit Project. Check for conflict or duplication with provisions in other Sections, particularly Divisions 20 through 29].
14. Remove grease, dust, dirt, stains, labels, fingerprints, protection and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to specified finish.
 - a. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces to ensure performance.
15. Contractor vacuum clean and mop all surfaces of pedestal floors and supports, including entire area beneath pedestal floors.
16. Ventilating Contractor shall replace air handling (conditioning) filters if units were operated during construction. Clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
17. Ventilating Contractor shall vacuum clean ducts, blowers and coils.
18. Each contractor maintain finally cleaned areas until project, or designated portion thereof, is accepted by the Owner.
19. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
20. Replace parts subject to unusual operating conditions.
21. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
22. First subparagraph below describes a major work item that may be disruptive to closeout procedures.
 - a. Clean ducts, blowers, and coils if units were operated without filters during construction.
23. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
24. Leave Project clean and ready for occupancy.

[Note to AE: Two paragraphs below represent end of the Work specified in Division 01 Section "Temporary Facilities and Controls." Most projects require these actions at completion of construction. Insert a paragraph on termite inspection where required by local code or desired for Project.]

- Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare and submit a report indicating compliance.

- Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 74 23

SECTION 01 76 00 - PROTECTING INSTALLED CONSTRUCTION

PART 1 - GENERAL

1.1 PROTECTION OF ALL INSTALLED CONSTRUCTION

- Any Component / System that is damaged, including but not limited to accidents or misuse resulting in scratches, dents, abrasions etc., shall be repaired back to “like new condition”, otherwise the same equipment shall be replaced with new equipment prior to “Final Acceptance” to the satisfaction of the OCP Project Manager. This applies to all installed construction, including general, mechanical and electrical devices, equipment and systems, regardless of acceptance for use during Construction.
- The Contractor shall only use permanent equipment as specified in the Contract Documents. Specific requests to use permanent equipment other than what is specified in the Contract Documents must first be approved by the OCP Project Manager, A/E and Commissioning Authority prior to such use. This includes the use of devices, equipment and systems, such as elevators or HVAC equipment, during any phase of construction prior to University “Final Acceptance.”
- During the construction process, each Contractor shall provide a written Plan outlining conformance with all Contract Sections and shall ensure that all installed devices, equipment and systems are not exposed to construction environments that are likely to hinder their proper operation/performance or shorten their useful life regardless of desire by Contractor for use prior to “Final Acceptance.”
- All equipment warranties shall be adjusted and / or extended so as to not impact the normal minimum expected warranty duration as expressed or implied within this project in accordance with the Base Bid requirements and without additional cost to the project or the University.

- Protect all components containing fluid(s) from freezing. Ensure all related safeties and necessary controls are active and functioning. Verify with OCP Project Manager, A/E and Commissioning Authority prior to use. This will not constitute “final acceptance” of components or systems.
- Under no circumstance shall any system in whole or part be allowed to operate beyond the design parameters of this project or the respective manufacturer’s limits.

1.2 USE OF PERMANENT AIR HANDLING UNIT (AHU) AND DISTRIBUTION SYSTEMS FOR CONSTRUCTION PURPOSES

- The use of permanently installed AHUs and associated distribution systems for temporary heating and cooling during construction shall only be permitted as specified in the Contract Documents. Specific requests to use permanently installed HVAC equipment other than what is specified in the Contract Documents must first be approved by the OCP Project Manager, A/E and Commissioning Authority prior to such use. Requests shall be considered only after a written plan for temporary use has been provided clarifying satisfactory implementation of the requirements of this Section. Requests do not constitute automatic approval for use.
 1. At no additional cost to the Project or Owner, minimum basic requirements that shall be met if permanent equipment is permitted to be used include:
 - a. Coordinate work with related Air Handling equipment, Duct and Duct Accessory sections.
 - b. All work shall comply with the Commissioning requirements and the LEED requirements for the Project.
 - c. All work on the AHUs shall be permanent, not temporary. This includes unit ductwork and insulation, hot water and chilled water pumps, piping and insulation, unit condensate drains if used for cooling, electrical components and controls.
 - d. Fans and related system components shall not run in such a manner as to allow fans to be in surge or unstable operation nor run within 80% of Maximum RPM.
 - e. Any meters, such as steam or chilled water, shall be operative, installed, calibrated and functioning prior to use. If necessary, a temporary meter shall be installed which meets the same reliability and accuracy requirements as the permanent meter specified in the Contract Documents. [Note to AE: Contact Owner for clarification on accuracy and calibration requirements.]

- f. Controls shall ensure safe operation without risk to the equipment or building. Freeze stats, static pressure safety switches, control dampers, etc. shall be in operation and successfully functionally tested. A means to send out an alarm in case of unit failure shall be in place.
- g. Perform all specified and manufacturer's start up procedures on all equipment being used, including VFDs. Provide verified results, Data, Reports, Checklists to the Owner's Representative.
- h. A written plan shall be implemented to monitor the systems and ensure adequate changing of filters. This plan shall include in writing the Contractor or Subcontractor who is responsible to monitor and maintain the systems in operation, ensure that the plan is adhered to and respond when there is a failure. It is recommended that this be the Ventilation Contractor.
- i. Air distribution systems shall be aggressively protected from dust during the construction process to ensure that no contamination of the duct system occurs. If air handling equipment is operated during the construction process for any reason (e.g. to provide temporary heat) for any length of time, special provisions shall be made to provide adequate filtration to protect all air handling equipment, distribution and return ductwork from exposure to dust, with filters being changed on a regular and frequent basis. Compliance with all Project LEED requirements and pursuit of credits shall be maintained.
- j. All return ductwork shall be disconnected from the respective supply AHU and capped to prevent contamination. Filters of sufficient ASHRAE spot efficiency shall be used at all AHU entrance(s) and normal filter sections in air handlers during construction use to prevent pass-through of construction dust 3 microns and larger in size even though the Project's filter classification as of occupancy may be less. Adhere to LEED requirements as indicated for Flushout.
- k. Where it is physically impossible to disconnect and mechanically cap respective return ductwork, minimum efficiency filters of a MERV 13 or higher rating shall be installed at all return ducting entrances (or openings to plenum areas) and normal filter sections in air handlers and maintained throughout the construction period to prevent pass-through of construction dust 3 microns and larger in size. Preauthorization from the OCP Project Manager, A/E and Commissioning Authority Owner is required before proceeding.
- l. Pipe flushing shall be completed and report validated with appropriate chemical testing.

- m. All permanent filters shall be installed in the AHU and maintained throughout use. All filtration shall be at the expense of the Contractor.
- n. Manufacturer warranty issues shall be resolved. Warranty extensions may be necessary.
- o. Equipment used for temporary heating/cooling shall be in "like new" condition when turned over to the University.
- p. Comply with LEED Construction IAQ Management plan and SMACNA IAQ Guidelines for Occupied Buildings under Construction.
- q. The Contractor is responsible for meeting the more restrictive indoor air quality conditions during construction as stated in the Contract Documents or throughout the NADCA Standards and Procedures as referenced within the April 8, 2002 edition or newer "NADCA General Specifications for the Cleaning of Commercial Heating, Ventilating and Air Conditioning Systems". It is the responsibility of the contractor to perform cleaning using these NADCA approved cleaning equipment and procedures of all internal duct paths and AHU(s) just prior to final inspection / commissioning for consideration of final acceptance.

1.3 USE OF NEW ELEVATORS FOR CONSTRUCTION PURPOSES (WHEN AN ELEVATOR CONTRACTOR IS CONTRACTED FOR THE PROJECT)

- The use of an installed elevator for use during construction shall only be permitted as specified in the Contract Documents. [Note to AE: Before specifying the use of a new elevator for construction purposes, a project variance request must first be submitted and approved] Prior to use of an installed elevator during any phase of construction, a written plan for temporary use shall be provided to the OCP Project Manager and A/E clarifying satisfactory implementation of the requirements of this Section. Agreement to the written plan for temporary use must be accepted in writing by the OCP Project Manager and A/E, and prior to use of elevator(s) by the Contractors. At no additional cost to the Project or Owner, the minimum basic requirements that shall be met if permanent elevator equipment is used include, but not limited to:
 1. Only elevators designed for C3 freight loading as defined in elevator Code Rule 207.2b may be used for construction purposes subject to care and replacement provisions in this Section.
 2. Any elevator that is not designed and rated for C3 classification shall not be used during construction for construction purposes.
 3. If there is more than one elevator installed, use of an elevator during construction shall be limited to no more than one designated elevator.
 4. The General Work Contractor shall establish a preventive maintenance and service agreement with the installing Elevator Subcontractor. The Contractors shall also obtain a "Temporary Agreement" from Elevator Subcontractor and

submit same to the OCP Project Manager and A/E prior to use of the elevator. This agreement shall include, but not be limited to, statements ensuring that the Elevator(s) system(s) in all respects will be in like-new condition, at the end of the project, in order to pass subsequent inspection/commissioning.

5. The service agreement must meet all requirements of Section 14 20 00 - Elevators (including but not limited to the OCP Project Manager and A/E monitoring the service work and requiring the elevator contractor to provide written documentation signed by the OCP Project Manager and A/E as to the date and type of service/repair provided to the elevator.)
6. The elevator will remain under the service agreement and will remain the responsibility of the General Work Contractors until the elevator and the project are determined to be Substantially Complete.
7. All visible structure and surfaces shall be kept in like-new condition. Any component of the elevator that is damaged, including but not limited to accidents or misuse etc. such as door frames, interior surfaces, thresholds, sills, hall doors and car doors being damaged, scratched, dented, marred etc. shall be repaired back to “like new condition”; otherwise the same equipment shall be replaced with new equipment prior to final acceptance of the elevator to the satisfaction of the OCP Project Manager and A/E.
8. The General Work Contractor shall provide to the OCP Project Manager and A/E a list of proposed materials to be carried on the elevator for approval by the OCP Project Manager and A/E.
9. The elevator(s) shall not be operated in any manner which may cause damage to the respective elevator, its components and finishes, or their respective overall operating system, as determined by the Elevator Manufacturer, including but not limited to:
 - a. Shall not be used to carry heavy construction materials that exceed or equal the maximum load rating.
 - b. Shall not be used to carry any type of demo work, cementitious or gritty substance.
 - c. Shall not be used for any purpose that exceeds the elevator Manufacturer's weight limit.
 - d. Shall not be operated in any manner which will detrimentally affect the Manufacturer's warranty.
10. Filters shall be installed over and around ODP type motors and controllers, including motor drives that use building air to cool their components. All air intakes shall be filtered. TEFC or TENV motors designed in accordance with this project and approved for use by the Elevator System Manufacturer may be used in lieu of providing open type motors and the additional filtration.

11. The elevator shall receive cleaning at regular intervals not to exceed 30 days by the installing Elevator Contractor. This cleaning shall include removal of dust from all moving components including car and counterweight roller guides, hall and car door equipment, hoist cables, deflector sheaves, drive sheave, governor, and brake components. The hoist motor shall be cleaned inside and out so that accumulated dust does not have a deteriorating effect on the motor components. Encoders shall be replaced at the end of construction if they are not of sealed construction. Controller relays and components shall be cleaned, and any air-cooled drive components shall be cleaned and inspected at regular intervals not to exceed 30 days. All controller filters shall be cleaned or changed monthly.
 12. The elevator cab shall be protected with padding, and cleaned on a weekly basis, including vacuuming the floor and cleaning all interior surfaces.
 13. Regardless of the extent of care provided, all damaged components visible or hidden shall be replaced or repaired to new condition.
 14. The General Work Contractor shall establish with the installing elevator contractor a plan for replacement of components specified herein that are required to be replaced at the end of Construction just prior to the final acceptance/inspection period and before the elevator is released to the Owner. At a minimum, hall and car door rollers and gibs shall be replaced. Additionally, the General Work Contractor/Installing Elevator Contractor, in conjunction with the OCP Project Manager and A/E as part of the overall inspection, shall check and inspect all hall and car door rollers and door gibs, and related door operating components for wear. The General Trades Contractor/Installing Elevator Contractor shall replace designated components with new components to provide "like new" assembly and operation subsequent to joint inspection and OCP Project Manager and A/E's evaluation. Ultimately, all components on the elevator shall be in like-new condition when it is inspected for substantial completion and acceptance.
- In the event the installing Elevator Contractor fails to perform the cleaning and inspections required above at the intervals indicated, the elevator shall be immediately removed from use until the required service is completed.
 - OCP Project Manager and A/E Construction Managers shall coordinate requirements for temporary elevator(s) usage and endeavor to accommodate such requirements while minimizing temporary use.
 - The OCP Project Manager may request the early use of the elevator for moving occupants into the building, and in this event the General Work Contractor shall ensure from the Elevator Contractor that the elevator warranty shall begin on the date of the signing of the substantial completion document for the entire project.

1.4 USE OF EXISTING ELEVATORS FOR CONSTRUCTION PURPOSES (NO ELEVATOR CONTRACTOR IS CONTRACTED FOR THE PROJECT)

- The use of an existing elevator during construction shall be strictly prohibited. Any deviation from this policy shall only be permitted by means of an approved variance for the project.

1.5 FINISHES AND FURNISHINGS

- Each Contractor shall ensure that all installed finishes and furnishings are not exposed to construction environments that are likely to mar their appearance or shorten their useful life. For example, carpet and other floor finish surfaces shall not be installed at a stage in the Project, which will result in them being subjected to excessive soiling, spotting, staining, scratching, abrasion, or wetting. Contractor or sub-contractors shall not use any installed furniture item as a bench, ladder or support for work they may be completing in any University space. If such furnishings impede or block assigned work, contractor shall notify Owner for adjustment or removal of said furnishings.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 76 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES AND REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- Administrative and procedural requirements for contract closeout including, but not limited to the following: (as part of Set of Manuals & Documents for Commissioning process)

1. Inspection procedures including Pre-Functional Checklists and Pre-Substantial Checklists.
 2. Functional Testing Procedures (part of Commissioning process)
 3. Project record document submittal set(s)
 4. Operation and maintenance manual submittal set(s).
 5. Submittal set of warranties.
 6. Final cleaning (documentation as defined in Project Cleaning Section).
- Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 1 through 48 and shall be coordinated with this Section.

1.2 RELATED SECTIONS

[Note to AE: Include these sections in the Contract Documents, even though some are not included in the UIC Office For Capital Programs Facilities Standards]

- [Section 01 74 23 – Final Cleaning](#)
- [Section 01 78 23 – Operation and Maintenance Data](#)
- [Section 01 78 39 – Project Record Documents](#)
- Section 01 74 00 - Warranties and Bonds
- [Section 01 79 00 – Demonstration and Training](#)
- Section 01 87 00 - Keys and Keying Schedule
- Section 01 91 13 – General Commissioning Requirements
- Section 23 08 00 –
- Example Indoor Air Quality Management Plan

1.3 RELATED DOCUMENTS

- Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- Exhibits: Pre-Substantial (Verification of) Completion Checklists:
 1. [Exhibit 01 77 00-1, Architectural Requirements](#)
 2. [Exhibit 01 77 00-2, Elevator Requirements](#)
 3. [Exhibit 01 77 00-3, Plumbing Requirements](#)
 4. [Exhibit 01 77 00-4, Heating Requirements](#)
 5. [Exhibit 01 77 00-5, Cooling Requirements](#)
 6. [Exhibit 01 77 00-6, Ventilation Requirements](#)
 7. [Exhibit 01 77 00-7, Controls Requirements](#)
 8. [Exhibit 01 77 00-8, EMS Requirements](#)

9. [Exhibit 01 77 00-9, Electrical Distribution Requirements](#)
10. [Exhibit 01 77 00-10, Lighting Requirements](#)
11. [Exhibit 01 77 00-11, Emergency Power Requirements](#)
12. [Exhibit 01 77 00-12, Fire Alarm Requirements](#)
13. [Exhibit 01 77 00-13, Routine Construction Inspection Report](#)

1.4 INSPECTION PROCEDURES

- Progress Inspections: In addition to AE observations, progress inspections will be conducted by an assigned Office For Capital Programs (OCP) Project Manager and Commissioning Authority Cx) throughout the course of the construction Project. The objective of this inspection is to effectively verify that construction is carried out in accordance with the approved plans and code requirements. [Note to AE: This does not relieve the AE of their responsibility.]
- Substantial Completion and Final Acceptance Inspections: Additional inspections will also be performed by the AE, OCP and Cx in conjunction with Substantial Completion and Final Acceptance.

1.5 SUBSTANTIAL COMPLETION

- Definition: Substantial Completion is that condition which occurs when the Owner accepts the certification of the AE that construction is sufficiently complete in accordance with the Contract Documents so that the Project may be occupied for the use for which it is intended.
- Contractor Notification: When Contractor considers work substantially complete, and after the building commissioning and training, submit written declaration to the AE that Work or designated portion thereof, is substantially complete. Include list of items to be completed or corrected.
- Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 2. Advise OCP Project Manager of pending insurance changeover requirements.
 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Obtain and submit releases permitting OCP Project Manager unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Prepare and submit: Completed Commissioning Manual including but not limited to - Summary {by specification #} Record of Approved Submittals and Samples, Project Record Documents (including but not limited to As-Built Record Drawings, As-Built Record Specifications, Operating and Maintenance Manuals, Certification of No Asbestos Products Incorporated in Project, Completed Punch Lists, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 6. Deliver tools, spare parts, extra materials, and similar items to location designated by OCP Project Manager. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to OCP Project Manager. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records and Specification compliant Final Report.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise OCP Project Manager of changeover in heat and other utilities.
 12. Submit changeover information related to OCP Project Manager occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 15. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 16. Prior to preliminary Substantial Completion and Inspection – Submit:
 - a. Operating and Maintenance Data
 - b. Keys and keying schedule
 - c. Guarantees, Warranties and Bonds
 - d. Completed pre-substantial completion checklists
- Preliminary Inspection: AE will make a preliminary inspection within 7 business days after receipt of Contractor's declaration.
 - Submit a written request for inspection for Substantial Completion. Upon receipt of request, A/E will either proceed with inspection or notify Contractor of unfulfilled requirements. A/E will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by A/E, that must be completed or corrected before certificate will be issued.
 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.
- Upon determining that Work is substantially complete, A/E will:
 1. Punch List: Prepare a punch list of items to be completed or corrected, as determined by the inspection.
 2. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.
 - a. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 - b. Include the following information at the top of each page:
 - i. Project name.
 - ii. Date.
 - iii. Name of AE and OCP Project Manager
 - iv. Name of Contractor.
 - v. Page number.
 - c. Submit list of incomplete items in the following format:
 - i. PDF electronic file.
 - ii. Three paper copies of product schedule or list, unless otherwise indicated. AE, through OCP Project Manager, will return two copies.
 3. Certificate: Prepare and process a certificate of substantial completion, containing:
 - a. Date of substantial completion.
 - b. Punchlist of items to be completed or corrected.
 - c. The time within which punchlist items shall be completed or corrected.
 - d. Date and time the Owner will take occupancy of Project or designated portion thereof.
 - e. Responsibilities of Owner and Contractor for:
 - i. Insurance.
 - ii. Utilities.
 - iii. Operation and maintenance of mechanical, electrical and other systems.
 - iv. Maintenance and cleaning.
 - v. Security.
 - f. Signatures of:
 - i. AE.
 - ii. General Contractor.
 - iii. OCP Project Manager.

- iv. Assigned Contractor.
- Contractor is responsible for the following:
 - 1. Corrections: Complete all Work listed for completion or correction within designated time.
 - 2. Final Cleaning: Perform final cleaning.
- Occupancy: Using Agency will occupy Project or designated portions thereof under provisions stated in the Certificate of Substantial Completion.
- Complete All Work: At time of inspection, should substantial completion not be certified, Contractor shall complete the Work and resubmit declaration in accordance with item the requirements of this Section.

1.6 FINAL ACCEPTANCE

- Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
 - 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and complete operations where required.
 - 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - 3. Submit certified copy of the AE's final inspection list of items to be completed or corrected, endorsed and dated by the AE. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the AE.
 - 4. Submit consent of surety to final payment.
 - 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 6. Submit pest-control final inspection report and warranty.
 - 7. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- Final Inspection: Submit a written request for final inspection for acceptance. On receipt of request, AE and OCP Project Manager will either proceed with inspection with Contractor or/and as appropriate notify Contractor of unfulfilled requirements to ensure completion of all Contract requirements.
- Closeout Documents: AE will prepare and process closeout documents when all Work is considered finally complete in accord with Contract Document requirements including all Deliverable Documentation.
- AE will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- Re-inspection Procedure:

1. The AE will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the AE.
2. Upon successful completion of re-inspection, the AE will prepare a certificate of final acceptance. If the Work is incomplete, the AE will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance. When necessary, reinspection will be repeated.

1.7 WARRANTIES (Commencing other than date of Substantial Completion)

- Submittal Time: Submit written warranties on request of AE for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES" Project name, and name of Contractor.
 4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.
- Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- Operation and Maintenance Data shall be submitted in appropriately sized 3-Ring binders, with dividers, and organized by each piece of equipment or system.
 1. Project Specific Information ONLY
 2. Operation and Maintenance Data shall also be scanned to a disc using the same layout and format described below and included in each 3-Ring Binder
- Operation and Maintenance Data include the following:
 1. Title Page.
 2. Spine Label.
 3. Table of Contents.
 4. Contact Information.
 5. Contents Specific to Type of Manual (Equipment and Systems, or Materials and Finishes).
- Store Operation and Maintenance Data in the field office apart from documents used for construction. Do not use Closeout Submittal Data for construction purposes. Maintain Closeout Submittal Data in good order and in a clean, dry, legible condition. Make all Closeout Submittal Data available at all times for the Owner's and AE's inspections.
- Each Contractor is responsible for obtaining, recording, and maintaining Operation and Maintenance Data applicable to its own Work. The Coordinating Contractor is responsible for coordinating information, where information from more than one Contractor is to be integrated with information from other Contractors to form one Closeout Submittal.

1.2 RELATED SECTIONS

- [Section 01 33 23 – Shop Drawings, Product Data, and Samples](#)
- [Section 01 78 39 – Project Record Documents](#)

PART 2 PRODUCTS

2.1 MANUALS – GENERAL

- Format and organization:
 1. Format:

- a. Binders: Heavy-duty, 3-ring, vinyl-covered binders, in thickness to match contents, sized to hold 8.5"x11" paper. Use multiple binders if contents are over 3" thick.
 - b. Binder dividers: Heavy-paper dividers with plastic-covered tabs for each section.
 - c. Drawings: If oversize drawings are necessary, fold drawings to same size as text pages and use as fold-outs. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes.
 - 2. Organization:
 - a. Separate manuals by Specification Division. No manual should cover more than one Specification Division.
 - b. Divide each Specification Division by Specification Section.
 - c. Divide each Specification Section by piece of equipment (using equipment ID).
- General requirements. Each manual shall contain:
 - 1. Cover and Title Page. Include the following:
 - a. U of I Official Project Name.
 - b. UI of I Official Project Number.
 - c. Words "Operation & Maintenance Manual".
 - d. Specification section covered, including number and name.
 - e. Name of Contractor.
 - f. Date of submittal.
 - g. Short list of contents.
 - 2. Spine Label. Include the following:
 - a. U of I Official Project Name.
 - b. Words "Operation & Maintenance Manual."
 - c. Specification section covered, including number and name.
 - d. Date of submittal.
 - 3. Table of Contents. Include the following:
 - a. List each item included in the manual, identified by product name and specification section
 - 4. Contact Information. Include the following:
 - a. List each Contractor's name, contact, address, phone, and e-mail for each item covered, including emergency contact information.
 - 5. Contents specific to Manual Type. See section below.
- Manual Type: Equipment and Systems Manuals. Include the following contents:
 - 1. Manufacturer's Product Data for each major component. Include the following:
 - a. Significant design criteria.

- b. List of equipment components.
 - c. Product name, model number, and serial number, if applicable. If Product Data sheets contain information about multiple products, mark each sheet to identify product incorporated into Work in such a way as to be reproducible with black and white copying.
 - d. Manufacturer's name.
 - e. Equipment function description.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - i. Engineering data and tests.
 - j. Wiring, piping and control diagrams. Include color-coding key where required.
 - k. Troubleshooting guide. Preferably include chart with three columns (malfunction, probable cause, recommended action). Troubleshooting instructions shall be predicated upon a logical effect-to-cause philosophy and a rapid replacement procedure to minimize equipment downtime.
 - l. License requirements.
 - m. Manufacturer's Installation Instructions for each major component. Include instructions that ship with the unit.
2. Manufacturer's Operational Instructions for each major component. Include the following:
- a. Operating procedures, including sequence of operation for normal, seasonal, and special condition operations. Include start-up, break-in, and shut-down procedures. Refer to controls and indicators by nomenclature consistent with that used on panels and in control diagrams.
 - b. Operating instructions that ship with the unit.
 - c. Checklists.
 - d. Operating logs, if recommended.
 - e. Precautions against improper use.
3. Supplemental Shop Drawings for entire equipment or system. Coordinate with information in Record Contract Drawings to ensure correct illustration of completed installation. Illustrate the following:
- a. The relationship of equipment components and system components to each other.
 - b. Control sequences.
 - c. Flow diagrams.

- d. If control drawings, include full points list, set point schedules, and set points after calibrations performed by contractor (not commissioning).
4. Manufacturer's Preventive Maintenance Instructions for each major component. Include the following:
- a. Maintenance procedures, including test and inspection instructions, disassembly instructions, cleaning, minor repairs, and adjusting instructions that detail essential maintenance procedures. Include test points and values, and sensor calibration requirements and methods.
 - b. Maintenance and service schedules, including service and lubrication requirements, list of lubricants for equipment, cleaning, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - c. Spare parts documentation, including spare parts list, parts diagrams, complete nomenclature and number of parts, replacement and repair parts, parts identified and cross-referenced to maintenance documentation, and local sources of maintenance materials and related services.
 - d. Maintenance service contracts, including copy of service agreement and service agent name and contact information.
 - e. Exploded equipment views.
 - f. Precautions against improper maintenance.
5. Warranties and Bonds. Include the following:
- a. Warranty and/or bond.
 - b. List of circumstances and conditions that would affect validity of warranty or bond.
6. Functional Performance Tests. Include the following:
- a. Start-up record.
 - b. Copies of required tests, when required in Divisions 2 through 48 or when otherwise applicable (not including Test & Balance Reports – [see section 01 33 23](#)), including submitting additional copies directly to governing authorities.
7. Safety Precautions. Include the following:
- a. List of precautions to be following before, during, and after operation, maintenance, or emergencies.
 - b. Provide equipment- and/or system-specific Lockout/Tagout procedures for the isolation of hazardous energy and materials including but not limited to electrical, hydraulic, chemical, mechanical, pneumatic, thermal, gravitational, potential, and hazardous materials. Include the following:
 - i. Equipment ID(s) and description(s)

- ii. Location: building name, building number, location in building
 - iii. Steps for each type of energy source required for isolation
 - iv. Equipment ID
 - v. Lockout location (description and photo or diagram)
 - vi. Energy source
 - vii. Lockout device(s)
 - viii. Lockout method
 - ix. Verification
- 8. Emergency Procedures. Include the following:
 - a. Emergency response instructions, organized by type of emergency, including equipment trouble indications and specific response procedure.
 - b. Operating instructions for partial equipment failure conditions.
- Manual Type: Materials and Finishes. Include the following contents:
 - 1. Manufacturer's Product Data. Include the following:
 - a. Product name and model number. If Product Data sheets contain information about multiple products, mark each sheet to identify product incorporated into Work in such a way as to be reproducible with black & white copying.
 - b. Color, pattern, size and texture.
 - c. Material and chemical composition.
 - d. Reordering information for specially manufactured products.
 - 2. Manufacturer's Maintenance Procedures. Include the following:
 - a. Inspection procedures.
 - b. Schedule for maintenance.
 - c. Types of cleaning agents.
 - d. Methods of cleaning.
 - e. Schedule for cleaning.
 - 3. Manufacturer's recommended Repair Materials and Sources. Include the following:
 - a. List of repair materials.
 - b. List of local sources of materials and related services.
 - c. Repair instructions.
 - 4. Warranties and Bonds. Include the following:
 - a. Warranty and/or bond.
 - b. List of circumstances and conditions that would affect validity of warranty or bond.

PART 3 EXECUTION

3.1 RECORDING

- During construction, maintain a set of Operation and Maintenance Data specifically for the purpose of creating Close-out Submittals, separate from the set used for construction.
- Maintain Operation and Maintenance Data in good order and in a clean, dry, legible condition.
- Mark Operation and Maintenance Data to indicate actual work details.
- Mark important additional information that was either shown schematically or omitted from Contract Documents.
- Mark Operation and Maintenance Data completely and accurately.
- Mark Operation and Maintenance Data in such a way as to be reproducible in black and white copying.
- Make all Operation and Maintenance Data available at all times for the Owner's and AE's inspections.

3.2 RESPONSIBILITY FOR MARKUP

- The individual or entity responsible for the Work involving the equipment, system, or product is responsible for maintaining Operation and Maintenance Data Closeout Submittals.
 1. Record changes and modifications as they occur – do not wait until the end of the Project.
 2. Record and check the markup prior to enclosing concealed installations.

3.3 SUBMISSION AND DISTRIBUTION

- After completing Work, prepare Operation and Maintenance Data Closeout Submittals for submission.
 1. Each Contractor is responsible for submitting Operation and Maintenance Data Closeout Submittals to the Coordinating Contractor.
 2. Each Contractor shall submit all Operation and Maintenance Manuals related to each Contractor's particular Work, whether or not changes and additional information were recorded.
 3. For equipment that requires commissioning, Coordinating Contractor shall submit two (2) draft copies of the Operation and Maintenance Manual to the AE for review by the AE and Contracted Commissioning Agent within sixty (60) calendar days after review of equipment shop drawings. Copies will be returned to the Coordinating Contractor within thirty (30) days after receipt by the AE and Contracted Commissioning Agent, along with review comments. Manuals must

be submitted no later than thirty (30) days prior to final requirements in paragraph 4.

4. Prior to Substantial Completion, the Coordinating Contractor shall submit to the AE three (3) copies and (3) discs of each Operation and Maintenance Manual.
5. Transmit each submittal by use of a transmittal form.

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DEFINITIONS

- Record Documents – As-built Contract Drawings and As-built Specifications, completed by the Contractor.
- As-built Contract Drawings or Contract Specifications – Drawings or specification section of the Project Manual marked-up (a.k.a. “red-lined”) by Contractors to indicate work as completed that deviates from work as designed, and changes from Addendum, Change Orders, Requests for Information (RFIs), Architect’s Supplemental Instructions (ASIs), or Request For Proposals (RFPs).
- Record Contract Drawings or Contract Specifications – Drawings or specification section of the Project Manual showing work as completed, compiled (incorporating all Contractor As-built Drawings) by the AE.

1.2 SUMMARY

- Record Documents required include the following:
 1. As-built Contract Drawings.
 2. As-built Specifications.
- Store Record Documents in the field office apart from documents used for construction. Do not use Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition. Make all documents and samples available at all times for the Owner’s and AE’s inspections.
- Each Contractor is responsible for obtaining, recording, and maintaining as-built information for its own Work. The Coordinating Contractor is responsible for coordinating information, where information from more than one Contractor is to be integrated with information from other Contractors to form one combined record.

1.3 RELATED SECTIONS

- [Section 01 33 23 – Shop Drawings, Product Data, and Samples](#)
- [Section 01 78 23 – Operation and Maintenance Data](#)

PART 2 PRODUCTS

2.1 AS-BUILT CONTRACT DRAWINGS

- Mark As-built Contract Drawings to show the actual installation where the installation varies from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to, the following:
 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 2. Locations of concealed internal utilities and appurtenances.
 3. Actual equipment locations.
 4. Revisions to routing of piping and conduits.
 5. Duct size and routing.
 6. Depths of foundations below the first floor.
 7. Revisions to electrical circuitry.
 8. Dimensional changes to the Drawings.
 9. Revisions to details on the Drawings.
 10. Details not on original Contract Drawings
 11. Changes made by Addendum, Change Orders, Requests for Information (RFIs), Architect's Supplemental Instructions (ASIs), or Request For Proposals (RFPs).

2.2 AS-BUILT SPECIFICATIONS

- Mark As-built Specifications to show Addenda, Change Orders, Requests for Information (RFIs), Architect's Supplemental Instructions (ASIs), or Request For Proposals (RFPs).

PART 3 EXECUTION

3.1 RECORDING

- During construction, maintain a set of As-built Documents specifically for the purpose of creating As-built documents, separate from the set used for construction.
- Maintain As-built Documents in good order and in a clean, dry, legible condition.

- Mark As-built Documents to indicate actual work done that deviates from the Contract Drawings.
- Mark important additional information that was either shown schematically or omitted from Contract Documents.
- Mark As-built Documents completely and accurately.
- Mark As-built Documents with red erasable colored pencil or approved electronic format. Use other colors to distinguish between changes for different categories of the Work at the same location. All marks shall be photo-reproducible.
- Reference any changes to the Contract, including but not limited to Addenda, Change Orders, Change Directives, Supplemental Instructions, and other issued modifications. Use specific document numbers.
- Make all documents and samples available at all times for the Owner's and AE's inspections.

3.2 RESPONSIBILITY FOR MARKUP

- The individual or entity who obtained as-built data, whether the individual or entity is the installer, contractor, subcontractor, or similar entity, shall record the markup.
 1. Record changes and modifications as they occur – do not wait until the end of the Project.
 2. Record and check the markup prior to enclosing concealed installations.

3.3 SUBMISSION AND DISTRIBUTION

- After completing the preparation of As-built Drawings, prepare the drawings for distribution.
 1. Each Contractor is responsible for submitting original As-built Drawings to the Coordinating Contractor.
 2. SITE UTILITIES: Within ten (10) working days of completion of site utilities, the Coordinating Contractor shall submit to the AE one (1) CD with scanned color

copies of each As-built Contract Drawing that shows site utility improvements, saved one sheet per file.

3. Prior to Substantial Completion, the Coordinating Contractor shall submit to the AE one (1) set of each As-built Contract Drawing and Specification Section in final form and one (1) CD with scanned color copies of each sheet, saved one sheet per file.
4. Submit all Drawings related to each Contractor's particular Work, whether or not changes and additional information were recorded. Organize the copies into manageable sets with paper cover sheets. Cover sheets will include U of I Project Name, U of I Project Number, Work covered, and date.
5. Transmit each submittal by use of a transmittal form.

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1 RELATED SECTIONS

[Note to AE: Include the sections listed below, in addition to sections to cover Coordination, Project Schedules and Warranties and Guarantees.]

- [Section 01 33 23 – Shop Drawings, Product Data, and Samples](#)
- [Section 01 77 00 – Closeout Procedures](#)
- [Section 01 78 39 – Project Record Documents](#)
- Section 01 91 13 – General Commissioning Requirements

1.2 SCOPE OF TRAINING

[Note to AE: Edit this paragraph to be project-specific].

- Training must include both classroom and on-the-job (hands-on) instruction by qualified manufacturer's representatives, vendors, installation/service technicians, and operation personnel having the necessary knowledge, experience, and teaching skills.
 1. Scheduling must be coordinated and confirmed with the OCP Project Manager prior to Substantial completion.
 2. In addition to respective Sections where specified, a minimum of one (1) full day of onsite classroom style instruction is required.
 3. In addition to respective Sections where specified, a minimum of one (1) full day of on-the-job (hands-on) instruction is required.
- The training shall provide comprehensive instruction on the operation and maintenance of building components, equipment, controls, and systems including procedures for routine startup, shutdown, normal operation, abnormal operation, preventive maintenance, troubleshooting, and corrective maintenance.
- All training sessions will be recorded by the Contractor if required by the Contract Documents and seven (7) copies [one copy for each O&M manual] of the recording are to be provided to the OCP Project Manager at the conclusion of the training session. Format for submitted video recording (DVD) shall be determined by the OCP Project Manager.
- Follow-up or post-occupancy training, where specified, shall be planned, scheduled and conducted per the requirements of this specification. This training will focus on seasonal issues that could not be addressed during the initial training and on addressing operational and maintenance issues identified by the Owner since turnover.

1.3 COORDINATION & SCHEDULING

- Training shall not begin until the following items have been completed:
 1. Building systems and equipment are complete and operational.
 2. The OCP Project Manager has received and approved the final submittal copies of the Operation and Maintenance Manuals
 3. The Contractor's proposed training plan and schedule have been approved by the OCP Project Manager.
- The Contractor shall work closely with the Owner's personnel and the CxA in the development and implementation of the training program. This may include preliminary meetings to map out the direction the training will take and development, with OCP Project Manager approval, of the written training materials.
- The minimum specific hours of training time provided for each category of major equipment and systems shall be in accordance with the specification sections pertaining to this equipment or systems. Where training session duration (hours) are not

provided in the specifications, Contractors shall coordinate with the OCP Project Manager for developing the hours of instruction and scope of material to be covered.

- The OCP Project Manager retains the option of redistributing training time, subject to the total time specified. This may include repetition of selected training sessions or provision for follow-up training sessions after occupancy.
- Training must be presented on an 8-hour per day, 5-day per week schedule, with all reading assignments and review to be within this period.
- Mutually agreeable dates for training shall be arranged with OCP Project Manager, but the training shall be completed before occupancy or final acceptance.
- Specific schedules for all training sessions must be coordinated in advance with the Owner.

1.4 TRAINING PROGRAM AND MATERIALS

- The Contractor will submit a written training program outlining the proposed scope of training, training materials and instruction schedule for review and approval by the OCP Project Manager approximately 30 days before the scheduled completion of the work for which training is to occur.
- The Commissioning Team will provide sample training session guidelines and agendas for use by the Contractors in developing their training programs where applicable.
- Copies of training materials furnished by the Contractor as part of their training program shall become the property of the Owner. This includes but is not limited to:
 1. All lesson plans, teachers' guides or training aids used to instruct the students. One complete set shall be given to the Owner.
 2. All written materials e.g. workbooks, manufacturers' instructions, brochures, student tests, charts or other printed or photographed visual aids. Three (3) sets with one complete reproducible master shall be given to the Owner.
 3. All audio visual materials (e.g. digital recordings). Three sets shall be given to the OCP Project Manager.

1.5 INSTRUCTOR QUALIFICATIONS

- Credentials of training instructors are subject to review and approval by the OCP Project Manager.
- Instructors must have knowledge and experience with the equipment on which they are providing training.
- Instructors must be familiar with the organization and content of Operation and Maintenance Manuals for the equipment on which they are providing training.
- Instructors for controls must be knowledgeable and familiar with the specific controls equipment, project applications, and specific sequences of operation for this project.

1.6 CLASSROOM TRAINING FACILITIES

- Locations for classroom training sessions shall be coordinated and scheduled with the OCP Project Manager. All training shall be conducted on-site.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION 01 79 00

This section of the Building Standards establishes minimum requirements only.
It should not be used as a complete specification