FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY

PROJECT MANUAL

for the

Recency Ballroom Restroom Renovation
Bid Package: 2025-06

Technical Specifications Prepared By:

Schooley Caldwell

October 23, 2025

NOTICE TO BIDDERS
FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY
Regency Ballroom Restroom Renovation

Sealed proposals will be received by the Franklin County Convention Facilities Authority, hereinafter referred to as the "Owner" of the Greater Columbus Convention Center ("GCCC"), 400 N. High St., Columbus, Ohio 43215 until **Thursday November 13, 2025 at 3:00 PM** local time and will be publicly opened and read aloud immediately thereafter, for the furnishing of materials and performing the labor for the execution and construction of:

Bid Package 2025-06 – Regency Ballroom Restroom Renovation

Owner's Estimate: $1,000,000

in accordance with specifications prepared by Schooley Caldwell. All information for bidders, including the Project Manual, Form of Proposal, plans, technical specifications, Contract Bond and other contract documents may be examined at the following offices:

Franklin County Convention Facilities Authority
The Greater Columbus Convention Center
400 N. High Street, 4th Floor
Columbus, Ohio 43215

Requests for copies of bid documents as well as questions regarding plans and specifications should be addressed to Jordan Edmonds, In-House Counsel, Franklin County Convention Facilities Authority, email: jedmonds@fccfa.org.

No bidder may withdraw their bid within 60 days after the actual date of the bid opening, except as provided for in the Project Manual.

Each proposal must be accompanied by a Bid Guaranty and Contract Bond in the exact form included in the Project Manual and meeting the requirements of Section 153.54 of the Ohio Revised Code.

State of Ohio prevailing wage rates and Equal Employment Opportunity requirements are applicable to this bid invitation for all work performed pursuant to this contract.

The Franklin County Convention Facilities Authority reserves the right to waive any informalities or in its sole discretion, to reject any or all bids.

Bids shall be sealed and delivered on or before November 13, 2025, at 3:00 PM EST to:

Franklin County Convention Facilities Authority
400 North High Street, 4th Floor
Columbus, Ohio 43215

INSTRUCTIONS TO BIDDERS

GENERAL REQUIREMENTS & INFORMATION

a) Bidder shall inspect all plans and specifications and visit the site of the work to verify existing conditions and to become familiar with the conditions under which the work will be performed.

b) The Form of Proposal, Bid Guaranty, Responsibility Analysis Form, Project Schedule, and all other required submittals, each fully executed, are to be submitted in sealed form and addressed to the Franklin County Convention Facilities Authority as provided for in the Notice to Bidders. **Interested bidders must provide one original and three hard copies of all required submittals.**

c) Owner & Architect:

1) The Owner is:

Franklin County Convention Facilities Authority (FCCFA)
400 North High Street, 4th Floor
Columbus, Ohio 43215-2096
Phone: 614-827-2800

2) The Architect is:

Schooley Caldwell
300 Marconi Blvd.
Columbus, Ohio 43215
Phone: 614-628-0300

d) The Project consists of providing all labor, materials, equipment, and services necessary for the timely and proper completion of construction for the renovation of the Regency Ballroom restrooms as described within the Project Manual, drawings, and technical specifications.

Bidders are responsible for visiting the site to determine existing conditions. No plea of ignorance of conditions that exist, or of conditions or difficulties that may be encountered in the execution of the work, as a result of the failure to make such examination and investigation, will be accepted as an excuse for any failure or omission on the part of the bidders to fulfill in every respect all the requirements of the contract, nor will the same be accepted as a basis for any claim whatsoever for extra compensation or for an extension of time.

ARTICLE 1. PROPOSALS

a) For lump sum bids, separate bids will be received for any or all divisions of work shown on the Form of Proposal. If not bidding a given contract on the Form of Proposal mark it "N/A".

b) In the case of unit price bids, the Bidder shall submit bids on all items listed, unless other instructions are noted in the Form of Proposal.

Unless otherwise expressly provided in the Project Manual and related bid documents, such unit prices shall be fully-loaded rates that include, but are not limited to, all overhead, profit, labor, materials, equipment, services, insurance and bonding costs necessary for the timely and proper installation of the item for which the unit prices are requested. The unit prices quoted in the proposal shall be the basis for any change orders entered into under the contract, unless the Owner determines that the use of such unit prices will cause substantial inequity to either the bidder or the Owner.

c) **The Proposal shall contain the following documents:**

1) The Form of Proposal (bid)
2) The Bid Guaranty
3) EEO Certification Clause
4) Non-Discrimination Policy Compliance
5) Contractor's Review Certificate
6) Manufacturer's Declaration and Subcontractor Declaration
7) Declaration of Insurance
8) Project Schedule
9) Responsibility Analysis Form

d) The wording of the Form of Proposal shall be used without change, alteration, or addition (except as provided for in the Project Manual). Any other change in the wording may cause the bid to be rejected; however, the Owner reserves the right to waive any informalities not affecting the substance of the bid.

e) The forms used in submitting the bid shall be those furnished by the Owner in the Project Manual.

f) The bid shall contain the Bid Guaranty meeting the requirements of Section 153.54 of the Ohio Revised Code.

g) Bidders shall take the following precautions in preparing bids:

1) Sign the bid. Failure to do so shall result in rejection of the bid. Bids shall be signed with the name typed below the signature. A bidder that is a corporation shall sign its bid with the legal name of the corporation followed by the name

of the state of incorporation and the legal signature, including title, of an officer authorized to bind the corporation to a contract.

2) Alternates:

The Owner may request bids on alternates and, the bidder should include the cost of any requested alternates on its Form of Proposal.

Where the Form of Proposal provides for quoting either an addition or deduction for an "Alternate," indicate whether the sum named is an addition or deduction by ruling out the words not applicable. Any alteration or erasure must be initiated by the bidder.

All requested alternates shall be bid by all bidders. If no change in the base bid is required enter "no change". Do not mark with any notation other than the cost change or "no change" (e.g., "N/A" or "No Bid", shall be taken as meaning "No Change" and a cost of $0.00 shall be used in determining the lowest and best bidder and preparation of the contract). If a bidder does not accept a value of $0.00 for any incorrectly marked alternates accepted by the Owner, the bid shall be considered non-responsive and be grounds for the rejection of the bid. At the time of awarding the contract, the Owner will select or reject alternates as it determines is in its best interest.

If, during the progress of the work, the Owner desires to reinstate any alternate not included in the contract, the Owner reserves the right to reinstate the alternate at the price bid by the bidder provided that such action is taken in sufficient time so as not to delay the progress of the work or cause the bidder additional expense.

3) Complete and sign the Equal Employment Opportunity Certification attached to the Form of Proposal.

4) Bidders shall acknowledge and note receipt of addenda on the Form of Proposal.

5) Bids shall not be submitted by facsimile, email, or other electronic forms of transmission.

6) Bids shall be enclosed in a sealed opaque envelope with the bidder's name and the title of the project printed in the upper left-hand corner and addressed as follows: Offices of the Franklin County Convention Facilities Authority, 400 N. High St., Fourth Floor, Columbus, Ohio 43215.

h) All bids are valid for a period of sixty (60) days after the date of opening bids. A bidder for a contract with the Owner may withdraw their bid from consideration if the price

bid was substantially lower than the other bids, providing the bid was submitted in good faith and the reason for the price bid being substantially lower was a clerical mistake as opposed to a judgment mistake and was actually due to an unintentional and substantial quantity of work, labor, or material made directly in the compilation of the bid. Request to withdraw such bid must be made in writing and filed with the Owner within two (2) business days after the opening of bids.

ARTICLE 2. METHOD OF AWARD

a) The Owner will receive bids for each of the contracts as set forth on the Form of Proposal and as defined in the Project Manual.

Subject to the right of the Owner to reject any and all bids and as provided below, the Owner will award a single contract for each of the contracts/bid packages listed in the Project Manual or one or more combined contracts for combination(s) of the bid packages. Bidders must furnish all information requested on or accompanying the Form of Proposal. Failure to do so may result in disqualification of the bid.

b) Determination of Lowest and Best Bid (see Instructions to Bidder's Responsibility Analysis Form):

Subject to the right of the Owner to reject any or all bids, the Owner will award the contract for the work to the bidder submitting the lowest and best bid, taking into consideration accepted alternates. In determining which bid is the lowest and best bid, the Owner may take into consideration not only the amount of the bid but such of the following criteria as it, in its sole discretion, deems appropriate and may give such weight thereto as it deems appropriate:

1) The bidder's financial ability to complete the contract successfully and on time without resort to its Surety;

2) The bidder's prior experience with similar work on comparable or more complex projects;

3) The bidder's prior history of the successful and timely completion of similar projects;

4) The bidder's equipment and facilities;

5) The adequacy, in numbers and experience, of the bidder's work force to complete the contract successfully and on time;

6) The bidder's prior experience on other projects of the Owner, including the bidder's demonstrated ability to complete its work on these projects in accordance with the contract documents and on time, and its ability to work with the Owner.

7) The bidder's compliance with federal, state, and local laws, rules, and regulations, including but not limited to, the prevailing wage law and Occupational Safety and Health Act.

8) All of the foregoing with respect to each of the subcontractors which the bidder intends to use on the Project;

9) Any changes to the sample contract suggested by the bidder; and

10) Depending upon the type of work, other essential factors, as the Owner may determine.

Absent special circumstances, no bidder shall be deemed responsible unless the bidder has been in existence at least thirty-six months.

c) Acceptance of the contract within the 60-day period following the opening of bids automatically assumes that if materials, labor or subcontract cost increases, they shall be absorbed by the successful bidder. Award of contracts beyond the 60-day period shall be reviewed for increased costs after award of the contract only if the cause for delay is no fault of the successful bidder.

d) If, in the opinion of the Owner, the acceptance of the lowest bid is not in the best interest of the Owner, the Owner may accept at its discretion, another bid so opened, or reject all bids and advertise for other bids. Such advertisement will be for such time, in such form and in such newspapers as may be directed by the Owner.

e) No contract shall be awarded if the low bidder is more than 20% below the median of all others bids received for projects where the estimate is $100,000 or more, and no contract shall be awarded if the low bidder is more than 25% below the median of all other bids received for projects where the estimate is less than $100,000, unless the following occurs and/or are reviewed.

1) An interview with the bidder, the purpose of which is to determine what, if anything, has been overlooked in the bid in question, and to analyze the process envisioned by the bidder to complete the work in question.

2) The financial status of the bidder and its Surety based upon certified financial statements submitted by each.

3) Receipt of written confirmation by the Surety that it has reviewed the bid in question.

4) The record of the bidder in performing other public works projects in the past.

If after review and consideration, the acceptance of the lowest and best bid is not in the best interest of the Owner, the Owner may accept another proposal so opened or reject all proposals and advertise for other bids.

f) In accordance with Ohio Revised Code 153.12, no contract will be awarded if the price of the contract exceeds the published estimate by more than twenty percent.

g) If individual and combined contract bids are included on the Form of Proposal and a bidder opts to submit multiple bids, a bidder shall not be permitted to be determined to be the low bidder for any individual contract bid if that bidder withdraws a lower combination contract bid for any reason (including omission of any work item or math/clerical errors).

h) The Owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices on the part of the bidder.

i) After determination of the lowest and best bid, the selected contractor shall receive a Recommendation of Award, a copy of the full unexecuted contract and an unexecuted copy of the Notice of Authority to Proceed ("NTP") with construction. The successful bidder ("Contractor") shall then provide the required items for formal execution of the contract and NTP by the Owner all in accordance with Article 8. If the Project Schedule requires that the Contractor commence work (or make commitments and preparations to commence the work) prior to receipt of the fully executed contract and NTP, the Contractor, in order to meet the requirements of the Project Schedule, shall be solely responsible to notify the Owner in writing 10 business days before the date that such NTP is required. The Owner may direct the Contractor to proceed with the work with an executed NTP before the formal execution of the contract. If the Contractor has met all of the requirements for executing a contract and the Owner chooses not to execute the contract, the Contractor shall be reimbursed for all reasonable costs incurred as a result of starting work under the NTP and prior to receipt of a fully executed contract.

j) No contract shall be entered into until:

1) The Industrial Commission has certified that the corporation, partnership, or person so awarded the contract has complied with Sections 4123.01 to 4123.99 (Workers' Compensation), inclusive of the Ohio Revised Code;

2) If the bidder so awarded the contract is a foreign corporation, the Secretary of State has certified that such corporation is authorized to do business in this state; and, if the bidder so awarded the contract is a non-Ohio person or partnership, then until the bidder has filed with the Secretary of State a Power of Attorney designating the Secretary of State as its agent for the purpose of accepting service of summons in any action brought under Section 153.05 of the Revised Code or under Sections 4123.02 to 4123.99 inclusive, of the Ohio Revised Code.

3) The successful bidder shall notify the Owner, within 3 calendar days after receipt of the Recommendation of Award, the provisions the bidder has made or reasonably can be expected to make in order to meet the provisions of the Owner's Disadvantaged Business Participation Plan. Notification shall include a statement of the bidder's present intention concerning which portions of the contract will be awarded to disadvantaged business subcontractors and materialmen and the identity of the intended subcontractor or materialman, if any. Within such five (5) calendar day period, the successful bidder may request in writing a longer period of time to meet the provisions of the plan. Such request shall set forth the reasons additional time is required. The Owner shall notify the successful bidder in writing of its approval or disapproval of the request. If additional time is approved by the Owner or if formal execution of the contract is delayed due to any failure of the bidder to meet the requirements of the Owner's Disadvantaged Business Participation Plan, the bidder shall remain responsible for all the requirements and timelines of the Project.

4) The required certificates of insurance coverage (as set forth in the contract) and bond are submitted to the Owner.

5) A copy of the contract is forwarded to the successful bidder by the Owner, signed by the successful bidder and returned to the Owner.

6) All requirements of Article 8 herein have been satisfied.

The contract cannot be fully executed until this information is provided. If the bidder fails to provide the documents within the required time, the bidder is solely responsible to meet all Project Schedule requirements regardless of the date of the formal execution of the contract.

ARTICLE 3. BID GUARANTY

a) All Bid Guaranties and Contract Bonds must be satisfactory to the Owner.

b) The Bid Guaranty and Contract Bond meeting the requirements of Section 153.54(B) of the Ohio Revised Code, as furnished by the Owner, shall be used without change of wording.

c) <u>If the amount is left blank, the penal sum of the Bid Guaranty and Contract Bond will be the full amount of the bidder's base bid plus add alternates; alternatively, if completed, the amount must not be less than the full amount of the base bid plus add alternates, stated in dollars and cents. A percentage is not acceptable.</u>

d) The Bid Guaranty and Contract Bond must be signed by an Authorized Agent of an acceptable Surety Bonding Company and by the bidder. The bond must be issued by a surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio. It is essential that the bond be issued by a surety company which

can adequately demonstrate a record of competent underwriting, efficient management, adequate reserves, and soundness of investments.

e) Bid Guaranties and Contract Bonds must be supported by credentials showing the Power of Attorney of the Agent.

f) In lieu of the Bid Guaranty referred to in Article 2(b) above, the bidder may submit the Bid Guaranty provided in Division (C) of Section 153.54 of the Ohio Revised Code, in the form of a Certified Check, Cashier's Check, or Letter of Credit pursuant to Chapter 1305 of the Ohio Revised Code. A Bid Bond is not acceptable for use as a Bid Guaranty.

g) The amount of the Certified Check, Cashier's Check or Letter of Credit shall be equal to 10% of the base bid plus add alternates.

h) The Bid Guaranty shall be payable to the Franklin County Convention Facilities Authority.

i) Bid Guaranties shall be returned to all unsuccessful bidders immediately after the contract is executed.

j) The Certified Check, Cashier's Check or Letter of Credit shall be returned to the successful bidder upon filing of the Bond required in Division (C), Section 153.54 of the Ohio Revised Code. The Performance Bond shall not be deemed "filed" until the Contract is fully executed.

ARTICLE 4. STANDARDS – SUBSTITUTIONS

a) Those articles, devices, materials, forms of construction, fixtures, etc., named in the specifications to denote the kind and quality required shall be known as "Standards" and all bids shall be based on the same.

b) Where two or more "Standards" are named together, the Contractor may furnish any one of the "Standards" named, but the Contractor shall make their selection known to the Owner within thirty (30) days following the award of the contract. Failure to comply with this requirement will automatically hold up payment requests from the Contractor in view of possible improper materials being used on the project. The first "Standard" listed shall be considered as the basis of design. If the Contractor opts to use a named "Standard" other than the basis of design and this results in any necessary modifications to any other element of the contract documents, the Contractor shall be responsible for all associated additional costs.

c) Bidders desiring consideration for the use of material, equipment, etc., not named in the specifications may submit proposals for the substitution of same for "Standards" as specified, using the "Substitution Sheet" attached to the proposal form and listing, for each proposed change: (1) the "Standard" specified, (2) the substitution, and (3) the

change in bid price, (or "no change"). Proposed substitutions must be included on the "Substitution Sheet" to be considered. Complete specifications and descriptions of any proposed substitutions being considered for acceptance shall be furnished to the Owner promptly upon request. Acceptance of substitutes shall be at the sole discretion of the Owner.

d) Any substitution accepted must be incorporated in the formal contract.

e) Substitution shall not affect the determining of lowest and best bid.

f) No substitution will be considered prior to receipt of bids unless written request for approval has been received by the Owner at least **10 days prior to the date for receipt of bids**. A statement setting forth changes in other materials, equipment, or other portions of the work, including changes in the work of other contractors that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Owner's decision of approval or disapproval of a proposed substitution shall be final. If the brand or product is acceptable, the Owner will approve it prior to bidding in an addendum issued by the Owner to all bidders on record.

g) In proposing a substitution, the bidder represents and warrants that each proposed substitution will not result in any changes to the project, including changes to the work of other contractors, or any decrease in the performance of any equipment or systems to be installed in the project and agrees to pay any additional costs incurred by the Owner as a result of a substitution which is accepted.

h) **Following the award of the contract, there shall be no substitutions**, except pursuant to a change order. The Owner in its sole discretion may decline to consider a substitution for a change order.

i) If the specified materials and/or manufacturers are no longer available, it is the bidder's responsibility to notify the Owner during the bidding period. Substitutions made during the construction period resulting from these conditions (i.e., failure of the bidder to notify Owner) will be made solely at the Owner's discretion.

ARTICLE 5. EXAMINATION OF DOCUMENTS

a) Each bidder shall examine all bid documents, including, but not limited to, the Project Manual, Project Schedule, Notice to Bidders, Form of Proposal, addenda, plans, specifications, form contract. etc., for all other divisions of the work as well as its own, noting particularly all requirements which will affect its work in any way. These Bid Documents shall become the Contract Documents, as defined in the contract that governs the relationship between the Contractor and the Owner when the contract is executed. Failure of a bidder to become fully acquainted with the amount and nature of work required to complete its division of the work in conformity with all requirements for the project as a whole will not be considered subsequently as a basis for extra compensation.

b) Should any requirements in the plans and/or specifications for the project, as a whole, appear to a bidder to be in disagreement with those for the part of the work on which the bidder proposes to bid or in the case of a discrepancy in the plans and specifications, a request for clarification, in writing should be addressed to the Owner at least 5 calendar days prior to the date set for opening bids. The Owner will reply to all such inquires through an addendum. Verbal interpretations will not be honored and are not legally binding. The Owner will forward a copy of same to all individuals holding plans and specifications. If, in examining the contract documents, the bidder discovers an apparent violation of the Ohio Basic Building Code, or other applicable statute or regulation, the bidder shall report such apparent violation to the Owner promptly. However, this provision shall not be construed as imposing responsibility on the bidder to ensure conformity of the plans and specifications to the Ohio Basic Building Code and other applicable regulations.

c) No allowance will be made subsequently for any omission, error, or negligence of the bidder.

d) Unless specifically assigned to one contract for all aspects of the project, each bidder is responsible to include all requirements for all sections contained in the Project Manual, and Project Schedule, in the base bid amount. (Contract is not limited to only those specifications sections listed in the contract summary of work).

ARTICLE 6. OPENING OF BIDS

Bids shall be opened and read publicly at the time and place named in the Notice to Bidders. The time for opening bids shall be extended at the discretion of the Owner with no further advertising when an addendum to the plans or specifications is issued within 72 hours of the scheduled bid opening, excluding Saturdays, Sundays and Legal Holidays.

ARTICLE 7. ADDENDA

a) Any explanation, interpretation, correction, or modification of the Project Manual or Bid Documents will be issued in the form of an addendum, which shall be the only means considered legally binding; explanations, interpretations, etc., made by any other means shall <u>not</u> be legally binding. All addenda shall become a part of the contract documents.

b) Bidders shall submit questions to the Owner no later than 5 days prior to the advertised bid date, to allow sufficient time for the Owner to respond. All addenda will be issued except as hereafter provided and mailed or otherwise furnished to persons who have obtained Bid Documents for the project, at least 72 hours prior to the published time for the opening of bids; excluding Saturdays, Sundays, and legal holidays. If any addendum is issued within such 72-hour period, then the time for opening of bids shall be extended one week with no further advertising of bids required.

c) Copies of each addendum will be sent only to the bidders to whom Bid Documents have been issued. Receipt of addenda shall be indicated by bidders in the space provided on the Form of Proposal.

d) Each bidder shall carefully read and review the Bid Documents and immediately bring to the attention of the Owner any error, omission, inconsistency, or ambiguity therein.

e) If a bidder fails to indicate receipt of all addenda through the last addendum issued by the Owner on its Form of Proposal, the bid of such bidder will be deemed to be responsive only if:

1) The bid received clearly indicates that the bidder received the addendum, such as where the addendum added another item to be bid upon and the bidder submitted a bid on that item; or

2) The addendum involves only a matter of form or is one which has either no effect or has merely a trivial or negligible effect on price, quantity, quality, or delivery of the item bid upon.

ARTICLE 8. ADDITIONAL SUBMITTAL REQUIREMENTS

a) Upon receipt of the Notification of Recommendation of Award (NOA), the successful bidder will submit the following to the Owner:

1) One copy of the Executed Contract;
2) Contract Bond;
   a) Including Certificate of Compliance issued by the Department of Insurance, showing the Bonding Company is Licensed to do business in the State of Ohio.
   b) Including a Financial Statement of the Bonding Company.
3) Certificate of Insurance;
4) Completed W-9 Form;
5) Workers' Compensation Certificate (Industrial Commission certification of O.R.C. requirements).

If the bidder fails to provide the documents within the required time, the bidder is solely responsible to meet all Project Schedule requirements regardless of the date of the formal execution of the contract. Failure of the bidder to provide these documents within 15 days of receipt of the NOA may result in rejection of the bid.

b) The successful bidder shall notify the Owner, within three calendar days of receipt of the NOA, of the provisions the bidder has made or reasonably can be expected to make in order to meet the provisions of the Owner's Disadvantaged Business Participation Plan.

c) Within fifteen calendar days of receipt of the NOA or such longer time as may be permitted in writing by the Owner, the apparent low bidder will submit the following to Owner:

1) The list of all proposed subcontractors, suppliers, manufacturers, and vendors.

   After approval by the Owner of the list submitted by the successful bidder, the list shall not be changed unless written approval of the change is authorized by the Owner.

2) Schedule of Values including a breakdown of labor and material for the project, and the sum thereof.

3) A current name of the person or persons proposed to represent the bidder as project manager(s) or superintendent(s).

4) A shop drawing and submittal schedule (includes every submittal requirement in the specifications).

d) Within 15 calendar days of receipt of the NOA, the successful bidder is required to submit a Project Schedule to the Owner which shall, at a minimum, show detailed work operations and durations. The intent of this requirement is to allow the Owner an opportunity to more fully understand how the Contractor intends to complete the detail of the project. This detailed working schedule shall identify workforce requirements and be thoroughly coordinated with the Owner and all other subcontractors. The Contractor shall prosecute its work, at the direction of the Owner, furnishing at all times sufficient skilled workers, materials, and equipment to perform its work to meet the line-item progress required by the Project Schedule, so as not to delay the completion of the whole or any part of the work. The Owner anticipates construction will begin in December 2025 and be completed by May 2026.

ARTICLE 9. TAXES

Materials purchased for use or consumption in connection with the proposed work will be exempt from the State of Ohio Sales Tax as provided for in Section 5739.02 of the Ohio Revised Code and also from the State of Ohio Use Tax, Section 5741.01.

ARTICLE 10. LIQUIDATED DAMAGES

Liquidated damages shall apply to the terms of the contract.

ARTICLE 11. PROJECT SCHEDULE

Each bidder is required to submit a proposed schedule with the bid which shall at a minimum, show work operations and duration.

ARTICLE 12. OWNER'S RIGHT TO WAIVE DEFECTS AND IRREGULARITIES

a) The Owner reserves the right to waive any and all irregularities provided that the defects and irregularities do not affect the amount of the bid in any material respect or otherwise give the bidder a competitive advantage.

b) By submitting a bid, the bidder agrees that (i) the Owner's determination of whether a defect or irregularity affects the amount of the bid in any material respect or otherwise gives the bidder a competitive advantage will be final and conclusive, and (ii) the bidder will pay the Owner's attorneys' and consultants' fees related to any challenge to the bid procedure or process, brought directly or indirectly by the bidder and/or any of its affiliates, which is unsuccessful.

ARTICLE 13. PRE-BID MEETING

A pre-bid meeting and site tour will be held on Thursday October 30, 2025, at 2:00 PM EST. Potential bidders should plan to meet in the FCCFA Offices located on the fourth floor of the Greater Columbus Convention Center at 400 N. High St., Columbus, OH 43215.

ARTICLE 14. CONTINUITY OF CONVENTION CENTER OPERATIONS

The Contractor shall plan and perform all work without creating any interruption or disruption to normal Greater Columbus Convention Center or Hyatt Regency operations and functions. All necessary interruptions and disruptions must be minimized, planned, scheduled, and approved by the Owner. In preparation of the bid, bidders may not assume the use of any activity or operation that will result in the disruption of convention center activities without the prior approval of the Owner.

ARTICLE 15. PREVAILING OR MINIMUM WAGE RATES

a) Each laborer, worker or mechanic employed by the bidder for the work herein specified or by the subcontractor or by other persons performing work for the project shall be paid not less than the prevailing wage rates as determined by the Department of Industrial Relations of the State of Ohio in accordance with Chapter 4115 of the Ohio Revised Code.

b) In the event the wage rate for any labor classification is changed between the time the rates are published herein and the time the work required by the contract is performed, or in the event any class of labor employed is not included in the published schedule of prevailing wages, then the rate prevailing at the time the work is actually performed, as ascertained and determined by the Department of Industrial Relations of the State of Ohio or the US Department of Labor, shall govern the work under the contract. No increase in the contract sum will be allowed for any later increase in the prevailing rates or wages as they may apply to this work.

ARTICLE 16. PAYROLL SUBMITTAL

a) All contractors and subcontractors shall keep full and accurate payroll records covering all disbursements of wages to their employees to whom they are required to pay not less than the prevailing rate of wages, as set forth in the contract documents. Such records shall be preserved for a period of three years from the date of completion of the contract.

b) The Contractor and each subcontractor shall deliver to the Owner a certified copy of their payroll, with each month's payment application for the previous month's weekly payrolls which shall show for each employee paid any wages, their name, current address, social security number, number of hours worked each day during the pay period and the total hours worked for each week, their hourly rate of pay, their job classification, fringe payments, and deductions from their wages. In addition, the Contractor, at the beginning of the performance under the contract, shall give to the Owner a schedule of the dates during the life of the contract with the Owner on which the Contractor is required to pay wages to employees and a complete list of all subcontractors. Upon completion of the contract and prior to final payment, the Contractor and each subcontractor shall file with the Owner an affidavit stating full compliance with Chapter 4115 of the Ohio Revised Code. The Owner will withhold payment of any monthly/partial and/or final payment until all requirements have been met in accordance with the terms of the contract.

ARTICLE 17. INSURANCE

Insurance requirements shall be defined in the contract.

DIVERSITY, EQUITY, AND INCLUSION POLICY

Through the adoption of this Diversity, Equity, and Inclusion Policy ("DEI Policy") the Franklin County Convention Facilities Authority ("FCCFA") affirms its commitment to equal opportunity and non-discrimination in all aspects of its operations including, but not limited to, contracting and procurement, employee recruitment and selection, compensation and benefits, professional development and training, promotions, transfers, layoffs, and terminations. Pursuant to this DEI Policy the FCCFA will not participate in either active or passive unlawful discrimination of any type and will strive to maintain an open, diverse, and inclusive workplace for all employees, officers, contractors, and subcontractors.

It is the position of the FCCFA that discrimination of any kind based upon age, sex, race, color, religion, disability, national origin, genetic information, ethnicity, ancestry, sexual orientation, gender identity or expression, family or marital status, military or veteran status, or any other basis prohibited by the laws of the United States, the State of Ohio, or the City of Columbus ("Protected Status") is prohibited. No person shall be unlawfully denied the benefit of, or otherwise be discriminated against in connection with their employment, the award or performance of any contract, or the modification of any contract or award.

The fundamental tenets of this DEI Policy are as follows:

- All Contractors shall have an equal opportunity to compete with respect to contracting and procurement activities of the FCCFA, regardless of age, sex, race, color, religion, disability, national origin, genetic information, ethnicity, ancestry, sexual orientation, gender identity or expression, family or marital status, military or veteran status, or any other Protected Status;

- No Contractor or FCCFA employee shall have engaged or shall engage in any kind of unlawful discrimination involving age, sex, race, color, religion, disability, national origin, ethnicity, ancestry, genetic information, sexual orientation, gender identity or expression, family or marital status, or any other Protected Status, whether or not such unlawful discrimination is related to the FCCFA or any contract with the FCCFA;

- The FCCFA and any Contractor seeking to do business with the FCCFA shall, whenever possible, craft bid specifications which enable MBE/WBE participation that is consistent with demographics for the City of Columbus;

- The FCCFA through its staff, facility management companies and other contractors will (i) monitor and provide periodic reports to the FCCFA Board of Directors regarding compliance by the FCCFA and its Contractors with this DEI Policy; (ii) collect and record information on the inclusion of minorities and women in their contracting, procurement, and workforce activities; and (iii) analyze data to evaluate the inclusion of minorities and women in the FCCFA's contracting, procurement, and workforce activities. Specific reporting requirements shall include:

- Semi-annual diversity profile updates from all key service partners and facility management companies;
- Documentation of contractor compliance with this DEI Policy in any recommendation of award presented to the FCCFA Board of Directors;
- Monthly board reports describing MWBE participation rates for all ongoing construction projects.

- The FCCFA shall review this DEI Policy periodically to ensure that it effectively promotes and achieves diversity, equity, inclusion, non-discrimination and equal opportunity in connection with the FCCFA's operations, and all contracting and procurement activities; and

- All Contractors and employees shall comply with this DEI Policy. A Contractor's success or failure to comply with this DEI Policy will be a factor in any award of a contract to such Contractor. An employee's success or failure to comply with this DEI Policy will be a factor considered in connection with any disciplinary measures or continued employment with FCCFA.

The FCCFA through its staff, facility management companies and other contractors shall be responsible for implementing, monitoring and evaluating this DEI Policy.

If the FCCFA determines that the objectives of this DEI Policy are not being achieved, the FCCFA Board of Directors may, in their discretion, direct the Executive Director to conduct further investigations into the reasons for not achieving such objectives.

This DEI Policy applies to all contracting and procurement activities of the FCCFA, including contracting for construction, professional and non-professional services and procurement of goods and supplies.

This DEI Policy shall be referenced in each bid and Request for Proposal or Qualifications document issued by the FCCFA. A Contractor's failure to comply with this DEI Policy may result in (a) debarment from participation in future FCCFA contracting opportunities, (b) liability for breach of contract and (c) the enforcement of any other remedies available under the related contract or applicable law.

FORM OF PROPOSAL

Submitted By:_____

on:_____ , 2025

To: Franklin County Convention Facilities Authority
400 North High Street, 4th Floor
Columbus, Ohio 43215-2096

having read the Project Manual, Specifications and examined the Drawings entitled:

Regency Ballroom Restroom Renovation

as prepared by the Franklin County Convention Facilities Authority for the construction of said project and having also received, read and included their provisions in the bid all addenda thereto as follows:

Addendum No:_____ Dated: _____ Addendum No: _____ Dated: _____

Addendum No:_____ Dated: _____ Addendum No: _____ Dated: _____

and having also inspected the site of and the conditions affecting and governing the construction of said project, the undersigned proposes to furnish all materials and perform all labor as specified, described, shown, and required in the Project Manual, Specifications and Drawings for the Work, for the indicated sum:

(NOTE: Fill in all spaces of items being bid and quote the sum in both words and figures.)

ESTIMATE FOR PROJECT
($1,000,000.00)

Total material, labor and services for the project – **Regency Ballroom Restroom Renovation** - for the lump sum amount of:

_____

Dollars ($ _____)

FORM OF PROPOSAL (continued)

EXECUTION OF PROPOSAL

NOTE A: TIME OF COMPLETION

a) It is understood and agreed that the work embodied in this contract shall be completed no later than the completion date stated within the contract, unless an extension of time is granted by the Owner.

b) Upon failure to have all work completed within the period of time above mentioned, the Contractor shall forfeit and pay, or cause to be paid, to the Owner for and as liquidated damages to be deducted from any payment due or to become due to the said contractor, the sum set forth in the following table for the size of contract, for each and every day thereafter that the said work remains in an unfinished condition.

DOLLAR AMOUNT OF CONTRACT	DOLLARS PER DAY
$0 to $100,000.00	$250.00
$100,000.01 to $500,000.00	$500.00
$500,000.01 to $1,000,000.00	$1,000.00
$1,000,000.01 to $10,000,000.00	$2,500.00
$10,000,000.01 and up	$5,000.00

NOTE B: Failure to sign proposal may result in rejection of the Bid.

THIS PROPOSAL SUBMITTED BY: _____

_____

Name of Contractor

BY: _____

Signature of Contractor or Authorized Representative

DATE: _____

Contact Person for contract processing: _____

Mailing Address if different from above: _____

_____

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY

Diversity, Equity & Inclusion Policy

_____ (name of Contractor) hereby has reviewed the FCCFA's Diversity, Equity & Inclusion Policy.

The contractor agrees to comply with all policy requirements and, directly or indirectly, (1) has not engaged, is not engaged, and will not engage in any kind of unlawful discrimination involving race, color, sex, sexual orientation or gender identity, disability, age, religion, veteran status or national origin, whether or not such discrimination is related to a contract or procurement activity with or for the FCCFA and (2) will not, for any purpose related to its engagement by the FCCFA, employ or contract with persons or businesses which the Contractor knows or has reason to know have engaged, are engaged, or will engage in any kind of unlawful discrimination involving race, color, sex, sexual orientation or gender identity, disability, age, religion, veteran status or national origin, whether or not such unlawful discrimination is related to a contract or procurement activity with or for the FCCFA. The contractor further agrees to incorporate these requirements in all subcontracts on this project regardless of tier.

Date: _____ _____

Signature of Contractor or Authorized Representative

( ) Submitted own Affirmative Action Plan.

( ) Contractor has been certified as a minority and/or female owned business. (Submit copy of certification as received from the federal government and/or any Ohio government unit or public authority).

Note: This certification must be filled and signed. Failure to comply may invalidate your bid.

DECLARATION OF INSURANCE TO THE
FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY

THIS IS TO CERTIFY THAT THE FOLLOWING DESCRIBED POLICIES OF INSURANCE HAVE BEEN ISSUED AND ARE IN FULL FORCE AND EFFECT AT THIS TIME:

1. Name of Insured (Contractor):

2. Address:

3. Title and Location: (Contract Job Site) — Franklin County Convention Facilities Authority - Greater Columbus Convention Center

4. Project: — Regency Ballroom Restroom Renovation

5. Policy Number(s), Carriers and Expiration Dates:

		LIMITS OF LIABILITY IN $1,000 AMOUNTS	
TYPE OF INSURANCE		**Each Occurrence**	**Aggregate**
GENERAL LIABILITY			
Comprehensive Form	Bodily Injury	$	$
Premises-Operations			
Explosion and Collapse Hazard	Property Damage`	$	$
Underground Hazard			
Products/Completed Operations Hazard	Combined	$	$
Contractual Hazard	Single Limit	$	$
Broad Form Property Damage			
Independent Contractors	Personal Injury	$	$
Personal Injury			
AUTOMOBILE LIABILITY	Bodily Injury Each Person	$	
Comprehensive Form			
Owned	Bodily Injury Each Accident	$	
Hired			

Non-Owned	Property Damage	$	
EXCESS LIABILITY	Combined Single Limit	$	
Umbrella Form	Combined Single Limit	$	$
Following Form	Self-Insured	$	

List any manuscript or unusual exclusions for forms and attach copies.

Check those of the following operations which are excluded:

_____ Asbestos removal or abatement _____ PCP Removal _____ Demolition

It is agreed that sixty (60) days written notice of cancellation or material change in the described policy(s) will be given to the holder of this certificate, known as the Franklin County Convention Facilities Authority, 400 North High Street, Columbus, OH 43215.

Insurance Agency:

Address: Telephone:

Contractor's Signature: **Agent's Signature:**

_____ _____

Date: _____ Date: _____

ADDITIONAL INSURED WITH RESPECT TO THIS JOB ONLY; AS THEIR INTEREST MAY APPEAR:

1. Franklin County Convention Facilities Authority, its other contractors and own forces, if any, and the subcontractors, sub-subcontractors, consultants, agents, and employees of any of them, in their individual capacities as such;
2. The Franklin County Convention Facilities Authority Board, its members, consultants, agents, and employees of any of them, in their individual capacities as such;
3. The Architect/Engineer, its consultants, agents, and employees of any of them, in their individual capacities as such; and
4. The Construction Manager, its consultants, agents, and employees of any of them, in their individual capacities as such.
5. ASM Global, its consultants, agents, and employees of any of them, in their individual capacities as such.

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY
MANUFACTURER'S DECLARATION

Part A

Contractor's Name and Address:

Project Title and Location**:** Regency Ballroom Restroom Renovation

Part B (Complete for all suppliers but do not include subcontractors.)

Name: Type/Brand Name of Supplies:

Address: Phone:
Minority/Female Business: _____ Yes
_____ No

Name: Type/Brand Name of Supplies:

Address: Phone:
Minority/Female Business: _____ Yes
_____ No

Name: Type/Brand Name of Supplies:

Address: Phone:

Minority/Female Business: _____ Yes
_____ No

Name: Type/Brand Name of Supplies:

Address: Phone:

Minority/Female Business: _____ Yes
_____ No

(attach additional pages as needed)

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY
SUBCONTRACTOR DECLARATION

Part A

Contractor's Name and Address:

Project Title and Location**:** Regency Ballroom Restroom Renovation

Part B (Complete for all subcontractors, specify brand name of their material)

Name: Type Work:

FTID#:
Address: Brand Name(s):

Minority/Female Business: _____ Yes
_____ No

Phone:

Name: Type Work:

FTID#:
Address: Brand Name(s):

Minority/Female Business: _____ Yes
_____ No

Phone:

Name: Type Work:

FTID#:
Address: Brand Name(s):

Minority/Female Business: _____ Yes
_____ No

Phone:

(attach additional pages as needed)

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY
CONTRACTOR'S REVIEW CERTIFICATE

The undersigned acknowledges that:

(1) the contractor's authorized agent has carefully read and understood all of the Bid Documents submitted for the REGENCY BALLROOM RESTROOM RENOVATION, including, but not limited to, the Notice to Bidders, Instructions to Bidders, Form of Proposal, Substitution Sheet, Prevailing Wage Determination, Form of Bid Guaranty and Contract Bond, this Contractor's Review Certificate, Project Manuals, Specifications and Drawings; and

(2) the Bid Documents are sufficient and adequate for the undersigned to perform the Work; and

(3) the contractor's authorized agent has carefully reviewed the site and conditions under which the Work will be performed, or has been given ample opportunity to do so, and fully assumes the risk for any condition at the site that could have been discovered by a careful and diligent review of the site; and

(4) the contractor's authorized agent has confirmed that the contractor's surety is authorized to do business in the State of Ohio.

Dated: _____

CONTRACTOR: _____

By: _____
SIGNATURE

_____
TYPED OR PRINTED NAME

Its: _____

NOTE: The Bidder should review the Bid Documents and the site and conditions under which the Work will be performed so that the Bidder can give the acknowledgments contained in this Certificate.

BID GUARANTY AND CONTRACT BOND

KNOW ALL MEN BY THESE PRESENT, that we, the undersigned

(Name and Address)

as Principal and

(Name of Surety)

as Surety, are hereby held and firmly bound unto the Franklin County Convention Facilities Authority as Obligee in the penal sum of the dollar amount of the bid submitted by the Principal to the Obligee on this _____day of _____, 2025 to undertake the project known as the Regency Ballroom Restroom Renovation. The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Obligee, incorporating any additive or deductive alternative proposals made by the Principal on the date referred to above to the Obligee, which are accepted by the Obligee. In no case shall the penal sum exceed the amount of _____ _____ dollars ($_____).

(If the above line is left blank, the penal sum will be the full amount of the Principal's bid, including add alternates.) Alternatively, if completed, the amount stated must not be less than the full amount of the bid, including add alternates, in dollars and cents. A percentage is not acceptable. For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above-named Principal has submitted a bid on the above referred to Project;

NOW, THEREFORE, if the Obligee accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Obligee the difference, not to exceed ten percent of the penalty hereof, between the amount specified in the bid and such larger amount for which the Obligee may in good faith contract with the next lowest bidder to perform the Work covered by the bid; or in the event the Obligee does not award the Contract to the next lowest bidder and resubmits the Project for bidding, the Principal will pay the Obligee the difference, not to exceed ten percent of the penalty hereof, between the amount specified in the bid, or the costs, in connection with the resubmission, or printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Obligee accepts the bid of the Principal and the Principal, within ten days after the awarding of the Contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said Contract is made a part of this Bond the same as though set forth herein; and

IF THE SAID Principal shall well and faithfully perform each and every condition of such Contract; and indemnify the Obligee against all damage suffered by failure to perform such Contract according to the provisions thereof and in accordance with the plans, details,

specifications, and bills of material therefor; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said Contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman, subcontractor or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said Contract or in or to the plans and specifications therefor shall in any way affect the obligations of said Surety on its Bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the Contract or to the Work or to the specifications.

SIGNED AND SEALED This _____ day of _____, 2025.

PRINCIPAL:

BY:

TITLE:

SURETY

SURETY COMPANY ADDRESS:

Street

City State Zip

Telephone:

BY:

Attorney-in-Fact

If the requirements of Section 3905.41 of the Ohio Revised Code are applicable or if Surety Agent's Address is other than Ohio, and the Ohio Department of Insurance's Certificate of Compliance is not attached, please complete Ohio Resident Agent Information as follows:

SURETY AGENT'S ADDRESS:

_____
Agency Name:

_____
Street

_____
City State Zip

_____
Telephone

_____
Agency Name:

_____
Street

_____
City State Zip

_____
Telephone

NOTE Failure by any party to sign this Bid Guaranty and Contract Bond shall result in rejection of bid.

INSTRUCTIONS TO BIDDERS
RESPONSIBILITY ANALYSIS FORM

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY
DETERMINATION OF LOWEST AND BEST BID

This form must be completed in its entirety and submitted with the Bid Form. Attach additional sheets if necessary to provide complete answers to the questions below. Do not include any misleading statements and make sure to include all facts necessary to make the statements made not misleading. The term "Project" means the project for which the attached bid is submitted. All references to "**Bidder**" should be answered with respect to the **actual legal entity** submitting the bid.

Subject to the right of the Owner to reject any or all bids, the Owner will award the Contract for the Work to the Bidder submitting the lowest and best bid, taking into consideration accepted alternates. In determining which bid is the lowest and best bid, the Owner may take into consideration not only the amount of the bid but such of the following criteria as the Owner, in its sole discretion, deems appropriate, and may give such weight thereto as it deems appropriate:

Bidder Name _____

Bid Package No.: 2025-6_____

Trade/Service _____

Product(s) Supplied_____

1. Bidder shall provide all information listed below with its bid, unless otherwise noted. Failure to do so may, at the Owner's discretion, result in rejection of the bid.

2. The Owner reserves the right to reject all bids.

3. Will the Bidder employ supervisory personnel on this Project that have three (3) or more years in the specific trade and/or maintain the appropriate state license?

   _____Yes _____No

4. On a separate sheet, provide information to demonstrate the following:

   - Bidder's previous performance to complete its work on projects of similar size and scope.
   - Bidder's previous ability to complete these same projects on time.
   - Bidder's previous ability to work with this Owner, Architect, Engineer and/or Construction Manager.

5. Bidder shall not have an EMR (Workers' Compensation Interstate/Intrastate Experience Modification Rate) greater than 1.5. If Bidder's EMR is above 1.0, Bidder shall provide a letter from Insurance Broker providing EMR for the most recent five (5) years, reasoning for EMR being above 1.0 and incident rates for that time period.

6. Has the Bidder been in existence at least 36 months?

_____Yes _____No

7. Has the Bidder, or any principal, owner, officer, stockholder, affiliate or any person involved in the bidding, contracting or leasing process been cited in the last five (5) years for violations of or failure to comply with any laws including without limitation:

a. Workers' compensation laws _____Yes _____ No

b. Wage and hour laws _____Yes _____ No
(including the Davis-Bacon Act and the Ohio Prevailing Wage Act)

c. Unemployment laws _____Yes _____ No

d. Tax laws _____Yes _____ No

e. Fair Labor Standards Act _____Yes _____ No

f. Immigration laws _____Yes _____ No

g. Licensing requirements _____Yes _____ No

h. OSHA _____Yes _____ No

i. EPA _____Yes _____ No

j. Any items below: _____Yes _____ No

1. A judgment or conviction for any business-related conduct constituting a crime under federal, state or local government law including, but not limited to, fraud, extortion, bribery, racketeering, price-fixing or bid collusion or any crime related to truthfulness and/or business conduct.

2. A criminal investigation or indictment for any business-related conduct constituting a crime under federal, state or local government law including, but not limited to, fraud, extortion, bribery, racketeering, price-fixing or bid collusion or any crime related to truthfulness and/or business conduct.

3. An unsatisfied judgment, injunction or lien for any business-related conduct obtained by any federal, state or local government agency including, but not limited to, judgments based on taxes owed and fines and penalties assessed by any federal, state, or local government agency.

4. An investigation for a civil or criminal violation for any business-related conduct by any federal, state or local agency.

5. A grant of immunity for any business-related conduct constituting a crime under federal, state or local governmental law including, but not limited to, fraud,

extortion, bribery, racketeering, price-fixing, bid collusion or any crime related to truthfulness and/or business conduct.

6. An administrative proceeding or civil action seeking specific performance or restitution in connection with any federal, state or local contract or lease.

7. A sanction imposed as a result of judicial or administrative proceedings relative to any business or professional license.

8. A consent order with the Ohio Environmental Protection Agency, or a federal, state or local government enforcement determination involving a violation of federal, state, or local environmental laws.

If yes, on a separate sheet, provide complete details including the date of each citation or violation; the nature of each violation; and the sanction for each violation. If the Bidder was fined, include the dollar amount.

For purposes of 7.a. above, a violation of the Workers' compensation laws is a determination by the Ohio Bureau of Workers Compensation that the contractor is not in compliance with Ohio Workers' Compensation laws and regulations.

For purposes of 7.b. above, a violation of the Ohio Prevailing Wage Act is a determination by the Ohio Department of Commerce, Division of Labor and Worker Safety, Wage and Hour Division, or successor that the contractor is not in compliance with the provisions, duties, obligations and is subject to the remedies and penalties of Chapter 4115 of the Ohio Revised Code.

8. Does Bidder have any outstanding liens? If yes, on a separate sheet identify each circumstance and Bidder's response.

_____Yes _____ No

9. Has Bidder been party to litigation or arbitration proceedings in connection with any work performed, services rendered, or products supplied in the last five years? If yes, on a separate sheet, provide complete details, including dates, parties, whether Bidder was a plaintiff/claimant or defendant/respondent, the nature of the dispute and the ultimate determination or other resolution (i.e. settlement).

_____Yes _____ No

10. In the last five years, has Bidder had work rejected as defective (other than minor re-work accomplished without formal notice)? If yes, on a separate sheet identify each circumstance and Bidder's response.

_____Yes _____ No

11. In the last five years, has Bidder's contract or employment been terminated prior to completion of a project for any reason other than convenience of the Owner? If yes, on a separate sheet identify each such circumstance and provide full details.

_____Yes _____ No

12. Bidder shall secure any required bonds from a surety licensed to do business in the State of Ohio with an A.M. Best Company rating of at least A. Has Bidder met this requirement?

_____Yes _____ No

13. Has Bidder's construction license ever been revoked in any state?

    _____Yes _____ No

14. In the last five years, has Bidder had its own forces supplemented by an Owner, contractor or construction manager or had a claim made against it for defective, delayed or non-compliant work? If yes, on a separate sheet identify each such circumstance and provide full details.

    _____Yes _____ No

15. Bidder for a skilled contract (i.e. plumbing, electrical, HVAC, or fire safety) shall certify that Bidder will not subcontract greater than 50% of its awarded contract.

16. Does Bidder provide a minimum healthcare medical plan for those employees working on the project? If yes, list the healthcare plan provider below.

    _____Yes _____No

    Healthcare Medical Plan Provider: _____

17. Does Bidder contribute to an employee pension or retirement plan for those employees working on the project? If yes, list the pension or retirement plan provider below.

    _____Yes _____No

    Pension Plan or Retirement Plan Provider: _____

    The contractor may be asked to provide ERISA form 5500 for the retirement plan.

18. Has Bidder implemented an OSHA compliant Safety Program?

    _____Yes _____No

19. Does Bidder maintain a substance abuse policy that meets or exceeds requirements of the Ohio BWC and that its personnel are subject to on this Project?

    _____Yes _____No

20. Is the bidder a foreign corporation (i.e. not incorporated under the laws of Ohio) or an individual or partnership?

    _____Yes _____No

21. If yes to Item 20 above, provide proof of a Certificate of Good Standing from the Secretary of State showing the right of the Bidder to do business in the State and/or proof of filing with the Secretary of State a Power of Attorney designating the Secretary of State as Bidder's agent.

22. Bidder shall certify that the Bidder's subcontractors / vendors shall meet all requirements contained herein.

23. The Owner reserves the right to request the following information within 48 hours of the bid date:

a. On a separate sheet, list all projects greater than $1,000,000 completed by Bidder in the preceding five years and for each, provide Bidder's original contract amount, final contract amount and a reference name and phone number.

b. For the three largest projects listed from Item 3 above list your average manpower and peak manpower along with the original duration of the project and final duration of the project.

c. On a separate sheet, provide Bidder's current work load under contract. List each current project and its respective contract amount and scheduled duration.

d. On a separate sheet, provide information on Bidder's equipment and facilities.

e. Bidder shall provide sufficient financial information to demonstrate fiscal capability to perform the project. All financial information identified by the Bidder as a trade secret and contained herein shall be treated as a trade secret and exempt from Ohio's Public Records laws, but the Owner's sole duty shall be to notify Bidder of any requests for that information so that Bidder is afforded the opportunity, at Bidder's expense, to contest in court the disclosure of any such information. The Owner may, but shall not be obligated to, contest any request for the disclosure of such information.

f. On a separate sheet, identify, in numbers and experience, the Bidder's work force. Differentiate between hourly and salaried staff. Describe Bidder's workforce, focusing on worker experience and continuity.

g. Bidder for a skilled trade contract or fire safety contract shall certify and upon request, provide evidence that Bidder is a state licensed heating, ventilating, and air conditioning contractor, refrigeration contractor, electrical contractor, plumbing contractor, or hydronics contractor or licensed by the State Fire Marshall and uses skilled, trained personnel.

h. Identify the number of man hours and associated wages for each trade classification included in the Contractor's and Subtiers' Base Bid. Separately list the subtier's information. Provide additional sheet if more room is needed. DO NOT include payroll taxes, assessments or fringe benefits of any kind in the Wage amounts.

Trade	Man Hours	Wages (No fringes or OH&P)

The Undersigned certifies under oath that the information provided herein and on all supplemental pages of explanation is true, complete and correct.

_____
Company

By _____

Title _____
(Signature must be notarized)

Sworn to and subscribed in my presence this_____ day of _____, _____

By _____ , the _____ of

_____ , a_____on

behalf of the _____ .

_____
Notary Public

My Commission Expires: _____

Franklin County Convention Facilities Authority
Bid Evaluation Process:

In determining the lowest and best bid for construction contracts, the Franklin County Convention Facilities Authority will take the following steps and consider the following items in making this determination. The Authority reserves its discretion to evaluate the price and quality of bids to ensure that the lowest and best bid is selected. The Authority reserves its discretion to modify this process at any time and for any reason without notice.

1. Select which alternates will be accepted.

2. Identify the apparent low bidder based on the accepted alternates.

    2.1 Is the apparent low bid responsive? Are all required bid submissions included?

    2.2 Has the bidder qualified their bid in a way that would disqualify the bid?

3. Meet with the bidder to determine that all project scope is clearly understood and included. Discuss project schedule, safety and all project requirements. Identify key project staff. Identify subcontractors. Identify long lead time equipment. Discuss submission, review and approval process. Identify and discuss other items pertinent to the job.

4. Is the bidder well qualified?

    4.1 Background Check:
        Check Dun and Bradstreet.
        Run Lexus/Nexus check.
        Check for prevailing wage and workers compensation compliance.

    4.2 Is the bidder qualified for a job of this scope? (Questions 4, 6, 15, 23.a, b,c,d,e)

    4.3 Has the bidder demonstrated that they will provide qualified, well trained staff? (Questions 3, 23.f, g)

    4.4 Does the bidder provide a minimum healthcare medical plan for those employees working on the project? (Question 16)

        Does the bidder contribute to an employee pension or retirement plan for those employees working on the project? (Question 17)

    4.5 Does the bidder have a history of providing quality construction services? (Questions 6, 9, 10, 11, 13, 14)

    4.6 Does the bidder maintain a safe workplace? (Questions 5, 18, 19)

    4.7 Does the bidder follow all applicable laws? (Question 7)

    4.8 Is the bidder financially stable? (Questions 7.j.3, 8, 12, 23.e)

5. If it is determined that the apparent low bid is responsive, valid and the bidder is well qualified:

5.1 Assemble all necessary documentation and paperwork required in the bid documents.

5.2 Submit a resolution for board approval to enter into the contract.

5.3 Issue a notice to proceed.

5.4 Sign a contract with the successful bidder.

TECHNICAL SPECIFICATIONS

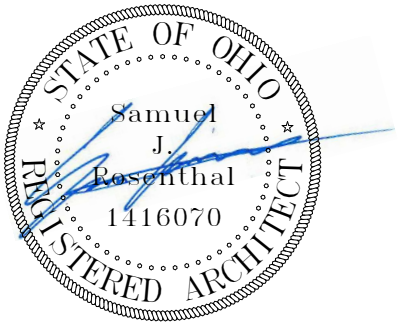
SCHOOLEY CALDWELL

DATE: 10/16/2025

JOB #: 25300.00

PROJECT MANUAL

Construction Documents



HYATT REGENCY RESTROOM RENOVATION

Greater Columbus Convention Center
400 North High Street
Columbus, OH 43215

PREPARED FOR:

Franklin County Convention Facilities Authority
Greater Columbus Convention Center
400 North High Street
Columbus, OH 43215

300 Marconi Boulevard
Columbus, Ohio 43215

T 614 628.0300
F 614 628.0311

schooleycaldwell.com

DOCUMENT 00 01 10

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DIVISION 02 – EXISTING CONDITIONS
02 41 19 Selective Interior Demolition

DIVISION 03 – CONCRETE
03 54 11 Floor Substrate Preparation

DIVISIONS 04 AND 05 – NOT USED

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES
06 10 00 Rough Carpentry

DIVISION 07 – THERMAL AND MOISTURE PROTECTION
07 92 00 Joint Sealants

DIVISION 08 – OPENINGS
08 11 13 Hollow Metal Doors And Frames
08 71 00 Door Hardware

DIVISION 09 – FINISHES
09 05 61 Common Work Results for Flooring Preparation
09 22 16 Non-Structural Metal Framing
09 29 00 Gypsum Board
09 30 13 Tiling
09 51 13 Acoustical Panel Ceilings
09 65 13 Resilient Base and Accessories
09 68 13 Carpet Tile
09 91 00 Painting

DIVISION 10 – SPECIALTIES
10 14 00 Signage
10 21 13 Toilet Compartments
10 26 13 Corner Guards
10 28 13 Toilet Accessories

DIVISION 11 – NOT USED

DIVISION 12 – FURNISHINGS
12 36 61 Solid Surface Trough Sink Countertops

DIVISIONS 13 TO 20 – NOT USED

DIVISION 21 – FIRE SUPPRESSION
21 00 00 Div 21-Fire Suppression Standard Index
21 05 01 Basic Fire Suppression Requirements
21 05 02 Agreement And Waiver For Use Of Electronic Files
21 05 02a Electronic Files - Heapy Release Form To Contractors
21 05 04 Basic Fire Suppression Materials And Methods
21 05 05 Firestopping
21 05 07 Piping Materials And Methods For Fire Suppression
21 05 29 Hangers And Supports For Fire Suppression Piping
21 05 53 Identification Of Fire Suppression Piping
21 13 12 Fire Suppression Piping
21 13 13a Fire Suppression Sprinkler System
21 13 14 Fire Suppression Standpipe System
21 13 15 Fire Suppression Equipment

DIVISION 22 – PLUMBING
22 00 00 Div 22-Plumbing Standard Index
22 05 01 Basic Plumbing Requirements
22 05 02 Agreement And Waiver for Use of Electronic Files
22 05 02a Electronic Files - Heapy Release Form to Contractors
22 05 04 Basic Plumbing Materials and Methods
22 05 05 Firestopping
22 05 07 Piping Materials and Methods
22 05 19 Meters And Gauges for Plumbing Piping
22 05 23 General Duty Valves for Plumbing Piping
22 05 29 Hangers And Supports for Plumbing Piping
22 05 53 Identification of Plumbing Piping and Equipment
22 07 19 Plumbing Piping Insulation
22 11 16 Interior Domestic Water Piping
22 11 19 Interior Domestic Water Piping Specialties

DIVISION 22 – PLUMBING (CONT'D)

22 13 16 Interior Drainage and Vent Systems
22 13 19 Drainage Systems Specialties
22 42 00 Plumbing Fixtures

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

23 00 00 Div 23- HVAC Standard Index
23 05 01 Basic HVAC Requirements
23 05 02 Agreement And Waiver for Use of Electronic Files
23 05 02a Electronic Files - Heapy Release Form to Contractors
23 05 04 Basic HVAC Materials and Methods
23 05 30 Bases And Supports for HVAC Equipment
23 05 53 Identification of HVAC Piping and Equipment
23 05 93 Testing, Adjusting and Balancing for HVAC
23 07 13 Duct Insulation
23 31 13 HVAC Ductwork
23 33 00 Air Duct Accessories
23 37 00 Air Outlets and Inlets
23 81 28 DX Mini Split Systems

DIVISION 26 – ELECTRICAL

26 00 00 Electrical Standard Index
26 05 01 Basic Electrical Requirements
26 05 02 Agreement And Waiver for Use of Electronic Files
26 05 04 Basic Electrical Materials and Methods
26 05 05 Firestopping
26 05 19a Low-Voltage Electrical Power Conductors - Copper
26 05 26 Grounding and Bonding for Electrical Systems
26 05 33 Raceways and Boxes for Electrical Systems
26 05 53 Identification for Electrical Systems
26 09 23 Lighting Control Devices
26 51 19 LED Interior Lighting

DIVISIONS 27 – 50 NOT USED

END

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 SUMMARY OF WORK

A. Work covered by Contract Documents is comprised of renovation of the Hyatt restroom and prefunction spaces and associated support spaces at the 3rd floor of the Greater Columbus Convention Center. in downtown Columbus, Ohio.

B. Project is located at **400 North High Street, Columbus, Ohio**.

C. Work consists of providing labor, materials, equipment, services, and administrative services required in conjunction with or incidental to Project Construction, including work provided under other contracts or indicated as “Furnished by Owner but Installed by Contractor” (FOIC).

D. Provide items required for complete operating systems, including items not necessarily specified or shown in these documents, but that can be reasonably inferred as being necessary.

E. Construction Manager: Construction Manager at Risk has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.

1.02 CONSTRUCTION CONTRACT AND RELATED WORK

A. Construction Under Other Contracts: Other Work on the Project may be executed prior to, simultaneous with, or after completion of Work of this Contract, which is excluded from this Contract.

1. Fully cooperate and coordinate schedule with separate contractors in order that work of separate contracts may proceed smoothly, without interference or delay of either contract. Refer to Section01 32 00 – Construction Progress Documentation for additional requirements.

B. Hazardous Materials: The removal from the construction area of any known toxic or hazardous chemical or material, including, but not limited to ‘asbestos containing’, ‘lead-based paint’, and ‘fluorescent light ballasts with PCB’s’ is to be accomplished prior to any construction activities commencing. Should the Contractor, after work has commenced, discover/disturb any hazardous material, the Contractor is directed to immediately cease work activity in the area found to be potentially hazardous, notify the Construction Manager, and await their direction.

C. Work to be Performed Later: Wherever an item is shown on the drawings or referenced in the specifications as "Future", it is to be considered as included in work of another and later contract.

D. Minimum disruption of operation and use of adjacent facilities and access to those facilities is required. Cooperation with Owner to minimize inconvenience is essential.

1.03 CONTRACTOR RESPONSIBILITIES

A. Contractor’s Duties: In addition to duties specified throughout the Contract Documents, the Contractor’s duties include the following:

1. Construction Costs: Except as specifically noted, provide and pay for labor, materials and equipment, tools, construction equipment and machinery, water, heat, electrical power and light, utilities required for construction, and other facilities and services necessary for the proper execution and completion of the Work. Refer to Section 01 50 00 – Temporary Facilities and Controls, for detailed requirements.
2. Taxes: Pay legally required sales, consumer, business, excise, and use taxes; Ohio State Sales Tax applied to materials and labor incorporated into the Work will be paid to the Contractor separately from the Contract Sum by the Owner.
3. Permits and Fees: Secure and pay for government fees, licenses, and permits, except as specifically noted in the Contract Documents.
4. Regulations and Notices: Comply with Codes, ordinances, rules, regulations, and other requirements of public authorities which pertain to the completion of the Work and give all required

notices, including written notice to the Architect of any observed variances in the Contract Documents with legal requirements. It is not the Contractor's responsibility to make certain that the Contract Documents comply with codes and regulations, except where expressing written into individual sections of the specifications. Refer to Sections 01 40 00 – Quality Requirements and 01 45 00 – Quality Control, for additional requirements.

5. Coordination: Coordinate work of the various trades and subcontractors to assure efficient and orderly sequencing and installation of construction elements, including provisions for accommodation items to be installed by Owner under separate contracts, or as tenant improvements, installed at a later time. Refer to Section 01 31 00 – Project Coordination, for detailed requirements.

1.04 WORK RESTRICTIONS

A. Contractor Use of Premises:

1. General: Confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents.
2. Construction Manager to coordinate work with the Owner to occur within agreed zones and times as the facility is to remain in operation throughout the duration of construction.
3. Contractor shall have full use of premises for construction operations, including use of site within the construction limits. However, since the premises adjoin, both public right- of-ways and private property, the Contractor's operations shall be governed by maintaining continuous use of all normal access on streets and driveways as required by the Construction Documents.
4. Where Contractors' use of site includes existing streets, sidewalks or right-of-way, the Contractor shall obtain approval and pay for use of such areas in accordance with requirements of the City of Columbus.
5. Refer to Section 01 50 00 –- Temporary Facilities and Controls, for additional requirements for site utilization, traffic control and dust control.
6. Hot Work on The Premises: Hot Work at the project site will be restricted to the fabrication of structural components indicated on the Contract Documents. Provide Fire Watch procedures during all welding, cutting and other hot-work operations in accordance with the impairment plan as approved by the City of Columbus, including restrictions and limitations by the Owner.

B. Lane Restrictions: Public right-of-ways adjacent to site shall be maintained to at least one lane, unless otherwise approved by The City of Columbus. Written requests for interim closing of right-of-ways shall be submitted to The City of Columbus in advance of scheduled work. Coordinate with civil engineer on traffic control plan, stating purpose, including date and time duration for each request.

C. Construction Hours: Noise generated through construction activities shall be limited to the hours of 7:00 AM to 10:00 PM as required by the City of Columbus Title 23 General Offenses Code, Section 2329.11, when maximum average sound level as measured 50 feet from property boundary exceeds 70dBA. Exceptions to the limitation may be granted by the Owner when necessary to accommodate construction which cannot be undertaken in exempt hours.

D. Site: The Contractor is the custodian of the site and is responsible to provide access, storage, and work space for Contractor's work force. Due to site limitations the Contractor shall be responsible to provide off-site storage for materials, parking and transportation as may be required to maintain the scheduling of the Work.

E. Existing Improvements, Hardscape and Utilities Within the Scope of Work:

1. General: Protect existing structures, sidewalks, curbs, streets, landscaping, utilities and work of any kind, which is to remain, from damage, defacement, or interruption of service, except as may be specially directed or authorized by the Architect. All damage shall be repaired to approximate original condition within the Contract Sum.
2. Existing Trees: Trees to remain shall be protected and maintained throughout the Construction period. Trees designated to be removed and replanted shall be stored offsite and maintained by a qualified landscaper or NAA certified arborist whose work shall result in the successful re-establishment of all trees.
3. Utilities: Protect and maintain existing utilities from damage or interruption, except as required to make service connections. Verify locations of all utilities and coordinate interruption and relocation with respective utility company.

4. Hardscape: Where curbs and sidewalks are to remain, protect from settlement and Contractors' operations. Site improvements which cannot be salvaged or which become damaged shall be replaced to City of Columbus Standard Specifications and as required by the Contract Documents.
5. Documentation: Document condition of existing site improvements to remain by photographic or other approved assessment as approved by the Architect. s. Maintain records of assessment at the jobsite for Architect's and Owner's review.

F. Assume responsibility for protection and safekeeping of products stored on and off site under this Contract.

G. Obtain and pay for use of additional storage or staging areas needed for operations.

H. Do not load structure with weight that would jeopardize its safety.

I. Existing Elevators: Use of existing elevators is subject to coordination with the Owner.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Administrative procedures for handling requests for substitutions made before and after award of Contract.

B. Related Sections:

1. Section 01 60 00 – Product Requirements: Product options which authorize a substitution request form.
2. Individual Technical Sections: Expressed restrictions related to substitutions.

1.02 PRODUCT SUBSTITUTIONS

A. General: If the proposer or Contractor desires approval of some material or product other than that specified, submit a written request for approval of the substitute item in accordance with the following requirements:

1. Requests for approval of equals or substitutions must be made in writing and received by the Architect at least ten (10) working days prior to scheduled time for receipt of bids. Requests for substitution will not be considered after Notice to Proceed, except under one or more of the conditions stated in Article 1.03, below.
2. All such requests must be made on the Substitution Request Form; see attached at end of this Section.
3. Any approval of the proposed equals or substitutions will be made by Addendum prior to receipt of bids, and by duly executed Change Order after receipt of bids. Proposers shall not rely upon any approval not incorporated into the Contract Documents in this matter.
4. Requests received after this time will not be reviewed or considered. No request for approval will be considered unless submitted in accordance with this Section.
5. Final decision as to whether an item is an equal or satisfactory substitution rests with the Architect.
6. Clearly mark manufacturer's literature to indicate equality in performance and appearance.

B. Substitution Requests: Every substitution request must state whether the item offered is an equal or equivalent to the specified product. The substitute material or product must be accompanied by its reference in the Contract Documents and complete catalog, technical and other information, as appropriate. In addition to requirements indicated on the Substitution Request Form, comply with following:

1. As required, include samples showing comparison of physical and other pertinent characteristics as required to establish equivalence of acceptability for the proposed application. This will require also providing data of the material or product specified to provide a side by side comparison.

C. Where specific test results are required by the Contract Documents, the comparison data for the proposed item shall be based upon the same test methods as those specified, or they shall be correlated to clearly demonstrate comparability.

1. The same guarantee/warranty described for the specified product is required for the substitution.
2. Coordination information, including a list of changes or modifications needed to other parts of the Work that will become necessary to accommodate the proposed substitution.
3. Cost information, including net change, if any.
4. Contractor shall accompany any request for substitution with such drawings, specifications, samples, manufacturer's literature, performance data, and other information necessary to describe and evaluate the proposed substitution completely. The burden of proof shall be on the Contractor.
5. As required, provide references of three (3) similar projects where proposed substitute product has been used successfully, on a separate sheet, include names, addresses, date of installation and contact name of Owner or facilities manager.

D. Coordination and Redesign: In making request for approval of substitute materials, the Contractor must represent that it has investigated the proposed product and, in its opinion, it is equal or equivalent in all respects to that specified. Also, Contractor will coordinate all trades including changes thereto as may be

required, that it waives all claims for additional costs or time extension for Completion which subsequently become apparent as a consequence of the substitution and that it will bear all costs related hereto, including costs of Architect's services for redesign if deemed necessary.

1. If any substitution will affect a correlated function, adjacent construction, or the work of other trades or contractors, the necessary changes and modifications to the affected work shall be considered as an essential part of the proposed substitution, to be accomplished by the Contractor without additional expense to the Owner if and when accepted.

E. Substitutions will not be considered if they are indicated or implied on Shop Drawings or other project data submittals, without proper notice shown on attached form.

1.03 SUBSTITUTIONS AFTER TIMES STATED ABOVE

A. Request for Approval: Substitution requests for approval of substitute materials will not be considered after the time period stated above, except if one or more of the following conditions exists. With its request, the Contractor shall indicate which condition it believes applies.

1. Unavailability: A substitution is required because the specified item is not available, due to factors beyond the control of the Contractor or Subcontractor. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the work promptly or coordinate activities properly.
2. Unsuitability: Subsequent information or changes disclose inability of the specified item to perform as intended, and where the Contractor certifies that the proposed substitution will overcome such non-performance.
3. Regulatory Requirements: Final interpretation of Code, regulatory requirements, safety requirements, or insurance requirements necessitate a change due to inability of the specified item to conform, and the proposed substitution can be approved.
4. Warranty: Manufacturer or fabricator cannot certify or warrant performance of specified item as required, and where the Contractor certifies that the proposed substitution will provide the required warranty.
5. Owner’s Benefit: Acceptance of the proposed substitution is clearly in the Owner’s best interest because of cost, quality, or other consideration. In requesting a substitution under this clause, the Contractor shall furnish substantiation of any such reason.

1.04 ARCHITECT’S REVIEW

A. Architect will review requests for proposed substitutions on Substitution Request Form with reasonable promptness.

B. Considerations for acceptance will be based on conformance with Contract Documents, including following as applicable:

1. Physical dimension and clearance requirements to satisfy space limitations.
2. Static and dynamic weight limitations; structural properties.
3. Audible noise levels.
4. Vibration generation.
5. Interchangeability of parts or components.
6. Accessibility for maintenance to allow possible removal or replacement.
7. Design aesthetics.
8. Colors, textures, and finishes.
9. Compatibility with other materials, products, assemblies, and components.

C. Architect’s decision to accept or reject requested substitution will be final.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 25 00A

SUBSTITUTION REQUEST FORM

TO: Construction Manager

c/o ___
_____

PROJECT: **HYATT REGENCY RESTROOM RENOVATION**
SC Project No. 25300.00
Due Date: At least 10 Days before Bid Date (*refer to Section 01 25 00)*

A proposed product is not legally approved and cannot legally be included in a bid or used in the Work until it appears in an Addendum or other Contract Modification as defined in the General Conditions. See "Form of Proposal" and Section 01 60 00 – Product Requirements.

PROVIDE THE FOLLOWING INFORMATION. FAILURE TO PROVIDE THE INFORMATION COMPLETELY WILL BE CAUSE FOR REJECTION OF THE SUBSTITUTION.

SPECIFIED PRODUCT:

Specified Product: _____

Specified Manufacturer: _____

Specification Section: _____ Page: _____ Article: _____ Paragraph: _____

PROPOSED PRODUCT:

Product Name: _____

Manufacturer Name: _____

Manufacturer Web site: _____

QUESTIONS:
Answer the following questions using a separate attachment:

In your opinion, is the proposed product equivalent to the specified product?

Are the product characteristics the same as the specified product? (Dimensions, material properties?)

Are the product warranties the same? If not, list differences (Include attachment documenting warranty).

Does the proposed product require modifications to the building construction details?

Color: Is the same color available at no upcharge? Is another color selection required that doesn't match the specified product?

Will the construction time be affected if this proposed product is approved?

Has the proposed product been used locally?

Name of Facility: _____

Address: _____

Contact Person: _____ Phone: _____

Is product represented locally?

Supplier/Representative: _____ Phone: _____

Are approved installer(s) available locally?

Approved Installer(s): _____

Provide an attachment that lists a minimum of three similar projects completed by each installer. Include contact name and telephone number.

ATTACHMENTS:

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ Other

Include the following attachments:

1. Copy of the Project Manual Section where the proposed equal product would be specified, rewritten or red-lined to include any changes necessary to correctly specify the proposed equal product. Identify completely changes necessary to the original Project Manual Section.
2. Copies of details, elevations, cross-sections, and other elements of the Construction Drawings redone as necessary to show changes necessary to accommodate proposed equal product. Identify completely the changes from the original Drawings.
3. Complete product literature and technical data, installation and maintenance instructions, test results, and other information required to show complete conformance with requirements of the Contract Documents.

CERTIFICATION:

Signature on this document provides that the proposer certifies that the following statement and accompanying attachments are true:

1. Substitute product has been fully investigated and determined to be equal or superior in all respects to the specified product performance.
2. Same warranty will be furnished for proposed substitution product as for specified product.
3. Same maintenance service and source of replacement parts, as applicable, is available.
4. Proposed equal product will have no effect on other trades and will not affect or delay progress schedule.
5. Proposed equal product does not affect dimensions and functional performance values.
6. Payment will be made to the Architect for changes to building design, including Architect design, detailing, and construction costs caused by the substitution.
7. The undersigned further states that the function, appearance, and quality of the proposed product are equivalent or superior to the specified item:

Submitted by: _____

Signature: _____

Typed Name: _____

Company: _____

Address: _____

_____ Zip Code: _____

Telephone: _____ Fax: _____

Attachments (List): _____

ARCHITECTS REVIEW AND ACTION: (For use of the Architect only)

_____ Proposed product accepted.

_____ Proposed product not in compliance with instructions. Respond to attached comments and resubmit.

_____ Proposed product not acceptable. Use specified product(s).

_____ Not Reviewed. Submission received too late. Use specified product(s).

ADDITIONAL REVIEWER COMMENTS: (For use of the Architect only)

_____

_____

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Work Includes: Administrative and procedural requirements for handling and processing Contract modifications and changes in the Project. The requirements of this Section are in addition to those stated in the "General Conditions." In general, this Section includes the following:

1. Architect's Supplemental Instructions (ASI).
2. Proposal Request (PR)
3. Change Order Request (COR).
4. Change Order (CO).
5. Construction Change Directive (CCD).

B. Related Sections:

1. 01 25 00 – Substitution Procedures
2. 01 29 00 – Payment Procedures
3. 01 33 00 – Submittal Procedures
4. 01 60 00 – Product Requirements
5. 01 77 00 – Closeout Procedures

1.02 SUBMITTALS

A. General:

1. Submit names of individuals authorized to receive Contract modification documents.
2. Submit names of individuals responsible for informing Contractor's employees and affected subcontractors of Contract clarifications and modifications.

1.03 CHANGE PROCEDURES

A. General: Change procedures are written instructions issued after execution of Contract Agreement.

B. Minor Changes in the Work:

C. Form: Architect's Supplemental Instructions (ASI).

1. Description: Written instructions, clarifications, or interpretations of Contract Documents not involving adjustment to Contract Sum or Contract Time. Instructions or interpretations are binding on Owner and Construction Manager.
2. Procedure: Document is prepared and signed by Architect or Owner and distributed to Owner and Construction Manager. Architect's Supplemental Instructions and orders for minor changes in the Work issued by the Owner are effective upon receipt.

D. Proposal Request (PR):

1. Form: Architect's Proposal Request form.
2. Description: Written proposed change of Work within Contract scope consisting of additions, deletions, and other revisions. Proposal Request is for information only and does not authorize changes in Contract Sum or Contract Time. Construction Manager/Contractor evaluates proposal for pricing and scheduling impact.
3. Procedure:
    a. Document is prepared and signed by Architect. Copies are sent to Owner and Construction Manager.
    b. Following Owner Agreement that the Construction Manager shall review Proposal Request and submit Change Order Request and Proposal Worksheet Detail and Summary Forms with proposed changes in Contract Sum and Contract Time.

c. Prepare and submit Change Order Request and Proposal Worksheet Detail and Summary Forms Architect within 20 days of Proposal Request receipt. Proposed Contract Sum and Contract Time changes quoted by Construction Manager/Contractor shall remain valid for 30 days from receipt by Architect.

E. Change Order Request (COR):

1. Attached Forms:

a. Change Order Request: Describes and summarizes Construction Manager/Contractor's proposed changes. Indicates changes in Contract Sum and Contract Time.
b. Proposal Worksheet Summary: Summarizes labor, materials, overhead and profit, bonds, insurance, and tax of proposed Contract additions and deductions.
c. Proposal Worksheet Detail: Summarizes labor and material costs of each subcontractor involved in proposed change.

2. Description: Written proposed change of Work consisting of additions, deletions, and other revisions. Submit Change Order Request to Architect for conditions which require Contract Document modifications. Include proposed changes in Contract Sum and Contract Time.
3. Procedure:

a. Proposed changes are documented by Construction Manager on Change Order Request, Proposal Worksheet Summary, and Proposal Worksheet Detail forms. Documents include description of proposed changes and summary of changes in Contract Sum and Contract Time are prepared and signed by Contractor. Send copies to Owner and Architect.
b. Comply with requirements of Section 01 25 00 - Product Substitution Procedures for proposed changes in Work which include products or systems not contained in Contract Documents.
c. Architect and Owner will review Change Order Request and evaluate proposed changes. Architect and Owner may accept or reject Change Order Request. Upon acceptance Architect will prepare Change Order to document Contract change.

F. Change Order (CO):

1. Description: Written change of Work within Contract scope consisting of additions, deletions, and other revisions, including proposed basis for adjustment to Contract Sum and Contract Time. Change Orders are signed by Owner, Construction Manager, and Architect. Owner's signature authorizes change.
2. Procedure: Document is prepared and signed by Architect; sent to Construction Manager for acceptance and signature; approved and signed by Owner; distributed to Architect and Contractor. Construction Manager/Contractor shall perform changes upon receipt.

G. Construction Change Directive (CCD):

1. Description: Written change of Work within Contract scope consisting of additions, deletions, and other revisions, including a proposed basis for adjustment to Contract Sum and Contract Time. Document is used in absence of agreement on terms of Change Orders.
2. Procedure:

a. Document is prepared and signed by Architect and Owner. Construction Manager/Contractor shall perform changes upon receipt.
b. Adjustments to Contract Sum should be one of following:

1) Lump sum.
2) Unit price.
3) Mutually accepted method.

c. Construction Manager/Contractor to review time and expenditures.
d. Architect will determine proposed method, time, and amount of Contract adjustment based on reasonable expenditures, and allowance for overhead, profit, and time. Architect will review proposed method, time, and amount of Contract adjustments with Construction Manager and Owner, and will mutually agree on values prior to execution of CCD.
e. Construction Manager's signing of Construction Change Directive acknowledges agreement with proposed method for adjusting Contract Sum and Contract Time and is recorded as Change Order.

f. Construction Manager/Contractor disagreement or no response to proposed method for adjusting Contract Sum or Contract Time does not relieve Construction Manager/Contractor from responsibility to perform Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and coordinate Schedule of Values and Applications for Payment with Construction Progress Schedule, Submittal Schedule, and List of Subcontracts.

B. Related Sections:

1. 01 26 00 - Contract Modification Procedures: for administrative procedures for handling changes to the Contract.
2. 01 32 00 - Construction Progress Documentation: for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.02 DEFINITION

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.03 SCHEDULE OF VALUES

A. General:

1. Submit at least 15 days prior to submitting first Application for Payment or before the Preconstruction Conference.
2. Upon request of Architect, submit additional data to substantiate accuracy of given values.
3. Approved schedule will be used as basis for reviewing applications for payment.
4. Sub-schedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values coordinated with each phase of payment.
5. Sub-schedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide sub-schedules showing values coordinated with each element.

B. Format:

1. Construction Manager’s standard form or electronic media printout.
2. Follow 33 Division format established in Table of Contents of Project Manual for listing of categories. Identify each line item by number and title of respective Specification sections.
3. Identify Schedule of Values with following information:

    a. Project name and location.
    b. Name of the Architect.
    c. Project number.
    d. Contractor's name and address.
    e. Date of submittal.

C. Content:

1. List installed value of each item of Work and each subcontracted item of Work as separate line item to serve as basis for computing values for Progress Payments. Round off values to nearest dollar.
2. All subcontractor payment applications will be attached to Construction Manager’s payment application..
3. Include the Construction Manager’s Fee and Contingency
4. General Conditions and General Requirements will be one line item on Construction Manager’s payment application.
5. For items on which payments will be requested for stored products, list sub-values for cost of materials, delivered and unloaded, with taxes paid.
6. Sum of listed values shall equal total Contract Sum.

D. Review and Resubmittals:

1. After Architect's initial review, revise and resubmit as necessary.
2. Revise and resubmit whenever Change Order is issued. Show each Change Order as new line item. Submit revised Schedule of Values with next application for payment.

1.04 APPLICATIONS FOR PAYMENT

A. General:

1. Maintain consistency with previous applications for payments as certified by Architect and paid by Owner.
2. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
3. Payment application times:

   a. Each progress payment date is as indicated in Agreement.
   b. Work covered by each Application for Payment is period indicated in Agreement starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.

B. Application Preparation:

1. Complete every entry on form, including notarization and execution by person authorized to sign legal documents on behalf of Contractor.
2. Incomplete applications will be returned without action.
3. Match data entries on Schedule of Values and Construction Progress Schedule. Use updated schedules if revisions have been made.
4. Include amounts of Change Orders and Construction Change Directives issued prior to last day of construction period covered by application.

C. Transmittal:

1. . Payment applications are to be transmitted electronically to the Architect and Owner with full back up by date required for receipt; waivers of lien will be provided after payment application submittal has been approved.
2. Transmit each copy with transmittal form listing attachments, and recording appropriate information related to application in manner acceptable to Architect.

D. Waivers of Mechanics Lien:

1. With each Application for Payment submit waivers of mechanics liens from subcontractors and suppliers for construction period covered by previous application.
2. Submit partial waivers on each item for amount requested, prior to deduction for retainage, on each item.
3. When application shows completion of item, submit final or full waivers.
4. Owner reserves right to designate which entities involved in Work must submit waivers.
5. Waiver forms: Submit waivers of lien on properly executed AIA Document G706A,
6. Contractor's Affidavit of Release of Liens.

E. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Construction Progress Schedule (preliminary if not final).
5. Submittal schedule.
6. Schedule of principal products.
7. Schedule of unit prices.
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of permits provided by the Contractor.
11. Copies of authorizations and licenses from governing authorities for performance of Work.
12. Initial progress report.
13. Report of preconstruction meeting.

14. Certificates of insurance and insurance policies.
15. Performance and payment bonds (if required).

F. Application for Payment at Substantial Completion:

1. Following issuance of Certificate of Substantial Completion, submit Application for Payment reflecting Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work.
2. Required administrative actions and submittals that precede or coincide with this application include:

   a. Occupancy permits and similar approvals.
   b. Warranties and maintenance agreements (dated to commence on date of Substantial Completion).
   c. Test/adjust/balance records.
   d. Maintenance instructions.
   e. Meter readings.
   f. Start-up performance reports.
   g. Change-over information related to Owner's occupancy, use, operation, and maintenance.
   h. Application for reduction of retainage, and consent of surety.
   i. Advice on shifting insurance coverages.
   j. Final progress photographs.
   k. Comprehensive list of incomplete or non-complying Work (initial punch list).

G. Final Payment Application: Required administrative actions and submittals which precede or coincide with submittal of final payment Application for Payment include following:

1. Completion of Project Closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Final cleaning.
6. Transmittal of required Project construction records to Owner.
7. Proof that taxes, fees and similar obligations have been paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish and similar elements.
10. Change of door locks to Owner's access.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.
4. Project meetings.
5. Requests for Information (RFI's)

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. 01 32 00 - Construction Progress Documentation: for preparing and submitting Contractor's construction schedule.
2. 01 73 00 – Execution Requirements: For procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. 01 77 00 – Closeout Procedures: For coordinating closeout of the Contract.

1.02 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner's Representative and sub-contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Preinstallation conferences.
6. Project closeout activities.
7. Startup and adjustment of systems.

D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate location of fixtures and outlets with finish elements. Bring unconcealed conditions indicated to the attention of the Architect for confirmation of intent.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

F. Coordinate Bidder-Design System: Where indicated in the technical sections, provide design, engineering and fabrication for the complete installation of building system or assembly included in the Bidder's Cost of the Work. Include all accommodations for complete installation of system, including coordination with each trade forming a component part of the system or assembly as required to meet the design and performance criteria, and as required to maintain the integrity of the building design aesthetic. Architect will be the judge for acceptance of Bidder-Design systems.

1.03 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

B. General:

1. Submit required coordination drawings to Architect/Engineer and Owner for record only within 60 days of Notice-to-Proceed. Coordination drawings are not shop drawings and will not be accepted or approved by the Architect/Engineer or Owner.
2. Coordination drawings shall show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in space provided and/or to function as intended.
3. Except as otherwise specified, prepare composite coordination drawings to scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of utilities, architectural, structural, mechanical, and electrical elements, equipment and materials in relationship with each other. Include dimensions.
4. Provide coordination drawings utilizing different colors to illustrate work of separate trades or systems.
5. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to efficient flow of Work affecting one or more trades.
6. Indicate scheduling, sequencing, movement, and positioning of large equipment into building during construction.
7. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
8. Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communications systems components, sprinklers, and other ceiling-mounted devices.
9. Show interrelationship of components to be shown on separate Shop Drawings.
10. Indicate required installation sequences.

C. Structural Systems: Include but do not necessarily limit to the following:

1. Structural frame showing interface with exterior elements.
2. Location of openings in relation to structure.
3. Show attachments to decking, structural elements, and other systems.

D. Above Ceiling Coordination:

1. Work by all above ceiling trades, especially work located by the Contractor (i.e. sprinkler pipes, conduit runs, etc.) must be carefully coordinated by the Contractor, prior to shop drawings submissions to assure that all work will fit in the space available.
2. The Contractor shall prepare above ceiling coordination drawings for all ceilings and all other ceiling space within 60 days of notice to proceed. The drawings should show all above ceiling work, and structure, with required clearances and dimensions shown. The drawing should also show exposed ceiling work. Drawings must locate all ductwork, pipes, and conduit. In preparing these drawings, verify structural conditions, and requirements of all above ceiling trades. All above ceiling work and exposed ceiling work must be fully coordinated by the Contractor, prior to submitting shop drawings for affected items.
3. Submit the coordination drawings to the Architect/Engineer and Owner for record but not review. No additional compensation will be paid to correct work that does not fit in the space available, due to inadequate coordination by the Contractor, or that could have been resolved in the coordination

drawing. Bring any discrepancies to the Architect/Engineer's attention for resolution at the time of submitting the coordination drawings.

4. The Contractor should hold a pre-installation meeting with all subcontractors involved in the above ceiling and exposed ceiling work. Review the coordination drawing requirements, plans, specifications, and proposed work sequencing and schedule. Resolve any problems or discrepancies prior to proceeding with the work.

E. Mechanical Systems: Include, but do not necessarily limit to, following:

1. Proposed locations of piping, ductwork, equipment, and materials.
2. Proposed locations for access panels and doors.
3. Clearances for installing and maintaining insulation.
4. Clearances for servicing and maintaining equipment, including coil removal, filter removal, and space for equipment disassembly required for periodic maintenance. Show access locations.
5. Equipment connections and support details.
6. Exterior wall and foundation penetrations.
7. Fire-rated wall and floor penetrations.
8. Sizes and location of required concrete pads and bases.
9. Valve stem movement.

F. Electrical Systems: Include, but do not necessarily limit to, following:

1. Proposed locations of major raceway systems, equipment, and materials.
2. Clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance. Show access locations.
3. Exterior wall and foundation penetrations.
4. Fire-rated wall and floor penetrations.
5. Equipment connections and support details.
6. Sizes and location of required concrete pads and bases.

G. Notify Architect of conflicts and other coordination issues requiring resolution prior to commencing construction in each affected area. Respond to Architect/Engineer's requests for information concerning the coordination drawings.

H. Transmit copies of final coordination to all interested parties including all concerned subcontractors. Keep a copy of all final coordination documents in the contractor's field office; make available for review and use by Architect/Engineer and Owner during construction.

1.04 COORDINATION OF CEILING SPACE

A. Coordinate use of ceiling space in accordance with the submitted ceiling coordination drawings.

B. Coordinate use of Project space and sequence of installation of plumbing, fire protection, mechanical and electrical Work. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; place runs parallel with building lines. Utilize space efficiency to maximize accessibility for other installations, maintenance, and repairs.

C. Layouts of plumbing, fire protection, mechanical, and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on Drawings are diagrammatic. Contractor shall make minor variations in alignment, elevation, and details required to avoid interference and to satisfy architectural and structural limitations

D. Prior to installation of material and equipment, review and coordinate Work with Architectural and Structural Drawings to establish exact space conditions. Where available space is inadequate or where reasonable modifications are not possible, request information from Architect/Engineer before proceeding.

E. Coordinate installation to prevent conflicts and cooperate in making, without extra charge, reasonable modifications in layout as needed.

F. Provide clear access to control points, valves, strainers, control devices, and specialty items of every nature related to such systems and equipment to obtain maximum head room. Provide adequate clearances as necessary for operation and maintenance.

1.05 REQUESTS FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in a form that has been prior approved by the Owner and Architect.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor, and subcontractor
5. Name of Architect.
6. RFI number, numbered sequentially
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data,

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow three (3) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. EST, will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Proposed Change (PC) according to Section 01 26 00 - Contract Modification Procedures.

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Contractor in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly on a form that is acceptable to the Owner and Architect.

1. Project name.
2. Name and address of Contractor and subcontractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.

6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive (CCD), and Proposed Change (PC), as appropriate.

1.06 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to project manager, project superintendent and Quality Control manager, provide other administrative and supervisory personnel as required for proper performance of the Work. Within 30 days of Notice-to-Proceed, submit to Architect/Engineer and Owner a list of principal Contractor staff assignments, including superintendent, project manager, Quality Control manager and other supervisory personnel in attendance at Project site.

B. Identify individuals and their duties and responsibilities; mailing addresses, office telephone numbers, cell telephone numbers, fax numbers, and email addresses. Provide names, addresses, telephone numbers, fax numbers, and email addresses of individuals assigned as standbys in the absence of individuals assigned to Project.

C. Post copies of list in project meeting room, in Contractor’s field office. Keep list current at all times.

1.07 PROJECT MEETINGS

A. The Contractor shall schedule and conduct meetings, take meeting minutes, and conduct conferences at Project site.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Owner will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner’s Representative, Contractor and Architect, but no later than 10 days after Notice to Proceed.

1. Attendees: Owner, Owner’s Representative, Architect, and their consultants; Contractor and its project manager, superintendent; Quality Control Manager, major subcontractors; manufacturer’s representatives, suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Designation of responsible personnel and their duties.
b. List of Subcontractors.
c. Construction schedule.
d. Submittal procedures.
e. Project phasing.
f. Critical work sequencing and long-lead items.
g. Procedures for processing field decisions and Change Orders.
h. Procedures for RFIs.
i. Coordination with testing and inspection agencies.
j. Procedures for processing Applications for Payment.
k. Distribution of the Contract Documents.
l. Preparation of record documents.
m. Use of the premises
n. Work restrictions.
o. Working hours.
p. Parking availability.
q. Owner's occupancy requirements.
r. Responsibility for temporary facilities and controls.

s. Procedures for moisture and mold control.
t. Procedures for disruptions and shutdowns.
u. Construction waste management and recycling.
v. Office, work, and storage areas.
w. Equipment deliveries and priorities.
x. Safety and first aid.
y. Security.
z. Housekeeping (cleaning) procedures.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

C. Pre-installation Conferences: Construction Manager shall conduct pre-installation conferences at the site before each construction activity that requires coordination with other construction. The installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.

1. Attendees: Owner’s construction representative, Contractor’s superintendent; Contractor’s quality control manager, installer (installing subcontractor); representatives of manufacturers and fabricators involved in or affected by the activity, supplier; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:

a. Contract Documents.
b. Requirements for proper installation.
c. Related Change Orders.
d. Purchases and deliveries.
e. Approved submittals including Shop Drawings, Product Data and quality control Samples.
f. Review of mockups
g. Possible conflicts.
h. Possible conflicts and material compatibility problems.
i. Time schedules for activity, project schedule.
j. Weather limitations.
k. Manufacturer's written recommendations.
l. Warranty requirements.
m. Acceptability of substrates.
n. Temporary facilities and controls.
o. Space and access limitations.
p. Regulations of authorities having jurisdiction.
q. Inspection and testing requirements.
r. Required performance results.
s. Recording requirements.
t. Protection of construction, adjacent work.

3. Construction Manager: Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Promptly distribute meeting records to everyone concerned, including the Owner and Architect.
4. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

D. Progress Meetings: Conduct Project coordination meetings at bi-weekly intervals unless weekly meetings are required by the CM. Project coordination meetings are in addition to specific meetings held for other purposes, such as pre-installation conferences.

1. Attendees: In addition to representatives of the Owner’s Representative and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in

planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether contract is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    c. Agenda: Discuss items of significance that could affect progress, including the following:

        1) Review, edit and approve minutes of the previous progress meeting.
        2) Review items of significance that could affect progress including any issues needing Owner and/or Architect/Engineer action to prevent delays.
        3) Include topics for discussion as appropriate to the status of the Project.
        4) Review Work progress, since the last meeting, compared against the latest approved Construction Schedule. Determine status of each current and near-future activity on the schedule to determine whether it is on time, ahead of schedule, or behind schedule. Pay especial attention to Critical Path items. Include Procurement activities (including fabrication and delivery dates) in the review.
        5) Corrective measures and procedures required to maintain Construction Schedule, if activities are behind schedule.
        6) Work scheduled for succeeding construction period (usually two weeks)
        7) Field observations and problems with proposed solutions. Review Contract deficiencies with regards to quality, safety, manpower, supervision, etc. Include report by Quality Control Manager.
        8) Status of Submittals (current log to be provided by Contractor).
        9) Status of Proposed Changes to the Work (current log to be provided by Contractor)
        10) Status of Requests for Information (current log to be proved by Contractor)
        11) Review of preliminary payment requests (as appropriate).
        12) Site Walk-through of the in-progress Work including site review of issues discussed during progress meeting. Walk-throughs shall be attended by, at a minimum: Contractor Superintendent, Contractor Project Manager, Architect/Engineer and Owner.

E. Coordination Meetings: Contractor will conduct project coordination meetings at weekly intervals for all parties (subcontractors, suppliers, etc.) involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.

1. Attendees: Representation at each meeting by every party (Contractor, subcontractor, supplier, etc.) currently involved in construction activities. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    c. Review present and future needs of each contractor present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Deliveries.
6) Off-site fabrication.
7) Access.
8) Site utilization.
9) Temporary facilities and controls.
10) Work hours.
11) Hazards and risks.
12) Progress cleaning.
13) Quality and work standards.
14) Change Orders.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting..

F. Construction Quality Control Meetings: Conduct and attend meetings required by Section 01 45 00 – Quality Requirements.

G. Commissioning Meetings: Conduct and/or attend meetings required by the Commissioning PIan and/or Commissioning Specification Sections.

H. Special Meetings: Attend special meetings when requested by the Owner at Project Site or Owner's office to discuss specific project concerns. Attendees shall include Contractor project manager or Principal (as requested by the Owner) and any requested Subcontractor project manager or Principal (as requested by the Owner). All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
3. Submittals Schedule.
4. Daily construction reports.
5. Stored material reports.
6. Field condition reports.
7. Special reports.

B. Related Sections:

1. Section 01 29 00 – Payment Procedures:
    a. Submitting the Schedule of Values.
2. Section 01 31 00 – Project Coordination
    a. Submitting and distributing meeting and conference minutes.
3. Section 01 33 00 – Submittal Procedures
    a. Submitting schedules and reports.

1.02 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

G. Major Area: A story of construction, a separate building, or a similar significant construction element.

H. Milestone: A key or critical point in time for reference or measurement.

I. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

J. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.03 SUBMITTALS

A. Qualification Data: For scheduling consultant.

B. Submittals Schedule: See Section 01 33 00:

C. Preliminary Construction Schedule: Submit a digital copy of the schedule.

1. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities.

D. Preliminary Network Diagram: Submit a digital copy, with sufficient detail to show entire network for entire construction period. Show logic ties for activities.

E. Contractor's Construction Schedule: Submit a digital copy of the initial schedule, with sufficient detail to show entire schedule for entire construction period.

F. Retain subparagraph below if required by Owner.

G. CPM Reports: Concurrent with CPM schedule, submit three copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days. Final format of report to be agreed with Architect.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.

H. Daily Construction Reports: Submit one copy with payment application.

I. Stored Material Reports: Submit one copy with payment application.

J. Field Condition Reports: Submit one copy at time of discovery of differing conditions.

K. Special Reports: Submit one copy at time of unusual event.

1.04 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Coordination. Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review delivery dates for Owner-furnished products.
2. Review schedule for work of Owner's separate contracts.
3. Review time required for review of submittals and resubmittals.
4. Review requirements for tests and inspections by independent testing and inspecting agencies.
5. Review time required for completion and startup procedures.
6. Review and finalize list of construction activities to be included in schedule.
7. Review submittal requirements and procedures.
8. Review procedures for updating schedule.

1.05 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect or Owner.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 - Submittal Procedures, in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Startup and Testing Time: Include not less than 14 days for startup and testing.
5. Commissioning Time: Include not less than 14 days for commissioning.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 11 00 – Summary of Work. Delivery dates indicated stipulate the earliest possible delivery date.
2. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 01 11 00 – Summary of Work. Delivery dates indicated stipulate the earliest possible delivery date.
3. Work Restrictions: Include the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Uninterruptible services.
    c. Partial occupancy before Substantial Completion.
    d. Use of premises restrictions.
    e. Provisions for future construction.
    f. Seasonal variations.
    g. Environmental control.

4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.

k. Curing.
l. Startup and placement into final use and operation.

5. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

a. Structural completion.
b. Permanent space enclosure.
c. Completion of mechanical installation.
d. Completion of electrical installation.
e. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion and the following interim milestones:

1. Structural topping out.
2. Temporary dry-in.
3. Final dry-in.

F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1. Refer to Section 01 29 00 – Payment Procedures for cost reporting and payment procedures.
2. Contractor to provide updated construction cost cash flow to Owner on a monthly basis.
3. Each activity cost shall reflect an accurate value subject to approval by Architect.
4. Total cost assigned to activities shall equal the total Contract Sum.

G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.02 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using Gantt Chart format.

B. Preliminary Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time- scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than **30** days for the first three (3) Phases and 90 days for the remaining Phases after date established for the Notice to Proceed.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

4. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Fabrication.
   f. Utility interruptions.
   g. Installation.
   h. Work by Owner that may affect or be affected by Contractor's activities.
   i. Testing and commissioning.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

   a. Sub-networks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

2.04 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions.
7. Accidents.
8. Meetings and significant decisions.

9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial Completions and occupancies.
19. Substantial Completions authorized.

2.05 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 – EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Administrative and procedural requirements for submittals required for performance of the Work which consist of the following: Construction Manager's Construction Schedule, schedule of values, product list, shop drawings, product data, samples, manufacturer's instructions and manufacturer's certificates.

B. Related Sections:

1. Refer to other Division 01 sections and other Contract Documents for specifications on administrative, non-work related submittals. Such submittals include, but are not limited to the following items:

    a. Construction Managers Construction Schedule
    b. List of Subcontractors.
    c. Schedule of Values
    d. Schedule of Materials and Equipment
    e. Certificate of Insurance and Worker's Compensation Certificate.
    f. Application for payment.
    g. Permits.
    h. Inspection certificates and test reports.
    i. Items required to be submitted prior to final payment and release of retainage.

2. Section 01 31 00 – Project Coordination:
3. Section 01 32 00 – Construction Progress Documentation: Submittal Schedule.
4. Section 01 77 00 – Closeout Procedures: Requirements for closeout submittals.

1.02 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. SharePoint: Web-based collaborative platform used as a document management and storage system, which enables internal and external users to access and share files.

D. Portable Document Format (PDF): An open standard file format invented by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

E. Bluebeam Revu: Server-based software application that allows users to markup, takeoff, organize, and collaborate with PDF files.

1.03 ELECTRONIC SUBMITTAL PROCEDURES

A. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Submit as Bluebeam (Portable Document Format) pdf document(s). Describe each submittal or submittal group under cover of an electronic transmittal. Submittals shall be grouped for individual, or like products. Include separate transmittals for unrelated products.
2. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
3. Electronic shop drawing submittals shall not be locked or password protected.

4. Transmittal Form for Electronic Submittals: Use electronic form provided by the Construction Manager.

B. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. For electronically submitted shop drawings, where modifications are required by the Architect, such documents will be printed, revised and rescanned, or electronically modified and/or annotated, and may incorporate an additional page indicating action to be taken.
2. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
3. Post electronic submittals as PDF electronic files directly to Construction Manager's SharePoint site. Notify Architect in email when submittals are posted to the SharePoint site.
4. All submittals are to be submitted electronically except for samples, color charts, and small mockups.

1.04 SUBMITTAL PROCEDURES

A. Coordinate preparation and processing of submittals with performance of construction activities. 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.

B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

C. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination. The Architect will withhold action on a submittal requiring coordination with other submittals until all related submittals are received. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

D. Prepare each submittal appropriately for transmittal and handling. Transmit each submittal from the Construction Manager to the Architect using the established transmittal form. The Architect will not accept submittals received from sources other than the Construction Manager.

E. Each submittal shall include (1) electronic Submittal Cover Sheet. The Construction Manager will generate an electronic file of the required Submittal Cover Sheet. All submittals including product data and certifications, color charts, shop drawings, samples, and mock-ups each require a Submittal Cover Sheet.

1. The following will be included on the Submittal Cover Sheet: Construction Manager's name and Project title, the Construction Manager's and Architect/Engineer's submittal stamps.
2. The Construction Manager's shall electronically enter the following on the Submittal Cover Sheet.

a. Project name.
b. Date.
c. Name and address of Architect.
d. Submittal Number. Submittals are to be numbered consecutively. If re-submittals are necessary, the original submittal number is used along with the suffix 01, 02, etc.
e. Name of Contractor/ Subcontractor/ Supplier
f. Name of firm or entity that prepared submittal.
g. Category and type of submittal.
h. Specification Section number and title.
i. Specification section, article and paragraph reference; Drawing reference number and detail references, as appropriate.
j. Item(s) Submitted. Provide specific information. (Example: Product data for all plumbing fixtures with the exception of fixture supports).
k. Location(s) where product is to be installed, as appropriate.
l. Indication of full or partial submittal.
m. Additional Information or Proposed Deviation: The Contractor is required to specifically identify a proposed deviation contained in a submittal. (Example: Scheduled product is discontinued. Product submitted is the current model #.)
n. Other necessary identification.

F. Additional requirements for submittals are:

1. The Construction Manager's markings on the submittals shall be made in the color blue, Subcontractors in the color green, and the Architect/Engineer in the color red. This does not apply to information on the cover sheet.
2. Submittals that are marked by the Architect as "Not Approved" or "Revise and Resubmit" will be returned to the Construction Manager. Revise and resubmit submittals as required; identify all changes made since previous submittal.
3. Resubmit submittals until they are marked with approval notation from Architect/Engineer's action stamp.
4. In addition to the above, clearly indicate the following:

    a. Relation to adjacent structure or materials.
    b. Field dimensions, clearly identified as such.
    c. Product or material conformance with applicable standards, such as ASTM standard or Federal Specification.

5. Give five (5) working days notice to Architect for delivery of shop drawings.
6. Allow seven (7) working days for review and return of submittals. Allow additional time if coordination with subsequent submittals is required. Allow fourteen (14) working days for review and return of submittals that require review by more that one consultant including the Architect. Architect will advise Construction Manager when a submittal being processed must be delayed for coordination.

G. Transmit under a separate cover sheet each material, product, equipment or assembly required in a specification section. Submittals grouping two or more types of unrelated systems or assemblies or submittals from more than a single specification section will not be reviewed and will be returned to the Contractor. Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic suffix.

H. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information are in accordance with the requirements of the Contract Documents.

I. Schedule submittals to expedite the Project and deliver to Architect via email or if physical samples, color charts, mockups or physical submittals, at business address. Coordinate submission of related items.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Submittals will be returned to subcontractors, suppliers, etc., via email.

K. Use for Construction: Retain complete copies of electronic submittals on Project site. Physical samples, color charts, mockups, etc. will be physically available in Construction Manager's field office. Use only final action submittals that are marked with approval notation from Architect/Engineer's action stamp.

1.05 SUBMITTAL TYPES

A. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

B. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

C. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

D. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

E. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

F. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

G. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

H. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

I. Maintenance Data: Comply with requirements specified.

1.06 QUALITY ASSURANCE

A. Perform no Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals or order products or materials until the Shop Drawings, Product Data, Samples or similar submittals have been submitted to and approved by the Architect. Work started on products or materials, or fabrication before final approval of the Shop Drawings, Product Data, Samples or other similar submittal by the Architect, shall be under risk that no payment will be made for non-approved Work or product or material and the non-approved Work, product or material will be rejected.

1.07 CONTRACTOR'S REVIEW

A. Submittals of shop drawings, product literature or data, samples, etc., shall be made for complete assemblies or units of the Work. Submittals which represent only a portion of a part of a larger assembly or unit of work is not acceptable and will be rejected by the Architect.

B. Check shop drawings, project data and samples prior to submission. Shop drawings not indicating evidence of checking by Construction Manager will be returned without review by the Architect. No time extensions will be permitted for this type of resubmittal.

C. All submittals must bear a stamp indicating that the Construction Manager has reviewed the submittal prior to forwarding to the Architect, or they will be returned to the Construction Manager without action. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Coordinate each submittal with requirements of the Work and of Contract Documents.

E. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by Architect's approval thereof. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of shop drawings, product data, samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation.

F. Notify Architect, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.

G. Begin no work which requires submittals until return of submittals with Architect/Engineer's stamp and initials or signature indicating review.

H. Materials or equipment installed prior to the required shop drawing, product data, or sample approval shall be subject to removal and replacement by the Construction Manager/Contractor at no additional cost to the Owner, if in the opinion of the Architect, such materials or equipment do not meet the requirements of the Contract Documents.

I. No xerographic or altered xerographic reproductions of the Contract Documents are permitted as submittals. Facsimiles or copies of facsimiles are not acceptable as required submittals to be furnished under this section.

1.08 ARCHITECT'S REVIEW

A. Architect will not review submittals that do not bear Construction Manager's approval stamp and will return them without action.

B. Action Submittals: Architect will review each properly executed submittal, will mark up to indicate corrections or revisions required, and return it.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Architect will discard submittals received from sources other than Construction Manager.

G. Submittals not required by the Contract Documents will be returned by Architect without action.

1.09 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
    a. Following response to the initial submittal, print and distribute copies to the Construction Manager, Architect, other contractors, and other parties required to comply with scheduled dates. Post copies in the project meeting room and temporary field office.
        1) When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
        2) Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

B. Prepare the schedule in chronological order. Provide the following information:

1. Scheduled data for the first submittal.
2. Specification Section number and title.
3. Submittal category (Action, Informational).
4. Name of the subcontractor.
5. Description of the part of the Work covered.
6. Scheduled date for the Architect’s and Construction Manager’s final release or approval.

1.10 SCHEDULE OF VALUES

A. Coordinate preparation of the schedule of values with preparation of the progress schedule.

B. Correlate line items in the schedule of values with other required administrative schedules and forms, including:

1. Construction Manager's Construction Schedule.
2. Application for payment form.
3. List of subcontractors.

4. Schedule of alternates.
5. List of products.
6. Schedule of submittals.

C. Submit the schedule of values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial application for payment.

D. Use the Project Manual Table of Contents as a guide to establish the format for the schedule of values. Include the following Project identification on the schedule of values:

1. Title of project and location.
2. Name of the Architect.
3. Project number.
4. Contractor's name and address.
5. Date of submittal.

E. Arrange the schedule of values in a tabular form with separate columns to indicate the following for each item listed:

1. Generic name.
2. Related specification section.
3. Change Orders (numbers) that have affected value.
4. Dollar value.
5. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

F. Provide a breakdown of the Contact Sum in sufficient detail to facilitate continued evaluation of applications for payment and progress reports. Break principal subcontract amounts down into several line items. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.

G. For each part of the work where an application for payment may include materials or equipment purchased or fabricated and stored, but not yet installed, provide separated line items on the schedule of values for initial cost of the materials for each subsequent stage of completion and for total installed value of that part of the work.

H. Show line items for indirect costs and margins on actual costs only to the extent that such items will be listed individually in applications for payment. Each item on the schedule of values and applications for payment shall be complete including its total cost and proportionate share of the general overhead and profit margin.

I. Update and resubmit the Schedule of Values when Change Orders or construction change directives result to a change in the Contract Sum.

1.11 PROPOSED PRODUCT SCHEDULE

A. Within 10 days after execution of the Agreement, submit schedule of major products proposed for use. Prepare schedule in tabular form showing each product proposed for use in the Work. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate the product list with the list of proposed materials manufacturers.
2. Prepare the product schedule with information on each item tabulated under the following column headings:

    a. Related specifications section number.
    b. Generic name used in Contract Documents.
    c. Proprietary name, model number and similar designations.
    d. Manufacturer's name and address.
    e. Supplier's name and address.
    f. Installer's name and address.
    g. Projected delivery date or time span of delivery period.

3. Provide a written explanation for omissions of data and for known variations from Contract requirements.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

C. Submit proposed Product Schedule in PDF electronic file format.

1.12 PRODUCT DATA

A. Collect product data into a single submittal for each element of construction or system. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where product data must be specially prepared because standard printed data is not suitable for use, submit as "shop drawings". Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.

B. Mark each copy to show which products and options are applicable. Where printed product data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information as applicable:

1. Manufacturer's catalog cuts
2. Manufacturer's product specifications
3. Standard color charts
4. Statement of compliance with specified referenced standards.
5. Testing by recognized testing agency.
6. Application of testing agency labels and seals.
7. Availability and delivery time information.
8. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

C. Do not proceed with installation until a copy of product data is in the Installer’s possession.

D. Submit Product Data before or concurrent with Samples.

E. Submit Product Data in PDF electronic file format.

1.13 SHOP DRAWINGS

A. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. All shop drawings should be submitted electronically as high quality PDFs.

B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Identification of products and materials included by sheet and detail number.
2. Show quantities, kinds of materials, methods of assembly, and all data required for fabrication, erection, and installation.
3. Show layout, details, materials, thicknesses, methods of assembly, attachments, the relationship of adjoining work, wiring diagrams, rough-in requirements, relevant field conditions and dimensions; coordinate with affected subcontractors and suppliers if in conflict. Clearly indicate field dimensions and field conditions.
4. Dimensions.
5. Compliance with specified standards.
6. Notation of coordination requirements.
7. Notation of dimensions established by field measurement.
8. Relationship and attachment to adjoining construction clearly indicated.
9. Seal and signature of professional engineer if specified.

C. Coordination drawings are a special type of shop drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

1. Preparation of coordination drawings is specified in Section 01 31 00 – Project Coordination, and may include components previously shown in detail on shop drawings or product data.

D. After review, reproduce and distribute in accordance with “Submittal Procedures” above.

E. Submit shop drawings in PDF electronic file format.

1.14 SAMPLES

A. Submit the required number of physical samples required, the Architect will retain a minimum of two (2) physical Samples, remainder will be returned unless otherwise provided. Cure and finish samples as specified and physically identical with the material or product proposed.

B. Samples may include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing colors, texture and pattern. Illustrate functional and aesthetic characteristics of materials, equipment, or workmanship, with integral parts and attachment devices. Coordinate sample submittals for interfacing Work.

C. Mount, display, or package samples in the manner to facilitate review of quantities indicated. Prepare samples to match the Architect's sample. Include the following information attached with label on unexposed side of Samples and include the following:

1. Include identification on each sample with full Project information.
2. Generic description of the sample.
3. Specification section number and paragraph number reference.
4. Sample source.
5. Product name or name of manufacturer.
6. Compliance with recognized standards.
7. Availability and delivery time.

D. Submit samples for review of size, kind, color, pattern, and texture, for a final check of these characteristics with other elements, and a comparison of these characteristics between the final submittal and the actual component as delivered and installed. Where finishes are not indicated as custom, provide full range of manufacturers' standard finishes.

E. Where variation in color, pattern, texture or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.

F. Refer to other Specification sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.

G. Reviewed samples which may be used in the Work are indicated in individual specification sections.

H. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

I. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

J. The Construction Manager/Contractor shall furnish additional certification of conformance to the specification requirements as may be requested by the Architect.

1.15 CALCULATIONS

A. When specified in individual Sections, submit calculations.

1. Submit engineering calculations for component sizes, deflections, and connections.
2. Submit calculations bearing seal and signature of professional engineer responsible for design, registered in State of Ohio.
3. Where existing conditions deviate from Contract Documents or shop drawings, submit calculations for existing condition, including calculations for anticipated corrective action required, and changes to loads transferred to "base building" structure.

1.16 ELECTRONIC DOCUMENTS

A. The Architect will, at his sole discretion and without obligation, make graphic portions of the contract documents available for use by Construction Manager/Contractors in electronic format for Construction Manager/Contractors' use in preparing submittals. These electronic documents are available in the .RVT file format for Revit Version 16, at no cost.

1. All dimensions, verbiage and statistical information will/may be removed.
2. Use of these electronic documents is solely at the contractors' risk, and shall in no way alter the contractor's responsibilities under the contract for construction.
3. The Architect will not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Architect's or his consultants' computer software or hardware defects or errors; the Architect's or his consultants' electronic or disk transmittal of data, information or documents; or the Architect's or his consultants' reformatting or automated conversion of date, information or documents electronically or disk transmitted from the Architect's consultants to the Architect.
4. The Contractor waives all claims against the Owner, Architect, their employees, officers and consultants for any and all errors in the electronic documents. Furthermore, the contractor shall indemnify, defend and hold harmless the Architect, and his consultants together with their respective employees and officers, harmless from and against any claims, suits, demands, causes of action, losses, damages or expenses, (including all attorney's fees and litigation expenses) attributed to errors or defects in data, information or documents, including drawings and specifications, resulting from the contractors' distribution of electronic documents to other contractors, persons or entities.

1.17 ELECTRONIC RECORD DRAWINGS SUBMITTALS

A. The Architect will release the computer drawing files at no cost to the contractor for the purpose of the Construction Manager/Contractor(s) returning these as Record Documents. At completion of work, the contractor shall submit As-Built / Record Drawings to SCA in .RVT file format for Revit Version 16 format and one set of marked-up Record Prints. Electronic drawings shall be submitted in .RVT format. The following file formats are not acceptable formats (.tif, .jpg, .jpeg, .pdf).

B. Refer to "Computer File Release Application & Electronic Record Drawings Agreement" contained in this Project Manual.

1. Cost for computer files will be waived for contractors submitting electronic record documents.

1.18 INFORMATIONAL SUBMITTALS

A. Informational submittals upon which Architect is not expected to take responsive action may be so identified in Contract Documents. When professional certification of performance criteria of materials, systems, or equipment is required by Contract Documents, Architect shall be entitled to rely upon accuracy and completeness of such certifications.

B. Types of Informational Submittals:

1. Design data: Submit with shop drawings.
2. Test reports: Submit within two weeks of testing.
3. Certifications:

    a. Submit certifications when specified in individual Specification sections.
    b. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
    c. Certifications may be recent or previous test results on material or product, but must be acceptable to Architect.
    d. Submit welder certifications with shop drawings.
    e. Submit manufacturer or fabricator certifications with product data.
    f. Submit copy of Contractor-obtained 'Hot-Work' permits.
    g. Submit certificates of compliance within two weeks following approval or acceptance by authority having jurisdiction.
    h. Submit installation certifications within two weeks following completion of product installation.

4. Engineering Certifications:

    a. Submit certified statement, signed and sealed by professional structural engineer responsible for design attesting to the following:

        1) Conformity to applicable governing codes.
        2) Conformity to criteria in Contract Documents.
        3) Component parts were designed or selected for locale and application intended.

4) State of origin within jurisdiction of project.

b. Submit with shop drawings. Submit prior to fabrication if shop drawings are not required by individual specification sections.

5. Qualification Data:

a. When specified in individual Sections, submit manufacturer's, fabricator's, and installer's qualifications verifying years of experience.
b. When specified in individual Sections, include list of completed projects having similar scope of Work identified by name, location, date, reference names, and phone numbers.
c. When specified in individual Sections, submit manufacturer qualification data with proposed products list.
d. When specified in individual Sections, submit fabricator or installer qualification data with list of subcontractors at least 15 days prior to submitting first Application for Payment.

6. Manufacturer's Instructions:

a. Refer to Section 01 60 00 – Product Requirements and 01 73 00 – Execution Requirements, for requirements.
b. When specified in individual Specification sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, adjusting, finishing, and other pertinent data.
c. Identify conflicts between manufacturer's instructions and Contract Documents.
d. Submit with product data.

7. Manufacturer's Field Reports:

a. Refer to Section 01 40 00 – Quality Requirements, for requirements.
b. When specified in individual Specification sections, submit written results and findings of manufacturer's field services specified as part of Field Quality Control.
c. Submit within two weeks following completion of field services covered in individual reports.

8. Coordination Drawings and Layouts: Refer to Section 01 31 00 – Project Coordination requirements related to trades indicated, unless otherwise indicated.

a. Refer to individual technical sections for detailed requirements.

C. Quantity: Submit in quantities specified for product data.

1.19 QUALITY ASSURANCE SUBMITTALS

A. Submit quality control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other sections of the specifications.

B. Where other sections of the Specifications require certification that a product, materials, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

C. Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

D. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 – Project Coordination.

E. Construction Manager's Construction Schedule: Comply with requirements specified in this section.

F. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 – Payment Procedures.

G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 – Quality Requirements.

H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 00 – Closeout Procedures.

I. Qualification Data: When specified in individual Sections, prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

J. Installer Certificates: When specified in individual Sections, submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

K. Manufacturer Certificates: When specified in individual Sections, submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

L. Product Certificates: When specified in individual Sections, submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

M. Material Certificates: When specified in individual Sections, submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

N. Material Test Reports: When specified in individual Sections, submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

O. Product Test Reports: When specified in individual Sections, submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

P. Research Reports: When specified in individual Sections, submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

Q. Preconstruction Test Reports: When specified in individual Sections, submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

R. Compatibility Test Reports: When specified in individual Sections, submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

S. Field Test Reports: When specified in individual Sections, submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

T. Design Data: When specified in individual Sections, prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality-control services.

B. Quality control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Architect.

C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

D. Related Documents/ Sections:

1. General Conditions: Inspections, testing, and approvals.
2. Section 01 33 00 – Submittal Procedures: Submission of manufacturers' instructions and certificates.
3. Section 01 73 29 – Cutting and Patching: Requirements for repair and restoration of construction disturbed by inspection and testing activities.

1.02 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.

C. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

D. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.

E. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

F. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

G. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.03 SUBMITTALS

A. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

B. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.04 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities:

1. Contractor to provide Q/C plan to demonstrate controls for quality in accordance with the following:

a. Q/C management plan.
b. Qualifications of Q/C supervisor(s) and organizational chart for chain of command.
c. Sample daily Q/C reports and checklists.
d. Q/C methods for storage and handling.
e. Q/C methods for selective demolition
f. Q/C methods for testing and inspection.
g. Q/C methods for installation of new materials.
h. Q/C methods for testing and reporting to Owner.

C. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

D. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

E. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
2. Special inspections required by authorities having jurisdiction
3. Owner-performed tests and inspections indicated in the Contract Documents.

F. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

G. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.05 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Factory-Authorized Service Representative Qualifications: An owner or manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1.06 QUALITY CONTROL

A. Owner Responsibilities: Owner will appoint, employ, and pay for services of an independent testing laboratory to perform specified inspections and testing, unless specified otherwise.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Provide quality-control service specified and required by authorities having jurisdiction.

1. Engage a qualified testing agency to perform quality-control services.
2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
4. Submit a certified written report, in duplicate, of each quality-control service.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

F. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.07 PROJECT LAYOUT AND CONTROL

A. Layout of all work shall be the responsibility of the Contractor. Layout and establishment of elevations shall be by a registered engineer or registered surveyor.

B. Maintain control points accessible to all contractors and personnel, set permanent monuments.

1.08 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, testing, and adjustment as applicable, and to initiate instructions when necessary.

B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

C. Submit report in duplicate within 30 days of observation to Architect for review.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
2. Comply with the Contract Document requirements for Section 01 73 29 – Cutting and Patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes general definitions for Specifications and other Contract Documents. Basic contract definitions are included in the Conditions of the Contract.

B. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

C. Comply with standards in effect as of date of the Contract Documents except comply with standards having different revision dates as referenced in the codes as indicated on Drawings.

1.02 REFERENCE STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standard have the same force and effect as if bound or copied direcly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents except for those having different revision dates as referenced in the codes indicated on Drawings.

C. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

1.03 GENERAL DEFINITIONS

A. General Explanation: Basic Contract definitions are included in the Contract. Certain terms used in Contract Documents are defined generally in this article. Definitions and explanations that follow are not necessarily either complete or exclusive, but are general for the Work to the extent they are not stated more explicitly in other provisions of the Contract Documents.

B. Approved: The term "approved" where used in conjunction with Architect's action on the Contractor's submittals, requests, and applications, is limited to the Architect's duties and responsibilities as specified in the Conditions of the Contract. In no case will "approval" by Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of Contract Documents.

C. Bulletin: A document issued by the Architect, after execution of the Contract requesting an proposal from the Contractor which, if approved as provided in the Contract Documents, will cause the execution of a Change Order to modify, amend or alter the Contract Documents.

D. Contract Completion: The date upon which all deficiencies noted in the “punch list” have been corrected, the Contractor’s work is 100 percent complete, and the Contractor has complied with all conditions precedent to final payment and release of retainage.

E. Cutting and Patching: The term "cutting and patching" means cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

1. Cutting and patching is performed for coordination of the Work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
2. Cutting and patching performed during the manufacturer of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching."

F. Demolish: The term "demolish" shall mean to wreck or destroy a structure or building system assembly (such as floor or ceiling system, walls or partitions, etc.) and the removal of wrecked materials from the job site. Where new work is not specified for the adjoining surface, selective demolition shall require " cutting and patching" wherever demolished portions of a structure adjoin portions to remain.

G. Directed, Requested, etc.: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect" "requested by Architect" and similar phrases. However, no such implied meaning shall be interpreted to extend Architect's responsibility to Contractor's area of construction supervision.

H. "Existing to Remain" or "Retain": Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.

I. Experienced: When used with an entity or individual, 'experienced' means having successfully completed a minimum number of projects similar in nature, size, and extent to this Project; and having a number of years of experience (as defined in the specification section) being familiar with special requirements indicated; and having complied with requirements of building code officials and industry standards.

J. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

K. Construction Manager and Contractor: These terms are used interchangeable throughout Division 01 and Divisions 02 through 33, referring to the procedural requirements affecting both the administration of the work and the work of individual trade contractors.

L. Indicated: The term "Indicated" is a cross-reference to graphic representations, notes, or schedules on the Drawings or other paragraphs or Schedules in the Specifications, and to similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

M. Install: Except as otherwise defined in greater detail, the term "install" describes operations at Project Site including the actual unloading, temporary storage, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.

N. Installer: An Installer is the Contractor or an entity (person or firm) engaged by the Contractor, either as an employee, subcontractor or contractor of lower tier, to perform a particular construction activity, including installation, erection, application and similar required operations. Installers are required to be experienced in the operations they are engaged to perform.

1. Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

O. ORC: The Ohio Revised Code.

P. Product: Includes natural and manufactured materials, components, machinery, fixtures, equipment, devices, furnishings, systems, and their associated accessories to be incorporated into the Work.

Q. Project Site: The project site is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing either work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.

R. Protect: The term "protect" shall mean to cover, enclose, shield or take other designated measures to avoid damage or harm. Items protected will either remain in place, or will be salvaged for re-installation in the Work. The type of protection shall be as specified. Where the type of protection is not specified, items shall be protected from any and all damage, scratches, marking, overspray, dripping, deterioration, or movement from any and all activities scheduled to take place on this Project, and/or would be typical to a Project site such as this one.

S. Provide: Except as otherwise defined in greater detail, the term "provide" means to furnish and install, complete and ready for the intended use.

T. Re-install: The term "re-install" or "re-installation" shall mean to install a salvaged or stored item or material in the Work.

U. Remove: The term "remove" shall mean to detach or separate an item, component or assembly from its installed location, and dispose of off-site, unless indicated to be removed and salvaged or removed and reinstalled. Removal shall be accomplished without damage to adjacent materials, components or systems that are to remain. Damage that must be incurred during removal shall be repaired as cutting and patching.

V. Repair:

1. The term "repair" shall be defined as “Replacement of component(s), either damaged or missing, which are part of a larger assembly, to return an existing material as closely as possible to its original form, structural integrity and condition.” Generally, the types of work required to achieve a “repaired” condition are the following:

    a. Disassembly of existing components or construction for the purpose if installing new components.
    b. Removal of the component or portion of an assembly designated for repair.
    c. Preparation of the adjacent surfaces to receive the repair.
    d. Installation and securing the repaired component in the assembly.
    e. Preparation of the assembly to receive a finish as specified in the finishing or painting specification.

W. Replace: To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:

1. The term "replace" shall be defined as providing in a former position or place.
2. The term may be combined with such terms as “with existing” or “with new” which define exactly what is to be replaced.

    a. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
    b. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.

3. Reference individual specification sections for further definition of “replace” as it relates to a specific application or condition.

X. Restore:

1. The term "restore" shall be defined as a general term for the process of returning a material, component, system or portion of work as nearly as possible to its original form or condition when it was new.
2. The term "restore" when used in a general sense may include the process of ‘repair’ defined above.
3. Refer to individual specification sections for further definition of “restore” as it relates to a specific application or condition.
4. Generally the process involved with “restore” or “restoration” include the following:

    a. Removal of applied items or materials which are not to be part of the restored work.
    b. Stripping or other types of removal of surface applied coatings (i.e., paint).
    c. Modifying the material if it is required to accommodate new work.
    d. Replacement of portions of components or materials that cannot be restored because of condition, including those that are deteriorated or otherwise damaged. Replacement is typically done with dutchmen.
    e. Reinforcing broken components when this procedure is acceptable in lieu of “repair.”
    f. Tightening and securing open or loose joints.
    g. Patching or plugging holes or other severe loss of the existing material.
    h. Filling of minor holes, scratches, dents, or other deformation not associated with normal wear and tear.
    i. Sanding of the repaired surfaces smooth as a result of the restore process, prior to final surface preparation for finishing.

5. Minor surface preparation of a reconditioned surface prior to other finishing or painting is not considered part of the “restore” process, and is specified as preparation in the finishing or painting specification.

6. It is not the intent of the “restore” process to return a material that shows normal wear to an original “like new” appearance or condition. Rather, such wear is considered a normal part of the use and life of the particular material, and as such does not require “restoring”

Y. Regulations: The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

Z. Salvage: The term "salvage" shall mean the removal of items, components, equipment or materials from their installed location, and protection and storage of such items, components, equipment or materials. Salvaged items will be designated either to be re-installed in the Work, stored, or turned over to the Owner or other designated entity, plus such other work as described.

AA. Store: The term "store" shall mean to protect and place in a designated area. Where an area is not designated, the Contractor responsible for the item shall provide adequate and reasonable facilities acceptable to the Architect.

BB. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

CC. True To Line, Plumb, Level, and Flat: Except as otherwise indicated in individual specification sections, install Work within following tolerances:

1. True to line: Allowed deviation from straight line within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 3/8 inch in lengths over 20 feet.
2. Level: Allowed deviation from horizontal plane within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 1/2 inch in lengths over 20 feet.
3. Plumb: Allowed deviation from vertical plane within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 1/2 inch in lengths over 20 feet.
4. Flat: Allowed deviation from flat plane in any planar direction within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 3/8 inch in lengths over 20 feet.
5. Tolerances are not accumulative.

1.04 PROJECT MANUAL FORMAT AND CONTENT EXPLANATION

A. The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 2020 MASTERFORMAT numbering system.

B. This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicate.

   a. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
   b. The words "shall be" are implied where a colon (:) is used within a sentence or phrase.

2. Keynotes (Alpha-Numeric Abbreviations): Abbreviations, in brackets **(081113.1)**, or quotation marks ‘**081113.1**’, denotes keynotes that identify materials and finish or type, as both shown on the drawings defined in abbreviation list and described in the respective specification Section.

C. Minimum Quality/Quantity:

1. Quality level or quantity shown or specified is intended to be minimum for Work to be performed or provided.

2. Except as otherwise specifically indicated, actual Work may either comply exactly with that minimum within specified tolerances, or may exceed that minimum within reasonable limits.
3. In complying with these requirements, indicated numeric values are either minimums or maximums as noted, or as appropriate for context of requirements.
4. Refer instances of uncertainty to Architect for decision before proceeding.

1.05 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

1. Referenced standards (referenced directly in Contract Documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to Work.
2. Publication Dates: Comply with standard in effect as of the date of the Contract Documents, unless otherwise indicated.
3. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source.
4. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the content of the text provision.

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1.06 GOVERNING REGULATIONS AND AUTHORITIES

A. The Architect has contacted authorities having jurisdiction where necessary to obtain information to prepare Contract Documents. Contact authorities having jurisdiction directly for information and decisions regarding the Work.

B. For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts of fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. Minimum temporary facilities and controls requirements are specified in this section. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of necessary temporary Work, and no omission from this section will be recognized as an indication that such temporary Work is not required for successful completion of the Project and compliance with requirements of the General Conditions and Contract Documents and all applicable codes.

B. Section Includes:

1. Construction aids.
2. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
3. Temporary field offices.
4. Temporary Representative's field office
5. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
6. Temporary tree and plant protection.
7. Temporary provisions for protection of installed work.
8. Temporary control for security, waste collection and disposal, cleaning, etc., as indicated.

C. Costs: Unless otherwise specified in the Contract Documents, all costs for furnishing, installation, operation, maintenance and removal of all temporary utilities shall be borne by the Contractor. Apply for all permits and metered bills will be paid by Owner.

1. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment at no additional cost.
2. Should Owner occupy part of the Project during the construction period, utility costs will be shared proportionally at an agreed upon unit cost.

D. Related Sections:

1. 01 11 00 – Summary of Work
2. 01 40 00 – Quality Requirements: Code authority references.
3. 01 58 00 – Project Identification Signs.
4. 01 60 00 – Product Requirements
5. 01 73 00 – Execution Requirements: Progress Cleaning.

1.02 SUBMITTALS

A. Prepare submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Site Utilization Plan: Submit a mobilization and staging plan to the Architect and Owner for review before starting any work on the site. Include staging for major equipment, material deliveries, parking, temporary structures, and fencing.

C. Traffic Control Plan and Construction Traffic Management Plan: Before starting work, develop a traffic control plan showing traffic flow on and off the site and intended haul routes; traffic plan shall also indicate timing and duration of street closures or detours. This traffic plan shall be submitted to the Architect and Owner for review; and then to the City of Columbus for approval, prior to altering access on any public street traffic. Approval of the traffic plan is required prior to the start of the Work on site.

1.03 QUALITY ASSURANCE

A. Codes and Regulations: Comply with applicable laws and regulations of authorities having jurisdiction, Related Sections which supplement the Contractor's use of the site, including following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police and Fire department rules.
5. Environmental protection regulations.

B. Obtain approval from utility companies and authorities having jurisdiction for each temporary utility before use. Obtain required certifications and permits. Pay connection fees.

1.04 SCHEDULING

A. Prepare schedule indicating dates for implementation and termination of each temporary utility.

B. At earliest feasible time, when acceptable to Owner, change over from use of temporary utility service to use of permanent utility service.

C. Notice of Street Closures: Contractor shall be responsible for providing advance notice of any street closures associated with construction of the Project as provided in the approved Construction Traffic Management Plan.

D. 24 Hour Contact: Contractor shall designate an employee or agent with a 24-hour phone number for reporting problems associated with the construction to be contacted by residents and businesses in the area.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Materials for temporary facilities may be new or used suitable for intended purpose, but of adequate capacity for required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

B. Water: Subcontractors are responsible for providing their own drinking water.

2.02 TEMPORARY FIELD OFFICES

A. Field Office:

1. Structurally sound, weather tight, equipped with heating, air conditioning, ventilation system, electric power outlets, lighting, and telephone.
2. Temporary Building: Portable or mobile buildings may be used. Floor raised above ground.
3. Size:

    a. As required for Construction Manager’s operations.
    b. Provide space in field office for project meetings, with table and chairs to accommodate 30 people.
    c. Provide common or separate space available for Architect and Owner to review Construction Documents with desk and chairs.

4. Equip with the following:

    a. Internet connection
    b. Scanner/copier/printer

2.03 CONSTRUCTION AIDS

A. Provide scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, chutes, and other devices and equipment necessary to facilitate execution and construction contract administration of Work.

B. Provide cranes, hoists, rigging, material lifts, and other conveyances or apparatus as necessary to facilitate execution of Work.

2.04 VEHICULAR ACCESS AND CONTROLS

A. Provide signs, signals, traffic cones and drums, flares and lights, and flag equipment of types required by authority having jurisdiction.

2.05 TEMPORARY PARTITIONS

A. Temporary Partitions: Materials are Contractor's options, except as follows performance requirements:

1. Maximum flame spread index of 75 in accordance with ASTM E84.
2. Fire rating to match existing or final construction.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install, maintain, and operate temporary utilities and services to ensure continuous operation. Modify and extend systems as Work progresses.

B. Install temporary facilities and controls in manner to produce reasonable uniform appearance, structurally adequate for required purposes, and properly maintained.

C. Modify and relocate temporary facilities and controls as necessary to accommodate progress of Work.

D. Refer to Related Sections for additional requirements.

3.02 TEMPORARY ELECTRIC POWER AND LIGHTING

A. Complement existing power service capacity and characteristics as required.

B. Provide electrical service sized to provide adequate temporary power and lighting for construction operations.

C. Provide branch distribution system from temporary power source with distribution boxes and outlets located so that power and lighting is available throughout active work areas.

D. Permanent receptacles may not be utilized during construction in areas of new construction. Permanent receptacles may be used in renovation areas but shall be repaired, replaced, and or cleaned following use to return them to as-new condition.

E. Replace receptacle plates and wiring devices damaged during construction.

F. Provide lighting to conduct construction operations.

G. Permanent lighting system may be utilized during construction.

H. Restore permanent lighting systems used during construction to original condition. Maintain lighting and provide routine repairs.

3.03 TEMPORARY HEATING AND VENTILATING

A. Except where indicated otherwise in individual Specification sections, maintain minimum ambient temperature of 50 degrees F in enclosed areas where construction is in progress; maintain humidity levels to within levels required to allow construction to proceed without affecting manufacturer’s accepted installation procedures and warranty certification.

1. Incorporate temporary means to prevent moisture accumulation in building assemblies within manufacturer’s acceptable limits by use of dehumidification equipment designed for 24 hour operation, complete with monitoring and notification capability similar to Munters Corporation Moisture Control Services.
2. Do not use propane fired equipment for temporary heating and moisture control without consent of Owner and Architect.

B. Drying Requirements For Concrete Slabs: Refer to Section 03 35 00 – Interior Floor Slab Requirements. If the moisture content is excessive, higher than acceptable limits prescribed by floor covering and finish materials manufacturers, the air above the concrete shall be held below 30% RH until the slab is dry enough to meet the specification requirements.

C. Use of permanent heating/ventilating and associated distribution systems will be permitted only upon meeting following requirements:

1. Verify that installation is approved for operation, equipment is lubricated, and filters are in place.
2. Equipment installed complete with accessories, started-up, maintained, serviced, and operated in strict accordance with manufacturer's instructions.
3. Provide and pay for regular replacement of filters and worn or consumed parts.
4. Operation of permanent systems or any portion thereof to provide temporary heat/ventilation does not constitute acceptance of system or portion of system.
5. Immediately before Substantial Completion, completely clean each permanent unit used, install new filters, and perform service functions required for placing units in use and qualifying for specified warranties.

D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

3.04 TEMPORARY WATER

A. Permanent Water System: The permanent water supply and distribution system may be used as a source of water for construction purposes.

3.05 TEMPORARY FIELD OFFICE

A. Provide temporary field offices at time of project mobilization. Maintain during progress of Work.

3.06 TEMPORARY SANITARY FACILITIES

A. Temporary Toilets: Provide self-contained single-occupant toilet units of the chemical, aerated circulation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. Comply with regulations and health codes for the type, number, operation and maintenance of facilities.

3.07 FIRST AID FACILITIES

A. General: Provide personnel trained in first aid and certified as approved by Ohio Department of Labor and Industries In accordance with applicable local requirements. Provide first aid kits on site; types and quantities in accordance with requirements.

3.08 PARKING AND TRAFFIC REGULATION

A. Parking Areas: Contractor is responsible for parking of his vehicles and those of his subcontractors and personnel in accordance with the City of Columbus Ordinances.

B. Flag persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroaches on public traffic lanes and as required by the Architect and Owner.

C. Warning Lights: Use warning lights during hours of low visibility to delineate traffic lanes and guide traffic.

D. Work Zone Traffic Control Devices: Comply with "Manual on Uniform Traffic Control Devices (MUTCD)", latest edition.

E. Access Roads and Approaches:

1. Construct and maintain temporary roads and approaches accessing public thoroughfares to serve construction area.
2. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
3. Provide and maintain access for firefighting equipment and access to fire hydrants to be free of obstructions.
4. Track-equipped vehicles not allowed on paved areas.
5. Provide means of removing mud from vehicle wheels before entering streets.
6. Keep streets, drives, and walks adjacent to site and haul routes clean and free of dirt, debris, and litter caused by construction operations.

F. Haul Routes: Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.

G. Traffic Signs and Signals: Comply with requirements of authorities having jurisdiction.

3.09 TEMPORARY BARRIERS AND ENCLOSURES

A. Provide barriers, warning signs, lights, guard railings, etc., to protect the public from hazards and prevent unauthorized entry to construction areas, to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations. Damage caused to Owner's property and existing facilities will be replaced by the Contractor to match existing (type and quality) in accordance with Section 01 11 00 – Summary of Work.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way, for public access to adjacent properties and sidewalks.

C. Protect non-owned vehicular traffic, stored materials, on and off-site, and structures from damage.

D. Duration of Controls: Throughout construction work, 24 hours a day.

3.10 TEMPORARY CONTROLS

A. Fire Protection:

1. Comply with requirements of the Columbus Fire Department and with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations", including requirements of local fire protection code and governing authorities.
2. Provide and maintain fire protection including, without limitation, fire extinguishers and other appropriate fire-fighting equipment ready for immediate use.
3. Distribute equipment around site, particularly in immediate vicinity of performance of welding or similar hazardous Work.
4. Store gasoline and other flammable liquids in Underwriter's Laboratories listed safety containers in conformance with recommendations of National Board of Fire Underwriters. Do not store gasoline or other flammable liquid within building.
5. Coordination with permanent fire protection systems:

    a. At earliest feasible date in each area of Project, complete installation of permanent fire protection system, including connected services, and place into operation and use.
    b. Instruct key construction and Owner personnel on use of systems.

B. Dust Control:

1. Contractor shall prevent dust from being generated during construction in compliance with all applicable City, County, State, and Federal regulations.
2. Pollution Control: Comply with all pollution control regulations in effect at site for all materials, soils, equipment and Work procedures used on the Project. If the Contractor causes a release of contaminants, the Contractor shall be responsible for all costs associated with clean-up of that release.

    a. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations. Perform emergency measures required to contain spillages, and to remove contaminated soils or liquids.
    b. Take measures to prevent harmful substances from entering public sewers.
    c. Maintain equipment so that it does not release unnecessary air pollution.
    d. Protect indoor air quality by avoiding the release of unnecessary chemicals, volatile organic compounds and pollutants and by avoiding the growth of molds and fungus.

C. Security:

1. Provide security fencing with gate access to protect Work from unauthorized entry, vandalism, and theft.
2. Conduct operations in manner to avoid risk of loss, theft, or damage by vandalism.
3. Comply with security program or instructions established by Owner.

4. Protect stored materials and equipment, including workmen tools from theft and vandalism. The Owner shall not be held to have incurred any liability for loss of, and damage to, materials, tools and equipment of the Construction Manager, or of those employed by the Construction Manager, by contract or otherwise.
5. Security Enclosure and Lock-up: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Secure all openings at any time site is left unoccupied.
6. Security of Store Materials and Equipment: Protect stored materials and equipment, including workmen tools from theft and vandalism. The Owner shall not be held to have incurred any liability for loss of, and damage to, materials, tools and equipment of the Construction Manager, or of those employed by Construction Manager, by contract or otherwise.

D. Noise Control Intent: The Contractor is alerted to the necessity for maintaining a noise control program during the entire construction period. Control and restrict noise levels to those permitted by the approved by the City and as specified herein. The maximum interior noise levels in adjacent buildings during daytime hours shall not exceed 55 dBA; during night time hours, the maximum noise level shall not exceed 45 dBA, unless otherwise approved by the City. Limit noise-generating construction activities to hours set by city ordinance.

1. Owner is sole judge of tolerability of noise levels.
2. High level noise operations must be performed in accordance with local regulations and must be approved by Owner prior to proceeding.

E. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

F. Traffic Control: Conduct operations in such a manner to avoid unnecessary interference to existing pedestrian and vehicle traffic.

1. Obtaining permits and inspections necessitated by the use of public streets, sidewalks, curbs, and paving. Post guarantees and bonds that may be required, and repair and make good any damages thereto, acceptable to the authorities having jurisdiction. Pay all fees.
2. Controlling construction traffic within and adjacent to the site. Keep streets adjacent to the site open to vehicular and pedestrian traffic, except as allowed by permits issued by the City. Maintain constant access for police, fire and ambulance service.
3. Mud tracked onto City streets by any activity related to the Project shall be minimized. This shall be done by washing vehicle wheels before they enter the public right-of-ways and by sweeping streets. The streets shall be clear of mud, dust and debris at the end of each days' work activities; during the day any built-up of same shall be removed.

G. Waste Collection and Disposal: Comply with all requirements as specified in Section 01 74 19 - Construction Waste Management and Disposal. Collect waste from construction areas and elsewhere daily. Dispose of all refuse and waste material off Owner's property. Do not stockpile waste material on site. Immediately clean up any spilled material.

1. Provide on-site containers for collection of waste materials, debris and rubbish.
2. Handle and dispose flammable, hazardous, and toxic waste materials separately from other waste; dispose of material lawfully.

3.11 TEMPORARY HOISTING, HOISTS, LIFTS AND USE OF ELEVATORS

A. General: Provide temporary lifts, hoists and other types of lifting equipment for hoisting materials and employees as required for the completion of the Work; verify requirements of all trades.

1. Number and capacity of lifting equipment is the Contractor's responsibility and no additional time or cost will be allowed by the Owner for the Contractor's lack of planning for vertical hoisting of materials.
2. Contractor may furnish transportation by its own forces, or may require its subcontractors to furnish their own, at its option.

3.12 OPERATION, MAINTENANCE & REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

C. Termination and Removal: Unless the Owner requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facilities. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property, unless otherwise specified.
2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:

    a. Replace air filters and clean inside of ductwork and housings.
    b. Replace significantly worn parts and parts subject to unusual operating conditions.
    c. Replace lamps burned out or noticeably dimmed by hours of use.
    d. Refer to Section 01 77 00 – Closeout Procedures for cleaning requirements.
    e. Clean and repair evidence or indication of installation or use of temporary Work.
    f. Restore existing facilities and equipment used during construction to original condition. Restore permanent facilities and equipment used during construction to specified condition.
    g. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction.
    h. Repair or replace street paving, curbs and sidewalks at temporary entrances as required by authorities having jurisdiction.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections/Documents:

1. 01 33 00 – Submittal Procedures: Requirements for submittals.
2. 01 77 00 – Closeout Procedures for submitting warranties for contract closeout.

1.02 DEFINITIONS

A. Definitions in this paragraph are not intended to change the meaning of other terms used in Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

C. "Named Products" are items identified by manufacturer's product name, including make or model number or other designation, shown or listed the manufacturer's published product literature, that is current as of the date of the Contract Documents.

D. "New Products" Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

E. "Comparable Product" is a product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

F. "Materials" are products substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form part of the Work.

G. "Equipment" is defined as products with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.03 SUBMITTALS

A. Prepare a Schedule of Materials and Equipment showing products specified in tabular form acceptable to the Architect. Include the manufacturer's name and proprietary product names for each item listed. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.

1. Prepare product list with information on each item tabulated under the following column headings:

a. Related Specification Section number.
b. Generic name used in Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's named and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.

2. Within 15 days after execution of Owner/Contractor Agreement, submit 3 copies of the Proposed Product List. Provide a written explanation for omissions of data and for known variations from Contract requirements.

B. Comparable Product Requests: Submit one copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If comparable product request is approved, Architect will identify comparable product in an addendum.

   a. Form of Approval: As specified in Section 01 33 00 – Submittal Procedures.
   b. If sufficient time is not allowed for Architect's review and subsequent approval of a comparable product prior to issuing the final addendum, the "Basis of Design" product shall be used.

2. Documentation: Show compliance with requirements for comparable product and the following, as applicable:

   a. Statement indicating why specified material or product cannot be provided.
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, which will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
   e. Samples, where applicable or requested.
   f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
   g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
   h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
   i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
   j. Cost information, including a proposal of change, if any, in the Contract Sum.
   k. Contractor's certification that proposed comparable product complies with requirements in the Contract Documents and is appropriate for applications indicated.

3. Burden of Proof: The burden of proof as to the applicability of the proposed comparable product as well as documentation sufficient for the Architect's review is the responsibility of the Contractor.

1.04 QUALITY ASSURANCE

A. Source Limitations: To the greatest extent possible for each unit of Work, provide products, materials or equipment of a singular generic kind and from a single source.

B. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

C. When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle and store products according to the manufacturer's recommendations using methods and means that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
2. Coordinated delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
5. Store products at the project site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

PART 2 – PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE

A. General: The compliance requirements, for individual products as indicated in Contract Documents, are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with.

1. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
2. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
3. Provide products which are free of asbestos and lead.
4. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

2.02 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
2. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
3. Where products are accompanied by the term "as selected," Architect will make selection.
4. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
5. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2

"Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.

2. Named Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
6. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
8. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
9. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
    c. Custom Color or Range: Where Specifications include the phrase "custom color, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from a palate separate from manufacturer's standard and premium items.

2.03 COMPARABLE PRODUCTS

A. Where manufacturers are specified by name after the product “Basis of Design” or “Standard” in the specification, submit the following, in addition to other required submittals, to obtain approval of an unnamed product that is “comparable” to the product “Standard”.

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Evidence that the proposed product has the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified Product “Standard”:
3. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate the proposed unnamed product.
4. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
5. Evidence that proposed product provides specified warranty.
6. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
7. Samples, if requested.

B. Provide products and construction methods compatible with products and construction methods of other contractors and trades. All costs associated with a contractor initiated design change that affects the work of other prime contractors shall be borne by the contractor making the change, including costs to other contractors.

C. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

2.04 SUBSTITUTIONS

A. Substitutions: The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to Contract Documents, where requested by the Owner or Architect, are "changes" not "substitutions." Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions"; and do not constitute a basis for change orders, except as provided for in Contract Documents.

1. “Proposed Equals” are different from “Substitutions” and will be considered for approval during the bidding period. Proposed Equals not included in an addendum as approved, may be listed on the Substitution Sheet attached to the Bid Form, for consideration by the Owner.
2. Product substitutions will only be considered after award of Contract when substantiated by one of the conditions listed in the General Conditions, Paragraph 2.11.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install, erect, connect, condition, use, adjust, and clean products in accordance with manufacturer’s instructions and in conformity with specified requirements.

1. Verify and coordinate clearances, dimensions and installation of adjoining construction, equipment, piping, ducts, conduits, or other mechanical or electrical items or apparatus.
2. Prior to fabrication, field measure actual existing conditions to ensure proper fit.
3. Inspect each item of material or equipment immediately prior to installation. Reject damaged and defective items.
4. Recheck measurements and dimensions of Work, as an integral step of starting each installation. Whenever stock manufactured products are specified, verify actual space requirements for setting or placing into allotted space. No extra cost will be allowed for adjustment of Work to accommodate particular product.

B. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

D. Install products at the time and under conditions that will ensure the best possible results in coordination with entire project. Maintain conditions required for product performance until Substantial Completion.

1. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
2. Coordinate enclosure of work with required inspections and tests to minimize necessity of uncovering work for those purposes.

E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide attachment and connection devices and methods for securing work to withstand stresses, vibration, physical distortion, disfigurement, or racking.

1. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work
2. Mounting Heights: Where not indicated, mount individual units of work at industry recognized standard mounting heights for particular application indicated.
    a. Refer questionable mounting heights choices to Architect for final decision.
    b. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
4. Secure work true to line and level, and within specified tolerances, or if not specified, industry recognized tolerances. Allow for building movement, including thermal expansion and contraction.
5. Physically separate, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints. Refer questionable visual-effect choices to Architect for final decision.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

K. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components to ensure operability without damaging effects.

L. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

SECTION 01 73 00

EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: General procedural requirements governing execution of the Work including, but not limited to, the following:

1. Preparing, installing, and protecting the Work.

B. Related Sections:

1. 01 40 00 - Quality Requirements: For Basis of Tolerances for Finish Work.
2. 01 60 00 - Product Requirements: Basic Product Requirements.
3. 01 77 00 – Closeout Procedures: Construction and final Cleaning.

1.02 EXAMINATION OF CONDITIONS

A. Do not proceed with Work until unsatisfactory conditions have been corrected.

B. Commencement of installation constitutes acceptance of conditions and cost of any corrective measures are responsibility of Contractor.

1.03 PREPARATION

A. Require compliance with manufacturer's printed installation instructions, including each step in sequence. Do not omit preparatory steps or installation procedures unless specifically modified or exempted by Contract Documents.

B. Maintain one set of complete instructions at Project site during installation and until completion.

C. Should Project conditions or specified requirements conflict with manufacturer's instructions, request clarification in writing from Architect before proceeding.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of concerns encountered, together with recommendations for changing the Contract Documents.

3.02 PRODUCT EXECUTION

A. Install, erect, connect, condition, use, adjust, and clean products in accordance with manufacturer's instructions and in conformity with specified requirements.

B. Verify and coordinate clearances, dimensions and installation of adjoining construction, equipment, piping, ducts, conduits, or other mechanical or electrical items or apparatus.

C. Prior to fabrication, field measure actual existing conditions to ensure proper fit.

D. Inspect each item of material or equipment immediately prior to installation. Reject damaged and defective items.

E. Recheck measurements and dimensions of Work, as an integral step of starting each installation. Whenever stock manufactured products are specified, verify actual space requirements for setting or placing into allotted space. No extra cost will be allowed for adjustment of Work to accommodate particular product.

F. Provide attachment and connection devices and methods for securing Work. Secure in place with devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

G. Allow for expansion of materials and building movement.

H. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration and electrolytic action.

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components to ensure operability without damaging effects.

J. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.03 PROTECTION OF INSTALLED WORK

A. Protect installed Work in manner to prevent damage from subsequent construction operations.

B. Provide special protection where specified in individual Specification sections.

C. Provide temporary and removable materials for protection of installed products. Control activity in immediate work area to minimize damage.

D. Ensure materials, systems, and components will be without damage or deterioration at time of Substantial Completion.

E. Protect finished Work from damage, defacements, stains, scratches, and wear.

F. Protect finished floors, stairs, and other surfaces from traffic dirt, wear, damage, or movement of heavy objects, by protection with durable sheet materials.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Prohibit traffic from lawn and landscaped areas.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes requirements and limitations for cutting and patching of the Work.

B. Related Sections:

1. Drawings and general provisions of the Contract, including General Conditions and Division 01 specification sections, apply to work of this section.
2. 01 33 00 – Submittal Procedures.
3. 02 41 19 – Selective Demolition for demolition of selected portions of the building for alterations.
4. Divisions 3 through 49 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

    a. Requirements in this Section apply to mechanical and electrical installations. Refer to Division 20 and 30 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.02 DEFINITIONS

A. "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

1. "Cutting and patching" is performed for coordination of the Work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

    a. Cutting and patching performed during the manufacturer of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching."

2. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

B. "Selective Demolition" is a related but separate category of work which may or may not require cutting and patching required in this section.

1.03 SUBMITTALS

A. Procedural Proposal for Cutting and Patching: Prior approval of cutting and patching is required for work which is not identified or inferred from the Contract Documents; therefore, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal.

1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to existing work, including structural, operational and visual changes as well as other significant elements.
2. List products, equipment, and techniques to be used and firms that will perform work.
3. Give a schedule of dates when work is expected to be performed.
4. List products, equipment, and techniques to be used and firms that will perform work.
5. Where cutting and patching of structural work involves the addition of reinforcement it shall be integrated with original structure to satisfy requirements.
6. Approval by the Architect to proceed with cutting and patching work does not waive the Architect’s right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.
7. Furnish protection from dust and noise to occupied areas.
8. Furnish adequate collection and removal of water for concrete cutting and coring.

1.04 QUALITY ASSURANCE

A. Before cutting and patching decorative finish material to remain in the work, obtain the Architect's approval to proceed. Review cut and patch procedures involved in the work with the Architect prior to start of such work.

B. Cut and patch in a manner that is compatible with the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Review cut and patch procedures involved in the work with the Architect prior to start of such work. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, included energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.

D. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

E. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or which results in increased maintenance or decreased operational life or safety.

F. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or which results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Equipment supports.
4. Piping, ductwork, vessels, and equipment.
5. Noise- and vibration-control elements and systems.

1.05 COORDINATION

A. Provide cutting of existing construction for the installation of other work, to uncover work for access or inspection, for coordination with other work, or for similar purposes, and provide for patching required to restore surfaces to original or modified condition.

B. Each contractor is responsible for the cutting and patching required for installation of their work, except as otherwise shown on the drawings.

C. Each contractor shall determine the location and size of opening required for the installation of their work. Cost of cutting and patching shall be borne by the Contractor requiring the opening or access.

D. Each contractor shall coordinate the locations and installation of sleeves and supporting devices to be installed in the construction for the installation of their work in the new construction.

1.06 WARRANTY

A. General: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Provide same products or types of construction as that in existing structure, as needed to patch, extend, or match existing work. Generally, Contract Documents do not define product or standards of installation present in existing construction; Contractor shall determine products by inspection and necessary testing and installation by use of the existing as a sample for comparison.

B. Materials for patching shall match existing adjacent surfaces to the fullest extent possible with regard to visual effect and installed performance characteristics.

C. Presence of a product, finish, or type of construction, required that patching extending, or matching shall be performed as necessary to make work complete and result in equal or better standards of quality.

PART 3 – EXECUTION

3.01 INSPECTION

A. Existing Conditions: Replace or repair existing exposed to view conditions required to maintain fire resistance assemblies, life safety codes, requirements of AHJ, and at the direction of the Architect, including patching and finishing surfaces damaged by demolition work to match level of finish, or as otherwise required to maintain a water and weathertight envelope as indicated in the respective sections.

1. Unless otherwise indicated to limit areas of the work under this category, all existing conditions are defined to mean exposed to view surfaces within the designated Work Limits of the Project.

B. Before the start of cutting work, coordinate layout of the work and resolve potential conflicts before proceeding.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

C. Before cutting existing surfaces, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

3.02 PREPARATION

A. Temporary Support: Provide temporary support to ensure structural integrity of affected portions of Work.

1. Provide devices and methods to protect other portions of Project from damage.
2. Provide materials and control operations to prevent spread of dust in surrounding area. Provide drop cloths or other suitable barriers.

B. Protect in place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

C. Take precautions not to cut existing pipe scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. Employ skilled workmen capable of matching existing quality of existing construction to perform cutting and patching work. Proceed with cutting and patching at the earliest feasible time and complete work without delay.

B. Perform cutting and removal of existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

C. Execute cutting, fitting, or patching of Work required to:

1. Fit several parts together, to integrate with other work.
2. Uncover portions of work to provide for installation of ill-timed work.
3. Remove and replace defective work prior to completion of work in other sections.
4. Remove and replace work not conforming to requirements of Contract Documents.
5. Inspect concealed work which requires inspection prior to covering.
6. Provide openings in elements of work for penetrations of plumbing, mechanical, and electrical work.
7. Uncover work to allow for Architect's observation of covered work which has been covered up prior to required observation by Architect.
8. Remove samples of installed materials for testing.

D. Perform cutting and removal work to remove minimum materials and surfaces necessary using methods that are least likely to damage elements to be retained. Protect adjoining finishes to remain from damage.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through masonry using a cutting machine such as a

carborundum saw or diamond core drill to ensure a neat hole. Cut finish surfaces such as masonry, clay tiles or metals using methods to terminate surfaces in a straight line at a natural point of division. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

2. By-pass utility services such as pipe, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut off pipe in walls or partitions to be removed. After by-pass and cutting; cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.
3. Remove existing construction as noted or required to be removed in order to accommodate new work.

E. Patch with durable seams that are as invisible as possible. Comply with specified tolerances for the work.

1. Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work.
2. Fit work tight to new sleeves, pipes, ducts, conduits and other penetrations through the wall surface.
3. At penetrations of fire rated wall and ceiling or floor construction, completely seal voids with fire-resistive sealant materials in accordance with Section 07 84 00 – Firestopping, to full thickness of the penetrated element.
4. Inspect and test patched areas to verify integrity of the installation.
5. Restore surfaces and conditions exposed by removal of existing equipment, features and items, i.e., holes, recesses, interruption of continuity of finishes, etc.
6. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

7. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
8. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

F. Restoration: Except where indicated otherwise, restore exposed finishes of patched areas to match existing and where necessary extend finish restoration into retained adjoining surfaces in manner which will eliminate evidence of patching and refinishing. Thoroughly clean surfaces prior to application of paint and other finishes.

1. Where patching occurs in previously painted surface, provide appropriate prime coat followed by first finish coat of paint. Provide final finish coat over entire area containing patch; for continuous surface extend to nearest vertical break or intersection, for an assembly refinish entire unit. Except where indicated otherwise, finish in sheen and color to match existing.

3.04 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching work is performed or used as access to work. Completely remove mortar, debris, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. Related Sections/Documents:

1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to Work of this section.
2. Closeout requirements for specific construction activities are included in the appropriate sections in Divisions 02 through 50.

1.02 DESCRIPTION OF REQUIREMENTS

A. Definitions: Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the Work.

1. Specified requirements for individual units of Work are specified in sections of Divisions 01 through 50.
2. Time of closeout is directly related to "Substantial Completion," and therefore may be either a single time period for entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

1.03 CLEANING DURING CONSTRUCTION

A. Clean and protect construction in progress and adjoining materials in place during handling and installation. Apply protective covering where required to assure protection from damage or deterioration until Individual Substantial Completion dates.

B. Deposit rubbish, scrap materials, debris, etc., in dumpsters (in a specified location). The Construction Manager/Contractor shall be responsible for the removal from the jobsite and proper disposal of the waste materials. Absolutely no burning of debris or trash will be allowed.

C. During the progress of the work, remove all waste materials and rubbish and deposit such waste in the project dumpster. Perform daily broom cleaning in the area of the Contractor’s work. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.

1. Keep the premises free at all times from all waste materials, packaging materials and other rubbish accumulated in connection with the execution of work by collecting and depositing said materials and rubbish in locations or containers as designated by the Construction Manager.
2. Clean and remove from own work soiling, staining, mortar, concrete or dirt caused by the execution of work and make good additional defects resulting therefrom.
3. At the completion of portions of the Work and the entire completion of work, remove all tools, equipment, scaffolds, shanties, and surplus materials. Execute all required final cleaning.

1.04 PRE-REQUISITES TO SUBSTANTIAL COMPLETION

A. General: Prior to requesting inspection for certification of substantial completion (for either entire Work or portions thereof), complete the following and list known exceptions in request:

1. In progress payment request, coincident with or first following date claimed, show either 100 percent completion for portion of Work claimed as "substantially complete," or list incomplete items, value of incompleteness, and reasons for being incomplete.
2. Submit statement showing accounting of changes to the Contract Sum.
3. Advise Owner of pending insurance change-over requirements at final payment.
4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
5. Submit project record documents in compliance with Section 01 77 00 – Closeout Procedures, maintenance manuals, construction photographs of existing conditions, and other similar final record data.
6. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.
7. Make final change-over of locks eliminating construction master key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
8. Comply with requirements of Section 01 50 00 – Temporary Facilities and Control for restoring permanent systems operated prior to Substantial Completion.
9. Complete facility startup, testing, adjusting, and balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in Section 01 77 00 – Closeout Procedures.
10. Discontinue and remove temporary facilities and services from Project site, along with construction tools, mock-ups, and similar elements.
11. Perform final cleaning in accordance with Section 01 77 00 – Closeout Procedures.
12. Touch-up and otherwise repair and restore marred exposed finishes.

1.05 SUBSTANTIAL COMPLETION REVIEW

A. When Construction Manager/Contractor considers Work to be substantially complete, submit to Architect:

1. Written certificate that Work, or designated portion, is substantially complete.
2. List of items to be completed or corrected (initial punch list).

B. Within 7 days after receipt of request for Substantial Completion, Architect will make site review to determine whether Work or designated portion is substantially complete following procedures indicated in Conditions of the Contract.

C. Should Architect determine that Work is not substantially complete:

1. Architect will promptly notify Construction Manager/Contractor in writing, stating reasons for its opinion.
2. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Architect.
3. Architect will re-perform review of Work.

D. When Architect finds that Work is substantially complete, Architect will:

1. Prepare Certificate of Substantial Completion on AIA Form G704 accompanied by Construction Manager/Contractor's list of items to be completed or corrected as verified and amended by Architect and Owner (final punch list).
2. Submit Certificate to Owner and Construction Manager for their written acceptance of responsibilities assigned to them in the Certificate.

E. After Work is substantially complete, Construction Manager/Contractor shall:

1. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion (AIA Document G704).
2. Complete work listed for completion or correction within time period stipulated.

1.06 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list for each phase. 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.

1. Organize list of spaces in sequential order proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Construction Manager/Contractor.
    e. Page number.

B. Re-inspection procedure: Upon receipt of Construction Manager's notice that the Work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect the Work. Upon completion of re-inspection, Architect will either prepare certificate of final acceptance or advise Construction Manager/Contractor of Work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.07 PRE-REQUISITES TO FINAL COMPLETION

A. General: Prior to requesting Architect's final inspection for certification of final completion and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:

1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit updated final statement, accounting for additional (final) changes to Contract Sum.
3. Submit consent of surety to final payment.
4. Submit copy of Architect's final punch-list of itemized Work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the Architect.
5. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
6. Submit specific warranties, installation/maintenance bonds, maintenance agreements, final certifications and similar documents.
7. Obtain and submit releases enabling Owner's full and unrestricted use of Work and access to services and utilities, including (where required) occupancy permits, operating certificates, and similar releases.
8. Submit record drawings, maintenance manuals, and similar final record information.
9. Make final change-over of locks and transmit keys to Owner, and advise Owner's personnel of change-over in security provisions.
10. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools, facilities and similar items.
11. Complete final cleaning requirements.

B. Re-inspection procedure: Upon receipt of Construction Manager’s notice that the Work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect the Work. Upon completion of re-inspection, Architect will either prepare certificate of final acceptance or advise Construction Manager of Work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.08 FINAL COMPLETION REVIEW

A. Within 7 days after receipt of request for final review, Architect will make site review to determine whether Work or designated portion is complete following procedures indicated in Conditions of the Contract.

B. Should Architect consider Work to be incomplete or defective:

1. Architect will promptly notify Construction Manager/Contractor, in writing, listing incomplete or defective work.
2. Construction Manager/Contractor shall take immediate steps to remedy stated deficiencies and send second written request to Architect that Work is complete.
3. Architect will re-inspect Work.

1.09 REVISITS FOR SITE REVIEWS

A. Should Architect have to re-perform site reviews due to failure of Work to comply with claims of completion made by Construction Manager/Contractor, Owner will reimburse Architect for such additional services and will deduct amount of compensation from final payment to Construction Manager/Contractor.

1.10 RECORD DOCUMENT SUBMITTALS

A. Maintain at the site one set of documents marked as "Record Documents;" maintain in up-to-date and correct condition; do not permanently conceal any Work until required information has been recorded.

B. Record Drawings: Maintain a clean undamaged set of blue or blackline white-prints of Contract drawings and shop drawings. Mark set to show actual installation where the installation varies substantially from the work as originally shown. Mark the drawing that is most capable of showing conditions fully and accurately. Where shop drawings are used, record a cross-reference at the corresponding location on the Contract drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with a red erasable pencil. Use other colors to distinguish between variation in separate categories of the Work.
2. Mark new information that is important to the Owner but was not shown on Contract drawings or shop drawings.
3. Note related change-order numbers where applicable.
4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

C. Electronic Submittals, Drawings: Provide one CD of electronic AutoCad/Revit files as follows:

1. Initial Submittal: Submit one set(s) of corrected Record CAD/Revit Drawings in electronic .dwg or .rvt format and one set(s) of marked up Record prints. The following file formats will not be accepted: (.tif, .jpg, .jpeg, .pdf). Architect will initial and date each Record Revit/CAD drawing and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return Record Drawings and prints for organizing into sets, printing, binding, and final submittal.
2. Final Submittal: Submit one set(s) of Record Revit/CAD Drawings, one set of marked-up Record prints, and three copies printed form Record Revit/CAD drawings. Print each drawing, whether or not changes and additional information were recorded.

D. Record Specifications: Maintain one copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as change orders and modifications issued in printed form during construction.

1. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer’s installation instructions and recommendation.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and product data.
4. Upon completion of Work, submit record specifications to the Architect for the Owner’s records.

E. Record Product Data: Maintain one copy of each project data submittal. Note related Change Orders and markup of record drawings and specifications.

1. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer’s installation instructions and recommendations.

2. Give particular attention to concealed products and portions of the work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of record product data to the Architect for the Owner's records.

F. Miscellaneous Record Submittals: Refer to other specification sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the work. Immediately prior to the date or dates of final completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.

1.11 OPERATING AND MAINTENANCE MANUALS

A. Each Contractor shall organize operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb-tabbed in hard copies or bookmarked in electronic copies).

B. Initial Submittal: Provide electronic PDF file(s) as follows:

1. Submit 1 copy of the Operating and Maintenance Manual sixty days prior to substantial completion. This copy will be returned after review by Architect with Architect's comments. Revise content of documents as noted prior to final submittal. Submit final volumes revised, within ten days after final inspection.

C. Final Submittal: Prior to final inspection:

1. Submit electronic PDF file(s) of Operating and Maintenance Manuals.

   a. PDF Format Requirements: Provide files in Adobe PDF format on a CD or DVD clearly labeled with project name, project number, discipline, and date of issue of included files. Produce files conforming to most recent Adobe PDF file format.
   b. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   c. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

2. Submit three (3) sets, bound in 8-1/2 x 11 inch three D side ring capacity expansion binders with durable, hard covers. Internally subdivide the binder contents with permanent heavy-weight divider sheets, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

   a. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of project, and subject matter of binder when multiple binders are required.
   b. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, type on 24 pound white paper.

      1) Fold all materials larger than 8-1/2 inches by 11 inches in accordance with accepted practice and reinforce the binding edges with vinyl or mylar tape prior to punching.
      2) Reproductions shall be high quality photographic, offset, xerographic or diazo copies. Copies on plastic surfaced electrostatic materials will not be acceptable.

D. Organization: Operating and Maintenance Manuals shall be organized as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by CSI 2004 MasterFormat (2016 Update) specification section (Divisions 01 through 50) in chronological order, and subdivided by submittal type. Arrange each section in the following order:

a. Product Data
b. Shop Drawings
c. Schedules
d. Color Charts
e. Certifications
f. Material test reports
g. Warranty
h. (Other required submittals)

3. For project documentation and certification, including the following:

   a. Shop drawings, product data and similar information. Include copies of the approved shop drawings, corrected to reflect changes made during construction, in each manual.
   b. Certificates.
   c. Photocopies of warranties and bonds.

4. In addition to the above provide the following information with equipment submittals. All information shall apply only to specific units incorporated in the work. Identify the following:

   a. Common operating problems and remedies.
   b. Care and preventive maintenance procedures and schedules.
   c. List of equipment.
   d. Complete parts list for each component.
   e. Spare parts list.
   f. Wiring diagrams.
   g. Significant design criteria.
   h. Operating and maintenance instructions for equipment and systems.
   i. Supplemental drawings and diagrams to show system operation and servicing and maintenance points.
   j. Inspection procedures.
   k. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

5. In order to assure the correctness of information in the manuals, carefully remove operating and maintenance instructions shipped with the units immediately upon receipt and assemble such instructions in a job site file. Such file shall be maintained complete and shall be available at all times for the Owner's inspection.
6. Final payment and retainage will not be released to the Contractor until all requirements stated are completed.

1.12 OPERATING AND MAINTENANCE INSTRUCTIONS/MATERIALS

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner’s personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

1.13 WARRANTIES REQUIREMENTS

A. Refer to individual sections of Divisions 02 through 50 for the determination of units of Work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).

B. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

C. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

D. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

E. Replacement Cost: Upon determination that Work covered by the warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirement of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

F. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations. rights, or remedies.

1. The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

G. When the Contract documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

H. Submit written warranties to the Architect prior to the date for Final Completion. If the Architect's certificate of Final completion designates a commencement date for warranties other than the date of Final completion for the Work, or a designated portion of the work, submit written warranties upon request of the Architect.

I. When the Contract documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution. Refer to Divisions 02 through 50 sections for specific content requirements and particular requirements for submitting special warranties.

J. At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into and orderly sequence based on the table of contents of the Project Manual. When warranted construction requires operation and maintenance manuals provide additional copies of each required warranty, as necessary, for inclusion in each manual.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 FINAL CLEANING

A. General: Special cleaning for specific units of Work is specified in sections of Divisions 01 through 50.

B. Provide final cleaning of the Work when indicated, employing experienced workers or a professional cleaning company for final cleaning. Clean each surface or unit of work to the condition expected from a

commercial building cleaning and maintenance program. Comply with manufacturer's specific instructions for cleaning operations for materials installed and specified herein. The following are examples, but not by way of limitation, of cleaning levels required:

1. At the completion of phase portions of the Work and the entire completion of work, remove all tools, equipment, scaffolds, shanties, and surplus materials. Execute all required final cleaning.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
3. 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.
4. Remove labels on installed materials and equipment which are not required as permanent labels.
5. Clean exposed hard-surfaced finishes, to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Remove plaster and paint droppings, and other foreign substances.
6. Clean exposed surfaces of diffusers, registers, and grilles.
7. Clean transparent materials, including mirror and glass in doors and windows to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.
8. Wipe surfaces of mechanical and electrical equipment clean.
9. Remove debris and surface dust from limited access spaces including plenums, shafts, and similar spaces.
10. Clean light fixtures, lamps, globes, and reflectors so as to function with full efficiency. Replace burned out bulbs and defective and noisy starters in fixtures equipped with same.
11. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
12. Dust and clean all counters, shelves, and cabinets in work areas including Owner’s furnishings and equipment stored in work areas during construction.
13. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo, if required to remove dirt or staining as a result of construction work of this Project.
14. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
15. Leave each phased area of the Project clean and ready for occupancy by the Owner. Maintain cleaning until acceptance by the Owner.

C. Removal of Protection: Remove temporary protection devices and facilities which were installed during course of the Work to protect previously completed Work during remainder of construction period.

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Product maintenance manuals.
5. Systems and equipment maintenance manuals.

B. Related Requirements:

1. 01 33 00 – Submittal Procedures for submitting copies of submittals for operation and maintenance manuals.
2. 01 77 00 – Closeout Procedures for preparation of closeout documentation including operation and maintenance data.
3. Divisions 02 through 14 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.02 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.03 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Owner.
    a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
    b. Enable inserted reviewer comments on draft submittals.
2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Owner, will return two copies.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Owner will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Owner will return copy with comments.

1. Correct or revise each manual to comply with Owner's 's comments. Submit copies of each corrected manual within 15 days of receipt of Owner's comments and prior to commencing demonstration and training.

PART 2 – PRODUCTS

2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.02 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Organization: Enable organization of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite files.

a. Create composite manual with bookmarks, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.
b. Name, configure, and organize files and in accordance with COBIE procedures.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold (8-1/2-by-11-inch) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Supplementary Text: Prepared on 215-by-280-mm (8-1/2-by-11-inch) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
b. Avoid placing loose, oversize drawings in binder pockets. Use reduced drawings or place folded drawings in labeled envelopes bound in manual.
c. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.03 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.
9. Earthquake emergency.
10. Extreme weather.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.04 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.05 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 – EXECUTION

3.01 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared record Drawings in Section 01 77 00 – Closeout Procedures: Project Record Documents.

G. Comply with Section 01 77 00 – Closeout Procedures for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 02 41 19

SELECTIVE INTERIOR DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes the following:

1. Demolition and removal of selected portions of existing building construction.
2. Salvage of existing items to be reused or turned over to Owner.
3. Removal and legal disposal of all debris.
4. Protection of all existing electrical systems, mechanical equipment, light fixtures, overhead piping, fire protection system etc. scheduled to remain.

B. Related Sections:

1. Section 01 33 00 – Submittal Procedures
2. Section 01 50 00 – Temporary Facilities and Controls: Temporary Utilities and Protection requirements during construction operations.
3. Section 01 73 29 – Cutting and Patching
4. Section 01 77 00 – Closeout Procedures: Project Record Documents

1.02 DEFINITIONS

A. Demolish: Remove and dispose of items as indicated.

B. Remove and Reinstall: Detach items, protect, and reinstall where indicated.

C. Salvage: Remove, protect, and deliver to Owner or store for reinstallation.

D. Existing to Remain: Items not indicated to be removed..

1.03 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials become Contractor's property; remove from Project site.

1.04 ACTION SUBMITTALS

A. Prepare submittals in accordance with provisions of Section 01 33 00 – Submittal Procedures.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust and noise control. Indicate proposed locations and construction of barriers.

C. Demolition Plan: Indicate sequence of demolition, items to remain, protection measures, utility shutdowns, and debris removal paths.

D. Protection Measures: Submit proposed methods for dust, noise, and vibration control.

1.05 PRE-DEMOLITION CONFERENCE

A. Conduct at Project site prior to starting demolition. Review:

1. Existing conditions and required protection.
2. Review areas where existing construction is to remain and requires protection
3. Demolition sequencing and utility shutdowns.
4. Owner occupancy constraints.

1.06 QUALITY ASSURANCE

A. Comply with applicable codes, NFPA, NEC, OSHA, and EPA regulations.

B. Comply with applicable safety codes for demolition work.

C. Provide fire extinguishers on site of multi-use type during demolition work.

D. Verify that utility supply lines have been shut off before removal.

E. Do not use jack hammers or other heavy duty impacting type tools for demolition work.

F. Pay all required fees and obtain all necessary permits and licenses required for demolition work.

1.07 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition, minimize disruption. Provide 72 hours' notice to Owner of work affecting Owner's operations.

B. Openings in wall, ceiling or floor construction assemblies discovered after removal of overlaying materials, or removal of mechanical, plumbing, electrical, fire suppression equipment or systems, shall be infilled with like construction materials to completely enclose and seal openings.

C. If removal of an item is required for access to work to be selectively demolished, that item shall be removed, protected, maintained in its original condition, and reinstalled in the work, unless otherwise noted.

D. Where removal of plumbing, HVAC, fire protection, electrical, communications systems or components results in openings left in existing floor, wall, or ceiling construction which is to remain, patch these openings in accordance with Section 01 73 00 – Cutting and Patching.

E. Carefully inspect the construction work area and items designated to be removed or preserved. Refer questions to the Architect before proceeding with the work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.02 PROTECTION REQUIREMENTS

A. Selective Demolition Protection Procedures:

1. Provide protective measures required by this specification in excess of those requirements for temporary protection specified under Section 01 50 00 – Temporary Facilities and Controls.
2. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain. Ensure safe passage around areas of demolition. Prevent injury to adjacent facilities. Erect temporary covered passageways as required by authorities having jurisdiction.
3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
4. Remove temporary protections required by this section at completion of selective demolition work.

B. Protect, support and maintain all conduits, drains, sewers, pipes, and wires to remain and which are subject to damage by construction activities.

1. Notify Architect if wires, conduits, pipes or other utilities serving building functions will be affected by demolition or remodeling before commencing such operations.

2. Disconnect and cap pipes and utilities as required and as necessary for demolition and alteration work.
3. Identify and indicate capping locations on Project Record Documents.

C. Provide protection for existing building surfaces and building components such that there is no possibility of damage to same, from demolition operations caused by impact, nicking, scratching, staining, or spillage of materials.

1. The protection system selected shall not be anchored to existing building finish surfaces or building components.

D. Protect items to be reused and relocated in construction. Refer to drawing notes.

E. Protection of Existing Surfaces:

1. Provide at minimum, protection levels specified in Section 01 50 00 – Temporary Facilities and Controls.
2. When removing portions of walls, partitions, or other vertical construction, or portions of vertical construction which is not to be totally demolished, provide floor covering protection on both sides of construction being demolished a distance of at least 4 feet or to the adjacent wall, whichever is the lesser distance.

3.03 UTILITY SERVICES

A. Existing Utilities/Systems to Remain: Maintain services/systems indicated to remain if any, and protect them against damage during selective demolition operations.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

C. Utility Requirements: Refer to Facilities Services Subgroup Divisions for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.04 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
2. Protect existing site improvements, appurtenances, and landscaping to remain.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
3. Cover and protect furniture, furnishings, and equipment that have not been removed.
4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 – Temporary Facilities and Controls.

C. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.
2. Remove temporary barricades and protections where hazards no longer exist.

D. Existing Facilities: Comply with specification requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

3.05 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

    a. Maintain adequate ventilation when using cutting torches.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

B. Remove all hangers, supports, miscellaneous framing and similar items used to support work to be demolished and removed.

C. Removed and Salvaged Items: Comply with the following:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to authorized storage are.
4. Protect items from damage during transport and storage.
5. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
6. Transport items to Owner’s storage area designated by Owner.
7. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.06 PATCHING AND REPAIRS

A. Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Section01 73 00 - Cutting and Patching.

3.07 DISPOSITION OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Clean interior and exterior areas used for removal routes of debris.

C. Remove temporary work related to selective demolition operations upon completion of the work.

3.08 CLEANUP AND REPAIR

A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

B. Upon completion of work, leave premises clean, neat and orderly and acceptable to the Architect.

END OF SECTION

SECTION 03 54 11

FLOOR SUBTRATE PREPARATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cement-based, polymer-modified, self-leveling underlayment for interior finish flooring as follows:

   a. Ramps and tapers as necessary to correct levels between dissimilar finishes.
   b. Fill as necessary to correct slab depression levels.
   c. Repair of concrete that does not meet specified flatness and levelness requirements.

2. Floor underlayment, grinding, sanding, etc. where concrete floors will not accept finish flooring specified.

B. Related Sections:

1. Division 09 Sections: For flooring systems substrate requirements.

1.02 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Written approval from finish flooring installer stating that such material is compatible with flooring adhesives to be used.

C. Product Data: Submit manufacturer's detailed technical data for material required, including installation instructions.

D. Shop Drawings: Plans indicating substrates, locations, existing conditions which requires such repair material, and average depths of cement-based underlayment based on survey of substrate conditions.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project with minimum 3 years' experience.

B. Obtain all substrate preparation and moisture remediation materials from a single-source manufacturer to ensure compatibility of products.

C. Product Compatibility: Manufacturers of both underlayment and floor covering system certify in writing that products are compatible.

D. Provide comprehensive warranty from the product manufacturer for all substrate preparation products installed.

E. Preinstallation Conference: Conduct conference at Project site.

F. Mock-Up: Before performing the work in this section, an on-site mock-up of the appropriate underlayment representative of specified process, surface, finish, color and joint design/treatments must be installed for review and approval.

1. Install mockups using the same Installer personnel who will perform work.
2. Approved mock-ups may become part of completed work, if undisturbed at time of substantial completion.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.05 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting underlayment performance.

1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 degrees F.

1.06 COORDINATION

A. Coordinate application of underlayment with requirements of floor covering products, including adhesives, specified in Division 09 Sections, to ensure compatibility of products.

PART 2 – PRODUCTS

2.01 HYDRAULIC CEMENT UNDELAYMENT MATERIALS

A. Hydraulic Cement Underlayment for Standard Applications: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch (6 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Basis of Design: ARDEX V 1200 Self-Leveling Underlayment
2. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. ARDEX Americas.
    b. BASF Corporation.
    c. CMP Specialty Products, Inc.
    d. Dayton Superior.
    e. Hacker Industries, Inc.
    f. Laticrete International, Inc.
    g. Maxxon Corporation.

3. Cement Binder: ASTM C 150/C 150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
4. Performance and Physical Properties: Meet or exceed the following values for material cured at 73 degrees F +/- 3 degrees F and 50 % +/- 5% relative humidity:

    a. Application: Barrel Mix or Pump
    b. Flow Time: 10 minutes
    c. Final Set: Approx. 90 minutes
    d. Compressive Strength: Not less than 4,500 psi at 28 days when tested according to ASTM C 109/C 109M.
    e. Flexural Strength: 1,000 psi at 28 days, ASTM C348.
    f. VOC: 0

B. Hydraulic Cement Underlayment for up to 5 inches: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch (6 mm). can be installed up to 5 inches with the addition of proper aggregate.

1. Basis of Design: ARDEX K 15 Premium Self-Leveling Underlayment Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. ARDEX Americas.
    b. BASF Corporation.
    c. CMP Specialty Products, Inc.
    d. Dayton Superior.
    e. Hacker Industries, Inc.
    f. Laticrete International, Inc.
    g. Maxxon Corporation.

2. Cement Binder: ASTM C 150/C 150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
3. Performance and Physical Properties: Meet or exceed the following values for material cured at 73 degrees F +/- 3 degrees F and 50 % +/- 5% relative humidity:

a. Application: Barrel Mix or Pump
b. Flow Time: 10 minutes
c. Walkable: 2 to 3 hours.
d. Compressive Strength: Not less than 5,500 psi at 28 days when tested according to ASTM C 109/C 109M.
e. Flexural Strength: 1,200 psi at 28 days, ASTM C348.
f. VOC: 0

C. Hydraulic Cement Patching Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch (6 mm). can be installed up to 3 inches with the addition of proper aggregate. (For areas where walls have been removed and floor patching is required.)

1. Basis of Design: ARDEX SD-P Self-Drying, Trowelable Concrete Underlayment
2. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ARDEX Americas.
b. BASF Corporation.
c. CMP Specialty Products, Inc.
d. Dayton Superior.
e. Hacker Industries, Inc.
f. Laticrete International, Inc.
g. Maxxon Corporation.

3. Cement Binder: ASTM C 150/C 150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.

D. Trowelable Underlayment (Sloped Applications): Cement-based, polymer-modified, trowelable product that can be applied from a featheredge up to 1 inch, and up to three inches with addition of proper aggregate.

1. Basis of Design: ARDEX SD-P Self-Drying, Trowelable Concrete Underlayment
2. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ARDEX Americas.
b. BASF Corporation.
c. CMP Specialty Products, Inc.
d. Dayton Superior.
e. Hacker Industries, Inc.
f. Laticrete International, Inc.
g. Maxxon Corporation.

3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109.
4. Aggregate: Well-graded, washed 1/8 inch to ¼ inch pea gravel.
5. Water: Potable and at a temperature of not more than 70 deg F.

E. Aggregate: For areas to be installed over 1 inch thick, add well-graded, washed pea gravel, 1/8 to 1/4 inch; as recommended by underlayment manufacturer. Do not use sand.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

F. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).

G. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.

H. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

PART 3 – EXECUTION

3.01 GENERAL

A. With the exception of areas where leveling can be accomplished by use of latex underlayment, as specified in other sections, install cementitious underlayment to concrete slabs as indicated on the Drawings, and as necessary to level slabs or bring substrates to proper elevation.

3.02 PREPARATION

A. Perform preparation to existing substrate and concrete surfaces to assure adhesion and to meet underlayment material and finish flooring material warranty requirements.

1. All substrate, regardless of type, must be solid, clean, prepared and primed as recommended by underlayment manufacturer.
2. Treat nonmoving substrate cracks to prevent cracks from telegraphing (reflecting) through underlayment according to manufacturer's recommendations.
3. Fill substrate voids to prevent underlayment from leaking.

B. Concrete substrates: All concrete substrates must be sound, clean, and free of dirt, dust, grease, curing compounds, or any other material which might prevent adhesion. Application over textured surfaces will achieve the best bond. Concrete that has been steel troweled should be mechanically prepared (ie. Bead blast, scarified, etc.). Acid etching is not acceptable.

C. Lightweight/Gypsum Subfloors: All substrates must be sound, clean and free of dirt, dust, grease or any other contaminant which might prevent adhesion. Remove any soft, dusty layers.

D. Wooden substrates: All wooden substrates must be sound, clean and free of dirt, oils, or any other material which may prevent adhesion. Depending upon the movement or deflection of the substrate, a metal lathe may be needed for reinforcement to provide increased flexural strength. Consult technical assistance.

E. Adhesive residue: Using mechanical means, remove loose, brittle, or thick/heavy accumulations to a minimal well bonded residue. Make sure that proper removal and disposal procedures are used when dealing with asbestos containing adhesive.

F. Existing tile: Existing ceramic tile, quarry tile, etc. must be well bonded. It must also be clean and free of waxes or any other material that might prevent adhesion. Glazed or extremely smooth tile may require abrading the surface by mechanical means in order to achieve a proper bond.

G. Prepare floor substrates for underlayment at all locations where floor does not meet specified tolerance requirements.

H. Verify that all areas to be leveled are at or below final design elevation.

I. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's printed instructions.

3.03 INSTALLATION

A. Application: Apply underlayment in accordance with manufacturer's printed instructions. Consult underlayment manufacturer's directions for drying times and any other special requirements.

1. Coordinate application of components to provide optimum underlayment-to substrate and intercoat adhesion.
2. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.

1. Apply a final layer without aggregate if required to produce smooth surface.
2. Feather edges to match adjacent floor elevations

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install finish flooring over underlayment until after time period recommended by underlayment manufacturer.

F. Do not install topical vapor reducers over underlayment without written confirmation from underlayment manufacturer.

G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

H. Set screeds, markers, and reference blocks. Set screeds at all construction and control joints to establish weakened plane joints in underlayment.

I. Finish to a smooth level surface within tolerances specified for concrete floors.

3.04 REMEDIAL WORK FOR CONCRETE: FLOORS TO RECEIVE NEW FLOORING MATERIALS

A. Repairing of minor holes, cracks, and transition areas is specified under respective finish flooring sections.

B. Grind ridges and other uneven surfaces smooth to prevent telegraphing, bulges or protrusions after resilient material or carpeting is laid.

C. Sand concrete floors with drum sander to remove scale, curing compounds, and other foreign materials which would interfere with bonding of adhesive. Remove lumps of paint, drywall joint compounds, and plaster.

3.05 CLEANING

A. As work proceeds, clean up excess materials, rubbish, and splash.

3.06 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

3.07 SCHEDULE

A. Self-Leveling Underlayment: Provide at all concrete slabs as necessary to correct slab flatness and levelness tolerances.

B. Self-Leveling Traffic-Bearing Topping: Provide at locations remain exposed and subject to traffic.

C. Trowelable Underlayment: Provide at locations such as transitions between dissimilar floor coverings, ramps, and other areas where slopes are indicated.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes rough carpentry work including the following:

1. Concealed blocking for use in architectural woodwork restoration and for support of accessories, countertops, equipment, fixtures, specialty items, trim and facing materials.
2. Rough hardware and accessory materials.

1.02 REFERENCES

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. APA – The Engineered Wood Association:
    a. APA Design/Construction Guide: "Residential and Commercial," Form No. E30X (2019).
    b. APA PRP-108 – “Performance Standards and Policies for Structural-Use Panels.”
2. NELMA: Northeastern Lumber Manufacturers Association:
    a. Standard Grading Rules for Northeastern Lumber.
3. NLGA – National Lumber Grades Authority.
4. SPIB – Southern Pine Inspection Bureau.
    a. Standard Grading Rules for Southern Pine Lumber.
5. U.S. Department of Commerce, National Institute of Standards and Technology; Product Standards (PS): Softwood Lumber and Plywood Standards:
    a. DOC PS1 – "Construction and Industrial Plywood."
    b. DOC PS2 – "Performance Standard for Wood-based Structural Use Panels."
    c. DOC PS20 – "American Softwood Lumber Standard."
6. WWPA – Western Wood Products Association.
    a. Western Lumber Grading Rules.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures for submittal requirements.

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Lumber shall conform to U.S. Product Standard PS20, "American Lumber Standards for Softwood Lumber."

1. Lumber grades shall conform to grading rules of association under which lumber is produced and shall bear official grade and trademark of the inspection bureau of the association.

C. Construction Panel Standards: PS 1, U.S. Product Standard for Construction and Industrial Plywood; APA PRP-108.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber and plywood well off the ground to ensure proper ventilation and drainage. Cover top and sides and protect from the elements, dampness, high humidity, damage and breakage.

1.06 COORDINATION

A. Fit rough carpentry to other work. Scribe and cope for accurate fit. Coordinate location of furring, nailers, blocking, grounds, and similar supports to allow proper attachment of other work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and abbreviations used to reference them with lumber grades and species include the following:

1. SPIB – Southern Pine Inspection Bureau.
2. WCLIB – West Coast Lumber Inspection Bureau.
3. WWPA – Western Wood Products Association.

C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

1. Provide dressed lumber, S4S, unless otherwise indicated.
2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

2.02 MISCELLANEOUS LUMBER

A. General: Provide lumber of grade indicated according to ALSC National Grading Rule (NGR) provisions, for support or attachment of the construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

1. Grade: No. 2.
2. Species:
    a. Spruce-pine-fir south; NELMA.
    b. Southern pine; SPIB.
    c. Douglas-fir-larch: WCLIB or WWPA.
    d. Hem-fir: WCLIB or WWPA.
3. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shaped shown.
4. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

2.03 WOOD-BASED STRUCTURAL-USE PANELS, GENERAL

A. Provide either all-veneer, mat-formed, or composite panels complying with DOC PS2, “Performance Standard for Wood-Based Structural-Use Panels,” unless otherwise indicated. Provide plywood panels

complying with DOC PS 1, “U.S. Product Standard for Construction and Industrial Plywood,” where plywood is indicated.

B. Factory mark structural use panels with APA trademark evidencing compliance with grade requirements.

2.04 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

A. Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail.

1. Thickness Provide panels meeting requirements specified but not less than the thickness indicated.
2. Span Ratings: Provide panels with span ratings required to meet “Code Plus” provisions of APA Design/Construction Guide: "Residential and Commercial," Form No. E30.

B. Construction Panels:

1. Plywood: DOC PS 1, unless otherwise indicated.
2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
3. Factory mark panels according to indicated standard.

C. Structural Use Panels for Backing: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 15/32 inch thick.

2.05 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacturer.

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc-coating per ASTM A153 or of Type 304 stainless steel.
2. Where carpentry is exposed to pressure-preservative treated wood, provide fasteners of Type 304 or 316 stainless steel.
3. Nails, Brads, and Staples: ASTM F 1667.
4. Power-Driven Fasteners: NES NER-272.
5. Wood Screws: ASME B18.6.1.
6. Lag Bolts: ASME B18.2.1.
7. Bolts: Steel bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers.

B. Screws for Fastening to Non-Structural Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

C. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing in accordance with ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

PART 3 – EXECUTION

3.01 INSTALLATION, GENERAL

A. Carefully lay out, fit, and fabricate all items of rough carpentry. Use only sound thoroughly seasoned materials of longest practical lengths and sizes to minimize joints. Use materials free of warp, unless warp can be easily corrected by anchorage and attachment. Brace, plumb, and level all members, and secure with sufficient nails, spikes, bolts, or other suitable fastenings to assure rigidity and permanent attachment.

1. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

2. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction

C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. "Table 2304.10.2 – Fastening Schedule" of the Ohio Building Code.

D. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated. Install fasteners without splitting wood; predrill as required.

E. Use hot-dip galvanized or stainless steel nails where rough carpentry is in area of high relative humidity.

3.02 WOOD NAILERS AND BLOCKING

A. Provide concealed wood blocking within wall or furred metal framed assemblies to support all types of wall-mounted or secured items including but not limited to casework, millwork, wall-hung fixtures, television monitors, communication devices, and other equipment indicated on the drawings. Blocking shall be of solid lumber or fire-retardant treated plywood, securely fastened to framing, sized to accommodate imposed loads, and located as required by equipment manufacturers' mounting requirements and architectural elevations.

B. Install wood nailers, blocking and sleepers where shown and where required for attaching other work. Install in accurate locations and elevations for attachment of other materials, plumb and level, accurately aligned, cut and fit. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.

C. Secure nailers and blocking to substrates adequate to support applied loads. Recess bolts and nuts flush with surfaces unless otherwise indicated. Provide continuous wood blocking between studs at door openings for stops and other door frame attachments.

3.03 INSTALLATION OF STRUCTURAL-USE PANELS

A. Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Plywood Backing Panels: Nail or screw to supports.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

1.01 SUMMARY

A. Section includes joint sealants and fillers for the applications specified with the products in this Section and as indicated on Drawings.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Product data including catalog cuts, specification data, installation details, and manufacturer's certificate for each type of sealant required.

C. Joint-Sealant Schedule: Submit for approval a detailed list of locations where materials will be used, types of sealants which will be used at each location, and names of manufacturers of compounds, primers, and fillers which will be used. Submit manufacturer's certificate attesting that their products comply with specification requirements and are suitable and recommended for the use indicated. Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and testing agency.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Warranties: Sample of special warranties.

1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.06 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

B. Apply joint sealants as late as possible in the construction, preceding application of water repellent coatings if any, and painting and following cleaning operations.

C. Do not install solvent curing sealants in unventilated building spaces.

1.07 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 – GENERAL

2.01 MANUFACTURERS

A. Specified Manufacturers and Products: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the products specified under this section for each individual sealant type, for the applications scheduled at the end of Section, and as may be additionally identified on the Drawings.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Bostik, Middleton, MA
2. Dow/Dow Corning products, Midland MI.
3. Momentive (GE Construction Sealants), Waterford NY.
4. Pecora Corporation, Harleysville PA.
5. Sika USA Corp, Lyndhurst NJ.
6. Tremco, Inc., Beachwood OH.

2.02 JOINT SEALANT MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. Colors of Exposed Joint Sealants: Match Architect's samples.

2.03 URETHANE JOINT SEALANTS

A. Joint Sealer **Type HL2** (Horizontal-self-Leveling): Two-part, moisture-curing, low-modulus polyurethane sealant with a tintable base sealant, ASTM C 920, Type M, Grade P, Class 35; Uses T, O, and I, with a minimum movement capability of ±25 percent, equal to the following:

1. BASF, product "MasterSeal SL2"
2. Sika Corp., product, "Sikaflex 2cSL"
3. Tremco, product, "Vulkem 445SSL"
4. Pecora Corp. product "DynaTrol II-SG"

B. Joint Sealer **Type P2** (Polyurethane, Multi-component): Low modulus type, Multi-component non-sagging gun-grade polyurethane sealant, conforming to FS TT-S-000227E, Type II, Class A, and ASTM C 920,

Type M, Class 25, Grade NS, uses T and NT, with a minimum movement capability of ±25 percent, equal to the following:

1. BASF, product "MasterSeal NP2"
2. Tremco, product "Vulkem 227"
3. Pecora, product "Dynatred"
4. Sika, product "Sikaflex 2c NS"

2.04 LATEX JOINT SEALANTS

A. Joint Sealer **Type AP** (Acrylic latex or siliconized acrylic latex): One component acrylic latex caulking compound, conforming to ASTM C 834 Type P, Grade NF, for use NT; paintable within 24 hours after application, with a minimum movement capability of ±12.5 percent, equal to one of the following:

1. BASF, product, "Sonolac"
2. Tremco, product, "Tremflex 834"
3. Bostik, product, "Chem-Calk 600"
4. Pecora, product " AC-20+"

2.05 MILDEW-RESISTANT JOINT SEALANTS

A. Joint Sealer **Type SM** (Silicone, Mildew-resistant): One-part. ASTM C 920, Type S, Grade NS, Class 50, for use NT, minimum movement capability of ±50 percent, and a Shore A hardness of 20, equal to the following:

1. BASF, product "MasterSeal NP 150"
2. DowSil, product "786 Mildew-resistant"
3. Momentive product "SCS1700 Sanitary"
4. Tremco, product "Tremsil 200 Sanitary"
5. Pecora, "898NST"

2.06 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant **Type AC**: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90. Acoustical sealant shall be permanently resilient and flexible, non-bleeding caulking material capable of 25 percent flexible movement after curing. Select acoustical sealants appropriate for substrates, gap thickness, and applicable fire codes. Sealants for vertical application shall be non-sag type.

B. Subject to compliance with requirements, provide one of the following:

1. Non-Fire-Rated Penetrations and Joints in Acoustical assemblies:

    a. Momentive; RCS20.
    b. OSI Sealants, Inc.; SC-175.
    c. Pecora Corporation; DynaTrol II.
    d. Sika Corp. Sikacryl -20 FC
    e. Tremco Incorporated; Dymonic.

2. Fire-Rated Floor, Wall, and Ceiling Penetrations and Joints in Acoustical assemblies:

    a. Hilti, Inc.; CP 506.
    b. Pecora Corporation; AC-20 FTR.
    c. RectorSeal Corporation; Smoke & Acoustic Sealant
    d. Specified Technologies Inc.; SpecSeal ES.
    e. 3M Fire Protection Products; Fire Barrier Sealant FD 150+
    f. USG Corporation; Sheetrock Brand Acoustical Sealant.

2.07 ACCESSORIES

A. Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin or polyurethane foam rod complying with ASTM C 1330, Type C, 1/3 greater in diameter than width of joint.

Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. Provide one of the following, or equal.

1. Nomaco, Inc., Zebulon, NC, product "Green Rod"
2. Industrial Thermo Polymers Ltd., Brampton, Ontario CN, product "ITP Standard Backer Rod"
3. BASF Construction Systems, product "MasterSeal 920 and 921"
4. W.R. Meadows Inc., Hampshire, IL, product "Sealtight Kool-Rod"

B. Type B: Bi-cellular reticulated, polymeric foam material with a surface skin, nonoutgassing, with a density of between 1.5-3.0 pcf (24-48 kg/cubic meter) per ASTM D1622 and minimum tensile strength of greater than 29 - 38 psi (200 - 267 kPa) per ASTM D1623, and with water absorption less than 0.058 oz./cubic inch (0.10 gm/cc) per ASTM C1016; one of the following:

1. SOFROD; Nomaco, Inc.
2. Soft Backer-Rod; BASF.

C. Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function.

D. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application, and completely free from contaminants which would adversely affect the sealant and caulking materials. Provide self-adhesive tape where applicable.

2.08 MISCELLANEOUS MATERIALS

A. Primer: Material recommended, as verified through compatibility and adhesion testing, by joint sealant manufacturer for the substrates indicated to be sealed.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and which will not stain nor mar the finish of surfaces adjacent to joints to which it is applied.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface receiving work of this section must be absolutely dry and dust free. All joints receiving sealant/caulking materials and primers shall be subject to the approval of the sealant manufacturer for proper use of specified materials.

B. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.

C. Prime joint substrates, as recommended in writing by joint-sealant manufacturer, as based on preconstruction joint-sealant-substrate tests or as based upon prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

D. Verify that joint backing and release tapes are compatible with sealant.

E. Perform preparation in accordance with ASTM C 804 and C 790 for solvent and latex base solvents, respectively.

3.03 INSTALLATION

A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Inspect each cartridge or container of sealant before use and verify that the production date is within 6 months of the date of application. Remove from the site all sealant more than 6 months old. Each applicator shall understand the method of coding the production date on the cartridge.

D. Apply sealant only to clean, dry, primed surfaces (where required) at ambient temperatures above 45°F. Seal joints within 10 hours of primer application.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints. Recheck correct backer rod and bond breaker tape positioning before applying sealant.

F. Mask all exposed surfaces, not masked for priming, along joint before applying sealant.

G. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Provide clean, dry backup rod or quarter-round rod in, or over, all joint openings against dry substrates. Remove all wet materials from the job site. Replace any backer rod not sealed over by the end of each day and solvent-clean surfaces again.
2. Do not leave gaps between ends of sealant backings.
3. Do not rupture the skin of the closed cell backer rod during installation. Do not cut rod lengthwise as substitute for smaller-diameter rod. Remove any rod containing punctures and solvent clean the surfaces again.
4. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

H. Install sealants by proven techniques to comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

I. Fill all joints solidly and continuously with sealant, neatly applied with a standard caulking gun in a continuous motion, using a slight pressure. “Push” the sealant bead ahead of the nozzle; do not “drag” the nozzle.

J. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Dry tool the joint surface with a concave tool to ensure intimate contact with substrate and to eliminate air bubbles
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration in accordance with Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Remove excess sealants from surfaces adjacent to joint.

K. Remove masking tape within 10 minutes of tooling. Avoid contaminating adjacent surfaces with excess sealant. Remove all traces of smears and droppings on metal or glass surfaces promptly, using a solvent recommended by the sealant manufacturer that will not damage or discolor the building surfaces. Remove smears and droppings on porous surfaces by mechanical means after the initial cure of the sealant.

3.04 INSTALLING ACOUSTICAL SEALANTS

A. At acoustically-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations.

B. Completely seal around perimeter of and penetrations through sound walls, including intersections with walls, columns, and other adjacent construction; fill depth of gaps around gypsum panels at floor, structure above, door frames, and other openings; and at cutouts for electrical boxes, pipes and plumbing, and other penetrations. Cut panels accurately to fit penetrations. Caulk openings in non-fire rated partitions with acoustical sealant.

C. Comply with ASTM C919 and manufacturer's recommendations for location of acoustical sealant beads, and close off sound-flanking paths around or through acoustical assemblies, including sealing of partitions above acoustical ceilings.

D. Where sound attenuation blankets are installed in partitions, seal perimeters, control and expansion joints, openings, and penetrations with continuous beads of acoustical sealant at both faces of partition.

1. Apply acoustical seals to electrical boxes and other penetrations of gypsum board.

E. Provide continuous bead of sealant under bottom edge of gypsum board and wall cut outs, at partitions receiving sound insulation so as to completely seal wall against sound leaks.

1. Apply 3/8 inch continuous bead of acoustical sealant to face of runner tracks before applying gypsum boards; completely seal wall against sound leaks.

F. Do not allow acoustical sealant to remain exposed to air for more than 15 minutes before panel is applied.

3.05 CLEANING

A. Clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealant and caulking materials with solvents which will not damage the surfaces in any way.

3.06 PROTECTION

A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.07 SCHEDULE

A. General: Seal joints indicated and all interior joints, seams, and intersections between dissimilar materials.

B. Sealant Colors:

1. Colors for Sealant Type "SM": As selected by the Architect from manufacturer's standard colors.
2. Color for Sealant Types "AC" and "AP": White.
3. In concealed installation, and in partially or fully exposed installation where so approved by the Architect, standard gray or black sealant may be used.

C. Interior joints (Listed by primary building material abutting sealant joints):

1. Gypsum Board:

JOINT CONDITION	SEALANT TYPE
Gypsum board to abutting surfaces at exposed tops and bottoms partitions and walls (Acoustical Sealant)	AC
Gypsum board to interior door and window frames, penetrating conduits and piping, light-fixtures, electrical cover plates, building specialty items, ductwork, grilles, supply diffusers, faucets, piping, escutcheon plates and similar items	AP
Gypsum board to plumbing fixtures:	SM

2. Architectural Casework:

JOINT CONDITION	SEALANT TYPE
Casework to abutting materials, kitchens, toilet rooms and similar "wet spaces":	SM
Casework to abutting surfaces (except in "wet" spaces):	AP
Countertops to abutting wall surfaces and to abutting casework:	SM
Countertops to plumbing fixtures and fittings:	SM

3. Interior Floor Drains:

JOINT CONDITION	SEALANT TYPE
Floor drains to concrete slab	P2

4. Acoustical ceilings:

JOINT CONDITION	SEALANT TYPE
Acoustical ceiling edge angle to irregular wall surface	AP

5. Tile:

JOINT CONDITION	SEALANT TYPE
Tile to tile vertical, and horizontal non-traffic joints:	SM
Tile to tile, horizontal pedestrian traffic joints:	HL2

END OF SECTION

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes standard hollow metal doors and frames.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 08 71 00 – Door Hardware
2. Section 09 91 00 – Painting: Field painting doors and frames.

1.02 REFERENCES

A. SDI standards:

1. SDI-108-23 Recommended Selection and Usage Guide for Standard Steel Doors
2. SDI-117-23 Manufacturing Tolerances for Standard Steel Doors and Frames
3. SDI-124-22 Maintenance of Standard Steel Doors and Frames

B. ANSI Standards:

1. ANSI/SDI A250.6-2024 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames
2. ANSI/SDI A250. 8-2023 Specifications for Standard Steel Doors and Frames
3. ANSI/SDI A250.10-2020 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
4. ANSI/SDI A250.11-2022 Recommended Erection Instructions for Steel Frames (Formerly SDI-105)
5. ANSI A115.18 Hardware Preparation in Steel Doors and Steel Frames
6. ANSI/DHI A115.IG Installation Guide for Doors and Hardware

1.03 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Shop Drawings: Show the following:

1. Elevations of each door and frame design.
2. Frame details for each frame type including dimensioned profiles.
3. Details and locations of reinforcement and preparations for hardware.
4. Details of each different wall opening condition.
5. Details of anchorages, accessories, joints, and connections.

C. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.

1.04 QUALITY ASSURANCE

A. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

B. Installer Qualifications: An employer of workers trained and approved by manufacturer.

C. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.

D. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.

E. Doors shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ICC A117.1 – Accessible and Usable Buildings and Facilities). These requirements supersede Technical Specifications in this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect; otherwise, remove and replace damaged items as directed.

C. Doors and frames shall be stored vertically under cover. The units shall be placed on at least 4" high wood sills or in a manner that will prevent rust or damage. The use of non-vented plastic or canvas shelters that can create a humidity chamber shall be avoided.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.06 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, products of the following manufacturers are acceptable:

1. Steelcraft, ALLEGION, Cincinnati, OH
2. Ceco Door; ASSA ABLOY, Chicago, IL
3. Curries, ASSA ABLOY, Mason City, IA
4. Pioneer Industries, ASSA ABLOY, Carlstadt, NJ
5. Republic Doors and Frames, ALLEGION, McKenzie, TN

2.02 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

2.03 INTERIOR HOLLOW METAL DOOR FRAMES

A. Hollow Metal Frames: Provide hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11, Level 2

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

a. At metal framed construction provide metal frames with drywall double return.

B. Frames for interior door openings 16 gauge, fabricated from cold rolled sheet steel, with 2 inch face at jambs, heads and mullions, unless otherwise indicated.

C. Single Leaf Interior Door Frame - KD style, typical reinforcements and preps for doors up to 3'-0" in width.

1. Reinforce frames at head for door hardware.

D. Door Silencers: Fabricate stops to receive three silencers on strike jambs of single-door frames and two silencers on heads of double-door frames.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153/A 153M, Class C or D as applicable.

2.04 FRAME ANCHORAGE

A. Floor Anchors:

1. At bottom of jamb use 0.053 inch thick steel clip angles welded to jamb and drilled to receive two 1/4 inch floor bolts.
2. Form jamb anchors of not less than 0.042 inch thick steel unless otherwise specified.
3. Where floor fills occur, provide extension type floor anchors to compensate for depth of fill.

B. Jamb Anchors:

1. Locate anchors on jambs near top and bottom of each frame, and at intermediate points not over 24 inches apart.
2. Anchors for stud partitions: Either weld to frame or use lock-in snap-in type. Provide tabs for securing anchor to the sides of the studs.
3. Anchors for frames set in prepared openings:

    a. Steel pipe spacers with 1/4 inch inside diameter welded to plate reinforcing at jamb stops or hat shaped formed strap spacers, 2 inches wide, welded to jamb near stop.
    b. Drill jamb stop and strap spacers for 1/4 inch flat head bolts to pass thru frame and spacers.
    c. Two piece frames: Subframe or rough buck drilled for 1/4 inch bolts.

4. Anchors for observation windows and other continuous frames set in stud partitions.

    a. In addition to jamb anchors, weld clip anchors to sills and heads of continuous frames over 4 feet long.
    b. Anchors spaced 24 inches on centers maximum.

5. Modify frame anchors to fit special frame and wall construction and provide special anchors where shown or required.

2.05 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.06 FINISHES

A. Shop Painting:

1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before the application of the shop coat of paint.
2. Clean, treat, and paint exposed surfaces of fabricated hollow metal doors and frames.
3. Apply shop primer that complies with ANSI A250.10 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.
4. Apply shop coat of prime paint of not less than 1.0 mil without runs, smears, or bare spots ready to receive field applied paint.

B. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A250.10 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied primer and topcoats. Apply shop primer immediately after surface preparation and pretreatment.

C. Field finishing of doors and frames is specified in Section 09 91 00 – Painting, and consists of primer plus two finish coats per the finish schedule.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.

B. Hollow Metal Frames: Install frames plumb, level, rigid and in true alignment as recommended in ANSI/SDI A250.11, “Recommended Erection Instructions for Steel Frames” and A115.IG, “Installation Guide for Doors and Hardware”. Frames shall be fastened to the adjacent structure so as to retain their position and stability.

1. In-place gypsum board partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
2. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind door frames.
    a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    b. Install door silencers in frames.
    c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    d. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
4. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
5. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.

D. Installation of hardware items shall be in accordance with the hardware manufacturer’s recommendations and templates. A115.IG, “Installation Guide for Doors and Hardware” and ANSI/SDI A250.6, “Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames” shall be consulted for other pertinent information.

3.02 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.03 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes commercial door hardware for interior doors and includes the following:

1. Cylinders for doors and openings specified in other sections.

B. Furnishing templates to 08 11 13 – Hollow Metal Doors and Frames for frame preparation.

1.02 COORDINATION

A. Coordinate work of this Section with other directly affected Sections, informing manufacturer of any internal door reinforcement required for door hardware.

1. This project requires close coordination with the door manufacturer/fabricator.
2. Provide all hardware items and accessories required to fully complete project hardware requirements and provide fully functional and operational door hardware system.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product Data: For each product indicated.

C. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

    a. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.

3. Content: Include the following information:

    a. Identification number, location, hand, fire rating, and material of each door and frame.
    b. Type, style, function, size, label, hand, and finish of each door hardware item.
    c. Manufacturer of each item.
    d. Fastenings and other pertinent information.
    e. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    f. Explanation of abbreviations, symbols, and codes contained in schedule.
    g. Mounting locations for door hardware.
    h. Door and frame sizes and materials.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

D. Keying Schedule: Prepared by or under the supervision of an Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

1. Include lists of completed projects with project names and addresses of architects and owners, and other information specified.

F. Templates: The hardware supplier shall provide necessary templates to door and frame manufacturers in order to prepare their materials or product to receive the hardware items. When factory installation if required, ship prepaid to the manufacturer.

G. Warranties: Special warranties specified in this Section.

H. Operation & Maintenance Manual: Include the following:

1. Point-to-Point Systems wiring diagrams.
2. Operation Narratives for each opening.
3. Elevation Drawings for each opening showing actual locations.

1.04 QUALITY ASSURANCE

A. Supplier Qualifications: Person who is or employs a qualified DHI Architectural hardware Consultant.

B. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Finish hardware specified in this Section shall meet the standards of the American National Standards Institute, Inc., which is sponsored by the Builders' Hardware Manufacturers Association, Inc. (BHMA). The standards latest revision will be in effect.

1. Standard: Comply with BHMA A156 series standards, Grade 1.

D. Source Limitations: Obtain each type and variety of door hardware from the single manufacturer specified, unless otherwise indicated.

E. Keying Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Management and Coordination. In addition to Owner, Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify package with door opening code to match hardware schedule,

B. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

C. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

D. Deliver keys to Owner's Representative by registered mail.

1.06 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Coordinate lockset trim design with door manufacturer's door design to insure that door stiles are of adequate width to permit installation of lockset, and that there are no hardware operation problems caused by door manufacturer's door panel design.

C. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

D. Where "verify in field" is noted in the construction documents, the hardware supplier is responsible for field investigation existing conditions, and for the appropriate modification of the specified product to meet the project requirements. The Owner will not be responsible for costs associated with new hardware that is not compatible with existing conditions.

1.07 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware which fail in materials or fabrication within warranty period. Warranty period are from date of Substantial Completion as follows:

1. Mechanical Warranty

a. Locks::Schlage L Series: 3 years
b. Closers: LCN 4000 Series: 30 years

1.08 MAINTENANCE SERVICE

A. Maintenance Service: Beginning at Contract Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 – PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section and the Door Hardware Schedule at the end of Part 3.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Basis-of-Design Product: Product named for each door hardware item indicated in Door Hardware Sets establishes the basis of design. Provide either the named product or a comparable product by one of the manufacturers specified under "Basis of Design" for each type of hardware item.

Products	**Basis of Design Manuf/Product**	**Comparable Products**
Hinges	Ives	Hager, Stanley, McKinney
Mortise Locks	Schlage L9000 Series	Sargent 8200 series
Cylinders	Sargent	No Substitution
Closers	LCN 4040XP	
Door Trim	Ives	Burns, Rockwood
Protection Plates	Ives	Trimco, Rockwood
Overhead Stops/Holders	Glynn-Johnson	Rixson, Sargent
Door Stops/Holders	Ives	Burns, Rockwood
Thresholds, Seals, Gasket	Zero	National Guard, Reese

Products	Basis of Design Manuf/Product	Comparable Products
Silencers	Ives	Rockwood, Trimco

2.02 MATERIALS

A. Fabrication: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.

1. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
2. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.

1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 CONTINUOUS HINGES

A. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum, conforming to ANSI/BHMA A156.26, Grade 1.

1. Split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
2. Hinges: Capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.

B. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.

C. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.04 MORTISE LOCKS

A. Mortise locks conform to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors, manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Lock case is multi-function and field reversible for handing without opening case

B. Indicators: Where specified, provide indicator window measuring a minimum 2-inch x 1/2 inch with 180-degree visibility. Provide messages color-coded with full text and/or symbols, as scheduled, for easy visibility.

C. Cylinders: Refer to "KEYING" article, herein.

D. Backset: Standard 2-3/4 inches backset with full 3/4 inch throw stainless steel mechanical anti-friction latchbolt.

E. Deadbolt: Full 1-inch throw, constructed of stainless steel.

F. Strikes: ASA strikes unless extended lip strikes are necessary to protect trim.

G. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.

2.05 CYLINDERS

A. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

1. Provide cylinder or hex-key dogging as specified at non fire-rated openings.

2.06 KEYING

A. Scheduled System: Existing factory registered system:

1. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Construction Keying: Replaceable Construction Cores.

1. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.

   a. 3 construction control keys
   b. 12 construction change (day) keys.

2. Owner or Owner's Representative will replace temporary construction cores with permanent cores.

C. Permanent Keying: Provide permanent cylinders/cores keyed by the manufacturer according to the following key system. Master Keying system as directed by the Owner.

1. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
2. Provide keys with the following features:

   a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
   b. Patent Protection: Keys and blanks protected by one or more utility patent(s).

3. Identification: Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.

   a. Identification stamping provisions must be approved by the Architect and Owner.
   b. Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
   c. Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
   d. Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

4. Quantity: Furnish in the following quantities.

   a. Change (Day) Keys: 3 per cylinder/core.
   b. Permanent Control Keys: 3.
   c. Master Keys: 6.

2.07 CLOSERS

A. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.

1. Fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
2. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
3. Cylinder Body: 1-1/2-inch diameter with 5/8-inch diameter double heat-treated pinion journal.

B. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.

C. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.

D. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.

E. Pressure Relief Valve (PRV) Technology: Not permitted.

F. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).

G. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.08 DOOR TRIM

A. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.09 PROTECTION PLATES

A. Provide protection plates with a minimum of 0.050 inch thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.

B. Size plates 2 inches less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch less width of door on pairs without a mullion or edge guards.

C. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.10 OVERHEAD STOPS AND HOLDERS

A. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

B. Provide friction type at doors without closer and positive type at doors with closer.

2.11 DOOR STOPS AND HOLDERS

A. Provide door stops at each door leaf :as follows:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.12 THRESHOLDS, SEALS, SWEEPS AND GASKETING

A. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.

B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

C. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

D. Size thresholds 1/2 inch high by 5 inches wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.13 SILENCERS

A. Provide "push-in" type silencers for hollow metal or wood frames.

B. Provide one silencer per 30 inches of height on each single frame, and two for each pair frame. Omit where gasketing is specified.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Steel Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.

B. Mounting Heights: Mount door hardware units at heights to comply with the following or required to comply with governing regulations:

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

C. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified unless otherwise required to comply with governing regulations.

1. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

E. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

F. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

G. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

H. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

I. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

J. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Section 07 92 00 Joint Sealants.'

K. Stops: Provide wall stops for doors unless floor or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

L. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

M. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

N. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.04 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.06 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the Architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

HARDWARE GROUP NO. DD-01

FOR USE ON DOOR #(S):
S305T S307T

provide each opening with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	DOOR PULL, 1" ROUND	8103HD 12"	630	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ MC	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. DD-02

FOR USE ON DOOR #(S):
S308T

provide each opening with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PRIVACY LOCK W/ INDICATOR	L9040 03A L283-722	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ MC	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

HARDWARE GROUP NO. DD-03

FOR USE ON DOOR #(S):
S306T

provide each opening with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PRIVACY LOCK W/ INDICATOR	L9040 03A L283-722	626	SCH
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ MC	689	LCN
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. DD-04

FOR USE ON DOOR #(S):
S308

provide each opening with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	OFFICE/ENTRY LOCK	L9050L 03A	626	SCH
1	EA	CYLINDER/PERMANENT CORE	AS REQUIRED	626	SAR
1	EA	OH STOP	100S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. DD-05

FOR USE ON DOOR #(S):
S309

provide each opening with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	STOREROOM LOCK	L9080L 03A	626	SCH
1	EA	CYLINDER/PERMANENT CORE	AS REQUIRED	626	SAR
1	EA	OH STOP	100S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOOR PREPARATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal of existing floor coverings
2. Preparation of new and existing concrete floor slabs for installation of floor coverings
3. Testing of concrete floor slabs for moisture and alkalinity (pH).
4. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
5. Application of fluid-applied, resin-based, membrane-forming systems that control the moisture-vapor-emission rate of high-moisture, interior concrete slabs to receive moisture-sensitive finish floor coverings.

B. Apply moisture-vapor-emission-control systems to floor slabs where floor coverings are indicated, if necessary to prepare concrete substrates so moisture-vapor emissions are within acceptable levels according to floor covering manufacturers' requirements.

C. Related Sections:

1. Section 01 31 00 – Project Management and Coordination: Preconstruction conference.
2. Section 03 54 11 – Floor Substrate Preparation: Hydraulic Cement Underlayment: Concrete Self-leveling requirements.
3. Section 09 65 00 – Resilient Flooring.
4. Section 09 68 13 – Carpet Tile

1.02 DEFINITIONS

A. MVE: Moisture vapor emission.

B. MVER: Moisture vapor emission rate.

1.03 REFERENCES

A. ASTM International:

1. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2021.
2. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate (MVER) of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.
3. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
4. ASTM F3010 – Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings

B. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute.

1.04 SLAB DRYNESS PRECEDENT TO ADHESIVE FLOORING INSTALLATION

A. General: Follow floor covering manufacturer's recommendations for slab dryness. In the absence of such recommendations, the following guidelines apply.

B. Correlation of Slab Relative Humidity to Moisture Vapor Emission: For purposes of this contract, the fallowing correlation applies.

Slab Relative Humidity	Moisture Emissions lbs/1000 sf/24 hours
95%	20 lbs.
90%	15 1bs.
85%	10 lbs.
80%	7 1bs.
78%	5 lbs.
75%	3 1bs.

C. Maximum 3-Pound Emission and pH of 9 or less: Suitable for installation of any type floor covering using normal adhesives.

D. Maximum 5-Pound Emission and pH of 9 or less: Suitable for installation of:

1. Carpet with vapor permeable backing (e.g. jute).
2. Other floor coverings using special adhesives approved by floor covering manufacturer.

E. Maximum 7-Pound Emission:

1. Suitable for installation of thin-set ceramic tile and similar materials using Portland cement base mortar.
2. Remediation or special adhesives required for installation of other floor coverings Verify pH within limits specified by adhesive manufacturer.

F. More than 7- Pound Emission: Remediation or additional drying required.

1.05 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product data: Submit manufacturer’s data sheets and supporting information for each product and process specified including:

1. Product specifications
2. Installation instructions
3. Manufacturer’s certification that moisture vapor control products meet requirements of current version of ASTM F3010.
4. Completed manufacturer’s pre-installation checklist
5. Warranty Information.

C. Qualification Data: Submit for testing agency. Submittal is for information only.

D. Testing Agency's Report:

1. Description of areas tested; include floor plans and photographs if helpful.
2. Summary of conditions encountered.
3. Moisture and alkalinity (pH) test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Submit report directly to Owner.
7. Submit report not more than two business days after the conclusion of testing.

E. Field Test Reports: Submit layout plan and test results for each location tested indicating time and date of each test. Report test results in chart form.

1. Calcium Chloride Test Method: Indicate test dates, start/stop time, start/stop weight, weight gain in grams, water vapor emission rate, and pH levels.
2. Relative Humidity Test Method: Indicate test dates, time, depth of test well, in-situ temperature, relative humidity and pH levels.
3. Submit record of ambient air temperature, ambient relative humidity, and floor slab surface temperature when test sites are prepared, start of test, and end of test.
4. Indicate condition of building enclosure including position of operable windows and exterior doors when test sites are prepared, start of test, and end of test.

5. Indicate operational status of HVAC systems maintaining environmental condition of spaces where tests are conducted when test sites are prepared, start of test, and end of test.

1.06 QUALITY ASSURANCE

A. Single-Source Responsibility: To the greatest extent practical provide a resilient sub-flooring system supplied by one manufacturer, an installation system supplied by one manufacturer, including self-leveling/skim coat materials, moisture vapor emission membranes, and adhesives providing a single system limited warranty of no less than 25 years. [alternatively, single source responsibility from one manufacturer of only self-leveling/skim coat materials, moisture vapor emission membranes (not flooring adhesive) providing system limited warranty of no less than 15 years.

B. Qualifications of Applicator

1. Employ an Applicator trained and currently approved by the moisture vapor control system manufacturer, experienced in surface preparation and application of the products of this section, and subject to observation by the manufacturer.
2. Submit list of at least three similar projects performed by the applicator within the previous five years that used the same products and similar moisture vapor control system design.

C. Manufacturer's Qualifications

1. Manufacturer shall have not less than ten (10) years' experience in manufacturing moisture vapor control systems. The moisture vapor control system must be specifically formulated and marketed for concrete floor slab moisture vapor control and pH control.

D. Provide manufacturer's standard fifteen (15) year warranty at no additional cost. Applicator of moisture vapor control system shall provide standard installation warranty for workmanship.

E. Mockup

1. Install the moisture control system in a minimum 100 sq ft mockup area, using the same methods and equipment that will be used for the entire installation. Test tensile bond strength of the moisture mitigation system to the concrete substrate following ASTM Test Method D7234. The results must be equal to or greater than 200 psi with failure in the concrete before proceeding with installation of the moisture control system.

1.07 PRE-INSTALLATION MEETING

A. Convene a minimum of two weeks before starting work in this section and at least three weeks before floor coverings are to be installed. Conduct conference at Project site to comply with requirements in Section 01 31 00 – Project Management and Coordination.

B. Discuss contract document requirements, moisture tests, manufacturer recommendations, installer's recommendations, scheduling, and protection of work from damage by other trades.

C. Attendance required by Contractor, Floor Installer, Flooring Manufacturer, Sub Flooring Manufacturer's Representative, Independent testing agency, Concrete Subcontractor, Ready-Mix supplier.

D. The Objective of the meeting is:

1. Review methods and procedures.
2. Tour job site representative areas to inspect and discuss the condition of the substrate.
3. Review concrete finishing requirements.
4. Review and finalize construction schedule.
5. Review required inspections, testing, certifications, and material usage procedures.
6. Review environmental restrictions and forecasts.
7. Record content of conference including attendance and topics.

E. Furnish record of pre-installation conference to all parties who are affected by the Work of this section.

F. Testing Agency Qualifications: At a minimum, testing agency or individuals shall demonstrate verifiable experience in vapor emission and pH testing, or be certified by recognized organizations, such as the Institute of Inspection, Cleaning and Restoration Certification (IICRC), or equivalent.

G. Contractor shall be responsible for obtaining confirmation from the respective finish flooring manufacturer that floor covering installation may proceed under the guidelines stated in this section, without invalidating the warranty of each respective floor covering material manufacturer.

1. Additional testing by floor covering installer to determine suitability of slab is recommended but not required.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

B. Floor covering work shall not commence where there is an indication of moisture or hydrostatic pressure or excess alkalinity.

C. Ambient Conditions:

1. Do not perform concrete moisture testing until building is enclosed and HVAC system is operational.

D. Substrate: Proceed with testing only after the following conditions have been attained:

1. Concrete is properly cured, 28-days, minimum.
2. Concrete has been cleaned to remove curing compounds and sealer, and is dry.
3. Concrete has been maintained at the same temperature and humidity conditions as the final floor covering will be exposed to for 48 hours before, during, and continuously after conducting testing.

1.09 WARRANTY

A. Warrant floor covering installations against failure due to slab moisture emissions and pH.

B. Warranty to include labor and materials required to remove failed flooring, remedy slab emissions, and install new flooring. Warranty may be underwritten by flooring manufacturer, remediation system manufacturer, Contractor, or a combination of those entities.

1. Warranty period: 2 years.

PART 2 – PRODUCTS

2.01 FLOOR SLAB MOISTURE REMEDIATION PRODUCTS

A. MVE-Control Systems, General: Provide products acceptable to each floor covering manufacturer to prevent adhesion problems of installed flooring caused by excess alkalinity and moisture occurring in concrete slabs.

B. MVE-Control System: ASTM F 3010-qualified, fluid-applied, two-component, epoxy-resin, membraneforming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor coverings indicated and acceptable to manufacturers of floor covering products indicated, including adhesives.

1. Substrate Primer: Provide MVE-control system manufacturer's concrete-substrate primer if required for system indicated by substrate conditions.
2. Cementitious Underlayment Primer: If required for subsequent installation of cementitious underlayment products, provide MVE-control system manufacturer's primer to ensure adhesion of products to MVE-control system.

C. Acceptable Manufacturers:

1. Ardex: Ardex MC Rapid
2. CreteSeal: Creteseal Max
3. Koster: VAP 1 2000
4. Vexcon Chemicals: Moisture Bloc
5. W.F. Taylor Resolute
6. Laticrete: Vapor Ban E

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify new concrete floors have cured minimum 28 days.

3.02 SURFACE PREPARATION

A. Remove existing floor finishes including floor coverings, coatings, paint, and adhesives. Follow RFCI Recommended Work Practices for the Removal of Resilient Floor Coverings.

B. Abrasive surface preparation.

1. Shot blast floors to ICRI CSP3. Shot blast as close as possible to walls, doorways, casework, and other permanently installed objects. Remove residual steel shot.
2. Grind perimeter of rooms and areas inaccessible to shotblasting using dry diamond media with vacuum dust extraction. Grind to ICRI CSP2. Do not smooth polish these areas. Grinding is allowed only in areas not accessible to shot blasting
3. Acid etching is not permitted.

C. Remove residual dust and debris by vacuum and dry sweeping. Do not use sweeping compound. Remove all foreign matter such as dust, adhesives, leveling compounds, paint, dirt, floor hardeners, bond breakers, oil, grease, curing agents, form release agents, efflorescence, laitance, shot blast beads, etc.

D. Test concrete surface tensile strength after abrasive preparation in accordance with requirements of ASTM F3010 following Test Method C1583. If test results are less than 200 psi, repair concrete or repeat surface preparation to achieve required concrete surface tensile strength.

3.03 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform concrete moisture tests and inspections and prepare test reports:

B. Acceptance Criteria:

1. Verify flooring manufacturer's requirements for concrete substrate moisture content and pH limits.
2. For renovation projects, moisture testing for elevated slabs may be omitted, provided there is no evidence of existing moisture problems.
3. Concrete floor slabs will be considered acceptable for installation of floor finishes when:

    a. Calcium Chloride Test Result: **3 lb of water/1000 sf** in 24 hours maximum moisture vapor transmission rate.
    b. Relative Humidity Test Result: 75 percent maximum relative humidity.
    c. pH Test Result: Within alkalinity range of 7.0 to 9.0.

4. When concrete floors do not meet acceptance criteria, obtain recommendations from floor finish manufacturers for remediation measures necessary to permit successful floor finish installation.

C. Concrete Moisture Testing – General:

1. Conduct calcium chloride test and relative humidity test at each test site.
2. Moisture testing requires controlled environment of 65 to 85 F and 40 to 60% R.H. for minimum 48 hours before test until completion of test
3. Do not begin moisture testing until work of Section 03 54 11 – Floor Substrate Preparation is complete.

    a. Exception: Portland cement based underlayments may be installed after completion of testing; verify compatibility of underlayment with remediation system if applicable.

4. Conduct pH tests per ASTM F 710 concurrent with moisture testing. Consistent readings of pH 9 or less require no action; for higher pH levels consult manufacture of product (adhesive or remediation system) in contact with slab surface for correction requirements.
5. *In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 12.*

D. Calcium Chloride Testing: Acceptable Method ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride.

1. Emission rate test may be used to confirm performance of proprietary moisture remediation systems.
2. Film forming curing compounds and remediation systems require emission rate test to verify performance and suitability to receive flooring. Sampling frequency reduced to 2 tests per representative area.
3. For floor finishes requiring scarification (e.g. shotblasting) of the slab surface, perform emission testing after scarification.

E. Relative Humidity Testing: Perform tests in accordance with ASTM F 2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes.

1. Recommended product: Wagner Electronics "Rapid RH" probes.
2. Probe depth below top surface: 40 percent of slab thickness for slab on grade and slab on metal deck; 20 percent of slab thickness on elevated slabs.
3. Drill test hole at each test site to accommodate test sleeve.
    a. Hole Diameter: In accordance with test equipment manufacturer’s instructions.
    b. Drilling Fluids: Not permitted.
4. Vacuum dust and debris from test hole.
5. Insert sleeve, to the full depth of test hole. Cap or plug sleeve to prevent test hole contamination.
6. Permit the test site to acclimate for minimum 72 hours before measuring relative humidity.
7. Remove sleeve plug and insert probe to bottom of test hole. Allow test probe to reach temperature *equilibration with concrete slab.*
8. Measure and record temperature and relative humidity at the test site.
9. If test values exceed floor covering manufacturer's limits, perform moisture remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
10. Report: Report the information required by the test method.
11. Notify the Architect and General Contractor in writing of any unsatisfactory conditions.

F. Test Reports: In addition to information specified by ASTM standard, calculate results normalized to 75 degrees F and 50 percent R.H. ambient conditions and slab temperature.

3.04 FLOOR SLAB MOISTURE REMEDIATION APPLICATION

A. General: Install MVE-control system according to ASTM F 3010 and manufacturer's written instructions to produce a uniform, monolithic surface free of surface deficiencies such as pin holes, fish eyes, and voids.

1. Install primers as required to comply with manufacturer's written instructions.

B. Do not apply MVE-control system across substrate expansion, isolation, and other moving joints.

C. Apply system, including component coats if any, in thickness recommended in writing by MVE-control system manufacturer for MVER indicated by preinstallation testing.

D. Spread moisture control coating using manufacturer’s recommended notched squeegee and back-roll with a 3/8-in. nap epoxy-rated, non-linting roller. Completely cover the entire concrete surface with a uniform application of the moisture control coating as quickly as possible and allow the coating to self-level. Work into a wet edge and assure continuity of the coating across the entire area.

E. After curing, examine MVE-control system for surface deficiencies. Repair surface deficiencies according to manufacturer's written instructions.

F. Protect MVE-control system from damage, wear, dirt, dust, and other contaminants before floor covering installation. Use protective methods and materials, including temporary coverings, recommended in writing by MVE-control system manufacturer.

G. Do not allow subsequent preinstallation examination and testing for floor covering installation to damage, puncture, or otherwise compromise the MVE-control system membrane.

3.05 INSPECTION

A. Inspect cured moisture control coating for complete, uniform coverage. Note any defects to be repaired such as pinholes, bubbles, or thin spots.

B. Repair or install additional coats as necessary to produce a uniform, flat, smooth, coating surface that meets manufacturer's minimum thickness requirements in all areas.

C. Test adhesion of the moisture control coating to the concrete substrate as required in ASTM F3010 following Test Method D7234. Tensile bond strength of the coating must be at least 200 psi with failure in the concrete. Repair or replace areas that do not meet this requirement.

3.06 CLEANING

A. Remove debris and unused materials from project site. Dispose chemicals, rags, and other materials in accordance with applicable regulations and specific jobsite instructions.

END OF SECTION

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes non-load-bearing steel framing members for the following applications:

1. Metal studs for partition and ceiling framing.
2. Suspension systems for gypsum board ceilings, soffits, and including grid suspension systems.
3. Wall furring.

B. Related Sections:

1. Section 06 10 00 – Rough Carpentry
2. Section 09 29 00 – Gypsum Board

1.02 DEFINITIONS

A. Non-Load Bearing Metal Support Systems: Cold formed metal framing assemblies supporting only loads directly attached to the framing and minor axial and/or transverse loading not greater than 5 psf, except as indicated otherwise.

B. Suspended Metal Support Systems: Cold formed metal framing assemblies, generally horizontal, characterized by wire hanger supports and supporting only loads attached to the framing.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit data and installation instruction for each materials and accessories to be used in the work, including descriptive data to show compliance with this specification. Submit specific assembly requirements for each different composite assembly, including the following:

1. Structural Performance Data: For each different assembly, submit data indicating gage and framing requirements based upon size of framing required, framing heights/configuration, composite assembly configuration, and structural performances required.
2. Suspension systems, including grid suspension systems.

C. Codes: Comply with all pertinent requirements of IBC as indicated on the Structural Drawing Notes for Seismic Design Category indicated.

D. Coordination Drawings: Coordinate installation of suspension systems with installation with following elements of the Work:

1. Overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
2. Ceiling suspension and supporting assemblies are located with other trades, including but not limited to air distribution system; lighting (recessed and surface mounted); fire-protection piping; concealed metal fabrications; art attachment points; A/V and Tele-data outlets and recess assemblies as indicated.

E. Allowable Installation Tolerances: Provide framing to conform with the following allowable tolerances:

1. Partition Framing Location: Within plus or minus 1/4-inch of required locations.
2. Partition Framing Members: Plumb within plus or minus 1/8 inch from the plane formed by faces of adjacent framing.
3. Ceiling Framing: Level within 1/8-inch in 12 feet and erected so that deflection of any component does not exceed deflection limits as indicated in design criteria after installation of all finish materials and equipment.

1.04 PERFORMANCE REQUIREMENTS

A. General: Manufacturer's non-load-bearing steel framing members, including anchorage and accessories, capable of withstanding the effects of the following performance criteria:

1. Walls/Partitions:
    a. Steel Studs and Runners: Minimum depth as indicated, and in accordance with the following performance requirements.
    b. Interior Metal Stud/Gypsum Board Assemblies, Typical Locations: Withstand lateral loading (air pressure) of 5 psf with deflection limit not more than L/240 of partition height.
    c. Where partition heights exceed stud manufacturer's recommended spans, provide one of the following:
        1) Heavier stud gage.
        2) Closer stud spacing.
        3) Deeper stud size (space permitting; as approved by Architect).
        4) Above ceiling bracing, anchored to structure above. Coordinate with MEP systems.
2. Ceilings: Limited to deflection of suspended metal stud ceiling system with gypsum board finish of L/240, and/or suspended metal stud ceiling system with gypsum board and tile finish of L/360.
3. Soffits: Limited to deflection of metal stud framing system with gypsum board finish of L/360.
4. Grid Suspension System (Ceiling): Limited to deflection of main beams and cross furring of L/240.

1.05 QUALITY ASSURANCE

A. Manufacturer/Fabricator/Supplier Requirements:

1. Work of this Section is to be designed, fabricated, and supplied by a company with a minimum of ten (10) years of continuous, uninterrupted experience in manufacturing, fabricating, and supplying products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units within constraints of Construction Schedule.
2. Member of the Certified Steel Stud Association (CSSA). or Steel Framing Industry Association (SFIA).

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

D. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI's "Code of Standard Practice".

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Steel Framing: Subject to compliance with requirements, provide products by one of the following:

1. Clark/Dietrich, West Chester, OH.
2. Marino\WARE, South Plainfield, NJ.
3. Steel Network Inc. (The), Raleigh, NC.

2.02 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Framing Members, General: Comply with AISI S220 for conditions indicated.

1. Steel Sheet Components: Comply with AISI S220, Section 10 requirements for metal, unless otherwise indicated.
2. Protective Coating: Comply with ASTM C 645; ASTM A 653/A 653M G40 (Z120), Coating with minimum equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120) or DiamondPlus® coating; roll-formed from steel meeting mechanical and chemical requirements of ASTM A 1003 with a zinc-based coating. Galvannealed products are not acceptable.

    a. Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authorities having jurisdiction.

C. Steel Studs and Runners: AISI S220, with flanged edges of studs bent back 90 degrees and double over to form 3/16-inch-wide minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal:

1. Minimum Base Metal Thickness: 0.0296 inch or equivalent thickness.

    a. Abuse-Resistant and Impact-Resistant Board assemblies: Minimum base metal thickness of 0.0296 inch (30 mil) per GA-216. No EQ studs permitted in these assemblies.

2. Web Depth: As indicated.
3. Width and spacing of studs shall be not less than that required to comply with ASTM C754, maximum deflection of L/240 at 5 lbf per square foot.
4. Partitions Supporting Wall Mounted Casework: 0.0538 inch (16 gauge) minimum base metal thickness.

D. Non-Structural Track: Cold-formed galvanized steel runner tracks, ClarkDietrich ProTRAK drywall track, in conformance with AISI S220 for conditions indicated below:

1. Flange Size: 1-1/4 inch.
2. Web Depth: Track web to match stud web size.
3. Minimum Base-Steel Thickness: Track thickness to match wall stud thickness or as per design.

E. Slip-Type Head Joints: When attached to structural components or where indicated, provide one of the following:

1. Double-Runner System: AISI S220 top runners, inside runner with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.

F. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.0179 inch.

G. Channel Bridging and Bracing: 0.0538-inch base-steel thickness, with minimum 1/2- inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

H. Hat-Shaped, Rigid Furring Channels: AISI S220

1. Minimum Base Metal Thickness: 20 gauge (0.0296 inch).
2. Depth: 7/8 inch.

I. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

J. Cold-Rolled Furring Channels: 0.053-inch base-steel thickness, with minimum 1/2-inch- wide flanges.

1. Depth: As indicated on Drawings.
2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch.

K. Z-Shaped Furring: With nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 3/4 inch, minimum base-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

L. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

2.03 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

2.04 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch- diameter wire.

B. Hanger Attachments to Overhead Decks: Suitable for application indicated, fabricated from corrosion resistant materials, with eyepins, clips, or other devices for attaching hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by the complete ceiling systems.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch diameter.

D. Carrying Channels: Cold-formed, commercial-steel sheet with a base-metal thickness of 0.0538 inch and minimum 1/2-inch- wide flanges, with manufacturer's standard corrosion-resistant coating.

1. Depth: 2-1/2 inches.

E. Furring Channels (Furring Members):

1. Cold-Formed Channels: 0.0538-inch bare-steel thickness, with minimum 1/2- inch- wide flanges, 3/4 inch deep.
2. Steel Studs: AISI S220.
    a. Minimum Base-Metal Thickness: 0.0296 inch or 0.0181 inch equivalent.
    b. Depth: As indicated on Drawings.
3. Hat-Shaped, Rigid Furring Channels: AISI S220, 7/8 inch deep.
    a. Minimum Base Metal Thickness: 0.0296 inch.
4. Resilient Furring Channels:
    a. Manufacturer's standard product designed to reduce sound transmission, complying with AISI S220 for material, finish and widths of face and fastening flange, fabricated to form 1/2-inch deep channel.

2.05 GRID SUSPENSION SYSTEMS

A. Grid Suspension Systems for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Armstrong Ceiling & Wall Solutions.
    b. CertainTeed; SAINT-GOBAIN.
    c. Rockfon (Chicago Metallic); ROCKWOOL International.
    d. USG Corporation.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow- metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Prepare substrates and connecting work to enable the best and most complete installation per industry standards of the work of this Section.

B. Coordination:

1. Coordinate installation of backing plates; verify length, height, location and number of backing plates required with manufacturers of items to be supported.
2. Coordinate installation of anchorage devices for suspended ceilings/soffits and walls, verifying that spacing and rated strength are correct for anticipated load conditions.

C. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.03 INSTALLATION, GENERAL

A. Erect framing systems in accordance with ASTM C754, except where exceeded by pertinent codes and regulations for rated construction and recommendations of the manufacturer and where otherwise detailed; securely anchor all members in position.

B. Accurately lay out all partitions; coordinate the work of this Section with that of other sections for concealed work.

C. Independently support partitions, furring and ceiling suspension systems; do not attach ducts, pipes, etc. to supports. Do not support suspension systems from any electrical, HVAC, plumbing or sprinkler system components. Do not drill or "shoot" into structural members in any manner that would impair its structural integrity.

D. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

1. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, comply with United States Gypsum's "Gypsum Construction Handbook."

E. Install bracing at terminations in assemblies.

F. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

G. Install framing members to preclude direct physical contact with conduits, pipe, and ducts; coordinate with installation of sleeves for mechanical penetrations.

H. Erect framing in true planes to provide solid backing for finish materials; tolerance limitations are specified under the various finishes unless noted herein.

I. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement.

1. Where building structure abuts ceiling perimeter or penetrates ceiling.
2. Where partition framing and wall furring abuts structure, except at floor. Install slip-type joints at head of assemblies that avoid axial loading of assembly while laterally supporting the assembly.

3.04 INSTALLING FRAMED ASSEMBLIES

A. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings and at partial height partitions. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.

B. General: Construct each partition, including all necessary offsets in framing; adjust location of, and vary size of, studs as required to provide continuous wall planes for their entire extent; vary finish thicknesses if necessary.

C. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:

a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.

D. Floor Track:

1. Align floor tracks to the partition layout. Secure tracks to concrete with powder-driven fasteners or concrete stub nails, spaced not to exceed 24 inches on center and within 2 inches on ends. Provide fasteners at all corners and ends of runner tracks; space fasteners a minimum of 3 inches from edge of slab or corner.

E. Top Runner Track (Full Height Partitions): For partitions which go to structure above, secure deep flange top track to valleys of metal deck units with powder-driven fasteners or welds, spaced not to exceed 12 inches on center.

1. Typical Slip-Type Head Joints or Vertical Deflection Clips: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

F. Studs: Set studs vertically in tracks with open side of studs facing in same direction. Align all punch-out holes in studs within a continuous length of wall to receive utilities. Use full length studs between tracks to full engage top and bottom runner track, except as otherwise indicated. Where partitions extend to structure above (except as required for fire-rated assemblies, above), cut studs short of total height to allow for minimum of 3/4 upward and downward vertical movement at head, and install vertical deflection clips; do not secure studs to top track; studs shall rest on bottom runner track in all conditions.

1. Place studs in direct contact with all door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are placed directly against exterior concrete or masonry walls, install asphalt felt strips between studs and wall surfaces.
2. Provide positive attachment to bottom tracks for studs at partition corners and intersections and adjacent to door and relight openings using 3/8 inch self-tapping screws on both stud flanges; screw attach or crimp all remaining studs at bottom.
3. Provide 20 gage by 2 inch wide continuous alignment strap secured to each stud along top as detailed.
4. Where studs cannot run to underside of construction above due to equipment or ductwork, provide built-up headers consisting of runner tracks and studs spanning the distance.

G. Stud Spacing:

1. Install studs at on centers indicated above, unless otherwise indicated or required to meet structural requirements for maximum allowable deflection, but not exceeding manufacturer's recommendations or requirements for fire rated construction for stud type, length and loading.
2. Provide double studs (back-to-back) at each side of door, duct penetrations, or other wall openings and at partition ends.
3. Install structural studs adjacent to door and relight openings, and at partitions as scheduled on drawings or required to meet structural requirements for maximum allowable deflection.

H. Framing of Openings: Provide rough framing at openings using full length studs adjacent to jambs and horizontal head and sill tracks. Cut horizontal tracks to length, split flanges and bend webs at ends for flange overlays and screw attach to jamb studs. Install cut-to-length intermediate studs between jamb studs at head and sill sections at same spacing as full length studs.

I. Plumbing Chases and Braced Cavity Partitions: Where a partition is indicated to be constructed from double rows of studs, maintain mechanical isolation between rows of studs; coordinate with plumbing and electrical work to ensure that no item is anchored to studs on opposite sides of wall and that acoustical separation is maintained between each side of the partition. Space bracing (runner tracks) not to exceed 16 inches on center horizontally and 4'-0" maximum on center vertically. Fasten to studs with two No. 8 by 1/2 inch long self-drilling, self-tapping screws in each stud.

J. Partitions Which Extend Above Ceiling, Not To Structure: Lateral force bracing shall meet the requirements as previously specified. Unless otherwise required by the governing jurisdiction, lateral bracing shall be accomplished by using minimum 20 gage steel "C" studs secured to the runner track and structure above at an angle of 45 degrees from the plane of the ceiling.

1. Place studs not to exceed 4 feet on center; studs may be located on either side of the partition, depending upon obstructions above. Secure studs to top track using two #8 screws, and to structure above using powdered actuated fasteners.
2. Bracing system shall be per ICC-ES Legacy Report 4071.

K. Miscellaneous Assemblies: Provide framing for elements shown on the drawings in accordance with approved drawings and standards of practice indicated.

L. Column and Beam Clips: Install in accordance with manufacturer's instructions and approved UL Design No.

M. Furred Walls:

1. Erect furring channels vertically, spaced 16 inches on centers maximum, unless otherwise indicated.
2. Attach with appropriate screw fasteners.
3. Splice by butting the resilient furring channel members over the framing member leaving a minimum 1/16 in. gap between resilient furring channels.
4. Miter 24 inch long horizontal furring channels at corners and space 24 inches on centers vertically.
5. Locate furring channels around perimeter of openings and secure to surfaces.

N. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.05 RESILIENT FURRING

A. Comply with provisions of the Gypsum Construction Handbook; "Framing and "Cladding."

B. Resilient Channels: Install resilient channels on wood or metal-framed walls. Attach resilient channels with the attachment flange down, except at floor level, install face up and at right angles to the wall studs.

C. For walls, install resilient channels at right angles to studs or joists, using 9.5-mm (3⁄8-in.) type S pan head screws.

D. Where resilient channel must be overlapped, splicing is necessary. Nest the ends of the channel directly over the framing members at the proper spacing, to align the pre-punched holes.

E. When fastening resilient channel, drive screws into the channels between the studs or joists. The appropriate length of screw must be selected, and the location of the studs or joists identified, before attachment of the wallboard. Screwing the wallboard through the channel to the stud or joist destroys the 'spring' assembly that suspends it.

F. Hold back ends of resilient channels from the side walls to eliminate binding against the wall. Ends should also be held off the top and bottom of a wall by a distance of 100 to 150 mm (4 to 6 in.). Where baseboard is used, screws cannot rigidly attach the base of the wall to the sill plate. Similarly, at the top of the wall, gypsum wallboard cannot be attached to the header.

G. Where a wall meets a resilient ceiling, maintain a 6-mm (¼-in.) gap to prevent supporting of the ceiling and grounding of the resilient channel. This gap should be filled with resilient caulk, and finish-taped.

H. Penetrations in a ceiling or wall assembly require maintaining the performance of the resilient channel and the integrity of the assembly's sound transmission performance. Where lighting is attached to joists, allow a 6-mm (¼-in.) gap on the perimeter. Seal gap with resilient sealant.

3.06 ACOUSTICALLY RATED ASSEMBLIES

A. For acoustic assemblies, mount resilient furring channels perpendicular to the framing members (horizontally), with the slotted holes centered directly over the studs, and fastened securely using screws, with the open side facing upwards create an air gap between the drywall and the framing, to maximize sound isolation.

B. Leave a small gap between the channel and the wall/ceiling edges to prevent sound bridging.

1. For top of walls, install the highest row of resilient furring channel with a 1/4 inch gap between the return lip and bottom edge of the top track, and not more than 6 inches from the ceiling to the bottom edge of the mounting flange.
2. For bottom of walls, install the lowest row of resilient furring channel no more than 2 inches from floor to the bottom edge of the mounting flange, leaving a 1/4 inch gap between the edge of bottom track and mounting flange of the resilient channel.

C. Ensure the channels are not touching any other structural elements, like the wall plate or ceiling joists, to maximize sound isolation.

3.07 GYPSUM BOARD SUSPENSION SYSTEM FRAMING

A. General: Install suspension systems to comply with ASTM C636, as required to support all design loads, and with manufacturer's directions. Support suspension system from overhead construction in solid and permanent manner, fully capable of carrying imposed loads. In no case shall deflection exceed 1/360 of any span.

B. Hanger Wires: Locate hangers a maximum of 8 inches from each end and spaced 48 inches on center along each main runner; provide additional hanger wires at all four corners of light fixtures and at mid-span of cross tees along sides of light fixtures. Do not hang wires more than 1 in 6 out of plumb, unless counter sloping wires are provided.

1. Secure hanger wires by looping and wire-tying, either directly to structure or to inserts, eye-screws, or other approved devices which are secure and appropriate for substrate. Install fasteners for securing hanger wires to structure in accordance with manufacturer's recommendations. Provide hanger wires capable of carrying not less than 100 pounds allowable load. Secure wires to runners by one loop and three tight twists in 1-1/2 inches. Splices not permitted.
2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structure or ceiling suspension system. Splay hangers only where required to miss obstructions and off-set resulting horizontal force by bracing, countersplaying or other equally effective means.

C. Trapeze Supports: Provide trapeze or other supplementary support members at obstructions to maintain hanger spacing. Provide minimum trapeze suspensions of back-to-back 1-1/4 inch cold-rolled channels for spans exceeding 48 inches. Provide additional hangers, struts or braces as required at ceiling breaks or discontinuous areas.

D. Additional Hangers: When weight of components supported on main runners or cross tees causes total dead load to exceed deflection capability, provide additional hangers as recommended by suspension system manufacturer. Do not apply system loads that may result in rotation of runners or tees.

E. Wall Track: Install wall track wherever suspension system meets vertical surfaces. Cut suspension components to fit into the wall track. Attach at 16 inches on center maximum, and within 3 inches of ends. Install track level with suspension system.

F. Stud Framed Ceiling and Soffits: Where ceilings or soffits are indicated for direct attachment to stud framing, or where suspension system is not used, install studs at a spacing not to exceed 16 inches on center. Provide hanger studs as required and where not indicated; size studs for spans used. All studs shall be screwed attached using minimum 3/8 inch self-tapping screws on both stud flanges.

G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.08 INSTALLATION OF GRID SUSPENSION SYSTEMS

A. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

1. Main Runners: Support main runners directly from hanger wires, spaced not to exceed 48 inches on center.
2. Cross Tees: Install cross tees spaced not to exceed 16 inches on center; install additional cross tees 8 inches from each end of each drywall panel. At recessed light fixtures, install cross tees on four sides for light fixture support.

3.09 WALL BACKING PLATES

A. Wall Backing Plates: Fabricate from galvanized steel stud runners, not less than 16-gage by 6 inches wide; notch at stud locations as detailed. Attach with flat head sheet metal screws; provide a minimum of three (3) screws per each bearing point.

1. Provide in wall or partition framing system wherever wall-hung cabinets, equipment, accessories, and handrails are indicated on drawings; for all wall-mounted finish hardware, including door stops; and where required for mounting of miscellaneous items requiring backing.
2. Backing plates shall span full length of attached item

END OF SECTION

SECTION 09 29 00

GYPSUM BOARD

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Interior gypsum board faced walls, partitions, and ceiling assemblies, and supplementary items necessary for installation as follows.

1. Gypsum board wall and ceiling systems including:
    a. Acoustical insulation and sealants for partition assemblies for acoustical gypsum board systems.
    b. Joint treatment materials
    c. Trim accessories
2. Tile backing panels
3. Gypsum board finishing schedule - Level of Finish for gypsum board surfaces.
4. Drywall trim and finishing (joint tape and compound treatment).
5. Acoustical treatment within partition assemblies as indicated on drawings.
6. Special requirements for acoustical wall construction.
7. Repair work at existing gypsum board assemblies.

B. Related Sections/Drawings:

1. “Board Types by Location” on the drawings.
2. Section 09 22 16 – Non-Structural Metal Framing: Wall framing, ceiling suspension systems, wall furring, etc.
3. Section 09 3013 – Tiling
4. Section 09 91 00 – Painting: Paint coatings on gypsum board.

1.02 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 for definitions of terms not defined in this Section or in other referenced quality standards.

B. Damage: Stored or installed paper faced gypsum board materials not specifically manufactured as “moisture-resistant products” shall be classified as defective and nonconforming Work if they have been exposed to wetness or dampness at any time prior to Substantial Completion or if they exhibit evidence of active or dormant mold or mildew.

1.03 REFERENCE STANDARDS

A. In addition to requirements shown or specified, comply with applicable provisions of following for design, materials, fabrication, and installation of component parts:

1. GA 216 – Application and Finishing of Gypsum Board by Gypsum Association.
2. GA 214 – Recommended Levels of Gypsum Board Finish by Gypsum Association.

1.04 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Product Data: Manufacturer’s technical literature for each product and system indicated.

1. Include manufacturer's specifications for materials, finishes, construction details, installation instructions, and recommendations for maintenance.

1.05 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Written reports based on evaluation of comprehensive tests performed by qualified testing agency indicating that each product complies with requirements.

B. Field Quality Control Reports: Written report of testing and inspection required by “Field Quality Control”.

C. Manufacturer’s Project Acceptance Document: Certification by the manufacturer that its product(s) are approved, acceptable, suitable for use in specific locations, for specific details, and for applications indicated, specified, or required.

D. Qualification Data:

1. For manufacturer and installer.
2. For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
3. Architect may waive Submittal of Qualification Data for Manufacturers listed in this Section.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with not less than 5 years’ experience with successful production of products and systems similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years, and with sufficient production capability, facilities and personnel, to produce required Work.

1. Source Limitations: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

B. Installer Qualifications:

1. Experience: Installer with not less than 5 years’ experience in performing specified Work similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years and with sufficient production capability, facilities, and personnel to produce required Work.
2. Supervision: Installer shall maintain a competent supervisor who is at Project site during times specified Work is in progress that is experienced in installing systems similar to type and scope required for Project.

C. Manufacturer’s Technical Representative Qualifications: Direct employee of technical services department of manufacturer with minimum of 5 years’ experience in providing recommendations, observations, evaluations, and problem diagnostics. Sales representatives are not acceptable.

D. Sound (STC) Resistance Rated Assembly Characteristics: Provide materials and construction identical to those tested according to ASTM E 90 and classified according to ASTM E 413 by independent and testing agency acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Reference: Gypsum Association GA-801: Handling and Storage of Gypsum Products.

B. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

C. Store materials inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

D. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and other trim from being bent or damaged.

E. Protect gypsum board panels to prevent damage to edges, ends, and surfaces.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Comply with requirements of ASTM C840 or recommendations of gypsum board manufacturer whichever more stringent, for environmental conditions before, during and after application of gypsum board.

B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degrees F. Do not exceed 95 degrees F when using temporary heat sources.

C. Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent finishing materials from drying too rapidly.

D. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

1. If Contractor chooses to install gypsum panels before areas are enclosed and conditioned, he does so entirely at his own risk. Damaged panels shall be removed and new panels installed at Contractor's expense and will not be deemed cause for additional time.

E. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

F. Provide adequate lighting and ventilation during installation and joint finishing treatment.

1.09 COORDINATION

A. Coordinate installation of products and systems with interfacing and adjoining construction to provide a successful installation without failure.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Manufacturers and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, manufacturers offering products that may be incorporated into the Work include those listed under gypsum board products:

1. Manufacturers:

a. United States Gypsum Company (USG)
b. National Gypsum Company, LLC
c. CertainTeed Gypsum Corp
d. Georgia-Pacific Gypsum

B. Single Source Responsibility: Furnish each type of product from single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.

2.02 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

B. Engineer products and systems to withstand loads within limits of allowable working stresses of the materials involved under conditions indicated and without permanent deformation or failure of materials.

1. Design Loads: Engineer to withstand design loads including but not limited to gravity, wind, seismic, and erection design loads established by authorities having jurisdiction, applicable local building codes, and as indicated.
2. Structural Movement: Engineer to withstand movements of structure including, but not limited to, drift, twist, column shortening, long-term creep and deflection from uniformly distributed and concentrated live loads. Contractor shall obtain required design data and identify movements accommodated on submittal drawings.

a. Accommodate plus or minus 3/8 in (10 mm) differential vertical deflection of floors.

C. Dimensional Tolerances: Engineer products and systems to accommodate dimensional tolerances of framing members and adjacent construction.

2.03 GYPSUM BOARD PRODUCTS

A. Sizes: Maximum lengths and widths available that will minimize short edge-to-short edge butt joints and to correspond to support system indicated.

B. Typical Paper-Faced Gypsum Board Products:

1. Paper-Faced Type X Gypsum Board:

a. Material Quality Standard: ASTM C 1396 / C 1396M, Type X.
b. Description: Noncombustible fire-resistant gypsum core with paper surfacing on face, back, and long edges; tapered long edges; 5/8 in. thick.
c. Manufacturers and Products:

1) United States Gypsum Company (USG); Sheetrock Firecode X Gypsum Panels, or Sheetrock Brand EcoSmart Firecode X Panels.
2) National Gypsum Company, LLC; Gold Bond Fire-Shield Gypsum board.
3) CertainTeed Corporation; Type X Drywall Panel.
4) Georgia-Pacific Gypsum LLC; ToughRock Fireguard X Gypsum Board.

C. Moisture-and Mold-Resistant Gypsum Board Products:

1. Moisture-Resistant Paper-Faced Gypsum Board:

a. Material Quality Standard: ASTM C 1178.
b. Description: Glass mat encased board resists mold, mildew and moisture with increased resistance to incidental moisture. Use as a substrate for tile applications in high-moisture areas, including restrooms and other interior applications.
c. Thickness: 5/8 inch.
d. Core: Types X
e. Edges: Square
f. Mold/Mildew Resistance: ASTM D3273; Score of 10
g. Manufacturers and Products:

1) United States Gypsum Company (USG);. Fiberock® Brand Aquasmart™ Tile Backerboard.
2) National Gypsum Company; Gold Bond eXP® Fire-Shield Tile Backer.
3) CertainTeed Corporation; GlasRoc® Tile Backer Type X
4) Georgia-Pacific Gypsum LLC; DensShield® Tile Backer/Fireguard**.**

2.04 TRIM ACCESSORIES

A. Paper Faced Metal Trim: Trim members conforming with ASTM C 1047 is required. Provide galvanized steel laminated with paper trim designed for concealed metal and for application without mechanical fastening, unless otherwise specified; sizes compatible with thickness of drywall.

B. Typical Drywall Trim Accessories:

1. Material Quality Standard: ASTM C 1047.
2. Description: Trim profile fabricated of paper-faced galvanized or aluminum-coated steel sheet; of required size for gypsum board thickness.
3. Manufacturers:

a. United States Gypsum Company (USG)
b. MarinoWare
c. Phillips Manufacturing.
d. ClarkDietrich Industries, Inc.

4. Trim Products:

a. Cornerbead:

1) Purpose: For protecting outside (external) and inside corners.
2) Basis of Design: ClarkDietrich Paper-Faced Corner Bead and Paper-Faced Inside Corner Bead.

b. L-Trim:

1) Purpose: For protecting exposed edges of gypsum board where gypsum board terminates.
2) Basis of Design: ClarkDietrich Paper-Faced L-Trim.

c. Control Joint:

1) Description: One-piece trim formed with V-shaped slot, with removable strip covering slot opening.
2) Purpose: For conditions requiring expansion and contraction stresses of large areas of gypsum board to be relieved.
3) Basis of Design: ClarkDietrich 093 Zinc Control Joint.

a) ClarkDietrich FAS-093X Fire Rated Control Joint where required.

2.05 FASTENERS

A. Limitations: Nails and staples are not permitted.

B. Metal Framing Screws: Screw fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten metal framing and furring members securely to substrates involved; complying with recommendations of gypsum board manufacturers for applications indicated.

C. Gypsum Board Screws:

1. Material Quality Standards:

a. Metal Framing Members less than 0.03 in (0.75 mm) Thick: ASTM C 1002, Type S.
b. Metal Framing Members from 0.033 in to 0.112 in (0.79 mm to 2.9 mm) Thick: ASTM C 954, Type S-12.

2. Product Description - Standard Applications: Bugle head, self-drilling, self-tapping, steel screws with Phillips-head recess of size, holding power, and other properties recommended by respective gypsum board manufacturer; minimum 1 in (25 mm) long; with corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
3. Product Description - High Moisture / Humidity Applications: Bugle head, self-drilling, self-tapping, stainless steel screws with Phillips-head recess of size, holding power, and other properties recommended by respective gypsum board manufacturer; for use at high moisture areas such as Kitchens, Showers and Tub Enclosures, Saunas, Steam Rooms, and Pool Enclosures.

D. Miscellaneous Fasteners: For conditions not indicated, fasteners shall be type, finish, size, and holding power recommended by respective gypsum board manufacturer and conditions.

2.06 JOINT TREATMENT MATERIALS

A. Joint Compound: ASTM C475, board manufacturer's standard ready-mixed, low-VOC joint compounds with no detectable amounts of crystalline silica based on NIOSH Method 7500.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use drying-type, all-purpose joint compound.

D. Setting Type Joint Compound for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
2. For pre-filling gypsum board joints, use formulation recommended by gypsum board manufacturer.
3. For topping compound, use sandable formulation.

E. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.

1. Ready-Mix Formulation: Factory-premixed product.
2. Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.
3. Topping compound formulated for fill (second) and finish (third) coats.
4. Lightweight Joint Compound: Specifically formulated to reduce airborne dust while sanding.

    a. Basis of Design: ProForm Lite Ready Mix Joint Compound with Dust-Tech as manufactured by National Gypsum, or equal products of the other named manufacturers.

F. Joint Compound for Tile Backing Panels:

1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
2. Cementitious Backer Units: As recommended by backer unit manufacturer.
3. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting- type, sandable topping compound.

2.07 SOUND ATTENUATION INSULATION AND ACCESSORIES

A. Sound Attenuation Batts: Glass or other inorganic fibers and resinous binders formed into flexible batts or blankets, complying with ASTM C665, Type I unfaced, manufacturer's standard sizes, thickness as indicated; lengths and widths required to interface with size of space insulated, maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, passing ASTM E 136 for combustion characteristics; and of the following nominal density and thermal resistivity:

B. Fiberglass Sound Attenuation Blankets:

1. Material Quality Standard: ASTM C665, Type I.
2. Description: Unfaced blankets produced by bonding inorganic glass fibers with a thermosetting binder.
3. Surface Burning Characteristics: According to ASTM E 84/NFPA 255/UL 723:

    a. Flame Spread: Class A no greater than 25.
    b. Smoke Developed: No greater than 50.

4. Thickness: Not less than 3-1/2 inch, unless scheduled elsewhere by partition type.
5. Manufacturers and Products:

    a. CertainTeed Corporation; CertaPro AcoustaTherm Batts.
    b. Johns Manville Building Insulation Div.; Sound Control Batts.
    c. Knauf Fiber Glass; QuietTherm.
    d. Owens Corning; Sound Attenuation Batts.

C. Mineral Wool Sound Attenuation Blankets**:**

1. Application: Mineral wool insulation scheduled by wall partition type.
2. Nominal Density: 2.4 lb/cu. ft.
3. Thermal Resistivity: Not less than 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F
4. Flame-Spread Index: Not more than zero when tested in accordance with ASTM E84.
5. Smoke-Developed Index: Not more than zero when tested in accordance with ASTM E84.
6. UL Classification Code: BZJZ
7. Manufacturers and Products: Subject to compliance with requirements, provide ROCKWOOL (Roxul, Inc.); Safe'n'Sound or comparable product by one of the following:

    a. Johns Manville; a Berkshire Hathaway company.
    b. Thermafiber, Inc.; an Owens Corning company.

D. Acoustical Sealant for Non-Fire Resistance Rated Joints:

1. Description: Nonsag, nonstaining latex sealant complying with ASTM C 834 that is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
2. Acceptable manufacturers and products:

    a. Hilti Inc.; CP 506 Acoustical Sealant and CP 572 Acoustical Spray

b. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
c. United States Gypsum Company (USG); Sheetrock Acoustical Sealant.

E. Fire-Resistance Rated and Acoustical Putty Pads:

1. Product Quality Standard: UL 1479.
2. Description: Fire-rated, non-hardening, moldable, intumescent compound formed into sheets designed to seal penetrations, construction gaps, and around electrical boxes against spread of fire, smoke, and toxic gases.
3. Manufacturers and Products:

a. Grace Construction Products; Flamesafe FSP 1077 Putty Pads.
b. Hilti; CP 617 Intumescent Acoustic Putty Pads.
c. KnaufDrywall; Putty Pads.
d. Specified Technologies, Inc; Series SSP Putty Pads.
e. Tremco; TREMstop Electrical Box Insert.
f. 3M; Fire Barrier Moldable Putty+Pads.

2.08 RELATED MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Acoustical Joint Sealant: At acoustically rated assemblies, comply Section 07 92 00, "Acoustical Joint Sealants."

D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033- to 0.112-inch thick.
2. For fastening cementitious backer units use screws of type and size recommended by panel manufacturer:

a. PermaBase Cement Board drill point screws (No. 8)

1) Wafer head, corrosion-resistant
2) Overall Thickness: 1-1/4 inch
3) For use with 20 to 14 ga. Steel framing and complying with ASTM C 1002

E. Backer Plates: 54 mil uncoated metal thickness steel sheet, galvanized, ASTM A525, G60.

1. Length: Sufficient to extend to nearest studs beyond maximum dimension of attached item and engage fasteners from attached item; span minimum three studs.
2. Height: 6 inch minimum or higher where required to accommodate item being fastened.
3. When manufacturer of attached item has more rigorous mounting plate requirements, comply with manufacturer's requirements.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.

1. Verify rough-in utilities and blocking is in proper position.

B. Do not proceed with installation until deficiencies are corrected and surfaces to receive gypsum board are acceptable.

C. Protrusions of framing, twisted framing members, or unaligned members must be repaired before installation of gypsum board is started.

3.02 PREPARATION

A. General: Comply with manufacturer's instructions, recommendations and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.

B. Suspended Gypsum Ceilings: Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hanger wires at spacing required to support ceilings and that hangers will develop their full strength.

C. Items Which Require Backer Plates or Blocking: Coordinate sizes and locations.

1. Install additional studs for attachment of backer plates and blocking in required locations to receive surface mounted accessories as indicated or as required by accessory manufacturer.
2. Elimination of backer plates and blocking is not permitted.
3. Direct attachment of items to studs is not permitted.

3.03 INSTALLATION – ACOUSTICAL INSULATION

A. STC-Rated Assemblies: Comply with requirements of indicated assemblies in partition schedule. STC-Rated Assemblies shall be airtight. Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations

B. Comply with recommendations of the Gypsum Association's Fire Resistance Design Manual, Section III, Sound Control.

C. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

D. Do not install sound attenuation blankets until mechanical and electrical work within framing spaces is complete.

E. Install sound attenuation blanket in contact with one face of partitions scheduled to receive sound insulation. Install insulation with daubs of adhesive applied to back of gypsum board or with adhesive applied to edge of studs to maintain full coverage and prevent slumping at tops of partitions and other displacement. Sound insulated partitions shall be constructed, insulated and caulked so as to produce sound transmission coefficient rating (STC) indicated. Do not locate outlets, switches, devices, or similar items on opposing sides of partition within same stud space.

F. Coordinate installation of recessed fixtures, accessories and devices to minimize sound transmission pathways. Recessed fixtures, accessories and devices located on opposite sides of the same wall shall be offset such that they do not share the same stud cavity. Where field conditions require that recessed fixtures, accessories and devices be located within the same stud cavity, the back of such fixtures, accessories and devices shall be wrapped with Putty Pads. Recessed fixtures, accessories and devices located on opposite sides of the same metal stud wall shall not be attached to the same metal stud.

G. Fit sound attenuation blankets tight around cut openings and penetrations, and behind and around electrical and mechanical items within framing spaces. Pack blankets around door and window frames, between jamb studs, in boxed headers, and in other voids.

H. Where sound attenuation blankets are installed in partitions, seal perimeters, control and expansion joints, openings, and penetrations with continuous beads of acoustical sealant at both faces of partition.

1. Apply acoustical seals to electrical boxes and other penetrations of gypsum board.

I. Where concealed acoustical sealant beads are required at floor line, apply sealant to clean floor surface first and set drywall boards into the sealant.

J. At other locations tool beads to ensure complete contact with joint surfaces. Where exposed, form smooth concave surface suitable for finish painting.

3.04 INSTALLING ACOUSTICAL SEALANTS

A. Comply with ASTM C919 and manufacturer's recommendations for location of acoustical sealant beads, and close off sound-flanking paths around or through the work, including sealing of partitions above acoustical ceilings.

B. Provide continuous bead of sealant under bottom edge of gypsum board and wall cut outs, at toilet room partitions and other partitions receiving sound insulation so as to completely seal wall against sound leaks.

C. Apply 3/8 inch continuous bead of acoustical sealant to face of runner tracks before applying gypsum boards; completely seal wall against sound leaks.

D. Where sound attenuation blankets are installed in partitions, seal perimeters, control and expansion joints, openings, and penetrations with continuous beads of acoustical sealant at both faces of partition.

1. Apply acoustical seals to electrical boxes and other penetrations of gypsum board.

E. Do not allow acoustical sealant to remain exposed to air for more than 15 minutes before panel is applied.

F. Completely seal around perimeter of and penetrations through sound walls, including intersections with walls, columns, and other adjacent construction; fill depth of gaps around gypsum panels at floor, structure above, door frames, and other openings; and at cutouts for electrical boxes, pipes and plumbing, and other penetrations. Cut panels accurately to fit penetrations. Caulk openings in non-fire rated partitions with acoustical sealant.

G. Putty Pads:

1. Before installing wallboards, install putty pads in accordance with manufacturer’s written instructions.
2. Overlap front edge of box so that putty will be compressed around edges of box as gypsum panels are installed.
3. Applications:

a. Electrical boxes in fire barriers, smoke barriers, and STC-rated walls.
b. Electrical boxes at interior gypsum board faces of exterior walls.

3.05 REPAIR WORK AT EXISTING GYPSUM BOARD SYSTEMS

A. Prepare all openings indicated on drawings to be removed in existing work to permit access for new work.

B. Cut back existing gypsum board to rectangular shape for opening to the nearest stud or blocking. Provide supplementary metal framing to support edges of gypsum board on all sides of openings.

C. Remove all existing trim pieces, tape and joint filler that will interface with providing a smooth surface in the new work.

D. Infill openings with metal stud framing where the opening size exceeds the stud spacing established elsewhere in this section. Set new studs so as to allow the finished face of the new gypsum board to be flush and even with the existing. For ceiling assemblies, provide additional framing to support new gypsum board infill.

E. Install and finish new gypsum board to be smooth and flush with existing work, such that infill will be unnoticeable in finished condition.

F. On walls which are decorated with vinyl wall covering, peel back covering to allow for gypsum board patching. Re-apply covering at completion of gypsum board work.

G. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.

H. Patch holes or openings 1/2 inch or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.

I. Repair holes or openings over 1/2 inch diameter, or equivalent size, with 5/8 inch thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.

J. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non-decorated surface to provide continuity of surface and such that defect is not visible when painted is completed.

3.06 INSTALLATION, GENERAL

A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:

1. United States Gypsum Company (USG); Gypsum Construction Handbook, if no other installation quality standard applies to condition.
2. Respective Manufacturer's written installation instructions.
3. Accepted submittals.
4. Contract Documents.
5. Gypsum Association GA 216.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

3.07 INSTALLATION OF GYPSUM BOARD ASSEMBLIES

A. Gypsum Board Installation Requirements: Comply with ASTM C840.

1. Do not proceed with gypsum board installation until blocking, framing, bracing, and other supports for subsequently applied work have been reviewed, installed, and accepted by the Architect.
2. Do not install gypsum board until thermal and acoustical insulation, membrane vapor barriers, and other work concealed by gypsum board have been installed.

B. Install interior gypsum board in the following locations:

1. Wallboard Type X: Vertical and horizontal surfaces unless otherwise indicated.
2. Tile Backing Panels Applications:

    a. Glass-Mat Water-Resistant Tile Backing Panels: Tiled surfaces except those designated for cementitious tile backing panels.
    b. Cementitious Tile Backing Panels: At tiled walls of shower and bath enclosures.

C. Resistance Rated Partitions: Construct fire resistance rated, smoke resistance rated, and sound resistance rated partitions according to respective assembly test reports. Ensure every material used within an assembly shall comply with manufacturers listed and product qualities indicated in respective assembly test report.

D. Acoustically Rated Partitions:

1. Verify that resilient channels where required are installed properly.
2. Install gypsum board with long dimension parallel to resilient channels and end joints staggered. Allow 1⁄8 inch spacing between the ceiling perimeter and adjacent walls and fill with acoustical sealant. Attach gypsum board with screws at recommended spacing along channels. Do not to fasten gypsum board through the channel into wood joists. Joints between boards should be centered over the resilient channels, or be midway between channels with joints floated and backed with sections of channels. Provide 3-mm (1⁄8-in.) spacing between the edges of boards, floor, and adjacent walls, and to fill space with acoustical sealant.

E. Control Joints: Install control joints at locations indicated on Drawings, in specific locations approved by Architect for visual effect and according to the following:

1. Spaced not more than 30 feet in either direction for uninterrupted straight planes of ceilings and walls.
2. Where different substrates occur at ceilings and walls.
3. Where control joints occur in substrates at ceilings and walls.
4. Where ceilings and walls abut inside face of exterior walls.
5. Where L, U, or T shaped ceiling configurations are joined.
6. Where less-than-ceiling-height door frames occur on walls more than 30 feet in length; extend control joints from top of frame up to ceiling at corner of hinge side of door
7. Where less-than-ceiling-height borrowed lites occur on walls more than 30 feet in length; extend control joints from top of frame up to ceiling and from bottom of frame to floor at both corners.

F. Isolation from Building Structure: Isolate gypsum board assemblies from building structure to prevent transfer of loading imposed by structural movement.

1. Provide isolation joints as indicated or required by installation quality standards.
2. Isolate ceiling assemblies abutting or penetrated by building structure.
3. Isolate partition framing and wall furring abutting or penetrated by building structure, except at floor.

G. Fire-Resistance Rated and Acoustical Putty Pads:

1. Before installing wallboards, install putty pads in accordance with manufacturer's written instructions.
2. Hand apply pads packing tightly into gaps and openings, in such a manner that pad will remain secured to surface; pinch pleat excess material together to close gaps.
3. Overlap front edge of box so that putty will be compressed around edges of box as gypsum panels are installed.
4. Applications:

   a. Electrical boxes in fire barriers, smoke barriers, and STC-rated walls.
   b. Electrical boxes at interior gypsum board faces of exterior walls.

H. Supplemental Accessories: Install supplementary framing, blocking, reinforcing, and bracing in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, hand rails, furnishings, or similar construction. Comply with details indicated and recommendations of installation quality standards or manufacturer.

3.08 INSTALLATION OF TILE BACKERBOARD

A. Tile Backing Panels

1. Areas Not Subject to Wetting: Install Moisture and Mold Resistant gypsum wallboard panels to produce a flat surface except at showers, tubs, and other locations indicated to receive cementitious backer units.
2. Where tile backing panels abut other types of panels in the same plane, shim surfaces to produce a uniform plane across panel surfaces.
3. Precut panels to required sizes and treat necessary edges at penetrations, joints, and intersections before panel installation with Sheetrock W/R compound. Treat all fastener heads with Sheetrock W/R compound after installation. Fill all openings around pipes, fittings, and fixtures with Sheetrock W/R compound before ceramic tile installation.
4. Space fasteners maximum 8 in. o.c. for walls, 6 in. o.c. for ceilings, with perimeter fasteners dimension per manufacturer's instruction. Drive screws so bottoms of heads are flush with panel surface to ensure firm panel contact with framing. Do not overdrive fasteners.
5. Manufacturer recommended tile backer screws for steel framing or wood framing per project conditions.
6. Prefill joints with tile-setting mortar or adhesive and then immediately embed tile backer tape and level joints.
7. If waterproofing is required to be applied to panels per Division 09 Section "Tiling," confirm approved product with tile backing panel manufacturer.

3.09 INSTALLING GYPSUM BOARD PRODUCTS

A. General Requirements:

1. Install type of gypsum board at location indicated by gypsum board schedule at end of this Section.
2. Do not install damaged gypsum boards.
3. Install gypsum boards with finishable face side out.
4. Butt gypsum boards together for a light contact at edges and ends with not more than 1/16 in (1.5 mm) of open space between panels.
5. Do not force gypsum boards into place.
6. Do not place tapered edges against cut edges or ends.

B. Isolation from Building Structure and Window and Door Frames:

1. Apply edge trim where gypsum board abuts dissimilar materials.
2. Provide 1/4 in to 1/2 in (6 mm in 12 mm) wide spaces at these locations and trim edges with edge trim where edges of gypsum boards are exposed.

3. Seal interior joints between edge trim and abutting structural surfaces with acoustical sealant.

C. Single-Layer Board Assemblies:

1. At typical conditions, install gypsum board vertically (long dimension parallel to metal framing), to minimize short end-to-short end joints unless otherwise indicated or required by assembly fire test reports.
2. At interior of stairwells and other high walls, install gypsum boards horizontally, unless otherwise indicated or required by assembly fire test reports. Stagger abutting end joints not less than one framing member in alternate courses of gypsum boards.

D. Ceiling Applications:

1. Apply gypsum board at right angles to main beams of suspension framing to minimize number of abutting end joints and avoid abutting end joints in central area of each ceiling.
2. Stagger abutting end joints of adjacent panels not less than one framing member.
3. Locate both edge or end joints of gypsum boards over intermediate supports or gypsum board back-blocking where metal framing is not present.

E. Typical Wall Applications:

1. Attach gypsum boards to metal studs so that leading edge or end of each board is attached to open (unsupported) edges of stud flanges first.
2. Stagger vertical joints on opposite sides of partitions.
3. Do not make joints other than control joints at corners of framed openings.
4. Attach gypsum boards to framing provided at doors, windows, other openings and cutouts. Avoid gypsum board joints within 12 in. of the corners of these openings.
5. Install gypsum board to allow for a 1/2 inch gap between gypsum board and floor to prevent potential wicking of moisture.
6. Cover both faces of metal framing with gypsum boards as indicated, except in chase walls that are braced internally.
7. Cut and fit gypsum boards around ducts, pipes, conduits, and other penetrations to form proper annular joint to receive firestopping.
8. Where partitions intersect open building structure members projecting below underside of floor slabs and roof decks, cut to fit profile formed by coffers, joists, beams, and other structural members; form proper annular joint to receive firestopping.
9. Support both edge and end joints of gypsum boards over metal framing.

F. Screw Attachments:

1. Attach gypsum board to metal framing with screw fasteners of type appropriate for gypsum board materials and installation conditions:
    a. Length shall be as required by condition and penetrating metal framing not less than 3/8 in (10 mm).
    b. Spacing shall be as recommended by installation quality standard, gypsum board manufacturer, or respective assembly test report.
    c. Use properly adjusted, positive-clutch electric power tool equipped with adjustable screw-depth head and a Phillips bit. Nails and staples are not permitted.
2. Drive screws to slightly dimple surface without breaking face paper, fracturing core, or stripping metal framing member around screw shank.
3. Space screws for non-fire resistance rated partitions and ceilings as recommended by installation quality standards.
4. Space screws for fire resistance rated partitions as required by assembly fire test reports.
5. Start field screwing near center and work towards edges.
6. Space screws not less than 3/8 in (10 mm) from gypsum boards edges.
7. Do not attach gypsum boards to top runner where wall or partition extends to building structure unless required by fire test reports.

G. Control Joints: Form control joints and expansion joints at locations indicated with required space between edges of adjoining gypsum boards.

H. Sound Attenuation Blankets: Install blankets within stud cavities set so that they are held in place by friction with metal studs; ensure blankets are secure within cavity and will not become displaced when second gypsum board side is closed.

I. Sealant:

1. Seal wall assemblies at perimeters, behind control joints, and at openings and penetrations with a continuous bead of sealant material according to following:

   a. Fire Resistance Sealant: Joints within fire resistance rated assemblies.
   b. Water Resistance Sealant: Joints within non-fire resistance rated assemblies exposed to possible water infiltration.
   c. Acoustical Sealant: All other joints.

3.10 INSTALLING TRIM ACCESSORIES

A. Attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840.

1. Install double studs to create control joints, leave 1/2 inch separation between gypsum board panels for installation of control joint units.
2. For Rated Fire and Smoke Barriers and Non-Rated Smoke Partitions: Construct joints to comply with detail for wall rating.
3. Routing gypsum board to create joint is not acceptable.

C. Control Joint Locations: Where indicated, but not less than the following.

1. Locations of control and expansion joints in substrate or framing.
2. Walls: Maximum 30 ft o/c; coordinate locations with Architect. Wall or partition-height door frames may be considered as control joints.
3. Ceilings: In ceilings larger than 2500 square feet, locate control joints maximum 50 feet on center each way, and at all locations where framing or furring change direction. Coordinate locations with Architect.
4. Joints between different types of gypsum board in same plane.

D. Interior Trim:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. Curved-Edge Cornerbead: Use at curved openings.

E. Exterior Trim:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.

F. Cornerbead: Install in single pieces at vertical corners.

G. Edge Trim: Install where edge of gypsum board would otherwise be exposed or semi-exposed.

1. Install trim in a single piece on each side of opening perimeters with joints only at corners. If size of opening exceeds available length of edge trim, coordinate locations of joints with Architect.

3.11 FINISHING GYPSUM BOARD PRODUCTS

A. General: Treat board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare surfaces for decoration.

B. Joint Tape: Finish joints according to following:

1. Typical Paper-Faced Gypsum Board: Paper.
2. Moisture-Resistant Paper-Faced Gypsum Board: Mesh tape.

C. Finishing: Finish boards and units to achieve specified level of finish as indicated in schedule at end of section.

1. Typical Paper-Faced Gypsum Board: Either or combination of the following as recommended by manufacturer:

   a. Setting-type joint compounds.
   b. Drying-type joint compounds.

2. Moisture-Resistant Paper-Faced Gypsum Board: Setting-type joint compounds.

3.12 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Manufacturer's qualified technical representative shall inspect first day's Work and periodically inspect Work to ensure installation is proceeding in accordance with manufacturer's designs, recommendations, and instructions. Representative shall submit written reports of each visit indicating observations, findings, and conclusions of inspection.

3.13 ADJUSTMENTS

A. Damaged Materials: Stored or installed paper-faced gypsum board materials not specifically manufactured as "moisture-resistant products" shall be classified as damaged, defective, and nonconforming Work if they have been exposed to wetness or dampness at any time prior to Substantial Completion or if they exhibit evidence of active or dormant mold or mildew. Damaged materials and assemblies shall be replaced with new and dry materials and assemblies.

3.14 PROTECTION

A. Procedures: Protect products and systems from damage during installation and remainder of construction period according to manufacturer's instructions.

3.15 GYPSUM BOARD SCHEDULE – MOISTURE RESISTANT BOARDS

A. Gypsum Board Schedule, General: Install the designated gypsum board product based on exposure classification to water and / or moisture and applied finish system as follows, unless otherwise indicated or scheduled on the Drawings.

B. No Exposure: Surfaces not normally exposed to water and / or moisture sources including but not limited to the following:

1. Typical walls and ceilings.

    a. Paint and Wall Coverings Only: Typical paper-faced gypsum board.
    b. Tile and Adhered Sheet/Panel Coverings: Moisture-resistant coated-glass-mat gypsum board.

C. Incidental Exposure: Surfaces immediately adjacent to water and / or moisture sources including, but not limited to, the following locations:

1. Top of walls above ceilings adjacent to mechanical equipment in corridors.
2. Walls and ceilings in mechanical equipment rooms and janitor closets.
3. Walls within 24 inches of centerline of drinking fountains, isolated wall-hung lavatories, and countertop sinks and other similar water sources.
4. Interior face of exterior walls.
5. Acceptable gypsum board products for the above listed conditions:

    a. Paint and Wall Coverings: Moisture-resistant paper-faced or moisture-resistant paperless glass-mat gypsum board.
    b. Tile and Adhered Sheet/Panel Coverings: Mold and Moisture-resistant coated-glass-mat gypsum board.

3.16 GYPSUM BOARD FINISHING SCHEDULE

A. Gypsum Board Finishing Schedule, General: Finish panels to Levels of Finish indicated below. Apply joint tape over panel joints, except those with trim having flanges not intended for tape. Sand between coats and after last coat to produce a surface free of defects and ready for applied finish system.

B. Preparation: Apply joint compound at open joints, panel edges, and damaged surface areas.

C. Level 1: At following locations, embed tape at joints in joint compound unless a higher level of finish is required for fire resistance rated assemblies:

1. Ceiling plenum areas above ceilings.
2. Concealed areas.
3. Substrate for interior woodwork.

D. Level 2: At following locations, embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges:

1. Substrate for tiling.

E. Level 4: At following locations, embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges:

1. Areas to receive paint with eggshell/satin sheen or light texture.

END OF SECTION

SECTION 09 30 13

TILING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes tile work for application to floor and wall surfaces and including accessories, and related items necessary to complete the Work indicated.

1. Ceramic wall tile
2. Porcelain floor tile
3. Tile cove base
4. Marble threshold
5. Waterproofing membranes
6. Setting bed, grout, and accessories for complete installation.

B. Related Sections include the following:

1. Section 03 54 11 – Floor Substrate Preparation
2. Section 06 10 53 – Miscellaneous Rough Carpentry: Blocking
3. Section 07 92 00 – Joint Sealants: For sealing of expansion, contraction, control, and isolation joints in tile surfaces.
4. Section 09 05 61 – Common Work Results for Floor Preparation
5. Section 09 29 00 – Gypsum Board for tile backer units installed as part of gypsum wallboard systems.

1.02 DEFINITION

A. Large Format Tiles (LFT): Any tile with one edge greater than 15 inches.

1.03 PERFORMANCE REQUIREMENTS

A. General: Provide floor tiles complying with one of the following standard and performance requirements.

B. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028 of not less than 0.60.

C. Dynamic Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ANSI B101.3 DCOF of not less than 0.42.

1.04 REFERENCES

A. American National Standards Institute (ANSI):

1. A108.1 - Ceramic Tile Installed with Portland Cement Mortar.
2. A108.02 – General Requirements: Workmanship for Tile Installation
3. A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
4. A108/A118/A136 – Specification for the Installation of Ceramic Tile.
5. A108.13 - Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
6. A118.4 - Latex-Portland Cement Mortar.
7. A118.10 - Standard for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
8. A137.1 – Specifications for Ceramic Tile

B. American Society for Testing and Materials (ASTM):

1. F710 - Aggregate for Masonry Mortar.

C. Tile Council of North America (TCNA):

1. Handbook for Ceramic Tile Installation, current edition.

1.05 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Product data for each type of product specified.

C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.

D. Samples for Verification: Of each item listed below, prepared on Sample of size and construction indicated. Where products involve normal color and texture variations, include sample sets showing the full range of variations expected.

1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on braced tile backer units, and with grouted joints using product complying with specified requirements and approved for completed work in color or colors selected by Architect.

E. Grout Samples for Initial Selection: Manufacturer’s color charts consisting of actual sections of grout showing the full range of colors available for each type of grout indicated.

1.06 INFORMATIONAL SUBMITTALS

A. Test Reports: Submit test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of tile products with requirements specified for slip resistance.

B. Maintenance Guide: Submit, in duplicate the tile manufacturer’s maintenance instructions.

C. Master Grade Certificates: Submit master grade certificates for each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

D. Product Certificates: Submit manufacturer's certifications for each type of grout and bonding material being provided suitable for the intended use and meet or exceed the referenced standards and the requirements of this Specification.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.

C. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

D. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:

1. Joint sealants.
2. Backer units.
3. Metal edge strips.

E. Field-Constructed Sample Installations: Before installing tile, erect sample installations for each form of construction and finish required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build sample installations to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate sample installations on site, in locations and size indicated or, if not shown or indicated, as directed by Architect but not less than 100 sq. ft. area for floors, and not less than 100 sq. ft. area for walls.
2. Retain and maintain sample installations during construction in undisturbed condition as a standard for judging completed unit of Work.
3. Approved sample installations may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original sealed containers and as follows:

1. Labels are legible and intact identifying brand name and contents.
2. Tile cartons are grade-sealed by manufacturer in accordance with ANSI A137.1.
3. Grade-seals unbroken.
4. Manufactured mortars and grouts shall contain hallmarks certifying compliance with reference standards and are types recommended by tile manufacturer for application.

B. Deliver manufactured mortar and grout materials in sealed, moisture proof containers.

C. Store materials under cover in manner to prevent damage or contamination.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

B. Maintain temperatures within range recommended by the mortar and grout manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C), in spaces during tile setting. After installation maintain temperatures within range recommended by the mortar and grout manufacturer

C. Close spaces to traffic during tile flooring installation.

D. Close spaces to traffic for 72 hours after tile flooring installation.

E. Shade all tile, materials and the work area from direct sunlight during the installation as needed to prevent rapid evaporation caused by excessive heat or wind.

1.10 EXTRA STOCK MATERIALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of all full-size units equal to 2 percent of amount installed for each type, composition, color, pattern, and size indicated.

B. Package each type of material separately, distinctly marked, and adequately protected against deterioration.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Acceptable Manufacturers and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, manufacturers/fabricators offering products that may be incorporated into the Work include but are not limited to those listed below.

B. Tile basis of design products are indicated in the Schedule of Finishes on the drawings.

2.02 TILE PRODUCTS, GENERAL

A. Manufactured tile shall conform with ANSI A137.1 with respect to abrasive wear, water absorption, bonding capability, thickness, facial dimensions, facial warpage, wedging, crazing, breaking strength and thermal shock.

1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products and materials complying with the following requirements:

1. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for products of type indicated.
2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Include special shapes, including cove bases, bullnose edges, corners, etc., required to complete the work according to best trade practice for each job condition, whether or not such special shapes are specifically indicated or specified.

E. Rectified Tile Edges: Provide all tile units having a face dimension of greater than 8" x 8" (200 x 200 mm) with factory rectified edges.

2.03 TILE MATERIALS

A. Basis of Design: Tile:

1. Refer to Schedule of Finishes on the drawings.

B. Basis of Design: Setting and Grouting Materials: Custom Building Products, Huntington Beach, CA

1. Comparable Products: Subject to compliance with requirements, provide the “Basis of Design” product or a comparable product by one of the following:

   a. Laticrete International, Inc., Bethany, CT
   b. TEC Specialty Construction Brands/H.B. Fuller, Aurora, IL
   c. Mapei Corp., Deerfield Beach, FL

C. Ceramic Tile: As scheduled on drawings and as follows:

1. Composition: Vitreous or impervious natural clay or porcelain.
2. Face: Pattern of design indicated, with cushion edges.
3. Surface: Smooth.
4. Size, Tile Color, Grout Color and Tile Pattern: Refer to the Schedule of Finishes on drawings.
5. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as indicated on drawings and as follows, selected from manufacturer's standard shapes.

2.04 SETTING MATERIALS

A. Source Limitations: For each tile installation, obtain compatible formulations of setting and grouting materials and waterproofing materials containing latex or latex additives from a single manufacturer.

B. Latex-Portland Cement Mortar (Thin Set):

1. Prepackaged dry-mortar mix combined with dry powder latex additive, one of the following

   a. For Thin Set Placed over Slabs on Grade: ANSI A118.4 consisting of the following:

      1) Versabond Flex; Custom Building Products.
      2) Ultraflex 2 Mortar; MAPEI Corporation.
      3) Laticrete 253 Gold; Laticrete International Inc.

   b. For Thin Set Tile Set over Walls: ANSI A118.15 consisting of the following:

      1) Porcelain Tile Professional Thin-Set Mortar, Custom Building Products.
      2) Kerabond Keralastic; MAPEI Corporation.
      3) Laticrete 272 mixed with Laticrete 333 Superflex; Laticrete International Inc.

   c. For wall applications, provide nonsagging mortar.

C. Dry Set Mortar for Large and Heavy Tile (LHT Mortar): ANSI A118.4:

1. Prepackaged dry-mortar mix combined with additives to minimize slump and facilitate a thicker bond coat, and specifically manufactured and recommended in writing by the mortar and underlayment manufacturer for use in LHT mortar assemblies; one of the following:

   a. VersaBond®-LFT Professional Large Format Tile Mortar, Custom Building Products.
   b. Ultraflex LHT Mortar; MAPEI Corporation.
   c. Laticrete LHT; Laticrete International Inc.

2.05 GROUTING MATERIALS

A. Polymer-Modified Tile Grout (For Typical Applications): ANSI A118.7 compounded with calcium aluminate cement, non-shrinking, efflorescence free grout.

1. Polymer Type: Dry, redispersible latex/polymer powder form, prepackaged with other dry ingredients, one of the following:

   a. Prism; Custom Building Products.
   b. Permacolor; Laticrete International Inc.
   c. Ultracolor Plus FA; Mapei Corporation.

2. Colors: As selected by Architect from manufacturers standards to match tile being grouted or as indicated in Schedule of Finishes on the drawings.

2.06 WATERPROOFING MATERIALS

A. Waterproofing for Above Grade Restroom Tile Installations:

1. Fabric-Reinforced and Unreinforced Fluid-Applied Product: System consisting of liquid latex rubber or elastomeric polymer and continuous fabric reinforcement, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), and fabric reinforcement which are compatible with mortar bed specified and complying with ANSI A118.10; one of the following:

   a. Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane which is manufactured in the plant closest to the geographic location of the project.
   b. Laticrete International Inc.; Laticrete 9235 Waterproof Membrane.
   c. Mapei Corporation; Mapelastic AquaDefense

B. (Option) Corrugated-Polyethylene Product: Corrugated polyethylene with dovetail-shaped corrugations for adhering to latex-portland cement mortar and with anchoring webbing on the underside; 39 inches (1000 mm) wide by 3/16-inch (4-mm) nominal thickness.

1. Product: Schluter Systems L.P.; DITRA.

2.07 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 10 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.
2. Fabricate from one piece without holes, cracks, or open seams; full depth of wall or frame opening by full width of wall or frame opening; 3/4-inch minimum thickness and 1/4-inch minimum thickness at beveled edge.
3. Notch thresholds to match profile of door jambs.

2.08 ACCESSORY MATERIALS

A. Tile Backer Units: Section 09 29 00.

B. Underlayment Product for Leveling and Patching Floors indicated to receive Tiles: Latex modified, cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

1. LevelQuik RS (Rapid Setting) Self-Leveling Underlayment, Custom Building Products.
2. Either Ultraplan or Novaplan Underlayment; MAPEI Corporation.
3. NXT Level Plus Underlayment; Laticrete International Inc.

C. Joint Sealants:

1. Typical Surfaces: "Mildew-Resistant Silicone Sealant', as specified in Section 07 92 00 – Joint Sealants.
2. Floor Joints (**Type HL2**): 'Two-Part Polyurethane Sealant for Paving Applications,' as specified in Section 07 92 00 – Joint Sealants. Minimum shre A harness of 35.

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

E. Grout Sealer: Grout manufacturers recommended product for sealing tile grout joints and that does not change color or appearance of grout.

F. Metal Edge Strips for Wall Applications: Metallic, angle or L-shaped, depth to match tile and setting-bed thickness and having an integral provision for anchorage to substrate; white zinc alloy exposed-edge material; furnish in longest lengths available.

1. Manufacturers: Provide products of one of the following:

a. Schluter Systems L.P.
b. Blanke Corporation.
c. Ceramic Tool Company, Inc.

2.09 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions. Add materials and liquid latex additives in accurate proportions. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
2. Verify that concrete substrates for tile floors installed with bonded mortar bed or thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.
5. Verify that tile backing board is installed in accordance with the manufacturer's installation instructions, firmly supported and fastened, and installed with fiberglass reinforcing tape at joints between panels completely embedded in thin-set mortar.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove coatings, including curing compounds, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture test recommended by flooring manufacturer.

2. Subfloor Moisture Conditions: Before installing flooring, Contractor shall verify that moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1 and does not exceed the capacity of the specified adhesive or mortar, with subfloor temperatures not less than 55 deg F, or as recommended by manufacturer.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Prior to laying flooring, vacuum and remove all contamination from surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.

D. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.

1. Underlayment: Eliminate deviations in floor flatness and level as necessary for installation of large format tile.
2. Use trowelable leveling and patching compounds in accordance with tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
3. Remove protrusions, bumps, and ridges by sanding or grinding.

E. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 SLAB LEVELING

A. Prior to installation of thinset floor tile, where local irregularities in the substrate surface would prevent level installation of the tile, the substrate shall be brought to plane surface with variations not to exceed 1/8 inch in 4 feet (cumulative) and 1/4 inch in 10 feet (non-cumulative). Smooth abrupt changes in plane.

B. Use thinset mortar or other filler for slab leveling. Other fillers are subject to endorsement by the setting mortar manufacturer. Submit manufacturer's letter of approval to the Architect.

C. Screed or float to appropriate thickness and specified surface tolerance. Allow to set prior to proceeding with installation. Do not exceed the maximum thicknesses for thin bed mortar as recommended by the manufacturer.

3.04 WATERPROOFING MEMBRANE INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

B. Install waterproof membranes at tiled floors on suspended slabs. Install waterproof membrane completely over floor surfaces indicated, and up the wall.

C. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.05 INSTALLATION – GENERAL

A. Use products in strict accordance with recommendations and directions of manufacturer.

B. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

C. TCNA Installation Guidelines: TCNA's "Handbook for Ceramic Tile Installation." Comply with TCNA installation methods indicated in ceramic tile installation schedules.

D. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

E. Finished Surfaces: Unless otherwise accepted in the sample installation(s), if any, finished surfaces shall present a flat, even appearance, free from waver, projections, and depressions.

F. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. Do not extend cleavage membrane waterproofing or crack isolation membrane under thresholds set in dry-set portland cement or latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane waterproofing or crack isolation membrane with elastomeric sealant.

G. Metal Edge Strips: Install where exposed edge of wall tile meets, terminates, or overlays other wall finishes that finish flush with or below face of the tile, and the manufacturer of the field tile does not manufacture a tile edge transition trim. Provide metal edge strips as full length single units. Miter corners and smooth sharp edges.

H. Grout Sealer: Apply grout sealer to tile grout joints in tile floors according to grout sealer manufacturer's written instructions. As soon as sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.06 LAYOUT

A. Lay out tilework so as to minimize cuts less than one-half tile in size.

B. Locate cuts in both walls and floors so as to be least conspicuous.

C. Lay out tile wainscots to next full tile beyond dimensions shown.

D. Align wall joints to give straight, uniform grout lines, plumb and level.

E. Align floor joints to give straight, uniform grout lines parallel with walls.

F. Make joints between tile sheets same width as joints within sheets so extent of each sheet is not apparent in finished work.

3.07 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.

1. Do not install tile over waterproofing until waterproofing has cured, and at each horizontal installation, has been tested for water tightness. Test waterproofing membrane for watertightness by damming the floor drain and creating a dam at the perimeter of the waterproofed basin followed by filling the basin with water, marking the height, and verifying the same height after 48 hours. Repair leaks before continuing with the installation of subsequent tile.

3.08 FLOOR TILE INSTALLATION

A. Thinset Tile over Concrete Slabs on Grade: Install in accordance with the mortar manufacturer's recommendations and requirements indicated below for setting bed methods, installation methods related to types of subfloor construction, and grout installation methods and grout types. Where recommendations and methods conflict, the manufacturer's recommendations shall apply.

1. Mortar: Latex-Portland Cement Mortar: ANSI A108.5.
2. Concrete Subfloors, Interior: TCNA F113 with crack isolation membrane.

a. With a trowel, having notches sized as recommended by the mortar manufacturer, comb the surface of the mortar with the notched side of the trowel removing excess mortar. Spread only as much mortar as can be covered in the time limits established by the mortar manufacturer's recommendations.
b. Wipe the back of each tile, with a damp sponge, to remove all dust or dirt immediately before applying mortar to tiles.
c. Immediately after wiping tile backs, but prior to placing tile, the mortar shall be troweled to back of tile for 100 percent coverage to thickness of not less than 1/16-inch.

d. Place tiles onto mortar bed, maintaining 1/8-inch wide joints, and true accurate pattern as shown. Exercise care to quickly remove spillage from faces of tile using damp sponge. Rake out joints to depth required to receive grout as tile units are set.
e. Prohibit foot and wheel traffic on tiled floors for period of time as recommended by the mortar manufacturer.

3. Grout Installation: Do not begin grouting tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed. Remove spacers, if any, prior to grouting. For typical installations, comply with latex-portland cement: ANSI A108.10. Fill joints of cushion edged tile to the depth of the cushion; fill joints of square edge tile flush with the tile surface. Do not permit mortar, mounting mesh, or spacer material to show through grouted joints. Provide hard finished grout, which is uniform in color, smooth, and without voids, pinholes, or low spots. Tool surfaces with shallow concave profile.

B. Thinset Tile over Waterproof Membrane (Restrooms above grade): Install in accordance with the mortar manufacturer's recommendations and requirements indicated below for setting bed methods, installation methods related to types of subfloor construction, and grout installation methods and grout types. Where recommendations and methods conflict, the manufacturer's recommendations shall apply.

1. Mortar: Latex-Portland Cement Mortar: ANSI A108.5.
2. Concrete Subfloors, Interior: TCNA F122 (on ground) and F122A (above ground).

a. Apply the mortar to waterproofed slab with the flat side of the trowel.
b. With a trowel, having notches sized as recommended by the mortar manufacturer, comb the surface of the mortar with the notched side of the trowel removing excess mortar. Spread only as much mortar as can be covered in the time limits established by the mortar manufacturer's recommendations.
c. Wipe the back of each tile, with a damp sponge, to remove all dust or dirt immediately before applying mortar to tiles.
d. Immediately after wiping tile backs, but prior to placing tile, the mortar shall be troweled to back of tile for 100 percent coverage to thickness of not less than 1/16-inch.
e. Place tiles onto mortar bed, maintaining 1/8-inch wide joints, and true accurate pattern as shown. Exercise care to quickly remove spillage from faces of tile using damp sponge. Rake out joints to depth required to receive grout as tile units are set.
f. Prohibit foot and wheel traffic on tiled floors for period of time as recommended by the mortar manufacturer.

3. Grout Installation: Do not begin grouting tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed. Remove spacers, if any, prior to grouting. For typical installations, comply with latex-portland cement: ANSI A108.10. Fill joints of cushion edged tile to the depth of the cushion; fill joints of square edge tile flush with the tile surface. Do not permit mortar, mounting mesh, or spacer material to show through grouted joints. Provide hard finished grout, which is uniform in color, smooth, and without voids, pinholes, or low spots. Tool surfaces with shallow concave profile.

C. LHT Set Tile (for Large Format Tile): Install in accordance with the mortar manufacturer's recommendations and requirements indicated below for setting bed methods, installation methods related to types of subfloor construction, and grout installation methods and grout types. Where recommendations and methods conflict, the manufacturer's recommendations shall apply.

1. Mortar: Latex-Portland Cement Mortar: ANSI A108.5.
2. Concrete Subfloors, Interior: TCNA F205 (on-ground slabs) and TCNA F205A (above ground slabs) except apply LHT bed in thickness recommended by the manufacturer.

a. Where required by the conditions indicated, apply underlayment using methods and within time limits recommended by the mortar manufacturer.
b. With a trowel, having notches sized as recommended by the mortar manufacturer, place and comb the surface of the mortar with the notched side of the trowel removing excess mortar. Spread only as much mortar as can be covered in the time limits established by the mortar manufacturers recommendations.
c. Wipe the back of each tile, with a damp sponge, to remove all dust or dirt immediately before applying mortar to tiles.
d. Immediately after wiping tile backs, but prior to placing tile, the mortar shall be troweled to back of tile for 100% coverage to thickness of not less than 1/16-inch (1.5-mm).

e. Place tiles onto mortar bed, maintaining 1/8-inch (3-mm) wide joints, and true accurate pattern as shown. Exercise care to quickly remove spillage from faces of tile using damp sponges. Rake out joints to depth required to receive grout as tile units are set.
f. Prohibit foot and wheel traffic on tiled floors for period of time as recommended by the mortar manufacturer.

3. Grout Installation: Do not begin grouting tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed. Remove spacers, if any, prior to grouting. Comply with Latex-portland cement: ANSI A108.10. Fill joints of cushion edged tile to the depth of the cushion; fill joints of square edge tile flush with the tile surface. Do not permit mortar, mounting mesh, or spacer material to show through routed joints. Provide hard finished grout, which is uniform in color, smooth, and without voids, pinholes, or low spots. Tool surfaces with shallow concave profile.

3.09 WALL TILE INSTALLATION

A. Install in accordance with the mortar manufacturer's recommendations and requirements indicated below for ANSI setting bed methods, TCNA installation methods related to types of construction, and grout ANSI installation methods and grout types. Where recommendations and methods conflict, the manufacturer's recommendations shall apply.

1. Tile Backerboard (Latex Portland Cement Mortar) Method: TCNA W244C, place tiles maintaining 1/8-inch (3-mm) wide joints, and true accurate pattern as shown.
2. Latex Portland Cement Mortar Installation (using specified latex portland cement mortar material): ANSI A108.5.
3. Grout Installation: Do not begin grouting tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed. Remove spacers, if any, prior to grouting. Comply with Latex-portland cement: ANSI A108.10. Fill joints of cushion edged tile to the depth of the cushion; fill joints of square edge tile flush with the tile surface. Do not permit mortar, mounting mesh, or spacer material to show through grouted joints. Provide hard finished grout, which is uniform in color, smooth, and without voids, pinholes, or low spots. Tool surfaces with shallow concave profile.

3.10 GROUTING

A. Grouting shall be installed in accordance with ANSI A108.10 and the manufacturer's recommended procedures and precautions during application and cleaning, unless noted otherwise

B. Grout tile to comply with the requirements of the following tile installation standards:

1. For ceramic tile grouts (sand-Portland cement, dry-set, commercial portland` cement, and latex-portland cement grouts), comply with ANSI A108.10.

C. Remove excess grout from tile surfaces in accordance with the grout and tile manufacturer's recommendations. Do not use excess amounts of water.

D. Rinse tilework thoroughly with clean water before and after using chemical cleaners.

E. Protect adjacent surfaces from damage caused by cleaning agents. Do not use cleaners which would damage tile or grout surfaces.

F. Do not grout joints indicated to receive sealants, including inside right angle corner joints between floors and walls of column bases. Grout joints perpendicular to expansion joints shall be finished flush with tile edges.

3.11 CURING

A. Cure installation in accordance with the grout manufacturer's recommendations. Protect tile and grout during curing operations.

B. Test cured grout, in the presence of the Architect, to confirm complete and proper hydration. Remove and replace with new grout which fails to cure properly.

3.12 CLEANING AND PROTECTING

A. Cleaning: On completion of placement, grouting and stripping, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer’s written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure tile is without damage or deterioration at the time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. New acoustical lay-in panels in existing suspension systems for ceilings indicated.

B. Related Sections/Drawings:

1. Schedule of Finishes and Finish Legend on drawings.
2. 09 22 16 – Non-Structural Metal Framing
3. 09 29 00 – Gypsum Board

C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete at ceilings.

1.02 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Product Data: For each type of product indicated.

C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Ceiling suspension system members.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
4. Minimum Drawing Scale: 1/8 inch = 1 foot.

D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of 12-inch- square Samples of each type, color, pattern, and texture.

1.04 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each ceiling panel system include a maintenance manuals along with a demonstration to Owners designated personnel in accessing and repairing each system.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.07 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.08 COORDINATION

A. Coordinate layout and installation of acoustical panels with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.09 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.

PART 2 – PRODUCTS

2.01 ACOUSTICAL PANEL CEILINGS

A. Acoustical Panel (**095113.1.3)**:

1. Type, Form, and Finish: Provide Type B, Form B2, Pattern E units in accordance with ASTM E1264 with factory applied latex painted white finish.
2. Color: White.
3. LR: Not less than 0.88 percent.
4. NRC: Not less than 0.95.
5. CAC: N/A
6. Edge/Joint Detail: “15/16 Square Tegular” (field verify)
7. Thickness: 1-inch.
8. Modular Size: 24 by 24 inches.
9. Exposed Grid Suspension System to remain: 15/16 inch square tegular (field verify)

2.02 METAL EDGE MOLDINGS AND TRIM

A. Manufacturer: Same as suspension system grid members.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Identify spaces where existing acoustical panel ceilings can remain and be modified. All ceiling panels in a given room must match; they must be all salvaged or all new.

B. Identify spaces where new grid is required, but existing salvaged acoustical panel can be used.

C. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet . Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

C. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.04 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes resilient wall base and accessories:

B. Related Sections/Drawings:

1. Schedule of Finishes and Finish Legend on drawings.
2. Section 09 29 00 – Gypsum Board: Wall materials to receive base.

1.02 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product Data: For each type of product specified, describing physical and performance requirements, sizes, patterns, and colors available.

C. Samples for Initial Selection: Manufacturer's colors charts consisting of units or sections of units showing the full range of colors and patterns available for each type of product indicated.

1.03 INFORMATIONAL SUBMITTALS

A. Product Certificates: Signed by manufacturers of resilient wall base and accessories certifying that each product furnished complies with requirements.

B. Maintenance Data: Include in operating and maintenance manual specified in Section 01 78 00 – Project Closeout.

1.04 QUALITY ASSURANCE

A. Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

B. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.

C. Fire-Test-Response Characteristics: Provide products with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by a testing and inspection agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 W/sq. cm or greater when tested per ASTM E 648.
2. Smoke Density: Maximum specific optical density of 450 or less when tested per ASTM E 662.

D. Materials shall be from a single production run and indicated on the carton label bearing the manufacturers color code. The color shall be uniform throughout.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing name of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 degrees F (10 and 32 degrees C).

C. Store tiles on flat surfaces.

D. Move products into spaces where they will be installed at least 48 hours before installation, unless manufacturer recommends longer conditioning period in writing.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance information including maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping and re-waxing.

1.07 PROJECT CONDITIONS

A. Install tiles and accessories after other finishing operations, including painting, have been completed.

B. Do not install flooring over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test.

C. Maintain a temperature of not less than 70 degrees F (21 degrees C) or more than 95 degrees F (35 degrees C) in spaces to receive products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After postinstallation period, maintain a temperature of not less than 55 degrees F (13 degrees C) or more that 95 degrees F (35 degrees C).

D. Do not install products until they are at the same temperature as the space where they are to be installed.

E. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Basis of Design (Product Standard): Contract Documents are based on products and systems specified to establish a standard of quality. Other named acceptable manufacturers/fabricators offering products having equivalent characteristics may be considered, provided deviations are minor and comply with requirements of Contract Documents as judged by the Architect.

1. Selections: As indicated in the Schedule of Finishes and Legend on the drawings.

2.02 WALL BASE MATERIALS

A. Standard: ASTM F 1861 Standard Specification for Resilient Vinyl Wall Base.

1. Material Requirement: Type TV, (vinyl, thermoplastic).
2. Manufacturing Method: Group I (solid, homogeneous).

B. Minimum Thickness: 0.125 inch.

C. Type: Straight (CBT) and coved (CB).

D. Height: 4 inches, maximum lengths.

E. Fire Resistance:

1. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I.
2. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class B, Smoke <450.

F. Base Accessories: Premolded end stops and external and internal corners of same material, size and color as base.

2.03 INSTALLATION ACCESSORIES

A. Primers and Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture test recommended by flooring manufacturer.
2. Subfloor finishes comply with requirements specified in Section 03 30 00 – Cast-in-Place Concrete for slabs receiving resilient flooring.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Do not proceed with installation until unsatisfactory conditions have been corrected. Beginning of installation means acceptance of existing substrate underlayment and site conditions.

3.02 PREPARATION

A. General: Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

B. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do no proceed with installation until unsatisfactory conditions have been corrected.

3.03 RESILIENT BASE INSTALLATION

A. General: Install resilient accessories according to manufacturer's written installation instructions.

B. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
3. Do not stretch base during installation.
4. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
5. Preformed corners: Install preformed corners if available before installing straight pieces.
6. Job-formed corners:

    a. Outside corners: Form by bending without producing discoloration (whitening) at bends.
    b. Inside corners: Butt one piece to corner then scribe next piece to fit.

C. Place resilient accessories so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

3.04 CLEANING AND PROTECTING

A. Perform the following operations immediately after installing resilient products:

1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
2. Sweep, vacuum or damp mop resilient accessories thoroughly.

B. Protect accessories against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by product manufacturer.

END OF SECTION

SECTION 09 68 13

CARPET TILE

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes: Capet tile and accessories where scheduled.

1. Moisture and pH testing as specified in related sections.

B. Related Sections/Drawings:

1. Schedule of Finishes on drawings.
2. Section 03 54 11– Floor Substrate Preparation.
3. Section 09 05 61 – Common Work Results for Floor Preparation
4. Section 09 65 13 – Resilient Base and Accessories

1.02 ACTION SUBMITTALS

A. Prepare the following Submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Layout drawings: Submit floor plans showing layout and placement of carpet tiles at 1/8 inch scale. Indicate various colors and patterns direction, start points, and locations and types of edge transition strips. Indicate columns, doorways, enclosing partitions, build-in cabinets and locations where cutouts are required in carpet tile.

C. Product Data:

1. Submit carpet tile manufacturer's material specification and installation instructions, including preparation of substrate and recommended releasable adhesives.
2. Submit data on edge moldings, transition trims and standard color options.

D. Moisture Test Results: Submit diagram of the area receiving carpeting showing location and results of each test; indicate time and date of each test, coordinate with Section 09 05 61 – Common Work Results for Floor Preparation.

E. Certification: Submit written certification in accordance with requirements in Quality Assurance from carpet tile manufacturer and supplier and installer, certifying the following:

1. Carpet tile installer is a certified installer of carpet tile manufacturer's specified materials.
2. Carpet tile materials and construction provided under this Section meets or exceed requirements specified, including static control, flammability properties, and IAQ – odor emissions and pre-conditioning requirements.
3. Provide written letter of acceptance from the carpet manufacturer or his representative stating that the moisture and pH test results are within acceptable limits to warrant installation of flooring materials.

F. Samples for Verification:

1. Submit full size sample of each type and color of carpet tile specified.
2. Edge transitions: Submit 6 inch long sections of edge molding in each color and type required.

G. Samples for Initial Selection:

1. Transition Strips: Submit manufacturer's standard color ring to the Architect showing full range of standard colors available for selection by the Architect.

H. Warranty: All warranties shall be no-prorated and lifetime in duration.

1. Draft: Submit draft of product and installation warranties: provide all material and labor warranty information and requirements for compliance warranty for review.
2. Executed Warranty: Submit for each carpet type; include installation warranties in "Warranties and Bonds Manual" specified in Section 01 77 00 – Closeout Procedures.

I. Operation and Maintenance Data: Submit manufacturer's data on each type of carpet tile used, including colors; submit recommended maintenance instruction and methods and cleaning frequencies for each type of carpet, including precautions against materials and methods detrimental to carpet performance; include all data in "Materials and Finishes Maintenance Manual" specified in Section 01 77 00 – Closeout Procedures.

1.03 QUALITY ASSURANCE

A. Single Source: Obtain each type of product required, including adhesive and accessories from one manufacturer throughout the Project.

B. Installer Qualifications: Engage an experienced installer certified by the Floor Covering Installation Board, with not less than 5 consecutive years of experience in installation of commercial carpet tile of type, quality and installation methods similar in material, design and extend, to that indicated for this Project.

1. Special Requirement: Flooring installer shall be certified by the respective carpet tile manufacturer for applications indicated. Submit evidence of written certification in accordance with Submittal requirements.

C. Flame/Smoke Resistance Standards: Provide carpet tile which has been tested and passes the following test standards:

1. Flammability: Comply with one of the following;

a. Pill Test: Test for flammability; ASTM D 2859, or CPSC FF 1-70.
b. Flooring Radiant Panel Test: Test for burning under varying radiant energy levels; ASTM E 648, with minimum average radiant flux rating not less than 0.45 watts/sq.cm (NFPA 253, Class 1).

2. Smoke Density Test: Test in radiant heat chamber, with and without flame, for density of smoke generated; ASTM E 662, or NFPA No. 258, also known as NBS Smoke Density Chamber Test, less than 450.

D. Fade and Stain Resistance: Provide only carpet tile whose manufacturer will guarantee that carpet base color and pattern or print colors shall meet the following requirements;

1. Light fastness – minimum rating of 4.0 after 60 AFU's, test AATCC-16E.
2. Crocking – minimum ratings of 4.0 for wet, dry and solvent crock test, AATCC-8.
3. Cold Water Bleed – minimum rating of 4.5 change scale rating, test AATCC-107.
4. Ozone and Gas – test AATCC-129.
5. GSA Permanent Stain resistance test – must pass AATCC-175 after 100 revolutions on the Taber Abrader. Passing rating must be no less than 8.0 (10.0 is best) on the AATCC Red 40 Stain Scale.

E. Static Resistance: Provide carpet tile that will maintain static generation of less than 3.5 [3.0] KV at 70 degrees F and 20% Relative Humidity as measured by AATCC-134-75 (Standard Shuffle Test) throughout the life of the carpet.

F. Dimensional Stability: Provide only carpet tile that will continue to lie flat with no edge curling or cupping when properly installed and maintained per manufacturer's requirements.

G. TAR Rating: Carpet products to meet or exceed a rating of 3.5/Severe. Confirm compliance during product data submission.

H. Face Distortion: Traffic patterns associated with crushing and matting, as well as soiling. Provide only carpet that meets the following minimum requirements.

1. Face Distortion:

a. CRI TM101 Assessment of Carpet Surface Appearance Change
b. CRI Carpet Appearance Retention Grading Scales.

2. Average pile yarn density:

a. Calculate per protocol of HUD/FHA publication UM-44d.

3. ASTM D6540-12 Standard Test Method for Accelerated Soiling of Pile Yarn Floor Covering.

a. Minimum rating of 3

I. Pre-installation Conference: Conduct conference at Project site with Contractor, carpet Installer, carpet representative and Architect to review methods and installation procedures related to each carpet type, including, but not limited to the following:

1. Review delivery, storage, and handling procedures.
2. Review installation schedule, Owner's restrictions and sequencing of carpet types.
3. Review installation procedures specific to room layout, terminations and cutouts for electrical floor access covers, etc.
4. Review ventilation procedures, as may be required to meet Indoor Air Quality (IAQ) Odor Emissions.

1.04 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with requirements specified in Section 01 60 00 – Product Requirements.

B. Deliver carpet tile to site in manufacturer's original packages clearly labeled with manufacturer's name, brand, size, and related information. Upon receipt of materials, inspect for in-transit damage and replace if necessary.

C. Store in dry, clean, well ventilated space; protect from damage, soiling, fading and moisture.

1.05 PROJECT CONDITIONS

A. Environmental Conditions: Maintain temperatures in space in accordance with carpet or adhesive manufacturer's recommendations, but in no case less than 65 degrees or above 95 degrees F. with a maximum relative humidity of 65%. If ambient temperatures are outside these parameters, Contractor shall not begin until HVAC system is operational and temperature and humidity parameters are maintained at least 48 hours before, during and for 72 hours after completion of work.

B. Precondition: All carpet tile shall be stored in a room on site 48 hours prior to actual installation with the room preconditioned at a minimum of 65 degrees F. with humidity between 35 to 65 percent.

1.06 SEQUENCING AND SCHEDULING

A. Install carpet tile after other finishing operations, including painting have been completed to ensure that installed carpet tiles are not damaged, soiled or stained.

B. Do not install carpet tile until concrete slabs are sufficiently dry to bond with adhesive. Perform bond and moisture tests or other third party testing procedure recommended by carpet manufacturer to verify that concrete surfaces are dry and ready to receive carpet, ant that adhesive is totally compatible with the substrate.

C. Installation Schedule: Confirm scheduling parameter with Contractor and facility coordinators.

1.07 WARRANTY

A. Special Warranty: Provide special warranty, signed by Contractor, Installer, and Manufacturer (carpet mill), agreeing to repair or replace defective materials during 10-15 year period following date of Substantial Completion. Warranty shall also cover workmanship for a period of two ears from the date of Substantial Completion.

B. Lifetime Warranties: Submit carpet manufacture's written non-prorated lifetime warranty, except as otherwise indicated, for each carpet type, agreeing to furnish FOB project site replacement carpet which exhibits any of the following product defects:

1. Wear: No more than 10% face yarn loss by weight in normal use.
2. Static: No change in specified performance/
3. Edge Ravel/Tuft Bind: No edge ravel or loss of adhesion to backing, wet or dry in normal use (no seam sealers required).
4. Dimensional Stability: No change in appearance, including cupping, doming or dishing.
5. Adhesive: No loss of adhesion to floor in normal use.
6. Stain Resistance: Manufacture's lifetime warranty, including 10 year warranty for Light fastness and Atmospheric Contaminant with use of specified fiber technology system.

1.08 MAINTENANCE / ATTIC STOCK

A. Extra Tiles: After completion of work, deliver to Project site, at a location designated by Construction Manager, provide replacement materials from same manufactured lot as materials installed.

B. Package extra materials in manufacturer's original unopened cartons and clearly labeled. Furnish 1-2 percent extra carpet tiles of each pattern and color installed. Provide overage expectations for each carpet type to Contractor and facility beyond the extra tile quantities noted.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Refer to Schedule of Finishes on the drawings:

2.02 CARPET TILE

A. Carpet Tile Type **(096813.1):**

1. Collection: Meiso collection
2. Dye Method: Solution Dyed
3. Construction: Tufted Textured Loop
4. Machine Gauge: 1/12 in (47.2 ends/10 cm)
5. Fiber: Antron® Lumena Nylon Type 6,6
6. Pile Density: 5,356 oz/yd³
7. Stitches: 11 /in 43.3 ends/10cm
8. Total Thickness: 0.260 in 6.6 mm
9. Total Weight: 58 oz/yd² 1967.1 g/m²
10. Indoor Air Quality: CRI Green Label Plus
11. Radiant Panel: Passes Class 1, ≥ 0.45 W/cm² (ASTM-E648)
12. Smoke Density: < 450 Dm corr (ASTM-E662), Flaming
13. Static: ≤ 3.5 kV (AATCC-134), Step
14. Flammability: Passes Methenamine Pill Test (CPSC-FF1-70)
15. Pattern Repeat: 72 in W x 86-13/32 in L 182.88 cm W x 219.47 cm L

2.03 INSTALLATION MATERIALS

A. Adhesives: Waterproof, non-staining, non-flammable, "Green Label" pressure sensitive (releasable) carpet adhesive as recommended by carpet manufacturer for compatibility with carpet backing with existing and new substrate conditions. Adhesives shall meet EPA, VOC's requirements and qualify for NFPA Class A and IBC class 1 fire ratings as determined by ASTM E84.

2.04 ACCESSORIES

A. Rubber Transition Strips: Types as follows manufactured by Johnsonite (Division of Duramax, Inc.) or approved equal. Exact depth of transition strips shall accommodate actual thickness of carpet. Colors as selected by the Architect from manufacturer's full range of standard colors.

B. Protection Paper: Fortfiber Corporation "Seekure 892", or approved heavy, reinforced, non-staining kraft laminated paper.

C. Miscellaneous Materials: As recommended by manufacturers of carpet tile; and selected by Installer to meet Project requirements.

PART 3 – EXECUTION

3.01 EXAMINATION

A. General: Examine areas where installation of carpet tile will occur with Installer present. Verify that substrates and conditions are satisfactory for installation and comply with carpet tile manufacturer's requirements and those specified in this Section. Do not proceed with installation in areas of discrepancy

until such discrepancies have been fully resolved. Commencement of work constitutes acceptance of sub-floor conditions.

3.02 PREPARATION

A. General: Remove all dirt, oil, grease, and other contaminants affecting bond. Thoroughly clean floors using power scrubbers and industrial strength detergents to remove all traces of curing compound and other surface contaminants; use fresh water to remove detergents. After cleaning, inspect substrate for visual evidence of moisture, alkaline salts, or dust.

1. Verify that slab substrates are free of curing compounds and other materials which would interfere with bonding of adhesives.
2. Vacuum surfaces thoroughly using industrial power vacuum immediately before installation.
3. Fill minor holes, cracks, and transition areas with an approved latex-type underlayment. Trowel-on to smooth surface and allow to fully dry before applying carpet. Consult underlayment manufacturer's directions for drying times and other special requirements.
4. Comply with any additional instructions and recommendations of carpet and adhesive manufacturers for proper floor preparation.
5. Seal powdery or porous surfaces with sealer recommended by carpeting manufacturer and apply according to sealer manufacturer's directions.

B. Moisture Tests: Moisture content and Ph testing are specified in Section 09 05 61 – Common Work Results for Floor Preparation. Do not apply materials over surfaces where moisture content or pH exceeds that permitted by the carpeting manufacturer.

3.03 INSTALLATION, GENERAL

A. General: Comply with Carpet and Rug Institute “Standard for Installation of Commercial Textile Floor Covering Materials (CRI 104, Section 10, ‘Carpet Tile; current edition)”, and manufacturer’s instructions and recommendation for installation of carpet by the full spread of pressure sensitive adhesive glue down method, except where more stringent requirements are shown or specified.

1. Installed carpet shall be free from ripples, ravels, frays, puckers and raw exposed edges. All loop pile tile will demonstrate some fuzzy edges due to normal manufacturing conditions. It is the Contractor’s responsibility to trim all edges of tile to eliminate fuzzing at tile edges.
2. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and closets of rooms indicated to be carpeted unless another floor finish is indicated for such spaces.
3. Provide cut-outs as indicated for removable access devices in substrate. Secure both sides of cuts to the substrate.
4. Install carpet edge guards where edge of carpet is exposed; anchor guards to substrate.
5. Do not bridge building expansion joints continuously with carpet tile, provide for movement.

3.04 CARPET INSTALLATION

A. General: Measure the area to find the best starting point to utilize full width perimeter tiles.

B. Joints: Install carpet tiles with snug seams. Continually check that modules and patterns are being placed together with correct and uniform firmness.

1. Seams at doors, running parallel to doors, shall be centered directly under the closed door.
2. Check correct snugness by measuring the distance covered by 11 installed modules (10 joints). This distance should be in compliance with manufacturer’s specifications for the particular product being installed.
3. Care shall be taken tot to rap yarn between modules.

C. Applying Adhesive: Apply carpet manufacturer’s approved adhesive over the entire surface using a paint roller. Begin at center or starting point and work outward to the perimeter until the entire surface is covered with adhesive. Begin installing carpet tiles only after adhesive has turned from opaque to clear. To check, it will not transfer when touched with a finger. Do not install carpet tile into wet adhesive.

1. The chalk lines must be used as a guide for lining up the edges of modules. Using the pyramiding technique, install one quadrant at a time.

2. The corners of the modules should be flat to assure proper fit. Modules should be installed snug, but not jammed. Be careful not to over-tighten the installation.

D. Use seam roller to blend and enhance the seams.

E. Trimming: The loop pile modules will have some yarn blossoming at the edges, which is inherent to this type of construction. Installer is responsible to trim all modules exhibiting this condition.

F. Vinyl Transition Strips: Install where carpet tile terminates exposing the edge of the material and where carpet tile terminates in doorway. Center reducers under doors. Bond reducers to substrate in straight, true lines.

3.05 CLEANING AND PROTECTION

A. Clean-up: On completion of installation, vacuum carpet using two motor, top loading, upright commercial machine with brush-only element, utilizing a high filtration dust bag. Remove spots in accordance with carpet manufacturer's guidelines and replace carpet where spots cannot be removed to the satisfaction of the Architect. Remove any protruding face yarn using sharp scissors. Be certain to trim any loose yarns or fibers at all seams.

B. Protection: Following cleaning and vacuum carefully protect the carpeting from soiling and damage until final acceptance. Protection shall be accomplished by using specified building paper. Edges shall be lapped 6 inches and secured with non-asphaltic tape. Covering shall be kept in repair and damaged portions replaced during the construction and move-in period.

END OF SECTION

SECTION 09 91 00

PAINTING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes surface preparation and field painting and finishing of interior surfaces including:

1. Scheduled and otherwise identified interior surfaces.
2. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified in other sections, and include sealers, primers, stains, fillers and other applied materials used as prime or intermediate coats.

B. Related Sections/Drawings:

1. Schedule of Finishes on the drawings.

C. Interior items and surfaces not requiring painting, unless noted otherwise:

1. Where specifically omitted.
2. Items and surfaces permanently concealed in inaccessible areas such as above ceilings; including pipe, pipe covering, hangers, and conduit.
3. Prefinished or naturally finished items such as exposed ornamental metalwork, sheet metal work, bronze, stainless steel, aluminum, and other prefinished materials.
4. Labels, including code-required labels, equipment name, identification, performance rating or nomenclature plates.
5. Operating parts.
6. Surfaces where finishing is specified under other sections of the specifications.
7. Items with factory applied finishes.
8. Brick, stone, ceramic tile, plastic laminate.
9. Moving parts of operating units.
10. Acoustical ceilings.

D. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically describe a particular item or a surface for a coating or color, paint the item or surface the same as similar adjacent equipment, materials or surfaces. If the schedules do not indicate color or finish, the A/E will select from standard colors and finishes available.

1.02 ACTION SUBMITTALS

A. Prepare submittals in accordance with Section 01 33 00 –- Submittal Procedures.

B. Product Data:

1. Submit complete schedule of products proposed for use, by brand name and/or number including manufacturer's label analysis and description of products and their suitability for intended use for approval.

   a. Identify each material by manufacturer’s catalog number, product name, and generic classification.
   b. Include typewritten list identifying paint systems and colors applied to each room, space, or item.

2. Specifically include percent solids by volume, VOC content (pound/gallon).

C. Samples for Color and Sheen: Prepare one sample of each opaque finish paint specified in each color and sheen scheduled for appearance verification.

1. Apply to 12 inch by 12 inch by ¼ inch hardboard. Apply sufficient paint thickness to provide proper hiding and appearance.
2. Label each sample to indicate material, color, by color formulation designation, and sheen.

3. On one-half of the sample show the completed treatment, and on the other half show the successive steps taken in producing the finish.
    a. Step back each coat and process at least on inch to show bare substrate and each coat and process in system build-up.
    b. Label each sample to indicate materials, color sheen, DFT or each coat applied, and total system DFT.
4. Approved samples will be so marked; one set will be returned for the painter's use.
5. Approved samples shall be standard of finish and color to be selected.
6. No finishes shall be applied on the work until samples are approved.

D. Informational Submittals: Submit the following separate for other submittals:

1. Certification specified in Quality Assurance article.
2. Manufacturer’s instructions.

1.03 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and to the extent indicated for this Project with a record of successful in-service performance.

B. Single Source Responsibility: Provide products of a single manufacturer for use in each paint system. Do not mix product of different manufacturers without approval of Architect and manufacturers involved.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in sealed containers, premixed and packaged by the manufacturer (or his authorized distributor), bearing the manufacturer's standard label showing trade name and number, label analysis, and directions for use.

1. Label containers to indicate manufacturer’s name, Product name and type of paint, brand code or stock number, date of manufacturer, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
2. Do not open containers until contents are to be used.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 degrees F and maximum 90 degrees F. Maintain containers used in storage in a clean condition, free of foreign materials and residue, and with labels maintained in legible condition.

C. Upon completion of work, leave storage area clean and in same condition as remainder of work.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Environmental Conditions: Comply with the more restrictive of the following or manufacturer’s requirements under which systems can be applied.

1. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures within specified limits and to exhaust hazardous fumes.
2. Maintain temperature and humidity conditions for minimum 24 hours before, during, and 48 hours after application of finishes, unless longer times are required by manufacturer.
3. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
4. Apply water-based paints only when surface temperature and surrounding air temperatures in each room are between 50 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer’s printed instructions.
5. Apply solvent-thinned paints only when surface temperature and surrounding air temperatures in each room are between 45 degrees F and 95 degrees F, unless otherwise permitted by paint manufacturer’s printed instructions.

B. Do not apply interior coatings under any of the following conditions:

1. When surface is not within the allowable moisture content as permitted by the paint manufacturer.
2. When relative humidity is less that 20 percent or exceeds 85 percent.
3. When temperature is less than 5 degrees F above dew point.

4. When dust may be generated before paints have dried.

C. Provide lighting level of 80 foot candles measured mid-height at substrate surface during application of paints.

1.06 COORDINATION

A. Review other section specifying prime coats to ensure compatibility of the total paint system for various substrates.

1. Upon request from other trades, furnish information on characteristics for finish materials proposed for use to ensure compatibility of various parts.
2. Test compatibility of existing coating, including shop applied primers and previously applied coating, by applying specified paint to small, inconspicuous area.
3. If specified paint lifts or blisters existing coating, apply barrier or tie coat as recommended by paint manufacturer.
4. If no compatible barrier or tie coat exists, remove existing coating completely and apply paint system as specified for new work.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Except for any special coatings specified or indicated elsewhere, provide painting products of one of the following manufacturers:

1. (Basis of Design) Sherwin-Williams Co., Cleveland, OH
2. (BM) Benjamin Moore & Co. Montvale, NJ
3. (PPG) PPG Paints, PPG Industries, Pittsburgh, PA

Note: Manufacturer designations in parenthesis are used in the Paint and Coatings schedule at the end of this section.

2.02 PAINT MATERIALS – GENERAL

A. Provide manufacturer's 1st line professional quality paint/ coating materials for the coating systems specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

B. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

C. Provide related materials, such as linseed oil, shellac, turpentine, or other accessory materials of the highest quality approved for use by the manufacturer of the paint and used within paint manufacturers recommended limits.

2.03 ACCESSORY MATERIALS

A. Muriatic Acid, Mildewcide, TSP (Tri-Sodium Phosphate), Acidic-Detergent, Zinc Sulfate, Sodium Metasilicate, And Solvent: Commercially available, non-damaging to surface being cleaned; as specified in PDCA Specification Manual; acceptable to paint manufacturer.

B. Metal Conditioner: Proprietary phosphoric acid based, etching type solution; acceptable to paint manufacturer.

C. Rust Inhibitor: Water containing 0.32 percent of sodium nitrite and 1.28 percent by weight of secondary ammonium phosphate (dibasic); or water containing 0.2 percent by weight of chromic acid or sodium chromate or sodium dichromate or potassium dichromate.

D. Compounds: Spackling compound, putty, plastic wood filler, liquid de-glosser, latex patching plaster, latex base filler, thinners, and other materials not specifically indicated but required to achieve finishes specified. Pure, of highest commercial quality, compatible with paints and acceptable to paint manufacturer.

E. Provide related materials, such as linseed oil, shellac, turpentine, or other accessory materials of the highest quality approved for use by the manufacturer of the paint and used within paint manufacturers recommended limits.

2.04 MIXING

A. Use factory prepared colors matching approved samples. Site tinting is not permitted.

1. Thoroughly mix and stir paints before use to ensure homogeneous dispersion of ingredients. Prior to application, blend multiple containers of same material and color by pouring from one container to another several times to ensure uniform consistency, color, and smoothness.
2. Mix only in clean mixing pails of material recommended by manufacturer to avoid contamination.
3. Remove film which may form on surface of material in containers and strain material before using. Stir frequently during use to maintain pigments in suspension. Do not stir film into material.
4. Apply paints of consistency recommended by manufacturer. Thin only within recommended limits using thinners approved by paint manufacturer.

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine substrates, areas, and conditions, with the applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect of anticipated problems in application, system specifications, or possible incompatibility of coatings over substrates which are pre-primed or primed by others.

C. Notify Architect a minimum of one working day prior to painting about possible problems resulting from using the specified materials over previously finished substrates.

D. Conduct alkali testing with litmus paper on cementitious, and masonry surfaces, and do not begin painting if surfaces exceed alkalinity allowed by paint manufacturer.

E. Test moisture content of surfaces using an electronic moisture meter. Do not begin application of coatings unless moisture content of exposed surfaces is below the following maximum values:

1. Gypsum Wallboard: 12 percent.
2. Masonry Surfaces: 12 percent.
3. Finish Woodwork: 7 to 10 percent moisture content.
4. Wood Surfaces: 15 percent.
5. Vertical Concrete Surfaces: 12 percent.
6. Horizontal Concrete Surfaces: 8 percent.

F. Coordination of Work: Review other sections in which primers are specified to ensure compatibility for the total system with various substrates.

3.02 SURFACE PREPARATION FOR EXISTING PAINTED SURFACES

A. General: Remove hardware and hardware accessories, plates, machined surfaces, and similar items previously installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting. Protect floors, adjacent work and surrounding elements and materials.

1. Remove mildew by scrubbing with mildewcide. Rinse thoroughly with clean water.
2. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved. Remove protection and coverings.

B. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Existing Surfaces: Condition, clean, sand, prime, seal and prepare existing surfaces per manufacturer's recommendations for application of finish materials specified.

a. Remove chalk deposits and loose, blistered, scaling, or crazed finish to bare base material or sound substrate by scraping and sanding.
b. Repair imperfections, nail holes, and irregularities in substrate with filler or materials compatible with substrate. Fill paint loss on existing surfaces with filler or materials compatible with substrate and finish. Match surface texture of repair and filled areas to non-damaged adjacent surface.
c. Wash surfaces with a solution of TSP to remove wax, oil, grease, and other foreign material; rinse and allow to dry.
d. Abrade glossy surfaces by sanding or wiping with liquid deglosser.
e. Remove mildew as specified above.
f. Neutralize and prime repairs, filled areas and bare spots.
g. Test compatibility of existing coatings by applying new paint to small, inconspicuous area. If new paints lift or blister existing coatings, request recommendation from Architect before proceeding.
h. Provide finish coats only over existing surfaces except where condition or type of surface requires priming and sealing. Provide finish materials for existing surfaces same as new surfaces and as scheduled under Paint and Coatings Schedule.

2. Provide barrier coats over incompatible primers or remove and reprime.

C. Metals to Receive Painted Finish:

1. Ferrous Metals: Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC/NACE) recommendations.

a. Treat shop fabricated metals with sandblasted or pickled clean metal with a metal treatment wash coat before priming.
b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

2. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

E. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

F. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 SURFACE-PREPARATION FOR NEW PAINTED SURFACES

A. General: Use the cleaning methods specified in this article, using the gentlest appropriate method necessary to clean the surface.

B. Wash surfaces by hand cleaning using clean rags, sponges, water, and detergent.

C. Hand-Tool Cleaning: Use wet sanding and wet scraping methods only. Lightly mist substrate before sanding or scraping. Acceptable hand-tools include scrapers, wire brushes, sandpaper, steel wool, nonmetallic pads, and dusters. Because of varying substrates, selection of tools shall be the responsibility of Contractor. After hand-cleaning is attempted, power tool cleaning may be required to complete cleaning and surface preparation.

D. Solvent Cleaning: Solvent cleaning may be used to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before preparation work begins. In addition, if necessary, spot-solvent cleaning may be employed just prior to the commencement of paint application, provided enough time is allowed for complete evaporation. Clean solvent and clean rags shall be used for the final wash to ensure that all foreign materials have been removed.

E. General:

1. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
2. Protect elements surrounding the work of this section from damage or disfigurement. Provide drop cloths, shields, and protection methods to prevent paint droppings from disfiguring other surfaces.
3. Protect floors and adjacent work and materials. Remove and properly place temporary protection and coverings removed from the work area. Repair damage to other surfaces caused by work of this section.
4. Remove empty paint containers from the site. Dispose in accordance with local disposal requirements.

F. Clean and prepare substrate surfaces in accordance with manufacturer's instructions for each particular substrate condition. Remove oil and grease before mechanical cleaning. Clean and correct defects and deficiencies in substrate surfaces to be painted before applying paint or finish treatments.

1. Do not paint over dirt, rust, scale, grease, oil, moisture, or marred surfaces, mildewed surfaces or other conditions detrimental to formation of a durable paint film.
2. Correct minor defects and clean surfaces which affect work of this Section.
3. Seal marks which may bleed through surface finishes.
4. Remove mildew by scrubbing with solution of tri-sodium phosphate and bl0each solution. Rinse with clean water and allow surface to dry thoroughly.
5. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

G. Gypsum Board:

1. New gypsum board must be clean and dry. All nail heads must be set and spackled. Joints must be taped and spackled and finished with joint compound. All dust must be removed prior to painting.
2. Rout out surface cracks to remove loose, unsound material; fill with patching compound and wet sand; spot-prime with specified primer.

3.04 PROTECTION AND MASKING

A. Take particular care to protect the following:

1. Adjacent surfaces.
2. Masonry surfaces.
3. Metal surfaces.
4. Wood surfaces.

B. Protect areas retaining their original finishes from damage and overpaint.

C. Protect the work of other trades against any overpainting, marring, masking residue, or other damage.

D. Safeguard the building's lighting fixtures, floors, natural woodwork, masonry work, and equipment and materials to be installed.

E. Mask, tape, and take great care when applying finish materials to areas adjacent to original finishes. Use products that will not damage surfaces or leave adhesive residue.

F. Mask off with masking film and masking tape and/or cover with drop cloths all building elements and equipment not to be decorated prior to material application to ensure that damage does not occur.

G. If accessibility to surfaces is restricted, it is the paint contractor's responsibility to request that the obstructing materials be moved.

H. All trades shall be responsible for making good any damage for which they are responsible. Correct damage by cleaning, repairing, or replacing, and repainting, as acceptable to the Architect.

3.05 APPLICATION

A. Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied. Coat all surfaces specified, scheduled, illustrated, and otherwise exposed unless specifically noted otherwise.

1. Apply paint of type, color, and sheen as scheduled.
2. Number of coats specified is the minimum number acceptable.
3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
4. Provide finish coats that are compatible with primers used.
5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
6. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
7. Paint interior surfaces of ducts with a flat, non-specular black paint where visible through registers or grilles.
8. Paint front and backsides of access panels and removable or hinged covers to match exposed surfaces unless these are scheduled to be pre-finished items.
9. Finish doors on tops, bottoms, and side edges the same as face surfaces.
10. Finish edges of paints adjoining other materials or colors sharp and clean, without overlapping.
11. Provide specified primer and finish coats on all surfaces of window frames and stops. Concealed ends and edges of window sashes are to receive primer and first coat of finish.
12. Sand lightly between each succeeding enamel or varnish coat.
13. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.
14. Prime all surfaces to receive vinyl, fabric, paper wall and other types of wall coverings, unless otherwise indicated.
15. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the room treatment schedule or the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate a paint coating system for a particular substrate, defer to the Architect for selection of finish system and color.

1. Items such as doors and door frames that are exposed on two faces and which occur between two rooms or spaces are to be finished/ painted on both sides unless otherwise noted.
2. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, supports, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
3. At any surface which is not scheduled to be painted, but which has been affected by cutting and patching or selective demolition, paint the surface with the pertinent coating system for the substrate type as scheduled in this section to the extent of the surface area. At walls, to inside or outside corners of the affected area; at ceilings to the extent of the ceiling area in each space.

C. Scheduling Painting: Apply prime coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to maintain a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
3. Omit primer on metal surfaces that have been shop primed and touchup painted with compatible materials.
4. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
5. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

D. Application: Apply paint in accordance with the manufacturer's directions. Use techniques best suited for substrate and type of material being applied. Apply using airless spray to greatest extent possible for doors and door frames and other medium to high gloss paints. Brushes and rollers shall be of a type best suited for the type of material being applied.

1. Apply intermediate and finish coats within the manufacturer's recommended top coating time periods.
2. When applying paint to drywall, use a roller nap no greater than 3/8 inch so as to achieve a light stipple finish.
3. If metal doors, and plaster surfaces are not sprayed, finish may be applied with 1/4 inch nap roller. Brush and level out paint applied to metal door frames to achieve a nearly sprayed-on appearance.

E. Apply paint systems to total dry film thickness in manufacturers specifications. Apply material at not less than manufacturer’s recommended spreading rate. Do not exceed maximum single coat thickness recommendation by paint manufacturer. Ensure that edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent of flat surfaces.

F. Prime Coats: Before applying finish coats, roll a prime coat of material, as recommended by the manufacturer as follows:

1. Apply a prime coat to material which is required to be painted or finished and which has not been prime coated by others.
2. Re-coat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
3. Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks or other surface imperfections.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

3.06 CLEANING AND PROTECTION

A. Cleaning: Comply with Section 01 77 00 – Closeout Procedures. Promptly remove spilled, splashed, or spattered paints. Clean spots, oil, and other soiling from finished surfaces using cleaning agents and methods which will not damage materials.

1. If completed construction is damaged beyond normal cleaning or repair by painting operations, replace damaged items at no additional cost to Owner.
2. Maintain premises and storage areas free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

3. Collect waste, cloths, and material which may constitute fire hazards and place in closed metal containers; remove from site daily along with empty containers.

B. Protection: Protect finished work in accordance with Section 01 50 00 – Temporary Facilities and Controls.

1. Protect work of other trades against damage from paint activities. Correct damage by cleaning, repairing, replacing, and repaint as acceptable to Architect.
2. Provide "Wet Paint" signs and other methods to protect newly coated surfaces. Remove when directed or when no longer needed.

3.07 INTERIOR PAINT AND COATINGS SCHEDULE

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.

B. Shop Primed Metal: Interior Structural Steel, Hollow Metal Doors, Frames, and other Ferrous Metal Surfaces for semi-gloss finish: Lining of Mechanical Equipment, Convector Cabinets, Unit Ventilators or Ducts Visible Through Grilles or Louvers:

1. First Coat: Primer
(NOTE: Primer also required on galvanized surfaces. All shop primed surfaces shall be reprimed with proper primer per manufacturer's instructions prior to applying coatings scheduled herein).
2. Interior Latex Enamel: Factory-formulated latex enamel for interior applications:

a. 1 coat S-W; ProCryl Universal Metal Primer B66W310 Applied at a dry film thickness of not less than 3.0 mils
2 coats S-W Pro Industrial Acrylic Semi-Gloss Coating, B66-650 Series at 2.5 to 4.0 mils dry, per coat.
b. 1 coat: BM Super Spec® HP Alkyd Metal Primer P06 (323 g/L)
2 coats: BM Advance Waterborne Interior Alkyd Semi-Gloss 793 (48 g/L)
c. 1 coat: PPG; Speedhide Rust-Inhibitive Steel Primer, 6-208 Series; applied at 1.5 mils minimum DFT
2 coats: PPG; Speedhide Zero Interior Latex Semi-Gloss, 6-5510 Series; applied at 1.5 mils minimum DFT.

C. Gypsum Board Wall Surfaces: (Eggshell sheen)

1. 1 Coat: S-W ProMar 200 Interior Latex Wall Primer, B28W8200, (4 mils wet, 1.3 mils dry per coat).
2 Coats: S-W ProMar 200 Acrylic Latex Egg-Shell Enamel B20W200, (4 mils wet, 1.6 mils dry per coat)
2. 1 coat BM Ultra Spec 500 Interior Latex Primer N534 (0 g/L)
2 coats: BM; Ultra Spec 500 Latex Eggshell N538 (0 g/L)
3. 1 coat PPG: "Speedhide zero Interior Zero VOC Latex Sealer 6-4900XI." (0 g/L)
2 coats PPG: "Speedhide zero Interior Zero VOC Latex Eggshell 6-4310XI Series." (0 g/L))

D. Gypsum Board Ceilings: (Flat Sheen)

1. 1 coat: S-W ProMar 200 Interior Latex Wall Primer, B28W8200, (4 mils wet, 1.3 mils dry per coat)
2 coats: S-W ProMar 200 Interior Latex Flat Wall Paint, B30 Series, (4 mils wet, 1.6 mils dry per coat)
2. 1 coat Benjamin Moore; Ultra Spec 500 Interior Latex Primer N534 (0 g/L)
2 coats: Benjamin Moore; Ultra Spec 500 Interior Latex Flat N536 (0 g/L)
3. 1 coat PPG: "Speedhide zero Interior Zero VOC Latex Sealer 6-4900XI." (0 g/L)
2 coats PPG: "Speedhide zero Interior Zero VOC Latex Flat 6-4110XI." (0 g/L)

E. Gypsum Board: (Semi-Gloss sheen)

1. 1 coat: S-W: "ProMar 200 Interior Latex Wall Primer, B28W8200" (<100 g/l)
2 coats: S-W: "ProMar 200 Acrylic Latex Semi Gloss Enamel B31W2600 Series." (<150 g/l)
2. 1 coat: Benjamin Moore: "Benjamin Moore Ultra Spec 500 Interior Latex Primer N534 (0 g/L)
2 coats: Benjamin Moore: "Ultra Spec 500 Interior Latex Semi-Gloss N539 (0 g/L)
3. 1 coat: PPG: "Speedhide Interior Latex Sealer Quick Drying 6-2." (<50 g/l)
2 coats: PPG: "Speedhide Acrylic Latex Semi Gloss Enamel 6-500 Series." (<50 g/l)

F. Lining of Mechanical Equipment, Convector Cabinets, Unit Ventilators or Ducts Visible Through Grilles or Louvers:

1. 2 coats SW Industrial Enamel, B54 Series; Black.
2. 2 coats BM Satin Impervo Enamel (235); Black.
3. 2 coats PPG HPC Rust Preventative High Gloss Alkyd Enamel 4309; Black

G. Exposed Insulated Piping, Ductwork, Vessels:

1. 1 coat Sherwin-Williams; PrepRite Masonry Primer B28W300: Applied at a dry film thickness of not less than 3.0 mils
   2 coats SW (Finish same as adjoining walls or ceiling)
2. 1 coat Benjamin Moore; Moorcraft Super Spec Latex Enamel Undercoater & Primer Sealer No. 253: Applied at a dry film thickness of not less than 1.2 mils
   2 coats BM (Finish same as adjoining walls or ceiling).
3. 1 coat Pittsburgh Paints; PPG 17-921 Seal Grip Primer
   2 coats PPG (Finish same as adjoining walls or ceiling)

H. Exposed Uninsulated Piping: Interior Semigloss Alkyd Enamel: Factory-formulated semigloss alkyd enamel for interior application.

1. 1 coat S-W Kem Bond HS Alkyd Universal Metal Primer Applied at a dry film thickness of not less than 3.0 mils
   2 coats S-W (Finish same as adjoining walls or ceiling)
2. 1 coat BM; Moore's IMC Alkyd Metal Primer No. M06: Applied at a dry film thickness of not less than 2.0 mils
   2 coats BM (Finish same as adjoining walls or ceiling).
3. 1 coat PPG Multiprime 4360 Low VOC Alkyd Corrosion Resistant Primer. Applied at a dry film thickness of not less than 2.0 mils.
   2 coats PPG ("Finish same as adjoining walls or ceiling")
4. 2 coats: S-W Harmony Low Odor Interior Latex Flat, B5 Series, (4 mils wet, 1.6 mils dry per coat)

END OF SECTION

SECTION 10 14 00
INTERIOR SIGNAGE

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes interior signs and attachment material including the following.

1. Interior signage required by code, including restrooms.

B. Related Documents:

1. Refer to Signage schedule and details on the drawings.

1.02 REFERENCES

A. ICC A117.1 – Accessible and Usable Buildings and Facilities.

B. Ohio Building Code – Chapter 11 Accessibility.

1.03 ACTION SUBMITTALS

A. Prepare the following submittals per requirements of Section 01 33 00 – Submittal Procedures.

B. Submit sign schedule to Architect for final approval prior to fabrication.

C. Submit shop drawing listing sign styles, lettering and locations, mounting methods, and overall dimensions of all project signage. Drawings for individual letters should indicate proposed spacing.

D. Submit available colors for all products.

E. Submit manufacturer’s installation instructions for each sign type and material. Include installation template and hardware.

1.04 QUALITY ASSURANCE

A. ADA compliant containing tactile symbols, raised lettering and Grade 2 braille.

B. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and protect products in protected location prior to installation.

B. Package signs, labeled in name groups.

C. Products shall remain in manufacturer’s protective wrappings and shall bear identification of manufacturer.

D. Store adhesive tape at ambient room temperatures.

PART 2 – PRODUCTS

2.01 INTERIOR SIGNAGE MATERIAL

A. All signage shall comply with the ICC / ANSI A117.1 or current edition, making buildings and facilities accessible to and usable by persons with disabilities, Chapter 18, Signage. All signage must have the written information under the pictograms in order to comply with the current accessibility code. Signage shall meet current code if different from above. Interior signs shall be installed with mechanical fasteners.

B. Unframed Panel Signs: Fabricate unframed panel signs with edges mechanically and smoothly finished to conform with the following requirements:

1. Edge Condition: Beveled.
2. Corner Condition: Provide corners rounded to 1/2 inch radius.
3. Signs: Nominal 1/4 inch thick, plastic or phenolic, finish as indicated, with the following:
    a. Raised characters, 1/32 inch minimum, at least 5/8 inch high;
    b. Raised numbers, 1/32 inch minimum, at least 1 inch high numbers;
    c. Raised Braille, 1/32 inch minimum;
    d. Signs shall be etched and have raised integral symbols and letters. Applied symbols and letters are not acceptable.
    e. Each room sign shall list the room number and a room identification name in both Braille and in the characters and numbers described above.
4. Provide typical 10 by 12 inch size, unless otherwise noted on the Drawings or as needed to meet requirements.
5. Handicapped Symbols: Provide one combination handicapped symbol, male and female caricatures, and room identification sign for every room where handicapped facilities are provided, such as toilet rooms.
6. All exposed edges on signs shall be sanded smooth.
7. Raised characters and graphics shall be painted in contrasting color.

C. Braille: Grade II Braille shall be provided.
1. Braille cells should be dome topped for ease of readability and be the same color as the background.
2. Sign manufacturer is responsible for assuring accuracy of spelling.
3. Braille for numbers is directly to the right on same line. Start ¼ inch from edge of last number.
4. For copy, Braille is centered horizontally directly below the word.

D. Mounting Accessories: Provide as required and recommended by signage manufacturer for a complete installation. Install signs at dimensions indicated on drawings.

E. Adhesives and Fasteners: Type recommended by the signage manufacturer to meet specified general and structural support criteria. Exact identification of adhesives and fasteners shall be noted on shop drawings, including data describing method of application.

2.02 INTERIOR IDENTIFICATION SIGNAGE

A. Refer to signage schedule on the drawings.

PART 3 – EXECUTION

3.01 SIGNAGE INSTALLATION

A. Refer to schedule and drawing for mounting locations. Unless otherwise noted, signs will occur outside of the room listed.
1. Verify all locations and heights with the Architect.
2. Clean signage and protect units from damage.

B. Install in accordance with manufacturer's instructions.

C. Install signs after doors and walls are finished, in locations indicated. Where locations are to be determined in the field, the Contractor shall consult with the Architect prior to beginning installation.

3.02 SIGN SCHEDULE

A. This preliminary sign schedule shall be reviewed and approved by the Owner prior to fabrication. Refer to drawings for location by Sign Tag.

END OF SECTION

SECTION 10 21 13

TOILET COMPARTMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes floor-mounted, overhead-braced toilet partitions.

1. Solid plastic compartments configured as toilet enclosures.
2. Structural and attachment accessories
3. Operating hardware

B. Related Sections include the following:

1. Section 06 10 00 – Rough Carpentry: Concealed blocking
2. Section 09 30 00 – Tiling
3. Section 10 28 00 – Toilet Accessories

1.02 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product data: Manufacturer’s catalog cuts of typical panel, pilaster, door, hardware and fastening.

C. Submit shop drawings indicating partition plan and elevation views, dimensions, details of wall supports, door swings, and instructions for installation of anchorage devices built into other work.

1. Show locations of cutouts for compartment-mounted toilet accessories.
2. Show locations of reinforcements for compartment-mounted grab bars.
3. Show locations of centerlines of toilet fixtures.
4. Show ceiling grid and overhead support or bracing locations.

D. Samples for Initial Selection: For each type of unit indicated. Include Samples of hardware and accessories involving material and color selection.

E. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for units, prepared on 6-inch- square Samples of same thickness and material indicated for Work.
2. Each type of hardware and accessory.

F. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.03 QUALITY ASSURANCE

A. Components of toilet partitions shall be sourced from one single source manufacturer who certifies that materials meet or exceed specifications.

B. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.

C. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years’ experience.

D. Regulatory Requirements: Comply with applicable provisions in [the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

1.04 PROJECT CONDITIONS

A. Take field measurements prior to preparation of shop drawings and fabrication, to ensure proper fitting of work. Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments.

B. Verify that adequate blocking exists. If necessary, furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the project site in the manufacturers original containers with labels indicating brand names, colors and quality designations, legible and intact.

B. All doors, panels and pilasters shall arrive at the job site with factory applied protective masking.

C. Store and protect accepted materials in accordance with the manufacturer’s direction and recommendations.

1.06 WARRANTY

A. Special Manufacturer’s Warranty: Provide manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship during the following period after substantial completion:

1. Warranty period: 25 years.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Basis of Design: Specifications are based on floor-mounted, overhead braced plastic color-thru partitions, as manufactured by Scranton Products, of Scranton, PA.

1. Toilet-Compartment Style: Floor-mounted, overhead braced.
2. Urinal-Screen Style: Wall hung with integral flanges.

2.02 MATERIALS – HDPE COMPARTMENTS

A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.

B. Doors, Panels and Pilasters:

1. High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panels; 1-inch thick with edges rounded to ¼ inch radius.
2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
3. Door and Panel Height: As shown on drawings.
4. Fire Hazard Classification: pass NFPA 286
5. Color: Refer to Schedule of Finishes on the drawings.

C. Aluminum Extrusions: ASTM B221, 6463-T5 allow and temper.

D. Stainless Steel: ASTM A167, Type 304.

2.03 HARDWARE

A. Hinges:

1. Fabricated from heavy-duty extruded aluminum with bright dip anodized finish, 8-inches long, wrap-around flanges, adjustable on 30-degree increments, through bolted to doors and pilasters with stainless steel, Torx head sex bolts.
2. Hinges operate on field-adjustable nylon cams, field adjustable in 30 degree increments.

B. Door Strike and Keeper:

1. Manufacturer's heavy-duty extruded aluminum surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
2. Latch housing: Bright dip anodized finish.
3. Slide bolt and button: Black anodized finish.

C. Coat Hook/Bumper:

1. Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
2. Equip out-swing handicapped doors with second door pull and door stop.
3. Finish: Chrome plated Zamak.

D. Door Pulls:

1. Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
2. Finish: Chrome plated Zamak.

E. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant- type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.04 COMPONENTS

A. Doors and Dividing Panels: 55 inches high, mounted 14 inches above finished floor.

B. Pilasters: 82 inches high, fasted to pilaster sleeves with stainless steel tamper resistant Torx head sex bolt.

C. Pilaster Shoes: 3 inches (76 mm), 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.

D. Pilaster Sleeves: 3 inches high, 20 gage stainless steel, secured to pilaster with stainless steel tamper resistant Torx sex bolt.

E. Wall Brackets: 54 inches long, heavy-duty aluminum, bright dip anodized finish, fastened to pilasters and panels with stainless steel tamper resistant Torx head sex bolts.

F. Headrail: Heavy-duty extruded aluminum, anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant Torx head sex bolt and at top of pilaster with stainless steel tamper resistant Torx head screws.

1. Headrail Brackets: 20 gauge stainless steel, satin finish, secured to wall with stainless steel tamper resistant Torx head screws.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

B. Verify spacing of plumbing fixtures and drains.

C. Verify correct location of built-in framing, anchorage, and bracing, where required.

D. Beginning of installation means acceptance of existing surfaces.

3.02 INSTALLATION

A. Install partitions and screens secure, plumb, and level and in accordance with manufacturer’s instructions. Secure stiles to supporting structure.

B. Maintain 3/8-inch to 1/2-inch space between wall and panels and not more than 1 inch between wall and end pilasters.

C. Pilasters shall be rigidly fastened to floor and walls. Attach panel brackets securely using anchor devices provided by the partition manufacturer. Verify location of blocking within metal framed walls to assure positive anchorage of anchors into blocking.

D. Locate bottom edge of door and panels 14 inches above the finished floor.

E. Provide uniform, maximum 3/8 inch vertical clearance at doors.

F. Adjust hinges to locate doors in partial opening position when unlatched. Return outswing doors to close position.

G. No evidence of drilling, cutting or patching shall be visible in the finished work.

3.03 ADJUSTING/CLEANING

A. Adjust, lubricate, and align hardware to uniform clearance at vertical edge of doors, not exceeding 1/4-inch.

B. Remove protective maskings. Clean surfaces.

C. Replace damaged or scratched materials with new materials.

D. Protect installation during remainder of construction.

END OF SECTION

SECTION 10 26 13
CORNER GUARDS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes flush mount corner guard for wall protection including.

1. Stainless steel corner guards
2. Installation accessories

1.02 ACTION SUBMITTALS

A. Prepare submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Product Data: For each type of product indicated.

1.03 QUALITY ASSURANCE

A. Source Limitations: Obtain impact-resistant wall-protection units through one source from a single manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in unopened factory packaging to the jobsite and store in original packaging in a climate controlled location away from direct sunlight.

1.05 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with impact-resistant wall-protection units by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M.

B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

2.02 CORNER GUARDS

A. Stainless Steel Flush Mount Corners Guards:

1. Basis-of-Design Manufacturers: Construction Specialties Inc., 8PH Series or comparable product of one of the following:

   a. ProTek Systems, Inc., CG-200
   b. Inpro Corp., SSCG-FM

2. Material: Stainless steel, Type 304.

   a. Thickness: 16 gauge
   b. Wing Size: 2 inches
   c. Height: One piece, full height of wall
   d. Profile: 90 degrees with 3/16 inch radius nose
   e. Reveal: As specified on drawings. 5/8-inch typical for gypsum board applications
   f. Finish: Directional satin, No. 4 satin finish

3. Attachment: Mechanical fastening with mounting flush to gypsum board.

a. Include mounting hardware.

2.03 FABRICATION

A. Fabricate impact-resistant wall-protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.

B. Fabricate components with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections.

2.04 METAL FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Remove tool and die marks and stretch lines or blend into finish.

C. Grind and polish surfaces to produce uniform, polished finish indicated, free of cross scratches.

1. Run grain of directionally textured finishes with long dimension of each piece.

D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Complete finishing operations, including painting, before installing impact-resistant wall-protection system components.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.03 INSTALLATION

A. General: Locate the corner guard as indicated on the approved detail drawing for the appropriate substrate and in compliance with manufacturers installation instructions. Install corner guard level and plumb full height of wall, do not splice.

B. Installation of Stainless Steel Corner Guard:

1. Surface must be dry, clean and properly sealed.
2. Screw on: Position the corner guard on the wall and attach it using the supplied screws.
3. Remove the protective plastic covering from the exposed surface of the corner guard.

3.04 CLEANING

A. Immediately after completion of installation, clean stainless steel by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.

END OF SECTION

SECTION 10 28 13

TOILET ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes toilet and bath accessories.

1. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible.

B. Related Sections:

1. Section 06 10 00 – Rough Carpentry: Wood blocking for support of toilet and bath accessory items.
2. Section 09 29 00 – Gypsum Board: For required wood or metal supports within metal stud wall system.
3. Section 09 30 13 – Ceramic Tiling.
4. Refer to Drawings for toilet accessory schedule and accessory mounting heights.

1.02 REFERENCES

A. ICC A117.1 – Accessible and Usable Buildings and Facilities.

B. Ohio Building Code – Chapter 11 Accessibility.

1.03 SYSTEM DESCRIPTION

A. Toilet accessories shall be provided to conform with ICC A117.1 and State and Local Regulations. These requirements supersede Technical Specifications in this Section.

1. Product data on accessories indicating quality, describing size, finish, details of function, attachment methods.
2. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.
3. Setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.
4. Maintenance instructions including replaceable parts and service recommendations.

1.04 ACTION SUBMITTALS

A. Prepare the following submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Shop Drawings:

1. Plans: Locate each specified unit in project.
2. Elevations: Indicate mounting height of each product.
3. Details: Indicate anchoring and fastening details, required locations and types of anchors and reinforcement, and materials required for installation of specified products.

C. Verification Samples: One sample chips of each specified color and finish.

1.05 INFORMATIONAL SUBMITTALS

A. Literature: Manufacturer's product data sheets, for each item furnished hereunder.

B. Schedule: Complete schedule, indicating types, quantity, and model numbers of accessories for each location in which the accessories will be installed.

C. Selection samples: Sample color chips indicating each manufacturer's full range of colors available for selection by Architect.

D. Verification samples: Complete units, as requested by Architect.

E. Manufacturer’s Warranty:

1. Deliver to the Owner upon completion of the work of this Section, applicable manufacturer's standard warranties.

F. Closeout Submittals: Warranty, issued and executed by manufacturer, and countersigned by Contractor.

1. One set of special adjusting or installation tools unique to the products furnished under this section.
2. Keys to accessories furnished under this section.

1.06 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 3, provide products of same manufacturer unless otherwise scheduled or approved by Architect.

B. Furnish accessory manufacturer's inserts and anchoring devices for use in masonry or concrete; coordinate delivery with other work to avoid delay.

C. Design, fabricate, and install handicapped toilet compartment grab bars capable of withstanding a downward dead load of at least 250 lb. per foot without damage or permanent set to grab bar members or anchors.

D. Exercise care to prevent damage to existing surfaces or equipment. At time of completion, accessories shall be in perfect condition, well anchored, and in proper alignment at the location indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Deliver accessories in manufacturer's original containers and store in same until installation.

B. Keys: Furnish 2 keys for each accessory item required to have a lock. Seal in clearly marked envelopes and turn over to Owner prior to building acceptance.

1.08 PROJECT CONDITIONS

A. Coordinate accessory locations, installation, and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.09 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Coordinate locations, dimensions, and other pertinent details with installation of backing, blocking, and electrical connections.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Toilet accessories shall be manufactured by Bobrick Washroom Equipment, Inc., Clifton Park, NY; specified as the type, size and function as described in the Toilet Accessory Schedule.

B. Products of the following manufacturers will be considered, providing their products equal or exceed the quality specified; and they can provide products of the type, size, function, and arrangement required:

1. Bradley Corporation, Menomonee Falls, WI
2. American Specialties Inc., Yonkers, NY

2.02 MATERIALS: TOILET ACCESSORIES

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.

B. Brass: ASTM B 19 flat products; ASTM B 16 (ASTM B 16M), rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch (0.9-mm) minimum nominal thickness.

D. Galvanized Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

1. Provide tempered glass, where indicated.

H. Galvanized Steel Mounting Devices: ASTM A153, hot dip galvanized after fabrication.

I. Fasteners and Anchors: Non-corrosive, theft-resistant, screws, bolts and other fastening devices of same material as accessory unit or of galvanized steel where concealed.

1. Provide mounting kits with stainless steel screws for accessories requiring same.
2. Mounting kits shall include toggle nuts for hollow walls and expansion shields for solid walls. Provide 2 fasteners at each mounting plate.
3. Provide 12 gauge, 3 inches wide, steel concealed anchor plates with tapped holes for installation of grab bars on walls constructed with metal studs.
4. Provide concealed anchors for installation of grab bars on solid walls. Anchor assembly shall consist of tapped 12 gauge anchor plate, 10 gauge back plate, and 3/8 inch diameter thru-wall bolt.

J. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing and resupply.

2.03 FABRICATION

A. Recessed and modified surface mounted dispensing and disposal cabinets shall be constructed as follows:

1. Exposed surfaces shall be of 22 gauge type 304 stainless steel with concealed stainless steel piano hinge on doors.
2. There shall be 1/4 inch return on face trim.
3. Each cabinet shall be provided with pin tumbler type locks (to match existing if possible) and two keys with the exception of the napkin vendors, which shall have door locks and coin box locks, keyed differently.
4. Cabinets shall have a common fascia with grain on exposed surfaces, lapped in one direction to a #4 satin finish.
5. Dispensers shall be equipped with sight or mechanical gauge for easier refill.
6. Disposals shall be completely enclosed and removable plastic; waste receptacles shall be constructed of heavy duty polyvinyl.

B. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:

1. Provide galvanized steel backing sheet, not less than 0.034 inch and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

C. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theft-proof installation, as follows:

1. One piece, galvanized steel, wall hanger device with spring action locking mechanism to hold mirror unit in position with no exposed screws or bolts.

D. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of 6 keys to Owner's representative.

2.04 FACTORY FINISHING

A. Ferrous metals: Clean and treat, spray apply one coat of baked-on rust and moisture-resistant primer, followed by two coats of baked-on synthetic enamel, in selected colors. Ensure that finish coating is uniform in color intensity and degree of gloss, throughout.

B. Chrome/Nickel Plating: ASTM 456, Type SC2, satin finish.

C. Stainless steel: Number 4 satin finish, except as otherwise specified above under the Article entitled “Toilet Accessories”.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.

B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site at appropriate time for building-in.

B. Provide templates and rough-in measurements as required.

C. Verify exact location of accessories for installation.

3.03 INSTALLATION

A. Install accessories in accurate locations as noted on drawings; securely anchored to substrate surfaces.

B. Install items in accordance with manufacturer's recommendation.

1. Wall mounted items to be secured with devices suitable for the wall construction. Lead, plastic, wood, or fiber plugs are not acceptable.
2. Accessories not located on drawings shall be installed where directed by the Architect.
3. Provide theft resistant type exposed fasteners.

C. Install accessories plumb, level, straight, and properly aligned with adjacent surfaces.

1. Install accessory units to accommodate the physically handicapped, with operating areas of coin slots, openings for dispensers and waste not more than 40 inches above the floor.
2. Mount grab bars to comply with specified performance requirements. Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
3. Comply with ANSI A117.1 accessibility requirements.

D. Accessories shall have concealed mounting and fastening devices for types of partitions as follows:

1. Concrete masonry units: Integral anchors.
2. Gypsum board and metal stud partitions: Screws or bolts secured to metal plates anchored to studs.

E. Coordinate installation of accessories in toilet compartments and work of other trades to allow proper operation. Notify the Architect in case of conflict.

3.04 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

SECTION 12 36 61

SOLID SURFACE TROUGH SINK COUNTERTOPS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:

1. Solid surface countertop assemblies with integral trough sinks, backsplashes, and side splashes.
2. Factory fabrication, field installation, and field joints.
3. Coordination with plumbing rough-ins, faucet, and accessory templates.

B. Related Sections:

1. Section 06 10 00 – Rough Carpentry: Support blocking.
2. Section 09 30 00 – Tiling: Wall finish coordination.
3. Section 22 40 00 – Plumbing Fixtures: Supply and waste piping connections, faucets, and traps..

1.02 REFERENCES

A. ASTM Standards:

1. ASTM D3960 – Standard Guide for Solvent Cementing of Acrylic and Other Thermoplastic Sheet Materials.
2. ASTM D256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
3. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Solid Surface Manufacturer Standards:

1. Corian® by DuPont, latest edition.

1.03 ACTION SUBMITTALS

A. Prepare and submit the following in accordance with Section 01 33 00 – Submittal Procedures:

B. Product Data: Manufacturer’s product specifications and installation instructions.

C. Shop Drawings:

1. Layouts of countertop, trough sink, side and back splashes.
2. Plumbing coordination templates for supply and drain lines.
3. Details of joints, seams, and edge profiles.

D. Samples: Minimum 6 in x 6 in (150 mm x 150 mm) solid surface sample in selected color (White).

E. Warranty documentation.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications:

1. Certified by solid surface manufacturer (Corian® Quality Network Fabricator or equal).
2. Minimum 5 years documented experience in fabricating and installing similar work.

B. Installer Qualifications: Trained and approved by fabricator or manufacturer.

C. Regulatory Requirements: Comply with ADA requirements for lavatory height, reach, and knee clearance.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s packaging.

B. Store indoors, flat, on clean surfaces, protected from dust, sunlight, and damage.

C. Handle panels carefully to prevent scratches, chips, or warping.

1.06 COORDINATION

A. Coordinate fabrication with plumbing rough-in templates and field dimensions.

B. Verify wall construction, blocking, and support framing are complete and capable of supporting countertop weight.

C. Coordinate cutouts for faucets and other accessories with final equipment selections.

1.07 WARRANTY

A. Provide manufacturer's standard limited warranty for a minimum of 10 years against material defects, delamination, and failure of bonded seams.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design:

1. Corian® Solid Surface by DuPont.
2. Color: Designer White (Glacier White or equivalent).

B. Acceptable Manufacturers:

1. LG HI-MACS, Wilsonart® Solid Surface, or Swanstone®, subject to compliance with specifications and approval prior to bid.

2.02 MATERIALS

A. Solid Surface Sheets:

1. Homogeneous, acrylic-based, nonporous solid surface material, meeting ASTM E84 Class A (flame spread ≤25, smoke developed ≤450).
2. Thickness: ½ inch (12 mm) minimum.
3. Finish: Matte/satin finish suitable for commercial restrooms.
4. Color: White, full-body color, consistent throughout thickness.

B. Integral Trough Sink:

1. Fabricated from same solid surface material as countertop.
2. Minimum depth: 6 inches (150 mm).
3. Slope: ¼ inch per foot toward drain.
4. Drain Location: Centered or per design drawings.
5. Overflow: None unless otherwise indicated.
6. Corners: Radiused for cleanability.

C. Splashes:

1. Back splash: 4 inches (100 mm) high, integral with countertop.
2. Side splashes: 4 inches (100 mm) high at ends, integral or field bonded.

D. Adhesives and Sealants:

1. Color-matched, manufacturer-approved solid surface adhesive.
2. Silicone sealant: Mildew-resistant, neutral cure, low VOC, color to match countertop.

E. Edge Configuration: Eased or square edge, ¼ inch radius max.

F. Accessories: Metal supports, concealed brackets, or structural wall framing as required to support countertop.

2.03 FABRICATION

A. Fabricate countertops and sinks in accordance with manufacturer's written instructions.

B. Provide field joints factory-prepared with color-matched adhesive.

C. Integrate sink trough and splashes seamlessly.

D. Reinforce areas subject to fixture loads as required.

E. Provide cutouts for plumbing and accessories per shop drawings.

F. Factory finish exposed surfaces; finish field seams to uniform matte sheen.

2.04 PLUMBING COORDINATION

A. Fabricator to provide cutouts and templates for:

1. Faucet supply lines (deck or wall mounted as applicable).
2. Drain piping and P-trap connection.
3. Field verification of dimensions and plumbing layout before fabrication.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify substrate, supports, and wall conditions are plumb, level, and properly prepared.

B. Verify plumbing rough-ins match templates.

C. Do not begin installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install countertops level, plumb, and true to line.

B. Secure countertop to wall or supports using concealed mechanical fasteners and adhesive as recommended by manufacturer.

C. Bond field joints with color-matched adhesive, clamp, and sand smooth when cured.

D. Install backsplashes and side splashes; seal joints at wall intersections with color-matched silicone.

E. Provide full continuous support under countertop; do not rely solely on wall anchors.

F. Protect finished surfaces from damage during installation..

3.03 FIELD QUALITY CONTROL

A. Inspect completed installation for proper seam quality, finish uniformity, and fit at walls.

B. Verify trough sink drains properly with no standing water.

C. Check alignment of faucet and drain openings.

3.04 ADJUSTING AND CLEANING

A. Clean surfaces using manufacturer-approved cleaning agents.

B. Remove all debris, adhesives, and sealant residue.

C. Replace damaged or defective components prior to substantial completion.

3.05 PROTECTION

A. Protect installed work from damage during remaining construction operations.

B. Do not permit use of countertop until plumbing and adjacent finishes are complete.

END OF SECTION

DIVISION 21 - FIRE SUPPRESSION INDEX

HYATT REGENCY RESTROOM RENOVATION

		HEAPY
Architect		MEP Engineer
Schooley Caldwell	Columbus, Ohio	Project No. 2025-07170

Section INDEX

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OCTOBER 2025

21 05 01 BASIC FIRE SUPPRESSION REQUIREMENTS

PART 1 - GENERAL

1.1 Special Note

A. All provisions of the Bidding Requirements, General Conditions, and Supplementary Conditions, including Divisions 00 and 01, apply to work specified in this Division.

B. Understanding that the contractors for various Divisions are sub-contractors to the Construction Manager, assignments of work by division are not intended to restrict the Construction Manager in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

1.2 Permits and Regulations

A. Include payment of all permit and inspection fees applicable to the work in Division 21. Furnish for the Owner certificates of approval from the governing inspection agencies, as a condition for final payment.

B. Work must conform to applicable local, state and federal laws, ordinances and regulations. Where drawings or specifications exceed code requirements, the drawings and specifications shall govern. Install no work contrary to minimum legal standards.

1.3 Inspection of Site

A. Each bidder shall inspect the project site and the premises of the existing building. Conditions shall be compared with information shown on the drawings. Report immediately to the Construction Manager any significant discrepancies which may be discovered. After the contract is signed, no allowance will be made for failure to have made a thorough inspection.

1.4 Drawings and Specifications

A. The drawings indicate the general arrangement of the work and are to be followed insofar as possible. The word "provide", as used, shall mean "furnish and install". If significant deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted to the Construction Manager for approval before proceeding with the work.

B. Make all necessary field measurements to ensure correct fitting. Coordinate work with all other trades in such a manner as to cause a minimum of conflict or delay.

C. The drawings and specifications shall be carefully studied during the course of bidding and construction. Any errors, omissions or discrepancies encountered shall be referred immediately to the Construction Manager for interpretation or correction, so that misunderstandings at a later date may be avoided. The contract drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Having pipe and fittings fabricated and delivered in advance of making actual measurements shall not be sufficient cause to avoid making offsets and minor changes as may be necessary to install piping and equipment.

D. The Construction Manager shall reserve the right to make minor adjustment in locations of system runs and components where considered desirable in the interest of concealing work or presenting a better appearance where exposed. Any such changes shall be anticipated and requested sufficiently in advance as to not cause extra work, or unduly delay the work.

Coordinate work in advance with all other trades and report immediately any difficulties which can be anticipated.

E. Equipment or piping shall not be installed in the dedicated electrical space above or in the working space required around electrical switchgear, motor control centers or panelboards as identified by the National Electric Code (NEC).

F. Where any system runs and components are so placed as to cause or contribute to a conflict, it shall be readjusted at the expense of the contractor causing such conflict. The Construction Manager's decision shall be final in regard to the arrangement of equipment, piping, etc., where conflict arises.

G. Provide offsets in system runs, additional fittings and necessary drains required to complete the installation, or for the proper operation of the system. Exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible.

H. Should overlap of work among the trades become evident, this shall be called to the attention of the Construction Manager. In such event, none of the trades or their suppliers shall assume that they are relieved of the work which is specified under their branch until instructions in writing are received from the Construction Manager.

1.5 Asbestos Materials

A. Abatement, removal or encapsulation of existing materials containing asbestos is not included in the Division 21 Contract. Necessary work of this nature will be arranged by the Construction Manager to be done outside of this construction and remodeling project by a company regularly engaged in asbestos abatement. Such work will be scheduled and performed in advance of work in the construction and remodeling project.

B. If, in the performance of the work, materials are observed which are suspected to contain asbestos, the Contractor shall immediately inform the Construction Manager who in turn will notify the Owner. Work that would expose workers to the inhalation of asbestos particles shall be terminated. Work may be resumed only after a determination has been made and unsafe materials have been removed or encapsulated and the area declared safe.

1.6 Coordination Drawings

A. The Division 23 Contractor shall prepare and be responsible for 0.25inch scale electronic coordination drawings. These drawings shall be produced using a computer aided drafting software of a mutually agreed upon format with the Division 21, 22, 23, 26, 27 and 28 Contractors. Each Contractor shall prepare their own electronic drawings, using common backgrounds obtained from the Architect and Structural Engineer. The Division 23 Contractor shall be responsible for consolidating (merging) the drawings into combined coordination drawings, and lead the conflict resolution process, with all contractors working together to obtain finished coordinated drawings. No work shall be installed until all contractors have approved and signed-off with their approval and drawings have been submitted and reviewed by the Engineer.

B. Review by the Engineer is cursory. It is the Contractors responsibilities to ensure that all work is coordinated, including fit above ceilings and that specified ceiling heights are maintained.

1.7 Inspection

A. All work shall be subject to inspection of Federal, State and local agencies as may be appropriate, and of the Architect and Engineer.

B. Obtain final inspection certificates and turn over to the Owner.

1.8 Record Drawings

A. Maintain a separate set of field prints of the contract documents and hand mark all changes or variations, in a manner to be clearly discernible, which are made during construction and the coordination process. Upon completion of the work, and within 90 days of system acceptance, these drawings shall be turned over to the Construction Manager. This shall apply particularly to underground and concealed work, and to other systems where the installation varies to a degree which would justify recording the change.

1.9 Operating and Maintenance Manuals

A. Assemble three copies of operating and maintenance manuals for the Fire Suppression work.

B. All “approved” shop drawings and installation, maintenance and operating instruction pamphlets or brochures, wiring diagrams, parts list and other information, along with warranties, shall be obtained from each manufacturer of the principal items of equipment. In addition, prepare and include a chart listing all items of equipment which are furnished under this contract, indicating the nature of maintenance required, the recommended frequency of checking these points and the type of lubricating media or replacement material required. Name and address of a qualified service agency. A complete narrative of how each system is intended to operate.

C. Pipe pressure test reports shall also be included.

D. These shall be assembled into three-ring loose leaf binders or other appropriate binding. An index and tabbed sheets to separate the sections shall be included. These shall be submitted to the Engineer and Construction Manager for review. Upon approval, manuals shall be turned over to the Owner.

1.10 Final Inspection and Punch List

A. As the time of work completion approaches, survey and inspect the work and develop their own punch list to confirm that it is complete and finished. Then notify the Architect or Construction Manager and request that a final inspection be made. It shall not be considered the Architect's or Engineer's obligation to perform a final inspection until the Contractor has inspected the work and so states at the time of the request for the final inspection.

B. Requests to the Architect, Engineer or Construction Manager for final inspection may be accompanied by a limited list of known deficiencies in completion, with appropriate explanation and schedule for completing these; this is in the interest of expediting acceptance for beneficial occupancy.

C. The Architect and/or Engineer will inspect the work and prepare a punch list of items requiring correction, completion or verification. Corrective action shall be taken by the Contractor to the satisfaction of Architect and Engineer within 30 days of receipt of the Architect/Engineer's punch list.

1.11 Warranty

A. Warrant all workmanship, equipment and material entering into this contract for a period of one (1) year from date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect or Construction Manager. Any materials or equipment proving to be defective during this warranty period shall be made good by this Contractor without expense to the Owner. Use of equipment for temporary system use is not the start of the warranty period.

1. Certain items of equipment are specified to have multi-year parts and/or labor warranties. Refer to individual equipment specifications.

B. This provision is intended specifically to cover deficiencies in contract completion or performance which are not immediately discovered after systems are placed in operation. Also included shall be supplementary assistance in balancing, adjusting or providing operating instructions as the need develops, and replacing overload heater elements in starters where necessary to keep systems in operation. Heater element sizes shall not exceed the motor manufacturer's recommendations.

C. This provision shall not be construed to include maintenance items such as re-tightening or repacking glands, greasing, oiling and cleaning strainers after these have been done for final close-out.

D. Provisions of this warranty shall be considered supplementary to warranty provisions under Division 01 - General Conditions.

PART 2 - PRODUCTS

2.1 Materials and Equipment

A. Materials and equipment furnished under this contract shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more articles of the same material or equipment are required, they shall be of the same manufacturer.

2.2 Listing and Labeling

A. All equipment and appliances shall be listed and labeled in accordance with the Building and Fire Codes. Testing shall be performed by an Approved Agency, with the seal or mark of the Agency affixed to each piece of equipment or appliance.

2.3 Reference Standards

A. Where standards (NFPA, NEC, ASTM, UL, etc.) are referenced in the specifications or on the drawings, the latest edition is to be used except, however, where the authority having jurisdiction has not yet adopted the latest edition, the edition so recognized shall be used.

2.4 Equipment Selection

A. The selection of materials and equipment to be furnished shall be governed by the following:

1. Where trade names, brands, or manufacturers of equipment or materials are listed in the specification, the exact equipment listed shall be furnished. Where more than one name is used, the Contractor shall have the option of selecting between any one of the several specified. All products shall be first quality line of manufacturers listed.
2. Where the words "or approved equal" appear after a manufacturer's name, specific approval must be obtained from the Architect during the bidding period in sufficient time to be included in an addendum. The same shall apply for equipment and materials not named in the specifications, where approval is sought.
3. Where the words "equal to" appear, followed by a manufacturer's name and sometimes a model or series designation, such designation is intended to establish quality level and standard features. Equal equipment by other manufacturers will be acceptable, subject to the Engineer's approval.

B. Substitute equipment of equal quality and capacity will be considered when the listing of such is included as a separate item of the bid. State the deduction or addition in cost to that of the specified product.

C. Before bidding equipment, and again in the preparation of shop drawings, verify that adequate space is available for entry and installation of the item of equipment, including associated

piping and accessories. Also verify that adequate space is available for servicing of the equipment.

D. If extensive changes in pipe or equipment layout, or electrical wiring and equipment are brought about by the use of equipment which is not compatible with the layout shown on the drawings, necessary changes shall be deemed to be included.

2.5 Shop Drawings

A. Electronic copies of shop drawings and descriptive information of equipment and materials shall be furnished. Submit to the Architect and/or Engineer for review as stated in the General Conditions and Supplementary Conditions. These shall be submitted as soon as practicable and before equipment is installed and before special equipment is manufactured. Submittal information shall clearly identify the manufacturer, specific model number, approval labels, performance data, pump curves, electrical characteristics, features, specified options and additional information sufficient to evidence compliance with the contract documents. Product catalogs, brochures, etc. submitted without project specific items marked as being submitted for review will be rejected and returned without review. Shop drawings for equipment, fixtures, devices and materials shall be labeled and identified same as on the Contract Documents. If compliance with the above criteria is not provided shop drawings will be subject to rejection and returned without review. Samples shall be submitted when requested or as specified here with-in.

B. The review of shop drawings by the Architect or Engineer shall not relieve the Contractor from responsibility for errors in the shop drawings. Deviations from specifications and drawing requirements shall be called to the Engineer's attention in a separate clearly stated notification at the time of submittal for the Engineer's review.

C. Shop drawings of the following Fire Suppression equipment and materials shall be submitted:

1. Pipe, fittings and joining methods.
2. Firestopping systems for pipe penetrations.
3. Pipe hangers.
4. Valves.
5. Fire department valves and cabinets.
6. Sprinklers and accessories.
7. Wet pipe system components.
8. Fire hose cabinets and hose assemblies.
9. Sprinkler system installation drawings per NFPA 13, calculations and water supply flow curve.
10. Welder performance qualification record.

PART 3 - EXECUTION

3.1 Pipe Testing

A. Pipe testing for fire suppression piping shall be as described below and in Section 21 13 13 Fire Suppression Sprinkler System.

B. Ensure that air is vented from piping when piping is hydrostatically tested.

C. Tests shall be witnessed by field representatives of the Architect or Engineer or shall be monitored by a recorder. Furnish a written record of each piping system test indicating date, system, pressure, duration and results of tests. Copies of test reports shall be included in the O&M manuals.

D. Leaks discovered during testing shall not be patched. Threaded connections shall be either tightened or replaced. Small leaks in welded pipe may be chipped and rewelded.

3.2 Pipe Cleaning

A. Before placing each piping system in operation, the piping system shall be thoroughly flushed out with clean water.

B. Refer to appropriate Sections for cleaning of other piping for normal operation.

3.3 Operation and Adjustment of Equipment

A. As each piping system is put into operation, all items of equipment included therein shall be adjusted to proper working order. This shall include tightening packing glands, and adjusting all operating equipment.

B. Caution: Verify that all bearings are lubricated, all motors are operating in the right direction, and correct drive settings and overload heater elements are provided on all motors. Do not depend wholly on the electrician's judgment in these matters. Follow specific instructions in regard to lubrication. Do not oil or grease presealed ball bearings unless upon manufacturer's specific instructions.

C. Test relief valves, air vents and regulating valves to ensure proper operation.

END OF SECTION

21 05 02 AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES

PART 1 - GENERAL

1.1 The Engineer, at their sole discretion and without obligation, makes graphic portions of the contract documents available for use by the contractor in electronic format. These electronic files are proprietary, and remain the Engineer's Instruments of Service and shall be for use solely with respect to this project, as provided in the Standard Form of Agreement between Owner/Architect and Engineer.

1.2 Electronic files shall be released only after bids have been received for the project and contracts have been signed with the contractors.

1.3 The contractor shall acknowledge receipt of electronic files in the requested format for this project. The electronic files are provided as a convenience to the User, for use in preparing shop drawings and/or coordination drawings related to the construction of only the project identified in the Agreement. The electronic files and the information contained within are the property of the Engineer and/or the Architect and/or the Owner, and may not be reproduced or used in any format except in conjunction with the project identified in the Agreement.

1.4 The User acknowledges that the information provided in the electronic files is not a substitution or replacement for the Contract Documents and does not become a Contract Document. The User acknowledges that neither the Engineer, the Architect, the Consultants, the Client or the Owner make any warrant or representation that the information contained in the electronic files reflect the Contract Documents in their entirety. The User assumes full responsibility in the use of the electronic files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

1.5 The User acknowledges that the receipt of electronic files in no way relieves the User from the responsibility for the preparation of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

1.6 Electronic files are available in a .DWG or .RVT format for a cost as indicated in the Agreement and Waiver Form. **Providing the documents in a .DWG version that differs from the product version that the .DWG files were initially created in will incur additional charges per sheet, as indicated in the Agreement and Waiver Form.** Charges are for the Engineer's time to prepare the documents in the format stated. They are available through the Engineer's office on a C.O.D. basis only. A sample of the format will be provided by the Engineer upon request by the contractor, for the purpose of testing the compatibility of the format to the contractor's systems.

1.7 All drawings will be in an AutoCAD file format, when requested to be .DWG format.

1.8 All project models will be furnished without views.

1.9 All electronic files shall be stripped of the Project's name and address, the Architect's, Engineer's and any consultant's name and address, and any professional licenses indicated on the contract documents, (and all dimensions, verbiage, and statistical information). Use of these electronic files is solely at the contractor's risk, and shall in no way alter the contractor's Contract for Construction.

1.10 The User agrees to indemnify, hold harmless and defend the Engineer, the Architect, the Consultants, the Owner, the Client and any of their agents from any litigation resulting from the use of (by any means of reproduction or electronic media) these files. The Engineer makes no representation regarding fitness for any particular purpose, or suitability for use with any software or hardware, and shall not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Engineer's or its consultant's computer software or hardware defects or errors; the Engineer's or its consultant's electronic or disk transmittal of data, information or documents; or the Engineer's or its

consultant's reformatting or automated conversion of data, information or documents electronically or disk transmitted from the Engineer's consultants to the Engineer.

1.11 The contractor waives all claims against the Engineer, its employees, officers and consultants for any and all damages, losses, or expenses the contractor incurs from such defects or errors in the electronic files. Furthermore, the contractor shall indemnify, defend, and hold harmless the Engineer, and its consultants together with their respective employees and officers, harmless from and against any claims, suits, demands, causes of action, losses, damages or expenses (including all attorney's fees and litigation expenses) attributed to errors or defects in data, information or documents, including drawings and specifications, resulting from the contractor's distribution of electronic files to other contractors, persons, or entities.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Attached "Agreement" shall be submitted with accompanying payment to the Engineer prior to delivery of electronic files.

END OF SECTION

21 05 02A
ELECTRONIC FILES HEAPY RELEASE FORM TO CONTRACTORS

Project: Hyatt Regency Restroom Renovation
500 North High Street
Columbus, Ohio

Owner: Franklin County Convention Facilities Authority

Heapy Engineering Project Number: 2025-07170

Heapy Engineering Project Manager: David Lovano

The Provider, named below, will furnish the Recipient, named below, certain documents prepared by the Provider or its sub consultants in an electronic format. These documents are hereinafter collectively referred to as "Electronic Files". The Electronic Files are instruments of the Provider services performed solely for the Owner's benefit and to be used solely for this Project. The Provider does not represent that the information contained in the Electronic Files are suitable for use on any other project or for any other purpose. If the Electronic Files are used for any other project or purpose without the Provider's specific written permission, the risk of such use shall be assumed solely by the Recipient or other user.

Prior to the use of the Electronic Files the Provider and the Recipient agree to the following terms and conditions:

1. The Provider and Recipient fully understand that the data contained in these electronic files are part of the Provider's Instruments of Service. The Provider shall be deemed the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights.

2. The Recipient confirms their request to the Provider for Electronic Files for the Project listed above, which the Recipient understands are to be provided only in accordance with, and conditioned upon, the terms and conditions of the Agreement and Waiver for Use of Electronic Files).

3. The Provider agrees that the Recipient may use the Electronic Files for the sole purpose of preparing shop drawings and/or coordination drawings for the above Project only. Any Electronic Files provided are strictly for the use of the Recipient in regard to the Project named above, and shall not be utilized for any other purpose or provided by the Recipient to any entity other than its subcontractors for the Project named above.

4. The Recipient acknowledges that the furnishing of Electronic Files in no way relieves the Recipient from the responsibility of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

5. The Recipient acknowledges:

    a. That the Electronic Files do not contain all of the information of the Bid Documents or Contract Documents for the construction of the Project above.

    b. That information in the Bid Documents or Contract Documents may be revised or modified in the future.

c. The Provider does not have, and will not have, any duty or obligation to advise or give notice to the Recipient of any such revisions or modifications.

d. That the Recipient agrees that its use of the Electronic Files is at the Recipient's sole risk of liability, and that the Recipient shall make no claim or demand of any kind against the Provider arising out of Recipient's receipt or use of the Electronic Files.

6. The Provider makes no representation or warranty of any kind, express or implied, with respect to the Electronic Files and specifically makes no warranty that the Electronic Files shall be merchantable or fit for any particular purpose, or accurate or complete. Furthermore, any description of said Electronic Files shall not be deemed to create an implied or express warranty that such Electronic Files shall conform to said description.

7. Due to the unsecured nature of the Electronic Files and the inability of the Provider or the Recipient to establish controls over their use, the Provider assumes no responsibility for any consequences arising out of the use of the data. It is the sole responsibility of the Recipient to check the validity of all information contained within the Electronic Files. The Recipient shall at all times refer to the Construction Documents of the project during all phases of the project. The Recipient shall assume all risks and liabilities resulting from the use of this data, and the Recipient agree(s) to waive any and all claims and liability against the Provider and its sub consultants resulting in any way from the use of the Electronic Files.

8. Electronic Files are provided strictly as a courtesy by the Provider solely for the convenience of the Recipient, and are not part of the Bid Documents or Contract Documents for the Project. The Electronic Files do not replace or supplement the paper copies of any drawings, specifications, or other documents included in the Contract Documents for use on the project.

    a. The Recipient assumes full responsibility in the use of Electronic Files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

9. As stated herein, the possibility exists that the Electronic Files provided may differ from the Bid Documents or Contract Documents for construction of the Project. The Provider shall not be responsible, nor be held responsible, for differences between Electronic Files, the Bid Documents, and Contract Documents. The Bid Documents or Contract Documents for the Project may be modified by the Provider at any time, either before or after construction begins. The Provider has no responsibility, either before or after any such modification, to determine or to advise the Recipient whether any such modification causes Electronic Files provided to the Recipient to be out of date, inconsistent with the Bid Documents or Contract Documents, or otherwise unsuitable or unfit for use in any way.

10. The Recipient assumes all risk and liability for any losses, damages, claims, or expenses (including defense and attorney fees) resulting from its receipt, use, or possession of Electronic Files furnished by the Provider. The Provider makes no representation, warranty or guarantee that the Electronic Files:

    a. Are suitable for any other usage or purpose.

    b. Have any particular durability.

    c. Will not damage or impair the Recipient's computer or software.

    d. Contain no errors or mechanical flaws or other discrepancies that may render them unsuitable for the purpose intended by the Recipient.

11. Recipient agrees to indemnify, defend and hold harmless the Provider, agents, employees, and the Owner from, and against, any and all claims, suits, losses, damages or costs, of any kind or nature, including attorney's fees, arising from or by reason of the Recipient's use of Electronic

Files provided by the Provider, and such defense and indemnification obligation duties shall survive any use under this Agreement and Waiver for Use of Electronic Files.

12. The Recipient agrees that the Provider shall have no responsibility whatsoever for problems of any nature arising from transmitting and storing electronic files at a Recipient requested FTP or project management site or the conversion of the Electronic Files by the Recipient or others for use in non-native applications. The Provider will not provide Electronic Files in compressed formats. Recipient agrees to accept the files in the format provided by the Provider, and that Recipient's conversion or electronic file storage at the Recipient's requested site, shall be at Recipient's sole risk.

13. Recipient acknowledges:

    a. That the Electronic Files provided by the Provider are a graphical representation of the building in order to generate two-dimensional industry standard drawings.

    b. That the data contained in the Electronic Files may not be 100% accurate and should not be used for dimensional control, building layout, shop drawings, or any other similar purpose

    c. That any schedule of materials produced directly from the Electronic Files has not been checked for accuracy.

    d. That the information in the Electronic Files should be used only for comparative purposes and shall not be relied upon for accurate quantity estimates or used in establishing pricing.

14. Electronic Files provided by the Provider will only contain elements and content that the Provider deems necessary and appropriate to share. No specific Level of Development (LOD) is implied or expected. The Recipient agrees that no proprietary content, MvParts or Revit Families or any other AutoCAD MEP or Revit MEP content shall be removed from the model and/or used for any other purpose but to support this specific project.

15. The Provider, at its sole discretion, may modify the Electronic files before they are provided to the Recipient. Such modifications may include, but are not necessarily limited to, removal of certain information. The Provider, at its sole discretion, may refuse to provide some or all Electronic Files requested by Recipient.

16. The availability of Electronic Files that were not prepared by the Provider is subject to the consent of the Owner or consultant that prepared those Electronic Files. The Provider will not negotiate with the Owner or consultant or repeatedly solicit the Owner or consultant to obtain such consent. Neither this Agreement and Waiver for Use of Electronic Files nor any such separate Consultant's consent may be assigned or transferred by Recipient to any other person or entity.

Provider (Name of Company): _____

Recipient (Name of Company): _____

Name of authorized Recipient Representative: _____

Title of authorized Recipient Representative: _____

E-mail address of authorized Recipient Representative: _____

Signature of authorized Recipient Representative: _____

Date: _____

NOTE: Select requested Electronic File Format, File Transfer Medium and complete applicable Cost Summary.

A. Electronic File Format (select one):

1. ☐ .DWG Format - List of Drawings Requested: _____

_____

2. ☐ Revit Project Model Requested (Model only, no Views included)

B. File Transfer Medium (select one):

☐ Heapy FTP ☐ User's FTP site

C. Delivery of Electronic Files Cost Summary:

Available Electronic .DWG file format:
☐ 2024 DWG

If a different file version is required than the indicated available version state the requested version:

_____ .DWG

Note that an additional charge per sheet will be incurred.

Cost of Preparation of Division 21 Electronic .DWG Files:

First Drawing: $50.00 $50.00

Additional Drawings $15.00 each _____ x $15.00 = $ _____

Conversion to .DWG version different from available .DWG:
$5.00 additional/sheet _____ x $ 5.00 = $ _____

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ _____
All files will be bound together.
Available electronic Revit file format:
☐ 2024 .RVT

Cost of Preparation of Division 21 Electronic Revit Model Files:

Revit Project Model without Views $500.00

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ _____

21 05 04 BASIC FIRE SUPPRESSION MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Construction Water

A. Refer to Division 01 - General Requirements, for information regarding construction water.

B. Each Contractor requiring water for construction purposes shall connect to wall hydrants or other connection points within the existing building.

1.2 Continuity of Services

A. Work shall be so planned and executed as to provide reasonably continuous service of existing systems throughout the construction period. Where necessary to disrupt services for short periods of time for connection, alteration or switch-over, the Owner and Construction Manager shall be notified in advance and outages scheduled at the Owner's reasonable convenience.

B. Submit, on request, a written step-by-step sequence of operations proposed to accomplish the work. The outline must include tentative dates, times of day for disruption, downtime and restoration of services. Submit the outline sufficiently in advance of the proposed work to allow the Architect or Engineer and Construction Manager to review the information with the Owner. Upon approval, final planning and the work shall be done in close coordination with the Owner.

C. Shutdown of systems and work undertaken during shutdowns shall be bid as being done during normal working hours. If the Owner should require such work be performed outside of normal working hours, reimbursement shall be made for premium time expenses only, without markup.

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 Workmanship

A. Materials and equipment shall be installed and supported in a first-class and workmanlike manner by mechanics skilled in their particular trades. Workmanship shall be first-class in all respects, and the Architect and Engineer shall have the right to stop the work if highest quality workmanship is not maintained.

B. Fire Suppression work shall be performed by Contractors that are fully certified by the State or Authority Having Jurisdiction.

3.2 Protection

A. Each Contractor shall be entirely responsible for all material and equipment furnished in connection with their work. Special care shall be taken to properly protect all parts thereof from theft, damage or deterioration during the entire construction period in such a manner as may be necessary, or as directed by the Architect or Construction Manager. All piping shall be elevated from grade for on-site storage, and all open ends shall be covered. Plastic piping shall be protected from direct and indirect sunlight.

B. The Owner's property and the property of other contractors shall be scrupulously respected at all times. Provide drop cloths and visqueen or similar barriers where dust and debris is generated, to protect adjacent areas.

3.3 Cutting and Patching

A. Refer to Division 01 - General Requirements for information regarding cutting and patching.

B. Plan the work well ahead of the general construction. Where pipes are to pass thru new walls or partitions, place sleeves in these elements or arrange for the provision of openings where sleeves are not practical. Where sleeves or openings have not been installed, cut holes and patch as required for the installation of this work. Any damage caused to the building shall be repaired or rectified.

C. Where pipes are to pass thru, above or behind existing walls, partitions or ceiling, cutting, patching and refinishing of same shall be provided.

D. All sleeves and openings not used or partially used shall be closed to prevent passage of smoke and fire.

E. All materials, methods and procedures used in patching and refinishing shall be in accordance with applicable provisions of specifications governing the various trades, and shall be completed by skilled workmen normally engaged in these trades. The final appearance and integrity of the patched and refinished areas must meet the approval of the Construction Manager. Wall, floor and ceiling refinishing must extend to logical termination lines (entire ceiling of the room repainted, for instance), if an acceptable appearance cannot be attained by finishing a partial area.

3.4 Removals, Alterations and Reuse

A. Refer to the project documents for the scope of remodeling in the existing building.

B. Cooperate with the General Contractor and Construction Manager regarding all removal and remodeling work. Unless otherwise noted, remove all existing work which is associated with Division 21 and which will be superfluous when the new work is installed and made operational.

C. Extraneous piping which is or becomes accessible shall be removed and stubs shall be capped at the first active pipe encountered. Piping that is and remains inaccessible shall be disconnected from active systems and abandoned. Ends of abandoned pipe shall be capped so as to be concealed by finished surfaces. Upon completion of the work no abandoned pipe, valve or stub shall extend thru finished floors, walls or ceilings.

D. When it is necessary to reroute a section of active piping the rerouted section shall be installed before removing the existing in order to minimize system down time.

E. Materials and equipment which are removed shall not be reused within the scope of this project unless specifically noted to be relocated or reused. Turn over to the Owner and place where directed on the premises all removed material and equipment so designated by the Owner. All material and equipment not claimed by the Owner shall become the property of the Contractor responsible for removal and shall be removed from the premises.

F. Remove, store and reinstall lay-in ceiling tile and grid as needed to perform work in areas where such removal and re-installation is not to be done by the General Contractor. Damaged tile and/or grid shall be replaced with new matching tile and/or grid.

G. In areas of minor work where the space is not completely vacated, temporarily move portable equipment and furnishings within the space as required to complete the work. Coordinate this activity with the Owner / Construction Manager. Protect the Owner's property by providing dust covers and temporary plastic film barriers to contain dust. Remove barriers and return equipment and furniture upon completion of the work.

H. Refinish any surface disturbed under this work to match existing, except where refinishing of that surface is included under the General Contract.

3.5 Painting

A. In addition to any painting specified for various individual items of equipment, provide the following painting:

1. Ferrous metal which is not factory or shop painted or galvanized and which remains exposed to view in the finished areas of the building shall be given a prime coat of paint.
2. Equipment and materials, except sprinklers, which have been factory or shop coated (prime or finished painted or galvanized), on which the finish has been damaged or has deteriorated, shall be cleaned and refinished equal to its original condition. The entire surface shall be repainted if a uniform appearance cannot be accomplished by touch up. Sprinklers and sprinkler assemblies shall be replaced with new.

B. Paint, surface preparation and application shall conform to applicable portions of the Painting section of Division 09 Specifications. All rust must be removed before application of paint.

C. Finish painting is included in the General Contract except where otherwise required under remodeling work. Refer to the Cutting and Patching paragraph in this Section for finishing requirements.

END OF SECTION

21 05 05 FIRESTOPPING

PART 1 - GENERAL

1.1 Firestopping assemblies shall be provided at penetrations of piping thru fire rated floors, fire rated floor-ceiling and roof ceiling assemblies, fire rated walls and partitions and fire rated shaft walls and partitions. In addition, firestopping assemblies shall be provided at penetrations thru 0-hour rated floors. Refer to the drawings for fire rated building elements and pipe layouts.

1.2 Firestopping assemblies shall be tested and rated in accordance with ASTM E814, E119 and listed in accordance with UL 1479, as published in the UL Fire Resistance Directory. Firestopping shall provide a fire rating equal to that of the construction being penetrated.

1.3 Firestopping materials, assemblies and installation shall conform to requirements of the OBC Chapter 1, Section 106 and Chapter 7, Section 712 and the Authority Having Jurisdiction.

1.4 For those firestopping applications that exist for which no UL tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineer judgment drawings must follow requirements set forth by the International Firestop Council.

1.5 Shop drawings shall be prepared and submitted for review and approval. Submittals shall include manufacturer's specifications and technical data of each material, documentation of UL firestopping assemblies and installation instructions. Submittals shall include all information required in the OBC Chapter 1 and Chapter 7.

PART 2 - PRODUCTS

2.1 Firestopping materials shall be manufactured and/or supplied by Hilti, 3M, Tremco, or Specified Technologies Inc (STI).

2.2 Materials shall be in the form of caulk, putty, sealant, intumescent material, wrap strip, fire blocking, ceramic wool and other materials required for the UL listed assemblies. These shall be installed in conjunction with sleeves and materials for fill and damming.

2.3 Combination pre-set floor sleeve and firestopping assemblies shall be equal to Hilti CP 680.

PART 3 - EXECUTION

3.1 Installation of all materials and assemblies shall be in accordance with UL assembly drawings and the manufacturer's instructions.

3.2 Installation shall be done by an experienced installer who is certified, licensed or otherwise qualified by the firestopping manufacturer as having the necessary training and experience.

3.3 Refer to 21 05 07 Piping Materials and Methods for Fire Suppression for pipe sleeve requirements and treatment of penetrations not requiring firestopping.

END OF SECTION

21 05 07 PIPING MATERIALS AND METHOD FOR FIRE SUPPRESSION

PART 1 - GENERAL

1.1 Piping materials and methods for piping common to Division 21 – Fire Suppression shall be as specified herein and as shown on the drawings.

1.2 Included in this section are:

A. Pipe, fittings and joining methods.

B. Unions and flanges.

C. Pipe sleeves, openings and escutcheons.

D. Installation methods of piping.

1.3 Refer to other Sections in Division 21 for selection of piping materials for the various services. Piping materials and installation methods peculiar to certain individual systems are specified in Sections related to those systems.

1.4 Refer to Section 21 05 05 Firestopping and Division 7 for firestopping requirements.

1.5 Welders shall be qualified and fully certified in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications.

1.6 Welding procedures, testing and welder performance shall comply with The American Welding Society Welding Handbook, AWS B2.1, Specification for Welding Procedure and Performance Qualification and National Welding Institute.

1.7 Pipe threads shall be cut to ASME B1.20.1, Pipe Threads, General Purpose.

1.8 Pipe sleeves and wall openings and escutcheon plates shall be provided as described below. Pipe sleeves shall be placed in all walls and partitions, except as noted below, to allow new piping to pass thru and to allow for expansion, contraction and normal movement of the pipe. Sleeves are also required for all existing piping related to this trade in new walls, partitions, floors and roof slabs, same as for new piping.

1.9 Sleeves are not required:

A. In stud and gypsum board or plaster walls and partitions which are not fire rated.

1.10 Where pipes penetrate walls, other than those required to be fire rated, the annular space between the sleeve or opening and the pipe shall be closed to retard the passage of smoke.

PART 2 - PRODUCTS

2.1 For detail of pipe and fitting products see Section 21 13 12 Fire Suppression Piping.

2.2 Forged welding outlets equal to Anvil/Merit “Weld-Miser Tee-let” may be used where branch is two sizes smaller than the main. Outlets shall be rated for minimum 300 psi working pressure, UL Listed and FM Global Approved, and have threaded or grooved end appropriate for application. Non-listed nipples and fishmouthed connections are not acceptable.

2.3 Unions and flanges shall be:

A. Unions on steel pipe 2 inches and smaller, malleable iron with ground seat, bronze to steel, 300 lbs., screwed ends.

B. Flanges on steel pipe with welded or screwed joints, 2.5 inches and larger. Gaskets shall be 0.0625 inches thickness, ASME B16.21, full face compressed sheet suitable for temperature and pressure ranges of the application.

C. Mechanical joints associated with grooved end pipe are acceptable in lieu of unions and flanges.

2.4 Pipe sleeves shall be:

A. 26 gauge galvanized sheet steel or Schedule 40 black steel pipe.

2.5 Escutcheon plates shall be split-ring chromium plated pressed steel. Plates shall be sized to cover the surface penetration and sleeve. Plates shall be installed on exposed piping in finished rooms and areas where pipes penetrate walls, floors, ceilings or overhead structure.

PART 3 - EXECUTION

3.1 Pipe and tubing shall be cut and fabricated to field measurements and run parallel to normal building lines. Pipe ends shall be cut square and ends reamed to remove burrs. The pipe interior shall be cleaned of foreign matter before erection of the pipe.

3.2 Piping shall be installed consistent with good piping practice, run concealed wherever possible and located as to be protected from damage by freezing. Coordinate with other trades to attain a workmanlike installation.

3.3 Piping shall be supported as specified in Section 21 05 29 Hangers and Supports for Fire Suppression Piping. Piping with mechanical joints for grooved end steel pipe shall be supported in accordance with the manufacturer's recommendations. Pipe alignment in both the horizontal and vertical must be tightly maintained. Misalignment must be corrected to the satisfaction of the Engineer before the system is accepted.

3.4 Close open ends of piping during installation to keep interior of the pipe clean.

3.5 Piping shall not be run above electrical switchgear or panelboards, nor above the access space in the immediate vicinity of the equipment, in accordance with the N.E.C.

3.6 Unions and flanges shall be installed at pipe connections to equipment and as required for erection purposes.

3.7 Length of wall sleeves shall be such that the sleeve ends are substantially flush with both sides of the wall or partition. Refer to the following paragraph for qualifications and exceptions relating to firestopping.

3.8 Refer to 21 05 05 Firestopping. Pipe sleeves which are a part of firestopping assemblies shall conform to the requirements of the assembly with particular emphasis regarding size, annular space, length, passage or non-passage of insulation and the installation of the sleeves.

3.9 In lieu of firestopping and where permitted by the OBC, uninsulated metallic pipes requiring no pipe sleeves in passing thru concrete floors or concrete or masonry walls or partitions, the annular space shall be closed full depth of the penetration with materials and methods compatible with the floor, wall or partition material (concrete, grout or mortar) in compliance with ASTM E119 test requirements.

3.10 Where firestopping is not required, the annular space between the sleeve, core drilling or opening and the pipe shall be closed with sealant or caulking to retard the passage of noise or smoke. Sealant or caulking shall be applied per the manufacturer's requirements, including opening width limitations, backing materials, sealant or caulking thickness, etc. Sealants and caulking shall be compatible with the materials they are in contact with, and sealants and caulking in direct contact with copper piping shall be silicon-based to minimize the potential for corrosion.

END OF SECTION

21 05 29 HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING

PART 1 - GENERAL

1.1 All interior erior piping shall be supported from the building structure.

1.2 All products and assemblies installed within a plenum shall not exceed a maximum flame spread of 25 and a smoke development of 50 as established by UL 723 or ASTM E84 test methods. However, “discrete” combustible components as defined by the mechanical code may be UL 2043 listed in lieu of UL 723 or ASTM E84.

PART 2 - PRODUCTS

2.1 Manufacturers listed below are basis of design. Other approved equal manufacturers are B-line, Erico, Mason, PHD and TOLCO.

2.2 Hangers and supports for horizontal piping shall be UL listed and/or FM Global approved, and equal to:

A. Pear shaped band hangers with adjustable swivel ring, lock nut and rod attachment - Anvil Fig. 69.

2.3 Hanger rods shall be solid steel, threaded end or all thread rod, of diameter listed below. A hanger attachment device (beam clamps, concrete inserts, etc.) and locking nuts at the hanger attachment shall be provided on each hanger. Locking nuts shall be provided at each clevis, trapeze and swivel ring type hanger.

Pipe Sizes	Min. Rod Dia.
4” and smaller	0.375"

2.4 Hanger rod attachment devices for attachment to the structure shall be:

A. After-set steel expansion type concrete inserts.

B. Beam clamps for steel construction equal to Anvil Fig. 92, 93, 94 or 14.

C. Channel support systems equal to Unistrut or Hilti.

2.5 Trapeze hangers for numerous pipes run in parallel may be utilized. Horizontal support members shall be unistrut type section with spring and nut connectors, suspended with hanger rods and attachments similar to individual pipe hanger suspension.

PART 3 - EXECUTION

3.1 Spacing of hangers and supports shall be as specified herein and, in addition, spacing and hanging methods in conformance with NFPA Standards when more stringent.

A. Steel pipe (vertical) – at the base, at each floor level, and 15 ft. maximum spacing.

B. Steel pipe (horizontal) – 12 ft. intervals for piping 1.25 inch size and smaller, 15 ft. spacing for piping 1.5 inches and larger pipe.

3.2 In piping systems with rolled or cut groove end pipe and mechanical joint couplings, pipe hangers shall be provided on horizontal piping at normal specified intervals and, in addition, so that no pipe shall be left unsupported between any two couplings nor left unsupported whenever a change in

direction takes place. Vertical piping shall be supported at normal specified intervals or every other pipe length, whichever is more frequent. The base of the riser or base fitting shall be supported.

3.3 Attachment of pipe hangers to the structure shall be with:

A. After-set concrete inserts, in 4 inch minimum depth concrete, set in drilled holes. Powder actuated driven fasteners are not permitted.

B. Beam clamps in steel construction. Provide anchoring where clamps are attached to sloping surfaces of beam flanges and where otherwise required to ensure permanent attachment. Attachment to the bar type joists shall be at joist panel points only.

C. Unistrut type channel support system may be utilized where a number of pipes are run parallel or to span below other utilities and equipment. Channel shall be pre-set or attached to the structure with inserts or clamps.

3.4 Pipe hangers shall be adjusted to proper elevation, hanger rods set in a vertical position and locking nuts secured before pipe insulation is installed.

3.5 Do not bend hanger rod to set in vertical position. Use manufactured hanger rod attachments that swivel to allow the hanger rods to hang vertically, or provide supplemental steel attached to the building structure and standard hanger rod attachments to allow the hanger rods to hang vertically. Refer to the following Manufacturers Standardization Society (MSS) Standard practices on pipe hangers and supports:

A. MSS SP-58 on Materials, Design and Manufacturer

END OF SECTION

21 05 53 IDENTIFICATION OF FIRE SUPPRESSION PIPING

PART 1 - GENERAL

1.1 Identification of fire suppression shall consist of pipe marking as specified hereinafter.

1.2 Pipe markings shall be applied to all piping.

1.3 Labels, tags and markers shall comply with ANSI A13.1 for lettering size, colors and length of color field.

PART 2 - PRODUCTS

2.1 Pipe markings shall be:

A. Plastic semi-rigid snap-on type, manufacturer's standard pre-printed color coded pipe markers extending fully around the pipe or pressure-sensitive vinyl markers similar to the above.

B. Arrows for direction of flow provided integral with the pipe marker or separate at each marker.

2.2 Labels, markings and tags shall be manufactured by W.H. Brady, Seton, Allen, Kolbi, MSI or Industrial Safety Supply.

PART 3 - EXECUTION

3.1 Identification labeling, marking and tagging shall be applied after painting has been completed.

3.2 Coordinate names, abbreviations and other designations used in Division 21 identification work, with corresponding designations shown, specified or scheduled on drawings.

3.3 The Division 21, 22 and 23 labeling, marking and tagging shall be coordinated and consistent systems of identification.

3.4 Pipe markers shall be placed:

A. At each piece of equipment.

B. At 25 ft. centers in mechanical rooms and concealed spaces.

C. At 50 ft. centers in other exposed locations.

D. On mains at each branch take-off.

E. At least once in each room.

END OF SECTION

21 13 12 FIRE SUPPRESSION PIPING

PART 1 - GENERAL

1.1 Piping, valves and devices for the fire suppression system shall be provided as shown on the drawings, as specified and as required for a complete system.

1.2 Piping and associated devices and materials shall conform to provisions of Section 21 05 07 Piping Materials and Methods for Fire Suppression, Section 21 05 29 Hangers and Supports for Fire Suppression Piping and as specified in this and other Fire Suppression sections.

1.3 Pipe, fittings and joints shall conform to specifications and standards references of NFPA 13 Standard for the Installation of Sprinkler Systems and NFPA 14 Standard for the Installation of Standpipe and Hose Systems.

1.4 Fire suppression system materials and components shall be UL listed and / or FM Global approved for fire suppression service. Piping, fittings, valves and system components shall be rated at not less than 175 psi or greater so that system pressures do not exceed working pressure ratings.

1.5 Welding in place will be permitted only if written approval is obtained from the authority having jurisdiction. Welders and welding procedures in both the shop and in the field shall conform to AWS B2.1, Specification for Qualification of Welding Procedures and Welders for Piping and Tubing. Welding of galvanized piping is prohibited.

PART 2 - PRODUCTS

2.1 Pipe, fittings and joining methods shall be:

A. TYPE F1 - Wet Pipe System
Pipe - Schedule 40 black steel, ASTM A53, Type E or F, or ASTM A135. Fittings and joints - malleable or cast iron screwed type or flanged.

B. TYPE F6 - Wet Pipe System
Pipe - Schedule 10 black steel, ASTM A135 with mechanically rolled groove ends, in sizes 2 inches and larger. Fittings and joints – grooved-end joint with malleable or ductile iron body, ASTM A-536 or A-47 and nitrile or EPDM gaskets. Victaulic “Firelock” Style 005 or 009 rigid or equal by AnvilStar “Gruvlok” or Tyco/Grinnell. All fittings and couplings shall be of the same manufacturer.

2.2 Grooved-end coupling specialty fittings and accessories such as ANSI class flange adaptors, reducing couplings and combination outlet-couplings that utilize grooved-end joining with torsion nuts and bolts shall be permitted. Other couplings and accessories, such as boltless couplings, and hole-cut mechanical – t outlets, strapless outlets and similar fittings using pipe-surface seals shall not be permitted unless specifically approved by the Engineer.

2.3 Valves on the interior piping of the fire suppression systems shall be UL listed or/and FM approved for fire suppression application. Valves shall be manufactured by Nibco, whose catalog numbers are listed below, or equal by Kennedy, Hammond, Watts, Apollo Valves; Aalberts - IPS.

C. Ball Valves.

Type B8. 1” and smaller, for trim and drain use only.
Nibco KT-580-70-UL, 300 psi w.w.p., two-piece bronze body, screwed ends, chrome plated brass ball, bronze stem, full port, TFE seat and seal, handle.

Type B9. 1.25” to 2”, for trim and drain use only.

Nibco KT-580-70-UL, 300 psi w.w.p., two piece bronze body, screwed ends, chrome plated brass base, bronze stem, standard port, TFE seat and seal, handle.

2.4 Valves of equal construction and features as those listed above, and with ends compatible with grooved-end pipe mechanical joint couplings are acceptable on such systems, and shall be manufactured by the coupling system manufacturer used on this project.

2.5 Flexible sprinkler connection assemblies shall be fully welded, non-mechanical fitting type, with minimum 1 inch internal diameter corrugated type 304 stainless steel hose, type 304 stainless steel braided outer cover and collar, 1 inch NPT male inlet and stainless steel or carbon steel 1 inch x 0.5 inches or 1 inch x 0.75 inches NPT female reducer outlet. Seals, when utilized shall be EPDM. Ceiling bracket shall be direct attachment type having integrated snap-on clip ends positively attached to the ceiling using tamper-resistant screws and a removable attachment hub with a set screw. Ceiling attachment shall incorporate a tamper resistant label for visual verification of inappropriate removal or relocation. The flexible sprinkler connection assembly shall be UL listed and FM Global approved for fire protection service, and seismically qualified pursuant to ICC-ESAC-156. Flexible sprinkler connection assemblies shall be Flex Head Model #20XX, Victaulic VicFlex, or approved equal.

2.6 Unions, flanges, pipe sleeves and firestopping shall be as described in Section 21 05 07 Piping Materials and Methods for Fire Suppression and Section 21 05 05 Firestopping.

2.7 Pipe hangers and supports shall be UL listed or FM approved and shall be as described in Section 21 05 29 Hangers and Supports for Fire Suppression Piping.

PART 3 - EXECUTION

3.1 Installation of piping, valves, hangers, sleeves and other components shall conform to NFPA 13 for sprinkler systems, NFPA 14 for standpipe and hose systems, Section 21 05 07 Piping Materials and Methods for Fire Suppression and Section 21 05 29 Hangers and Supports for Fire Suppression Piping.

3.2 Grooved-end joint type couplings shall be installed in strict conformance with manufacturer's recommendations, including torquing of coupling bolts to recommended levels. Submit coupling torque requirements to Engineer.

3.3 Flexible sprinkler connection assembly calculation requirements and installation methods with respect to permitted bend radius and number of bends, and hanger and support requirements shall strictly adhere to the manufacturer's documented listing instructions.

END OF SECTION

21 13 13 A FIRE SUPPRESSION SPRINKLER SYSTEM

1.1 Provide modifications of and additions to an existing wet-pipe sprinkler systems as outlined on the drawings and as specified.

1.2 The sprinkler system shall conform to requirements of NFPA 13, OBC and other requirements of the authority having jurisdiction.

1.3 All materials and devices, as appropriate, shall be UL Listed, FM Global Approved and acceptable to the authority having jurisdiction.

1.4 Bidders on Division 21 work shall be regularly engaged in the installation of the respective fire control systems and shall be fully certified by the State or authority having jurisdiction, as applicable. Bidders shall provide a list of approved operational installations upon request.

1.5 Obtain and pay for a permit and other applicable fees.

1.6 Perform a fire pump flow test to serve as the basis for hydraulic calculations in sizing of piping and other elements of the system. Calculations shall include not less than a 5 psi safety factor. Service and main pipe sizes shown on the drawings shall not be reduced. Flow tests performed within 6 months of the date of permit will be acceptable. A copy of the flow test report shall be included with the submitted hydraulic calculations.

1.7 Hydraulic calculations shall be based on minimum area of operation as indicated on the drawings. Area of operation reduction(s) for quick response and extended coverage sprinklers are acceptable.

1.8 Installation drawings for the sprinkler system shall be developed showing all information needed to obtain approval from the authority having jurisdiction. A summary sheet shall be included showing all pertinent information per NFPA 13. Drawings shall be submitted to the Engineer for review and to the authority having jurisdiction and to the Owner's insurer for approval.

1.9 On gridded systems (if provided) velocities shall be a maximum of 20 fps for pipe sizes 2 inches and smaller and 30 fps for 2.50 inches and larger. No gridded system branch lines (serving multiple sprinklers) shall be smaller than 1.25 inches. Velocities on all other systems shall be a maximum of 30 fps for all pipe sizes.

1.10 Pipe, fittings, valves, accessories, devices and installation shall be as specified in 21 13 12 Fire Suppression Piping. Refer to 21 13 15 for Fire Suppression Equipment.

PART 2 - PRODUCTS

2.1 Sprinklers, valves, and all other associated items shall be manufactured by Globe, Reliable, Tyco, Viking or Victaulic.

2.2 Sprinklers, unless otherwise noted, shall be quick-response frangible bulb or fusible solder style having a temperature range suitable for the application and pressure rating in excess of the maximum system pressure, with a minimum operating pressure of 175 psi. Refer to the drawings for sprinkler types, finishes and features. Escutcheon plates for pendent and sidewall sprinklers shall be two-piece to allow removal of the escutcheon and sprinkler without disturbing the ceiling or wall. Escutcheon plates shall be a part of the listed sprinkler assembly.

2.3 Flexible sprinkler drops are acceptable.

2.4 Special coatings shall be factory applied by the sprinkler manufacturer only. Field application of coatings or finishes that would nullify the UL listing or FM Global approval of the sprinkler is prohibited.

2.5 Spare sprinklers and sprinkler wrenches shall be furnished in accordance with the requirements of NFPA 25. Stock of spare sprinklers shall be representative of, and in proportion to, the number of each type, temperature, and pressure rating of the sprinklers installed. At least one wrench of each type shall be provided. Provide a wall mounted steel cabinet for spare sprinklers and wrenches.

PART 3 - EXECUTION

3.1 Pendent type sprinklers shall be located in the center of square suspended ceiling tile and at the center or at quarter points of the long axis of rectangular suspended ceiling tile. The acceptability of alternate layouts will be contingent upon obtaining the Architect's approval regarding the location of the sprinklers. Additional sprinklers, if not more than 5 percent of the total number required, and related piping that may be required to maintain the continuity of a desired ceiling pattern or to accommodate an unforeseen condition shall be deemed to be included in the contract.

3.2 Piping Installation

A. The location of piping and devices shall be coordinated with other trades to ensure proper fit of all building systems and adequate access to test stations, control valves and water flow alarms. Sprinkler piping shall be so located as to be protected from damage by freezing.

B. Piping in exposed areas shall be installed without diminishing exit access widths, corridors or equipment access. Exposed horizontal piping, including drain piping, shall be installed to provide maximum headroom.

C. In areas with suspended or drop ceilings and in areas with concealed spaces above the ceiling, piping shall be concealed above ceilings. Piping shall be inspected, tested and approved before being concealed. Risers and similar vertical runs of piping in finished areas shall be concealed.

3.3 Sprinkler Installation

A. Drop nipples to pendent sprinklers shall consist of minimum 1 inch pipe with a reducing coupling into which the sprinkler shall be threaded. Arm-overs shall be used to connect sprinkler to branch piping where possible.

B. Sprigs to upright sprinklers shall contain no fittings between the branch line tee and the reducing coupling at the sprinkler. Riser nipples exceeding 30 inches in length shall be individually supported.

3.4 The revised piping system, shall be hydrostatically tested at 200 psig minimum and not less than 50 psi above the maximum system pressure. Test pressure shall be applied for a period of not less than 2 hours and shall be measured at the low point of the piping being tested. Piping shall show no leakage by visual inspection and by pressure gauge reading. On dry pipe and preaction system successfully complete 24 hour air pressure test prior to conducting hydrostatic test. Testing procedure and pertinent data shall be recorded and made available to the Owner and to the authority having jurisdiction. Remove air from system piping before proceeding with the test.

3.5 Provide system drain valves, related accessories and discharge and drain piping.

3.6 Conduct all flow and flow alarm tests as required by NFPA 13.

END OF SECTION

21 13 14 FIRE SUPPRESSION STANDPIPE SYSTEM

PART 1 - GENERAL

1.1 Modify existing wet standpipe system as shown on the drawings and as specified.

1.2 The standpipe system shall conform to NFPA 14, OBC and other requirements of the authority having jurisdiction.

1.3 All materials and devices, as appropriate, shall be UL listed, FM approved and acceptable to the authority having jurisdiction.

1.4 Bidders on Division 21 work shall be regularly engaged in the installation of the respective fire control systems and shall be fully certified by the State or authority having jurisdiction, as applicable. Bidders shall provide a list of approved operational installations upon request.

1.5 Pipe, fittings, valves, accessories, devices and installation shall be as specified in 21 13 12 Fire Suppression Piping. Refer to 21 13 15 for Fire Suppression Equipment.

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 The location of piping and devices shall be coordinated with other trades to ensure proper fit of all building systems and adequate access to test stations, control valves and water flow alarms. Piping shall be so located protected from damage by freezing.

3.2 The modified piping system shall be hydrostatically tested at 200 psig minimum and not less than 50 psi above the maximum system pressure. Test pressure shall be applied for a period of not less than 2 hours and shall be measured at the low point of the piping being tested. Interior system piping shall show no leakage by visual inspection and by pressure gauge reading. Testing procedure and pertinent data shall be recorded and made available to the Owner and to the authority having jurisdiction. Remove air from system piping before proceeding with the test.

END OF SECTION

21 13 15 FIRE SUPPRESSION EQUIPMENT

PART 1 - GENERAL

1.1 Fire control equipment shall be provided as specified and as shown on the drawings. All items provided shall be UL listed and/or FM Global approved for fire suppression use and must be acceptable to the authority having jurisdiction.

PART 2 - PRODUCTS

2.1 Equipment shall be as manufactured by Potter Roemer, Croker, Guardian, J.L. Industries or Elkhart/Larsens. Outlet threads shall conform to the standards of the servicing fire department.

2.2 Fire department valves (FDV) shall be 2.50 inch size angle type hose valve, for end-of-line application, having female inlet and male outlet. Valves shall have cast brass body polished chrome plated finish and wheel handle equal to Potter-Roemer 4065. Provide each valve with a cast brass cap and chain finished to match valve.

2.3 Portable fire extinguishers shall be of size and type as indicated on the drawings. Extinguishers shall have enameled steel or aluminum shell, carrying handle, safety device to prevent accidental discharge, gauge to indicate operational status, discharge trigger and nozzle. Provide bracket for wall mounting where indicated. Firing mechanism components shall be metal (plastic will not be acceptable).

2.4 Cabinets shall be provided to house fire control equipment as shown on the drawings and shall be of adequate size to accommodate all components. Cabinets shall be recessed as indicated on the drawings. Semi-recessed style cabinets shall have not more than 1.25 inch projecting trim. Doors shall have tubular type frames and shall be complete with latch and continuous hinge. On doors without a window, lettering on a contrasting background shall be provided identifying the equipment (fire extinguisher, fire dept. valve, fire hose, etc.), to the satisfaction of the fire official. Pop rivet construction, rough seams, rough edges or poor appearance of exposed surfaces will not be acceptable.

A. Steel cabinets shall have 20 gauge steel tub, 20 gauge steel door and 16 gauge steel trim. Steel surface mounted cabinets shall have 16 gauge steel tub and 20 gauge steel door. Cabinets shall have baked white enamel finish inside and white prime coat outside.

PART 3 - EXECUTION

3.1 Fire department valves (2.50 inch hose valves) shall be mounted in valve cabinets as shown on the drawings. Valves shall be not more than 50 inch above the floor.

3.2 Portable fire extinguishers shall be mounted in FDC/fire extinguisher cabinet as shown on the drawings. Mounting shall be such that top of extinguisher is not more than 48 inch above the floor.

3.3 Cabinets shall be turned over to the General Contractor along with instructions regarding location and installation. Cabinet location shall be carefully coordinated with other trades to ensure that no conflict exists. Locations shall also be carefully coordinated regarding pipe entry point, hinge side and maintaining the fire resistance rating (if applicable) of the wall in which the cabinet is to be installed.

END OF SECTION

DIVISION 22 - PLUMBING INDEX

HYATT REGENCY RESTROOM RENOVATION

Architect		HEAPY MEP Engineer
Schooley Caldwell	Columbus, Ohio	Project No. 2025-07170

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OCTOBER, 2025

22 05 01 BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 Special Note

A. All provisions of the Bidding Requirements, General Conditions, Supplementary Conditions including Divisions 00 and 01, apply to work specified in this Division.

B. Understanding that the contractors for various Divisions are sub-contractors to the Construction Manager, assignments of work by division are not intended to restrict the Construction Manager in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

1.2 Permits and Regulations

A. Include payment of all permit and inspection fees applicable to the work in Division 22. Furnish for the Owner certificates of approval from the governing inspection agencies, as a condition for final payment.

B. Work must conform to applicable local, state and federal laws, ordinances and regulations. Where drawings or specifications exceed code requirements, the drawings and specifications shall govern. Install no work contrary to minimum legal standards.

1.3 Inspection of Site

A. Each bidder shall inspect the project site and the premises of the existing building. Conditions shall be compared with information shown on the drawings. Report immediately to the Construction Manager with a pre bid RFI of any significant discrepancies which may be discovered. After the contract is signed, no allowance will be made for failure to have made a thorough inspection.

1.4 Drawings and Specifications

A. The drawings indicate the general arrangement of the work and are to be followed insofar as possible. The word "provide", as used, shall mean "furnish and install". If significant deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted to the Construction Manager for approval before proceeding with the work.

B. Make all necessary field measurements to ensure correct fitting. Coordinate work with all other trades in such a manner as to cause a minimum of conflict or delay.

C. The drawings and specifications shall be carefully studied during the course of bidding and construction. Any errors, omissions or discrepancies encountered shall be referred immediately to the Construction Manager for interpretation or correction, so that misunderstandings at a later date may be avoided. The contract drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Having pipe and fittings fabricated and delivered in advance of making actual measurements shall not be sufficient cause to avoid making offsets and minor changes as may be necessary to install piping and equipment.

D. The Construction Manager shall reserve the right to make minor adjustment in locations of system runs and components where considered desirable in the interest of concealing work or presenting a better appearance where exposed. Any such changes shall be directed sufficiently in advance as to not cause extra work, or unduly delay the work. Coordinate work

in advance with all other trades and report immediately any difficulties which can be anticipated.

E. Equipment or piping shall not be installed in the dedicated electrical space above or in the working space required around electrical switchgear, motor control centers or panelboards as identified by the National Electric Code (NEC).

F. Where any system runs and components are so placed as to cause or contribute to a conflict, it shall be readjusted at the expense of the contractor causing such conflict. The Construction Manager's decision shall be final in regard to the arrangement of equipment, piping, etc., where conflict arises.

G. Provide offsets in system runs, additional fittings, necessary drains and minor valves, traps and devices required to complete the installation, or for the proper operation of the system. Exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible.

H. Should overlap of work among the trades become evident, this shall be called to the attention of the Construction Manager. In such event, none of the trades or their suppliers shall assume that they are relieved of the work which is specified under their branch until instructions in writing are received from the Construction Manager.

1.5 Asbestos Materials

A. Abatement, removal or encapsulation of existing materials containing asbestos is not included in the Division 22 Contract. Necessary work of this nature will be arranged by the Construction Manager to be done outside of this construction and remodeling project by a company regularly engaged in asbestos abatement. Such work will be scheduled and performed in advance of work in the construction and remodeling project.

B. If, in the performance of the work, materials are observed which are suspected to contain asbestos, the Contractor shall immediately inform the Construction Manager who in turn will notify the Owner. Work that would expose workers to the inhalation of asbestos particles shall be terminated. Work may be resumed only after a determination has been made and unsafe materials have been removed or encapsulated and the area declared safe.

1.6 Coordination Drawings

A. The Division 23 Contractor shall prepare and be responsible for 0.25 inch scale electronic coordination drawings. These drawings shall be produced using a computer aided drafting software of a mutually agreed upon format with the Division 21, 22, 23, 26, 27 and 28 Contractors. Each Contractor shall prepare their own electronic drawings, using common backgrounds obtained from the Architect and Structural Engineer. The Division 23 Contractor shall be responsible for consolidating (merging) the drawings into combined coordination drawings, and lead the conflict resolution process, with all contractors working together to obtain finished coordinated drawings. No work shall be installed until all contractors have approved and signed-off with their approval and drawings have been submitted and reviewed by the Engineer.

B. Review by the Engineer is cursory. It is the Contractors responsibilities to ensure that all work is coordinated, including fit above ceilings and that specified ceiling heights are maintained.

1.7 Inspection

A. All work shall be subject to inspection of Federal, State and local agencies as may be appropriate, and of the Architect and Engineer.

B. Obtain final inspection certificates and turn over to the Owner.

1.8 Record Drawings

A. Maintain a separate set of prints of the contract documents and hand mark all changes or variations, in a manner to be clearly discernible, which are made during construction and the coordination process. Upon completion of the work and within 90 days of system acceptance, these drawings shall be turned over to the Construction Manager. This shall apply particularly to underground and concealed work, and to other systems where the installation varies to a degree which would justify recording the change.

1.9 Operating and Maintenance Manuals

A. Assemble three copies each of operating and maintenance manuals for the Plumbing work.

B. All “approved” shop drawings and installation, maintenance and operating instruction pamphlets or brochures, wiring diagrams, parts list and other information, along with warranties, shall be obtained from each manufacturer of the principal items of equipment. In addition, prepare and include a chart listing all items of equipment which are furnished under this contract, indicating the nature of maintenance required, the recommended frequency of checking these points and the type of lubricating media or replacement material required. Name and address of a qualified service agency. A complete narrative of how each system is intended to operate.

C. Pipe pressure test reports, domestic water disinfection certificate of completion and bacteriological analysis results shall also be included.

D. These shall be assembled into three-ring loose leaf binders or other appropriate binding. An index and tabbed sheets to separate the sections shall be included. These shall be submitted to the Engineer and Construction Manager for review. Upon approval, manuals shall be turned over to the Owner.

1.10 Final Inspection and Punch List

A. As the time of work completion approaches, survey and inspect the work and develop their own punch list to confirm that it is complete and finished. Then notify the Architect and Construction Manager and request that a final inspection be made. It shall not be considered the Architect's or Engineer's obligation to perform a final inspection until the Contractor has inspected the work and so states at the time of the request for the final inspection.

B. Requests to the Architect, Engineer or Construction Manager for final inspection may be accompanied by a limited list of known deficiencies in completion, with appropriate explanation and schedule for completing these; this is in the interest of expediting acceptance for beneficial occupancy.

C. The Architect and/or Engineer will inspect the work and prepare a punch list of items requiring correction, completion or verification. Corrective action shall be taken by the Contractor to the satisfaction of Architect and Engineer within 30 days of receipt of the Architect/Engineer's punch list.

1.11 Warranty

A. Warrant all workmanship, equipment and material entering into this contract for a period of one (1) year from date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect or Construction Manager. Any materials or equipment proving to be defective during this warranty period shall be made good without expense to the Owner. Use of equipment for temporary system use is not the start of the warranty period.

1. Certain items of equipment are specified to have multi-year parts and/or labor warranties. Refer to individual equipment specifications.

B. This provision is intended specifically to cover deficiencies in contract completion or performance which are not immediately discovered after systems are placed in operation. Also included shall be supplementary assistance in balancing, adjusting or providing operating instructions as the need develops, and replacing overload heater elements in starters where necessary to keep systems in operation. Heater element sizes shall not exceed the motor manufacturer's recommendations.

C. This provision shall not be construed to include maintenance items such as re-tightening or repacking glands, greasing, oiling, belt tightening and cleaning strainers after these have been done for final close-out.

D. Provisions of this warranty shall be considered supplementary to warranty provisions under Division 01 General Conditions.

PART 2 - PRODUCTS

2.1 Materials and Equipment

A. Materials and equipment furnished under this contract shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more articles of the same material or equipment are required, they shall be of the same manufacturer unless noted otherwise.

2.2 Listing and Labeling

All equipment and appliances shall be listed and labeled in accordance with the Plumbing Code. Testing shall be performed by an Approved Agency, with the seal or mark of the Agency affixed to each piece of equipment or appliance

2.3 Reference Standards

A. Where standards (NFPA, NEC, ASTM, UL, etc.) are referenced in the specifications or on the drawings, the latest edition is to be used except, however, where the authority having jurisdiction has not yet adopted the latest edition, the edition so recognized shall be used.

2.4 Equipment Selection

A. The selection of materials and equipment to be furnished shall be governed by the following:

1. Where trade names, brands, or manufacturers of equipment or materials are listed in the construction documents, the exact equipment listed shall be furnished. Where more than one name is used, the Contractor shall have the option of selecting between any one of the several specified. All products shall be first quality line of manufacturers listed.
2. Where the words "or approved equal" appear after a manufacturer's name, specific approval must be obtained from the Architect during the bidding period in sufficient time to be included in an addendum. The same shall apply for equipment and materials not named in the specifications, where approval is sought.
3. Where the words "equal to" appear, followed by a manufacturer's name and sometimes a model or series designation, such designation is intended to establish quality level and standard features. Equal equipment by other manufacturers will be acceptable, subject to the Engineer's approval.

B. Substitute equipment of equal quality and capacity will be considered when the listing of such is included as a separate item of the bid. State the deduction or addition in cost to that of the specified product.

C. Any changes in pipe or equipment layout, or electrical wiring and equipment brought about by the use of equipment which is not compatible with the layout shown on the drawings, shall be deemed to be included in this contract.

2.5 Shop Drawings

A. Electronic copies of shop drawings and descriptive information of equipment and materials shall be furnished. Submit to the Architect and/or Engineer for review as stated in the General Conditions and Supplementary Conditions. These shall be submitted as soon as practicable and before equipment is installed and before special equipment is manufactured. Submittal information shall clearly identify the manufacturer, specific model number, approval labels, performance data, electrical characteristics, features, specified options and additional information sufficient to evidence compliance with the contract documents. **Product catalogs, brochures, etc. submitted without project specific items marked as being submitted for review will be rejected and returned without review.** Shop drawings for equipment, fixtures, devices and materials shall be labeled and identified same as on the Contract Documents. If compliance with the above criteria is not provided shop drawings will be subject to rejection and returned without review. Samples shall be submitted when requested or as specified here with-in.

B. Deviations from specification and/or drawing requirements shall be called to the Engineer's attention in a Request for Information (RFI) at the time of submittal for the Engineer's review.

C. Shop drawings of the following Plumbing equipment and materials shall be submitted:

1. Pipe, fittings and joining methods for the various systems.
2. Pipe hangers and supports.
3. Valves.
4. Gauges.
5. Pipe insulation.
6. Supply system specialties.
7. Drainage system specialties.
8. Plumbing fixtures and trim.

PART 3 - EXECUTION

3.1 Pipe Testing

A. All piping provided in this work shall be pressure tested, as specified below.

B. Pipe testing for Plumbing piping shall be:
1. Domestic cold and hot water piping - hydrostatic at 125 psig or 1.50 times the maximum operation pressure of the system, whichever is higher, for 6 hours at the low point of the system.
2. Soil, waste and vent piping - rough test and final test, in conformance to Plumbing Code requirements.

C. Testing shall be performed prior to application of insulation. Ensure that air is vented from piping when piping is hydrostatically tested.

D. Tests shall be witnessed by field representatives of the Architect or Engineer or shall be monitored by a recorder. Furnish a written record of each piping system test indicating date, system, pressure, duration and results of tests. Copies of test reports shall be included in the O&M manuals.

E. Leaks discovered during testing shall not be patched.

F. Where a new pipe connects to an existing pipe, provide the following to facilitate testing, cleaning, draining and eventual shutoff service:

1. A shutoff valve in the new pipe near the point of connection.
2. A valved stub with brass plug downstream of the valve for testing of the new pipe extension. Close valve, remove handle after testing is complete. Wire handle to valve body.

3.2 Pipe Cleaning

A. Before placing each water piping system in operation, the piping system shall be thoroughly flushed out with clean water. Remove, clean and replace all strainer screens once flushing is complete. On domestic water systems, remove, clean and replace all fixture mounted strainer screens and faucet aerators after fixtures are set and connected piping is flushed thru the fixtures.

B. Refer to appropriate Sections for cleaning of other piping for normal operation.

3.3 Disinfection of Piping

A. All new domestic water systems including any existing domestic water piping, tanks and equipment out of service for more than 14 days shall be disinfected by a company or personnel regularly engaged in the performance of this service.

B. Keep new systems isolated from the existing systems until after disinfection is completed and proven acceptable by bacteriological test results. Provide a service cock at the point of connection for injection of the disinfecting agent. If it is necessary to use a potable water supply in the performance of the disinfection procedures, provide temporary reduced pressure zone back flow prevention until disinfection and analysis results are complete.

C. Thoroughly flush the system, as previously described, prior to disinfection. Disinfection shall be performed in accordance with the Local Authorities prescribed method, or when a Local Authority prescribed method is not available, in accordance with the locally adopted Plumbing Code or AWWA C651 Standards. Disinfection shall be by means of a chlorine solution injected into the water system near the source. Each outlet shall be tested to prove presence of minimum chlorine concentration. Document that adequate levels of chlorine are present in all parts of the system. Following the appropriate retention period, flush out the system with clean water until the residual free chlorine content is equal to the level of the incoming water, but not greater than 1.5 parts per million or until approved by the Health Department.

D. Perform a bacteriological analysis of the potable water system in compliance with Health Department requirements. One test sample shall be collected from the end of the main and one from each branch. Provide certification stating the name of the lab performing the testing, the job name, the date of the sample and results of the testing.

E. Contractor shall inform the Owner in advance of disinfection procedures so that the Owner might have a representative witness the procedure. Certified laboratory information and bacteriological analysis reports shall be included in the Operations and Maintenance Manuals.

F. Domestic water systems shall be disinfected and bacteriologically analyzed within 14 days of the established date of substantial completion. Systems disinfected and analyzed more than 14 days prior to substantial completion shall be disinfected and analyzed again, or an Owner approved total system flushing procedure shall be implemented.

3.4 Operation and Adjustment of Equipment

A. As each piping system is put into operation, all items of equipment included therein shall be adjusted to proper working order. This shall include balancing water systems, tightening packing glands, and adjusting all operating equipment.

B. Caution: Verify that all bearings are lubricated, all motors are operating in the right direction, and correct drive settings and overload heater elements are provided on all motors. Do not depend wholly on the electrician's judgment in these matters. Follow specific instructions in regard to lubrication. Do not oil or grease presealed ball bearings unless upon manufacturer's specific instructions.

C. Test relief valves, air vents and regulating valves to ensure proper operation.

END OF SECTION

22 05 02 AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES

PART 1 - GENERAL

1.1 The Engineer, at their sole discretion and without obligation, makes graphic portions of the contract documents available for use by the contractor in electronic format. These electronic files are proprietary, and remain the Engineer's Instruments of Service and shall be for use solely with respect to this project, as provided in the Standard Form of Agreement between Owner/Architect and Engineer.

1.2 Electronic files shall be released only after bids have been received for the project and contracts have been signed with the contractors.

1.3 The contractor shall acknowledge receipt of electronic files in the requested format for this project. The electronic files are provided as a convenience to the User, for use in preparing shop drawings and/or coordination drawings related to the construction of only the project identified in the Agreement. The electronic files and the information contained within are the property of the Engineer and/or the Architect and/or the Owner, and may not be reproduced or used in any format except in conjunction with the project identified in the Agreement.

1.4 The User acknowledges that the information provided in the electronic files is not a substitution or replacement for the Contract Documents and does not become a Contract Document. The User acknowledges that neither the Engineer, the Architect, the Consultants, the Client or the Owner make any warrant or representation that the information contained in the electronic files reflect the Contract Documents in their entirety. The User assumes full responsibility in the use of the electronic files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

1.5 The User acknowledges that the receipt of electronic files in no way relieves the User from the responsibility for the preparation of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

1.6 Electronic files are available in a .DWG or .RVT format for a cost as indicated in the Agreement and Waiver Form. **Providing the documents in a .DWG version that differs from the product version that the .DWG files were initially created in will incur additional charges per sheet, as indicated in the Agreement and Waiver Form.** Charges are for the Engineer's time to prepare the documents in the format stated. They are available through the Engineer's office on a C.O.D. basis only. A sample of the format will be provided by the Engineer upon request by the contractor, for the purpose of testing the compatibility of the format to the contractor's systems.

1.7 All drawings will be in an AutoCAD file format, when requested to be .DWG format.

1.8 All project models will be furnished without views.

1.9 All electronic files shall be stripped of the Project's name and address, the Architect's, Engineer's and any consultant's name and address, and any professional licenses indicated on the contract documents, (and all dimensions, verbiage, and statistical information). Use of these electronic files is solely at the contractor's risk, and shall in no way alter the contractor's Contract for Construction.

1.10 The User agrees to indemnify, hold harmless and defend the Engineer, the Architect, the Consultants, the Owner, the Client and any of their agents from any litigation resulting from the use of (by any means of reproduction or electronic media) these files. The Engineer makes no representation regarding fitness for any particular purpose, or suitability for use with any software or hardware, and shall not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Engineer's or its consultant's computer software or hardware defects or errors; the Engineer's or its consultant's electronic or disk transmittal of data, information or documents; or the Engineer's or its

consultant's reformatting or automated conversion of data, information or documents electronically or disk transmitted from the Engineer's consultants to the Engineer.

1.11 The contractor waives all claims against the Engineer, its employees, officers and consultants for any and all damages, losses, or expenses the contractor incurs from such defects or errors in the electronic files. Furthermore, the contractor shall indemnify, defend, and hold harmless the Engineer, and its consultants together with their respective employees and officers, harmless from and against any claims, suits, demands, causes of action, losses, damages or expenses (including all attorney's fees and litigation expenses) attributed to errors or defects in data, information or documents, including drawings and specifications, resulting from the contractor's distribution of electronic files to other contractors, persons, or entities.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Attached "Agreement" shall be submitted with accompanying payment to the Engineer prior to delivery of electronic files.

END OF SECTION

21 05 02A
ELECTRONIC FILES HEAPY RELEASE FORM TO CONTRACTORS

Project: Hyatt Regency Restroom Renovation
500 North High Street
Columbus, Ohio

Owner: Franklin County Convention Facilities Authority

Heapy Engineering Project Number: 2025-07170

Heapy Engineering Project Manager: David Lovano

The Provider, named below, will furnish the Recipient, named below, certain documents prepared by the Provider or its sub consultants in an electronic format. These documents are hereinafter collectively referred to as "Electronic Files". The Electronic Files are instruments of the Provider services performed solely for the Owner's benefit and to be used solely for this Project. The Provider does not represent that the information contained in the Electronic Files are suitable for use on any other project or for any other purpose. If the Electronic Files are used for any other project or purpose without the Provider's specific written permission, the risk of such use shall be assumed solely by the Recipient or other user.

Prior to the use of the Electronic Files the Provider and the Recipient agree to the following terms and conditions:

1. The Provider and Recipient fully understand that the data contained in these electronic files are part of the Provider's Instruments of Service. The Provider shall be deemed the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights.

2. The Recipient confirms their request to the Provider for Electronic Files for the Project listed above, which the Recipient understands are to be provided only in accordance with, and conditioned upon, the terms and conditions of the Agreement and Waiver for Use of Electronic Files).

3. The Provider agrees that the Recipient may use the Electronic Files for the sole purpose of preparing shop drawings and/or coordination drawings for the above Project only. Any Electronic Files provided are strictly for the use of the Recipient in regard to the Project named above, and shall not be utilized for any other purpose or provided by the Recipient to any entity other than its subcontractors for the Project named above.

4. The Recipient acknowledges that the furnishing of Electronic Files in no way relieves the Recipient from the responsibility of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

5. The Recipient acknowledges:

    a. That the Electronic Files do not contain all of the information of the Bid Documents or Contract Documents for the construction of the Project above.

    b. That information in the Bid Documents or Contract Documents may be revised or modified in the future.

c. The Provider does not have, and will not have, any duty or obligation to advise or give notice to the Recipient of any such revisions or modifications.

d. That the Recipient agrees that its use of the Electronic Files is at the Recipient's sole risk of liability, and that the Recipient shall make no claim or demand of any kind against the Provider arising out of Recipient's receipt or use of the Electronic Files.

6. The Provider makes no representation or warranty of any kind, express or implied, with respect to the Electronic Files and specifically makes no warranty that the Electronic Files shall be merchantable or fit for any particular purpose, or accurate or complete. Furthermore, any description of said Electronic Files shall not be deemed to create an implied or express warranty that such Electronic Files shall conform to said description.

7. Due to the unsecured nature of the Electronic Files and the inability of the Provider or the Recipient to establish controls over their use, the Provider assumes no responsibility for any consequences arising out of the use of the data. It is the sole responsibility of the Recipient to check the validity of all information contained within the Electronic Files. The Recipient shall at all times refer to the Construction Documents of the project during all phases of the project. The Recipient shall assume all risks and liabilities resulting from the use of this data, and the Recipient agree(s) to waive any and all claims and liability against the Provider and its sub consultants resulting in any way from the use of the Electronic Files.

8. Electronic Files are provided strictly as a courtesy by the Provider solely for the convenience of the Recipient, and are not part of the Bid Documents or Contract Documents for the Project. The Electronic Files do not replace or supplement the paper copies of any drawings, specifications, or other documents included in the Contract Documents for use on the project.

    a. The Recipient assumes full responsibility in the use of Electronic Files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

9. As stated herein, the possibility exists that the Electronic Files provided may differ from the Bid Documents or Contract Documents for construction of the Project. The Provider shall not be responsible, nor be held responsible, for differences between Electronic Files, the Bid Documents, and Contract Documents. The Bid Documents or Contract Documents for the Project may be modified by the Provider at any time, either before or after construction begins. The Provider has no responsibility, either before or after any such modification, to determine or to advise the Recipient whether any such modification causes Electronic Files provided to the Recipient to be out of date, inconsistent with the Bid Documents or Contract Documents, or otherwise unsuitable or unfit for use in any way.

10. The Recipient assumes all risk and liability for any losses, damages, claims, or expenses (including defense and attorney fees) resulting from its receipt, use, or possession of Electronic Files furnished by the Provider. The Provider makes no representation, warranty or guarantee that the Electronic Files:

    a. Are suitable for any other usage or purpose.

    b. Have any particular durability.

    c. Will not damage or impair the Recipient's computer or software.

    d. Contain no errors or mechanical flaws or other discrepancies that may render them unsuitable for the purpose intended by the Recipient.

11. Recipient agrees to indemnify, defend and hold harmless the Provider, agents, employees, and the Owner from, and against, any and all claims, suits, losses, damages or costs, of any kind or nature, including attorney's fees, arising from or by reason of the Recipient's use of Electronic

Files provided by the Provider, and such defense and indemnification obligation duties shall survive any use under this Agreement and Waiver for Use of Electronic Files.

12. The Recipient agrees that the Provider shall have no responsibility whatsoever for problems of any nature arising from transmitting and storing electronic files at a Recipient requested FTP or project management site or the conversion of the Electronic Files by the Recipient or others for use in non-native applications. The Provider will not provide Electronic Files in compressed formats. Recipient agrees to accept the files in the format provided by the Provider, and that Recipient's conversion or electronic file storage at the Recipient's requested site, shall be at Recipient's sole risk.

13. Recipient acknowledges:

    a. That the Electronic Files provided by the Provider are a graphical representation of the building in order to generate two-dimensional industry standard drawings.

    b. That the data contained in the Electronic Files may not be 100% accurate and should not be used for dimensional control, building layout, shop drawings, or any other similar purpose

    c. That any schedule of materials produced directly from the Electronic Files has not been checked for accuracy.

    d. That the information in the Electronic Files should be used only for comparative purposes and shall not be relied upon for accurate quantity estimates or used in establishing pricing.

14. Electronic Files provided by the Provider will only contain elements and content that the Provider deems necessary and appropriate to share. No specific Level of Development (LOD) is implied or expected. The Recipient agrees that no proprietary content, MvParts or Revit Families or any other AutoCAD MEP or Revit MEP content shall be removed from the model and/or used for any other purpose but to support this specific project.

15. The Provider, at its sole discretion, may modify the Electronic files before they are provided to the Recipient. Such modifications may include, but are not necessarily limited to, removal of certain information. The Provider, at its sole discretion, may refuse to provide some or all Electronic Files requested by Recipient.

16. The availability of Electronic Files that were not prepared by the Provider is subject to the consent of the Owner or consultant that prepared those Electronic Files. The Provider will not negotiate with the Owner or consultant or repeatedly solicit the Owner or consultant to obtain such consent. Neither this Agreement and Waiver for Use of Electronic Files nor any such separate Consultant's consent may be assigned or transferred by Recipient to any other person or entity.

Provider (Name of Company): _____

Recipient (Name of Company): _____

Name of authorized Recipient Representative: _____

Title of authorized Recipient Representative: _____

E-mail address of authorized Recipient Representative: _____

Signature of authorized Recipient Representative: _____

Date: _____

NOTE: Select requested Electronic File Format, File Transfer Medium and complete applicable Cost Summary.

A. Electronic File Format (select one):

1. ☐ .DWG Format - List of Drawings Requested: _____

_____

2. ☐ Revit Project Model Requested (Model only, no Views included)

B. File Transfer Medium (select one):

☐ Heapy FTP ☐ User's FTP site

C. Delivery of Electronic Files Cost Summary:

Available Electronic .DWG file format:
☐ 2024 DWG

If a different file version is required than the indicated available version state the requested version:

_____ .DWG

Note that an additional charge per sheet will be incurred.

Cost of Preparation of Division 21 Electronic .DWG Files:

First Drawing: $50.00		$50.00
Additional Drawings $15.00 each _____ x $15.00	=	$ _____
Conversion to .DWG version different from available .DWG: $5.00 additional/sheet _____ x $ 5.00	=	$ _____

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ _____
All files will be bound together.
Available electronic Revit file format:
☐ 2024 .RVT

Cost of Preparation of Division 21 Electronic Revit Model Files:

Revit Project Model without Views	$500.00

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ of this form.)

22 05 04 BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Construction Water

A. Refer to Division 01 - General Requirements, for information regarding construction water.

B. Each Contractor requiring water for construction purposes shall connect to wall hydrants or other connection points within the existing building.

1.2 NSF/ANSI 61 establishes limits for lead that may migrate into drinking water from the water contact materials, NSF/ANSI 372 establishes a limit on the amount of lead that may be contained within the water contact materials in a drinking water contact product.All piping, fittings, valves, solders, fluxes, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 61 and NSF/ANSI 372.

1.3 Continuity of Services

A. Work shall be so planned and executed as to provide reasonably continuous service of existing systems throughout the construction period. Where necessary to disrupt services for short periods of time for connection, alteration or switch-over, the Owner and Construction Manager shall be notified in advance and outages scheduled at the Owner's reasonable convenience.

B. Submit, on request, a written step-by-step sequence of operations proposed to accomplish the work. The outline must include tentative dates, times of day for disruption, downtime and restoration of services. Submit the outline sufficiently in advance of the proposed work to allow the Architect or Engineer and Construction Manager to review the information with the Owner. Upon approval, final planning and the work shall be done in close coordination with the Owner.

C. Shutdown of systems and work undertaken during shutdowns shall be bid as being done during normal working hours. If the Owner should require such work be performed outside of normal working hours, reimbursement shall be made for premium time expenses only, without mark-up.

PART 2 - PRODUCTS

2.1 Access Panels

A. Provide wall access panels where indicated on the drawings, or where otherwise required to gain access to concealed valves, devices and equipment requiring service or adjustment. Refer to Section 22 13 19 Drainage System Specialties for access plates associated with cleanouts.

B. Access panels shall be steel construction with concealed hinge and door with screwdriver lock. Panels shall be 18 inches x 18 inches size unless larger panels are shown or required. Mounting frames shall be compatible with the material in which they are installed. Access panels shall be:

1. Standard flush type with overlapping flange for masonry and tile walls, Milcor Style “M” or equal.

C. Access panels in fire rated shaft walls and in fire rated ceilings shall be "B" label or greater to match the rating of the wall or ceiling.

D. Materials used in plenums shall be rated for plenum use conforming to the 25/50 smoke development and flame spread restrictions.

PART 3 - EXECUTION

3.1 Workmanship

A. Materials and equipment shall be installed and supported in a first-class and workmanlike manner by mechanics skilled in their particular trades. Workmanship shall be first-class in all respects, and the Architect and Engineer shall have the right to stop the work if highest quality workmanship is not maintained.

B. Plumbing work shall be performed by licensed Plumbing Contractors in accordance with requirements of the jurisdiction.

3.2 Protection

A. Each Contractor shall be entirely responsible for all material and equipment furnished in connection with their work. Special care shall be taken to properly protect all parts thereof from theft, damage or deterioration during the entire construction period in such a manner as may be necessary, or as directed by the Architect or Construction Manager. All piping and tubing shall be elevated from grade for on-site storage, and all open ends shall be covered. Plastic piping shall be protected from direct and indirect sunlight.

B. The Owner's property and the property of other contractors shall be scrupulously respected at all times. Provide drop cloths and visqueen or similar barriers where dust and debris is generated, to protect adjacent areas.

3.3 Cutting and Patching

A. Refer to Division 01 - General Requirements for information regarding cutting and patching.

B. Plan the work well ahead of the general construction. Pipe sleeves shall be placed in all floor slabs, walls and partitions, except as noted below, to allow new piping to pass thru and to allow for expansion, contraction and normal movement of the pipe. Where sleeves or openings have not been installed, cut holes and patch as required for the installation of this work. Any damage caused to the building shall be repaired or rectified.

C. Where pipes are to pass thru, above or behind existing walls, partitions, floors or ceiling, cutting, patching and refinishing of same shall be provided. Core drilling and saw cutting shall be utilized where practical. Contractor to examine where floors and walls, etc. are to be cut for presence of existing utilities.

D. When cutting or core-drilling floor verify location of existing electrical, plumbing or steel reinforcement. Use X-ray method to verify existence of obstructions. Either re-route existing system, brace floor or alter location of new work to maintain existing system.

E. Openings created during demolition or removal of materials shall be restored to match existing conditions.

F. All sleeves and openings not used or partially used shall be closed to prevent passage of smoke and fire.

G. All materials, methods and procedures used in patching and refinishing shall be in accordance with applicable provisions of specifications governing the various trades, and shall be completed by skilled workmen normally engaged in these trades. The final appearance and integrity of the patched and refinished areas must meet the approval of the Construction

Manager. Wall, floor and ceiling refinishing must extend to logical termination lines (entire ceiling of the room repainted, for instance), if an acceptable appearance cannot be attained by finishing a partial area.

3.4 Removals, Alterations and Reuse

A. Refer to the project documents for the scope of remodeling in the existing building.

B. Cooperate with the General Contractor and Construction Manager regarding all removal and remodeling work. Unless otherwise noted, remove all existing work which is associated with Division 22 and which will be superfluous when the new work is installed and made operational.

C. Extraneous piping which is or becomes accessible shall be removed and stubs shall be capped at the first active pipe encountered. Piping that is and remains inaccessible shall be disconnected from active systems and abandoned. Ends of abandoned pipe shall be capped so as to be concealed by finished surfaces. Upon completion of the work no abandoned pipe, valve or stub shall extend thru finished floors, walls or ceilings.

D. When it is necessary to reroute a section of active piping the rerouted section shall be installed before removing the existing in order to minimize system down time. Rerouted sections shall be insulated as required for new work. Patch insulation on existing piping which has been damaged or removed in this work.

E. Materials and equipment which are removed shall not be reused within the scope of this project unless specifically noted to be relocated or reused. Turn over to the Owner and place where directed on the premises all removed material and equipment so designated by the Owner. All material and equipment not claimed by the Owner shall become the property of the Contractor responsible for removal and shall be removed from the premises.

F. Remove, store and reinstall lay-in ceiling tile and grid as needed to perform work in areas where such removal and re-installation is not to be done by the General Contractor. Damaged tile and/or grid shall be replaced with new matching tile and/or grid.

G. In areas of minor work where the space is not completely vacated, temporarily move portable equipment and furnishings within the space as required to complete the work. Coordinate this activity with the Construction Manager. Protect the Owner's property by providing dust covers and temporary plastic film barriers to contain dust. Remove barriers and return equipment and furniture upon completion of the work.

H. Refinish any surface disturbed under this work to match existing, except where refinishing of that surface is included under the General Contract.

3.5 Painting

A. In addition to any painting specified for various individual items of equipment, provide the following painting:

1. Ferrous metal which is not factory or shop painted or galvanized and which remains exposed to view in the finished areas of the building shall be given a prime coat of paint.
2. Equipment and materials which have been factory or shop coated (prime or finished painted or galvanized), on which the finish has been damaged or has deteriorated, shall be cleaned and refinished equal to its original condition. The entire surface shall be repainted if a uniform appearance cannot be accomplished by touch up.
3. Apply Z.R.C. 221 cold galvanizing compound, or approved equal, for touch-up and repair of previously galvanized surfaces.

B. Paint, surface preparation and application shall conform to applicable portions of the Painting section of Division 09 Specifications. All rust must be removed before application of paint.

3.6 Access Panels

A. Install access panels. Final appearance is subject to approval by the Architect or Engineer.

B. Location of access panels shall be planned to clear obstructions so as to allow, wherever possible, full shoulder clearance beside the device to be inspected, adjusted or repaired.

END OF SECTION

22 05 05 FIRESTOPPING

PART 1 - GENERAL

1.1 Firestopping assemblies shall be provided at penetrations of piping thru fire rated floors, fire rated floor-ceiling and roof ceiling assemblies, fire rated walls and partitions and fire rated shaft walls and partitions. In addition, firestopping assemblies shall be provided at penetrations thru 0-hour rated floors. Refer to the drawings for fire rated building elements and pipe layouts.

1.2 Firestopping assemblies shall be tested and rated in accordance with ASTM E814, E119 and listed in accordance with UL 1479, as published in the UL Fire Resistance Directory. Firestopping shall provide a fire rating equal to that of the construction being penetrated.

1.3 Firestopping materials, assemblies and installation shall conform to requirements of the OBC Chapter 1 and Chapter 7 and the Authority Having Jurisdiction.

1.4 For those firestopping applications that exist for which no UL tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineer judgment drawings must follow requirements set forth by the International Firestop Council.

1.5 Shop drawings shall be prepared and submitted for review and approval. Submittals shall include manufacturer's specifications and technical data of each material, documentation of UL firestopping assemblies and installation instructions. Submittals shall include all information required in the OBC / Chapter 1 and Chapter 7.

PART 2 - PRODUCTS

2.1 Firestopping materials shall be manufactured and/or supplied by Hilti, 3M, Tremco, or Specified Technologies Inc (STI).

2.2 Materials shall be in the form of caulk, putty, sealant, intumescent material, wrap strip, fire blocking, ceramic wool and other materials required for the UL listed assemblies. These shall be installed in conjunction with sleeves and materials for fill and damming.

PART 3 - EXECUTION

3.1 Installation of all materials and assemblies shall be in accordance with UL assembly drawings and the manufacturer's instructions.

3.2 Installation shall be done by an experienced installer who is certified, licensed or otherwise qualified by the firestopping manufacturer as having the necessary training and experience.

3.3 Refer to 22 05 07 Piping Materials and Methods for Plumbing for pipe sleeve requirements and treatment of penetrations not requiring firestopping.

END OF SECTION

22 05 07 PIPING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Piping materials and methods for piping common to Division 22 – Plumbing shall be as specified herein and as shown on the drawings.

1.2 All piping, fittings, valves, solders, seals and appurtenances in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 372.

1.3 Included in this section are:

A. Pipe, fittings and joining methods.

B. Unions.

C. Dielectric connectors.

D. Pipe sleeves, openings, curbing and escutcheons.

E. Installation methods of piping.

1.4 Refer to other Sections in Division 22 for selection of piping materials for the various services. Piping materials and installation methods peculiar to certain individual systems are specified in Sections related to those systems.

1.5 Refer to Section 22 05 05 Firestopping and Division 7 for firestopping requirements.

1.6 Pipe threads shall meet B1.20.1 for factory threaded pipe and pipe fittings.

1.7 Soldering procedures per ASTM B828 with flux per ASTM B813 and solder per ASTM B32.

1.8 Pipe sleeves, floor and wall openings and escutcheon plates shall be provided as described below. Pipe sleeves shall be placed in all floor slabs, poured concrete roof decks, walls and partitions, except as noted below, to allow new piping to pass thru and to allow for expansion, contraction and normal movement of the pipe. Sleeves are also required for all existing piping related to this trade in new walls, partitions, floors and roof slabs, same as for new piping.

1.9 Sleeves are not required:

A. In floor slabs on grade.

B. In stud and gypsum board or plaster walls and partitions which are not fire rated.

C. For above grade uninsulated pipe passing thru masonry walls and partitions and stud and gypsum board or plaster walls and partitions.

D. In core drilled openings in solid concrete not requiring water protection. Sleeves are required, however, at core drilling thru hollow pre-cast slabs and concrete block walls, to facilitate containment of required firestopping material.

E. In large floor openings for multiple pipe risers which are within a fire rated shaft, unless the opening is to be closed off with concrete or other material after pipes are set.

1.10 Where pipes penetrate walls and floors other than those required to be fire rated, the annular space between the sleeve, core drilling or opening and the pipe or pipe insulation shall be closed to retard the passage of smoke.

PART 2 - PRODUCTS

2.1 Copper tubing, conforming to ASTM B88, Standard Specification for Seamless Copper Water Tube and Fittings and Joints, shall be:

A. Type C1
Pipe - Type "L" seamless hard drawn copper tubing.
Fittings – ASME B16.22 wrought copper or cast bronze, solder ends.
Joints - soldered with lead-free tin alloy, 95-5 tin-antimony or silver-bearing tin in accordance with methods of ASTM B828 and equal to Harris "Stay-Brite", "Stay-Brite 8" or "Bridgit".

B. Type C6
Pipe - Type "L", 0.5 inches thru 4 inches seamless hard drawn copper tubing.
Fittings – copper or cast bronze press fittings conforming to ASME B16.51 and ASME B16.22, EPDM O-ring seal. O-ring seal and/or seal cup design must not allow the fitting joints to pass a pressure test prior to being pressed.
Joints – 200 psi, 250 degrees F rated compression joint using fitting manufacturer approved electro-hydraulic crimping tool. Compression crimp shall be applied on upstream and downstream side of EPDM seal bead.

C. Mechanically formed extruded outlets in copper tubing and stainless steel pipe may be provided in lieu of standard tees and couplings. Mechanical formed extruded outlets shall be in compliance with ASME B31.9, Section 930.2, constructed perpendicular to the axis of the run tube and formed by drilling a pilot hole and drawing out the tube surface to form a collar having a height three times the thickness of the branch wall. The inner branch tube end shall conform to the shape of the inner curve of the run tube, and the insertion depth shall be controlled so that the branch tube does not extend into the flow stream. All joints shall be brazed. All installation tools and procedure shall be by a single manufacturer. Mechanically formed tees and couplings shall be T-Drill or approved equal.

2.2 Unions shall be:

A. Unions on copper tubing, all bronze construction 150 lb., solder ends.

2.3 A dielectric connector shall be incorporated at each connection between ferrous and non-ferrous piping. Connectors shall be:

A. Dielectric coupling with non-conductive polymer liner, Victaulic Style 47, Gruvlok “Di-Lok” and Lochinvar Corp. “V-Line” Dielectric fitting on services 200 degrees and less, and pressures less than 300 psi.

2.4 Pipe sleeves shall be:

B. 26 gauge galvanized sheet steel or Schedule 40 black steel pipe in other than poured concrete.

C. Galvanized sheet metal for existing pipes passing thru new poured concrete floors (18 gauge) and thru new walls and partitions (26 gauge).

2.5 Escutcheon plates shall be split-ring chromium plated pressed steel. Plates shall be sized to cover the surface penetration and sleeve. Plates shall be installed on exposed piping in finished rooms and areas where pipes penetrate walls, floors, ceilings or overhead structure.

PART 3 - EXECUTION

3.1 Pipe and tubing shall be cut and fabricated to field measurements and run parallel to normal building lines. Pipe ends shall be cut square and ends reamed to remove burrs. The pipe interior shall be cleaned of foreign matter before erection of the pipe.

3.2 Mechanically formed tee fittings and couplings of the T-Drill type on copper tubing shall be formed in a continuous operation using equipment specifically designed for the application in strict adherence to the manufacturer's instructions. Cutting debris shall be removed from the piping on completion. Joints shall be brazed.

3.3 Press connections: Copper press fittings shall be made in accordance with the manufacturer's installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to ensure the tubing if fully engaged (inserted) in the fitting. The joints shall be made using a calibrated tool approved by the manufacturer.

3.4 Piping shall be pitched for drainage. The low points shall be fitted with a 0.75 inch drain valve (with hose thread adapter if not piped to a floor drain) except that on piping 1.25 inches and smaller where a drain valve is not shown, a drain plug is acceptable.

3.5 Piping shall be installed consistent with good piping practice, run concealed wherever possible and located as to be protected from damage by freezing. Coordinate with other trades to attain a workmanlike installation.

3.6 Piping shall be supported as specified in Section 22 05 29 Hangers and Supports for Plumbing Piping. Pipe alignment in both the horizontal and vertical must be tightly maintained. Misalignment must be corrected to the satisfaction of the Engineer before insulation is applied and the system accepted.

3.7 Internals of sweat end valves shall be removed when damage or warping could occur due to applied heat of soldering.

3.8 Close open ends of piping during installation to keep interior of the pipe clean.

3.9 Piping shall not be run above electrical switchgear or panelboards, nor above the access space in the immediate vicinity of the equipment, in accordance with the NEC.

3.10 Length of wall sleeves shall be such that the sleeve ends are substantially flush with both sides of the wall or partition. Floor sleeves shall be flush with the bottom and top of the floor slab except, in mechanical rooms and other areas which might have water on the floor, sleeves shall project a minimum of 1 inch above finished floor. Pipe sleeves shall be sized to allow insulation to pass thru the sleeve, for insulation requiring continuous vapor barrier (domestic cold water, chilled water, refrigerant, etc.). Where vapor barrier continuity is not needed, the sleeve may be sized to pass the pipe only or the insulation as well. Refer to the following paragraph for qualifications and exceptions relating to firestopping.

3.11 Refer to 22 05 05 Firestopping. Pipe sleeves which are a part of firestopping assemblies shall conform to the requirements of the assembly with particular emphasis regarding size, annular space, length, passage or non-passage of insulation and the installation of the sleeves.

3.12 In lieu of firestopping and where permitted by the OBC, uninsulated metallic pipes requiring no pipe sleeves in passing thru concrete floors or concrete or masonry walls or partitions, the annular space shall be closed full depth of the penetration with materials and methods compatible with the floor, wall or partition material (concrete, grout or mortar) in compliance with ASTM E 119 test requirements.

3.13 Where firestopping is not required, the annular space between the sleeve, core drilling or opening and the pipe or pipe insulation shall be closed with sealant or caulking to retard the passage of noise or smoke. Sealant or caulking shall be applied per the manufacturer's requirements,

including opening width limitations, backing materials, sealant or caulking thickness, etc. Sealants and caulking shall be compatible with the materials they are in contact with, and sealants and caulking in direct contact with copper piping shall be silicon-based to minimize the potential for corrosion.

END OF SECTION

22 05 19 METERS AND GAUGES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 Thermometers and, pressure gauges shall be provided as shown on the drawings and as specified herein.

1.2 All piping, fittings, valves, solders, fluxes, seals, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing portable water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 372.

PART 2 - PRODUCTS

2.1 Manufacturers products listed below are basis of design. Other acceptable manufacturers are Winters, Milijoco or Palmer Instruments.

2.2 Thermometers

A. Thermometers shall be 4.5 inches diameter dial face, vapor actuation type with aluminum case, glass lens, adjustable angle hinge, stainless steel insertion stem and adjustable pointer equal to Trerice V80742 with 316 stainless steel thermowell.

B. Separable socket insertion well, with graphite fill, shall be furnished with each thermometer. An extension neck socket, with appropriate increase in thermometer stem length, shall also be furnished where insulation thickness exceeds 2 inches.

C. Ranges of thermometers shall be selected to be consistent with anticipated temperatures. Select thermometer so that the normal operating temperature is near mid-range of the thermometer, example chilled water (45 degrees F) thermometer range 0 - 100 degrees F.

2.3 Pressure Gauges

A. Pressure gauges, shall be Bourdon tube type with 4.50 inches dial and cast aluminum case, equal to Trerice 600CB-PBF Series. Accuracy shall be 1 percent at mid-range.

B. A brass cock or bronze ball valve and a pressure snubber shall be furnished with each pressure gauge.

C. Ranges of pressure gauges shall be selected to be consistent with anticipated pressures. Range shall be approximately twice the normal system working pressure at the gauge location.

PART 3 - EXECUTION

3.1 Thermometers shall be installed where shown on the drawings and also at:

A. The outlet of water heater; at recirculating water pump.

3.2 Pressure gauges shall be installed where shown on the drawings, where required by applicable codes and also at:

A. The inlet of water heater.

3.3 Thermometers and gauges shall be positioned to be read with unobstructed view from the floor. Pressure-temperature test plugs shall be installed where shown, located in a position to be most readable.

3.4 Install thermometer wells in piping tees in the vertical position. Fill the well with graphite and secure the thermometer in position.

END OF SECTION

22 05 23 GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 Refer to Section 22 11 16 Interior Domestic Water Piping and Section 22 11 19 Interior Domestic Water Piping Specialties for selection of valves for the various services. Valves peculiar to individual systems are referenced or specified in Sections related to those systems.

1.2 Valves and materials shall comply with applicable standards and specification of ANSI, ASTM, ASME and MSS. Working pressure and temperature ratings of each valve shall exceed those imposed by the service in which it is applied.

A. ASTM B584 and ASTM B61 Copper Alloy Sand Casting for General Applications.

B. MSS SP-80 Bronze Check Valves.

C. ASME B16.34, MSS SP-110 Ball Valves Threaded, Socket-Welded, Solder Joint, Grooved and Flared Ends.

D. Bronze (brass) valves installed in drinking water systems made with copper silicon alloy shall contain less than 22 percent zinc, and made with copper bismuth alloy less than 4 percent zinc. Bronze (brass) valves installed in non-drinking water systems shall contain less than 15 percent zinc.

1.3 All piping, fittings, valves, solders, fluxes, seals, fixtures, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 372.

PART 2 - PRODUCTS

2.1 Valves installed in potable and drinking water systems shall be:

A. Ball Valves – NIBCO, Apollo Valves; Aaberts-IPS, Viega, Milwaukee, Watts, Legend, Jomar, Crane,

1. Type B1. 3 inches and smaller.
NIBCO T 585-80-LF, 600 c.w.p.., two piece bronze body, ASTM B584 threaded ends, full port, bronze stem, brass steel ball, packing nut with adjustable stem packing, TFE seat and seal, handle.

2. Brass ball valves from listed manufacturers which are listed as DZR (dezincification resistant) alloys are allowable alternates as approved by engineer for bronze bodied ball valves.

B. Check Valves – NIBCO, Milwaukee, Stockham, Watts, Legend, Crane

1. Type C1. 2 inches and smaller
NIBCO T 413-Y-LF, 200 non shock c.w.p., silicon bronze body (ASTM B584), threaded ends, renewable bronze swing disc with PTFE seat ring.

2.2 Valves installed in non-potable and non-drinking water systems shall be:

2.3 Sweat end and press fit type valves of equal construction and features are acceptable in lieu of those specified with threaded ends.

2.4 Ball valves in piping which is to be insulated shall have extended shaft necks to accommodate the insulation. On cold service piping, the extended shaft neck design shall permit operation of the valve without breaking the vapor seal.

PART 3 - EXECUTION

3.1 Drain valves shall be the same as for shutoff service. Provide a 0.75 inch hose thread adapter on the outlet of each drain valve that is not piped to a drainage point.

3.2 Internals shall be removed and the remaining elements of sweat end valves shall be protected against heat damage during soldering or brazing.

3.3 Valves shall be installed with the stem at or above the centerline of the pipe. Valves shall be located to be accessible for operation, servicing and/or removal.

3.4 Packing glands shall be tightened before placing the valves in service.

3.5 Furnish duplicate packing gland wrenches for all applicable valves and turn over to Owner at project completion.

END OF SECTION

22 05 29 HANGERS AND SUPPORTS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 All piping shall be supported from the building structure.

1.2 All products and assemblies installed within a plenum shall not exceed a maximum flame spread of 25 and a smoke development of 50 as established by UL 723 or ASTM E84 test methods. However, “discrete” combustible components as defined by the mechanical code may be UL 2043 listed in lieu of UL 723 or ASTM E84.

PART 2 - PRODUCTS

2.1 Manufacturers listed below are basis of design. Other approved equal manufacturers are B-line, nVent/Caddy, Mason, PHD and TOLCO.

2.2 Hangers and supports for horizontal piping shall be equal to:

A. General service

1. Clevis type. Anvil Fig. 260.

2. Clevis type hangers with rollers, Anvil Fig. 181, for insulated piping systems where the length of the hanger rod between the top of the hanger and the attachment device is 3 inches or less, and where required elsewhere herein or on the drawings, to allow for expansion travel.

2.3 Hanger Supports

A. Hanger rods

1. Hanger rods shall be solid steel, threaded end or all thread rod, of diameter listed below. A hanger attachment device (beam clamps, concrete inserts, etc.) and locking nuts at the hanger attachment shall be provided on each hanger. Locking nuts shall also be provided at each clevis and trapeze type hanger.

Pipe Sizes	Min. Rod Dia.
2” and smaller	0.375"
2.5” to 3"	0.50"
4” to 5"	0.625"

2.4 Pipe riser supports shall be as follows:

A. Riser clamps (for downward loads) on cold service piping (domestic cold water, etc.) - insulated pipe riser clamp assembly, Anvil Fig. CT-122T or Pipe Shields, Inc. E1000, with polyisocyanurate insulation, galvanized steel jacket, top thrust plates and riser clamps.

B. Riser clamps (for downward loads) on piping other than cold service - Anvil Fig. 261 except, on copper tubing, CT-121 (copper plated) or CT-121C (plastic coated).

2.5 Trapeze Hangers

A. General Service 3” pipe size and smaller.

2.6 Insulation saddles (shields) shall be compatible with pipe insulation materials and thicknesses. Vapor barrier shall be continuous.

2.7 Coordinate the items above during the bidding period and determine, consistent with industry practice, the selection, furnishing and installation of the needed components.

PART 3 - EXECUTION

3.1 Spacing of hangers and supports shall be as follows; unless otherwise shown on drawings:

A. Copper tubing (vertical) - at the base, at each floor level; and 10 ft. maximum spacing.

B. Copper tubing (horizontal) - 6 ft. spacing for tubing 1.25 inches size and smaller, 8 ft. spacing for 1.50 inches thru 2.5 inches sizes, 10 ft. spacing for tubing 3 inches size and larger.

C. Cast iron pipe (vertical) - at the base and at each floor (15 ft. maximum spacing).

D. Cast iron pipe (horizontal) - at each fitting and at each joint on straight lengths, 10 ft. maximum spacing.

3.2 Attachment of pipe hanger rods and/or cabling to the structure shall be with:

A. After-set concrete inserts as described below, in 4 inches minimum depth concrete, set in drilled holes. Powder actuated driven fasteners are not permitted.

1. Steel expansion type concrete inserts equal to B-Line.

2. Steel threaded type concrete inserts equal to Sammy Vertical Mount.

B. Beam clamps in steel construction equal to Anvil Figures 92, 93, 94, or 14. Provide anchoring where clamps are attached to sloping surfaces of beam flanges and where otherwise required to ensure permanent attachment. Attachment to bar type joists shall be at joist panel points only.

C. Unistrut type channel support system equal to Unistrut or Hilti, may be utilized where a number of pipes are run parallel or to span below other utilities and equipment. Channel shall be pre-set or attached to the structure with inserts or clamps.

D. Attachment to steel deck is prohibited. Span from steel structural members with supplementary steel shapes where direct attachment to structural members is not practical. This does not apply to steel deck with concrete slab poured on the deck. Refer to A. and B. above.

3.3 Pipe hangers shall be adjusted to proper elevation, hanger rods set in a vertical position and locking nuts secured before pipe insulation is installed.

3.4 Hanger and support assemblies which are not factory plated (galvanized or copper) and will remain exposed on completion of the project shall be painted before installation.

3.5 Do not bend hanger rod to set in vertical position. Use manufactured hanger rod attachments that swivel to allow the hanger rods to hang vertically, or provide supplemental steel attached to the building structure and standard hanger rod attachments to allow the hanger rods to hang vertically. Refer to Manufacturers Standardization Society (MSS) Standard MSS SP-58 on Materials, Design and Manufacturer for best practices on pipe hangers and supports.

END OF SECTION

22 05 53 IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 Identification of plumbing equipment shall consist of pipe marking and valve tagging as specified hereinafter.

1.2 Pipe markings shall be applied to all piping.

1.3 Each shutoff valve, other than at equipment, shall be identified with a stamped tag. Valves and tagging shall be scheduled typewritten on 8.50 inches x 11 inches paper, tabulating valve number, piping system, system abbreviation, location of valve (room or area) and service (e.g. - south wing cold water).

1.4 Labels, tags and markers shall comply with ANSI A13.1 for lettering size, colors and length of color field.

1.5 Equipment and device identification specified in other sections shall be provided as a part of those requirements.

1.6 Coordinate pipe markings and valve tags to ensure similar markings.

PART 2 - PRODUCTS

2.1 Pipe markings shall be:

A. Plastic semi-rigid snap-on type, manufacturer's standard pre-printed color coded pipe markers extending fully around the pipe and insulation or pressure-sensitive vinyl markers similar to the above.

B. Arrows for direction of flow provided integral with the pipe marker or separate at each marker.

2.2 Valve tags shall be polished brass or plastic laminate with solid brass S hook. Tags shall be engraved with "P" (for plumbing) and the designated number.

2.3 Labels, markings and tags shall be manufactured by W.H. Brady, Seton, Allen, Kolbi, MSI or Industrial Safety Supply.

PART 3 - EXECUTION

3.1 Identification labeling, marking and tagging shall be applied after insulation and painting has been completed.

3.2 Coordinate names, abbreviations and other designations used in Division 22 identification work, with corresponding designations shown, specified or scheduled on drawings.

3.3 The Division 21, 22 and 23 labeling, marking and tagging shall be coordinated and consistent systems of identification.

3.4 Equipment labeling shall consist of unit designation as shown on the drawings.

3.5 Pipe markers shall be placed:

A. At each piece of equipment.

B. At 25 ft. centers in mechanical rooms and concealed spaces.

C. At 50 ft. centers in exposed finished area locations.

D. On mains at each branch take-off.

E. At least once in each room.

3.6 Refer to appropriate sections of this specification for installation of underground line marker tape.

3.7 Valve tags shall be placed on each valve except those intended for isolation of individual items of equipment. Valve tag schedules shall be prepared as specified above. Copies of one set of schedules shall be laminated in clear plastic and placed where directed by the Owner. Other sets shall be included in the Operating and Maintenance Manuals.

END OF SECTION

22 07 19 PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 Piping systems shall be insulated as described below. Pipe, fittings, unions, valves, devices, specialties and related items in the piping systems shall be insulated unless otherwise noted, with access maintained to P/T test ports, strainer caps, air vents and similar accessories thru the use of removable and reusable caps, plugs and fittings.

1.2 Composite insulation assemblies shall not exceed maximum flame spread of 25 and smoke development of 50, except as specifically allowed below, as established by UL 723 or ASTM E84 test methods. However, “discrete” combustible components as defined by the mechanical code may be UL 243 listed in lieu of UL 723 or ASTM E84.

1.3 Insulation thicknesses are based on ASHRAE 90.1 and an average thermal conductivity of 0.22 to 0.28 BTU-in./hr. ft.2 - degrees F at 100 degrees F (0.21 to 0.27 BTU-in/hr ft^2 – degrees F at 75 degrees F). Thickness of insulation with lower conductivity may be reduced proportionately except that minimum thickness shall be 0.50 inch.

1.4 The following plumbing piping shall be covered with insulation of thickness listed, in compliance with ASHRAE 90.1, latest publication:

Pipe System	0.75” and smaller	1.0” to 1.25”	1.50” to 3”	4” to 6”	8” and larger
Domestic cold and non-potable water	0.50”	0.50”	1”	1”	1”
Domestic hot water (≤140°F)	1”	1”	1.50”	1.50”	1.50”
Domestic hot water recirculating	1”	1”	1.50”	1.50”	1.50”

1.5 Insulation on plumbing systems is to be omitted on the following:

A. Unions in domestic hot water piping systems.

B. Exposed plumbing fixture supplies and supply stops except where required to meet ADA requirements.

1.6 Submittals

A. Submit product description, thermal characteristics and list of materials and thickness for each service and location.

B. Submit manufacturers published literature indicating proper installation procedures.

1.7 Delivery, Storage and Handling

A. Materials on site shall be stored in original factory packaging, labeled with manufacturer’s identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical and damage in addition to storing in original wrapping.

PART 2 - PRODUCTS

2.1 Fiberglass insulation shall be manufactured by Johns Manville, Owens-Corning, Knauf or Manson. Closed-cell elastomeric insulation shall be manufactured by Armacell, K-Flex USA “Insul-Tube” or Aeroflex USA “Aerocel-SSPT”. Refer to paragraphs below for manufactures of specific restricted use insulations.

2.2 Fiberglass pipe insulation shall be factory molded tubular fiberglass with "all service" jacket having an integral vapor barrier. Longitudinal joints of the jacket shall be overlapping with factory applied adhesive. In lieu of the factory adhesive, staples on 6 inch centers may be used with vapor barrier mastic applied to seal both the joint and stable holes. Butt joints shall be sealed with 3 inches wide ASJ pressure sensitive tape. Insulation shall be GreenGuard certified for low formaldehyde and VOC emissions.

2.3 Fittings, valves, flanges and other devices, both exposed and concealed, requiring insulation shall be covered same thickness as pipe insulation with:

A. For fiberglass insulation systems:

1. Factory molded fitting insulation cover with PVC one-piece fitting cover;
2. Miter-cut segments of pipe insulation, held in place with adhesive and/or wire, filled with insulating cement smoothed to shape and covered with PVC one-piece fitting cover;
3. Fiberglass blanket insulation, compressed, held in place and covered with PVC one-piece fitting cover; or
4. Oversized pipe insulation, where applicable, finished same as straight run pipe insulation.

2.4 Hangers on insulated horizontal piping are to be oversized to surround the pipe insulation. To protect the insulation from damage or inordinate compression due to concentrated weight, the following shall be provided at each hanger:

A. Pipe 2 inches and smaller - Anvil Fig. 168 18 ga. sheet metal rib-lock shield with belled ends, 12 inches long.

B. Pipe 2.50 inches and larger.
Pipe service temperatures 210 degrees F and below: 360 degrees insulated saddles equal to Buckaroos Tru-Balance with phenolic foam insulation, integral zero-perm vapor barrier and sheetmetal rib-lock shield with belled ends. For piping systems specified to be insulated with elastomeric type insulation, utilize Armafex IPH 25/50 flame/smoke rated insulation pipe hangers with polyurethane inserts and 30 MIL aluminum jacket, insulation wall thickness shall be minimum 1”. If required service insulation is specified to be greater than 1”, transition to required thickness within 2” of either side of IPH.

2.5 Insulation shields shall be compatible with pipe insulation materials and thicknesses. Vapor barrier shall be continuous.

PART 3 - EXECUTION

3.1 Site Inspection

A. Before starting work, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of insulation materials and accessories can begin.

B. Verify that all insulation materials and accessories can be installed in accordance with project drawings and specifications and material manufacturers’ recommendations.

C. Verify, by inspecting product labeling, submittal data, and/or certifications which may accompany the shipments, that all insulation materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.

3.2 Preparation

A. Ensure that all surfaces over which insulation is to be installed are clean and dry.

B. Ensure that insulation is clean, dry and in good mechanical condition with all factory-applied vapor or weather barriers intact and undamaged. Wet, dirty or damaged insulation shall not be acceptable for installation.

C. Ensure that pressure testing of piping and fittings has been completed prior to installation.

3.3 Installation

A. Installation shall be done by tradesman specializing in insulation work in strict accordance with manufacturers' recommendations. Installers shall be factory trained and certified for the insulation systems being installed. Submit credentials upon request.

B. Install all insulation materials and accessories in accordance with manufacturer's published instructions and recognized industry practices.

C. Install insulation on piping subsequent to acceptance tests.

D. Overlap and seal all longitudinal joints. Staples and adhesive may be used as stated above. Tape and seal cross joints. Vapor barrier shall be continuous on insulation of all cold services. Vapor barrier type mastic shall be used where needed to maintain a vapor seal, including over staples.

E. Where insulation is terminated, insulation shall be beveled at 45 degrees and the beveled surface sealed with vapor barrier mastic, except in cellular glass systems. PVC caps over straight cut ends which have been vapor sealed may be used in lieu of beveling.

F. Vapor barrier shall be continuous on insulation of all cold services, including horizontal storm and overflow drains. Vapor barrier type mastic shall be used where needed to maintain a vapor seal. Overlap and seal all longitudinal joints of fiberglass insulation jacket. Staples and adhesive may be used as stated above. Tape and seal cross joints.

G. Insulation on cold service piping shall be run thru floor and wall sleeves to maintain vapor barrier continuity. Insulation on other services may likewise be run continuous when sleeve size permits. Refer to the 22 05 07 Piping Materials and Methods for special considerations which must be given at fire rated wall and floor penetrations. Refer to Section 22 05 23 General Duty Valves for Plumbing Piping for valves requiring extended shaft necks. Coordinate the furnishing, installation and detailed requirements of these. Provide insulation and vapor barrier on and around supports for pipe risers of services which require vapor seal so as to prevent sweating.

3.4 Protection

A. Advise as to the requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.

B. Replace damaged insulation, which cannot be satisfactorily repaired, including insulation with vapor barrier damage and moisture-saturated insulation.

3.5 Safety Precautions

A. Employees shall be properly protected during installation of all insulation. Protection shall include proper attire when handling and applying insulation materials and shall include (but not be limited to) disposable dust respirators, gloves, hard hats and eye protection.

B. Conduct all job site operations in compliance with applicable provisions of the Occupational Safety and Health Act, as well as with all state and/or local safety and health codes and regulations that may apply to the work.

3.6 Reinsulate piping to match where existing insulation has been damaged or removed in the performance of work in this project.

END OF SECTION

22 11 16 INTERIOR DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 Piping, valves and associated devices and materials for non-potable, interior domestic cold water, hot water and hot water recirculating systems shall be provided as shown on the drawings and as specified.

1.2 Refer to Section 22 05 07 - Piping Materials and Methods for Plumbing, Section 22 05 23 – General Duty Valves for Plumbing Piping, Section 22 05 29 Hangers and Supports for Plumbing Piping and other related sections for required provisions.

1.3 All piping, fittings, valves, solders, fluxes, seals, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable and/or drinking water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 372.

PART 2 - PRODUCTS

2.1 Water piping and associated devices, materials and accessories shall be as described in Section 22 05 07 Piping Materials and Methods for Plumbing. Piping shall be:

A. All piping 4 inches and smaller unless specifically noted below - Type C1, Type C6, Mechanically formed extruded outlets shall be permitted.

B. Pipe nipples extending out of the wall to connect fixtures - brass with screwed ends. Exposed piping shall be chrome plated.

2.2 Valves for the various services shall be as listed below and as described in Section 22 05 23 General Duty Valves for Plumbing Piping.

A. Shutoff
   1. Ball B1

B. Check

   1. Swing C1

PART 3 - EXECUTION

3.1 Installation shall conform to provisions in Section 22 05 07 Piping Materials and Methods for Plumbing and Section 22 05 29 Hangers and Supports for Plumbing Piping.

3.2 Rigid support sway bracing shall be provided at changes in direction greater than 45 degrees for pipe sizes 4 inches and larger.

END OF SECTION

22 11 19 INTERIOR DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 Water system specialties shall be provided as shown on the drawings and as specified.

1.2 Submit shop drawings for all products specified below.

1.3 Refer to 22 05 07 Piping Materials and Methods for Plumbing, 22 05 23 General Duty Valves for Plumbing Piping, 22 05 19 Meters and Gauges for Plumbing Piping (for thermometers and pressure gauges) and 22 11 16 Interior Domestic Water Piping.

1.4 All piping, fittings, valves, solders, fluxes, seals, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable water for human consumption shall conform to the “Lead Free” requirements of NSF/ANSI 372.

PART 2 - PRODUCTS

2.1 Hot Water Recirculating Pump

A. Pumps shall be system lubricated (wet rotor) horizontal in-line pipe mounted centrifugal type with bronze pump casing and motor with internal overload protection. Pump shall be Bell & Gossett Bronze Fox Series, Grundfos Series UP, Taco 00 Series or Armstrong Astro Series.

B. Temperature controller for pump cycling shall be a Honeywell L4006A1017 commercial grade aquastat controller with insertion element, 100 – 240 deg. range and 5 - 30 deg. adjustable differential.

2.2 Thermal Expansion Tank

A. Thermal expansion tank for expansion compensation in the domestic hot water system shall be pressurized diaphragm type, NSF or FDA approved and specifically constructed for domestic hot water systems.

B. The tank shall be welded steel constructed for 125psi. The tank shall be fitted with a butyl rubber diaphragm (to separate water from the pressurized air section of the tank), stainless steel tapping for system connection and a standard tire air charging valve. Diaphragm type tank shall have a rigid polypropylene interior liner in the water section. Tank exterior shall be prime coat or finish painted.

C. Tank shall be equal to Amtrol "Thermo-X-Trol" or Wessels "TXA", or equal by Watts of configuration and acceptance volume as indicated on the drawings.

2.3 Point-of-Use Thermostatic Mixing Valves

A. Point-of-use mixing valves shall be designed to thermostatically blend hot and cold water for sink and lavatory supply. Valve construction shall be solid brass or bronze, with corrosion-resistant internal actuation components, union ends, and integral check valve and removable strainer on each inlet. Temperature control knob (field adjustable from 80 to 120 degrees F) shall have an adjustable stop and vandal-resistant locking mechanism. Unit shall be ASSE 1070 listed.

B. Valves serving individual faucets shall control to a minimum flow of 0.5 GPM and have a maximum 5 PSI pressure drop at 2.0 GPM. Valves shall have 0.375 inch compression, or 0.5 inch union-threaded or union-sweat connections.

C. Valves serving multiple faucets shall control to a minimum flow of 0.5 GPM and have maximum 10 PSI pressure drop at 4.0 GPM. Valves shall have 0.5 inch union-threaded or union-sweat connections.

D. On valves serving multiple fixtures, provide a temperature test plug (Pete's plug) on the outlet to assist in setting the discharge temperature. See Section 22 05 19.

E. Point-of-use mixing valves shall be Powers, "Hydrogard" Series LFLM495 or equal by Apollo, Acorn, Bradley, Cash Acme, Leonard, Wilkins Caleffi, or Watts.

2.4 Water hammer arresters shall be precharged sealed stainless steel gas bellows or diaphragm type conforming to PDI Standard WH-201 and ASSE 1010. Units shall be of size and location as shown on the drawings. Units shall be by Smith, Wade, Josam, Mifab, Watts, Sioux Chief or Zurn.

2.5 Refer to drawings for trap primers which are integral parts of plumbing fixture trim.

PART 3 - EXECUTION

3.1 Provide temperature controller for hot water recirculating pump control. Wire thru the controller to cycle the pump. Set differential for 5°F.

3.2 Thermostatic mixing valves shall be installed in accordance with the manufacturers recommendations and details on the drawings.

END OF SECTION

22 13 16 INTERIOR DRAINAGE AND VENT SYSTEMS

PART 1 - GENERAL

1.1 Interior drainage and vent systems including soil, waste and vent system shall be provided as shown on the drawings and as specified.

1.2 Refer to 22 05 07 Piping Materials and Methods for Plumbing, 22 05 29 Hangers and Supports for Plumbing Piping and other related sections for provisions affecting this Section.

1.3 All referenced standards shall be of the latest edition adopted by the jurisdiction unless specifically noted otherwise.

1.4 All cast iron drainage and vent pipe, fittings and joining materials shall be listed to the respective standard(s) stated below, and shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute.

PART 2 - PRODUCTS

2.1 Interior soil, waste and vent piping.

A. Pipe, fittings and joints above grade shall be:

1. Coated cast iron, centrifugally cast with hubless ends, ASTM A-888 and CISPI 301. Fittings shall be drainage type with hubless ends. Joints shall be made with no-hub couplings consisting of a neoprene gasket, ASTM C564, Series 300 stainless steel shield and stainless steel band, CISPI 310, NSF certified and marked.

PART 3 - EXECUTION

3.1 Cut pipe to required length and ream ends to remove burrs. Align horizontal piping to attain even pitch, minimum of 0.25 inch per ft. on sizes 2.50 inches and smaller, 0.125 inch per ft. on sizes 3 inches and larger unless specifically noted on drawings.

3.2 Piping shall not be run above electrical switchgear or panelboards, nor above access space in the immediate vicinity of the equipment, in accordance with N.E.C. Article 110.26.

3.3 The use of sealers or sealants for couplings in No-Hub cast iron systems is not acceptable unless specifically recommended by the coupling manufacturer. No-Hub type couplings shall be installed in strict conformance with manufacturer's recommendations.

3.4 Above grade piping, in sizes 4 inches and larger, shall be anchored at all changes in direction, at all changes in diameter greater than two pipe sizes, and to prevent axial movement and/or joint separation at each branch opening. Bracing methods shall be as recommended by pipe and/or coupling manufacturer's installation instructions and/or the Cast Iron Soil Pipe Institute (CISPI) Handbook.

3.5 Provide cleanouts in drainage piping as indicated on the drawings and:

A. In horizontal piping at intervals no greater than 50 ft.

END OF SECTION

22 13 19 DRAINAGE SYSTEMS SPECIALTIES

PART 1 - GENERAL

1.1 Drainage systems specialties shall be as shown on the drawings and as specified.

1.2 Submit shop drawings for all products specified below.

PART 2 - PRODUCTS

2.1 Drainage system specialties shall be manufactured by J.R. Smith, Zurn, Sioux Chief, Watts, Mifab, Wade, or Josam.

2.2 Floor drains shall be as shown and scheduled on the drawings. Drains shall be equal to listed catalog numbers, type, size, materials and features.

A. Floor drain traps shall be same material as the connecting piping.

2.3 Carriers for Wall Hung Fixtures

A. Unless indicated otherwise, provide carriers for all wall mounted fixtures.

B. Closet chair carriers, ASME A112.6, shall be adjustable type, cast iron and steel construction, with neoprene gasket, floor plate, anchor foot assembly and rear anchor tie down. Wax gaskets are not acceptable. The nipple shall be adjustable without cutting or defacing the wall and yet maintain a tight joint. Closet chair carriers shall be capable of supporting a 500lb. load.

C. Closet chair carriers shall be so selected and installed that the stud plate is tight against the back of the wall to afford a rigid mounting. Closet chair carrier configurations and auxiliary inlets shall be provided to comply with the piping configurations shown on the drawings. Plastic or metal positioning frames shall be furnished with closet chair carriers to separate the bolts from the wall construction.

D. Urinal chair carriers, ASME A112.6, shall be hanger plate type, steel construction, upper and lower bearing plate, welded footplates, designed for thin wall construction.

E. Electric water cooler and drinking fountain chair carriers, ASME A112.6, shall be hanger plate or dual hanger plate type, steel construction, welded footplates, designed for thin wall construction. Electric water cooler chair carriers shall be capable of supporting the cooler with a 250 lb. vertical load applied to the front of the fixture.

F. Plumbing fixture carriers shall be provided for all wall hung fixtures, unless specifically noted otherwise, and shall be of the same manufacturer as floor and roof drains.

2.4 Cleanouts

A. Cleanouts shall be of the same manufacturer as floor drains and equal to the listed catalog numbers in type, materials and features.

B. Cleanouts located in walls and partitions shall be J.R. Smith Series 4472 consisting of cast bronze plug and round stainless steel access cover secured by vandal-proof center screw. Wall cleanouts that cannot be made accessible in this manner shall be provided with an access panel as described in 22 05 04 Basic Plumbing Materials and Methods.

2.5 Mechanical Trap Seal Device

A. Device shall comply with ASSE 1072 and be rubber insertable assembly which forms a watertight seal that opens to allow drainage and closes when there is no flow.

B. Design basis: JR Smith Quad-Close Model 2962 or equal by Zurn, Mifab, Josam, Sureseal,"

PART 3 - EXECUTION

3.1 Floor drains shall be set with rim below finish floor level to permit continuous floor pitch to drain, unless otherwise noted or directed. Verify exact location and desired rim elevations before installation.

3.2 All carriers shall be equipped with feet properly adjusted to rest firmly on the floor. Carrier feet shall be block base type and shall be bolted securely to the floor slab using all bolt holes provided.

3.3 Cleanouts shall be same size as pipe thru 4 inch size. Maximum size of cleanouts shall be 4 inches diameter unless larger units are required for testing or special access purposes. Provide cleanouts where indicated on the drawings and at other locations where deemed advisable. Location of cleanouts as stipulated by applicable code shall be considered as the minimum requirement.

END OF SECTION

22 42 00 PLUMBING FIXTURES

PART 1 - GENERAL

1.1 Plumbing fixtures installed in place complete with supports, supply and waste trim shall be provided as shown on the drawings and as specified.

1.2 Refer to Division 7 for submittal, qualification, storage, handling warranty and installation requirements for joint sealants. Shop drawings shall be submitted to the Architect / Engineer for review and approval.

1.3 All plumbing fixtures, equipment and trim shall meet the dimensional and performance requirements of the ANSI, ARI, ASME, ASSE and/or CSA standards listed in the current jurisdictional plumbing code.

1.4 All piping, fittings, valves, solders, fluxes, seals, fixtures, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable and/or drinking water for human consumption shall conform to the “Lead Free” requirements of NSF 61 and NSF/ANSI 372.

PART 2 - PRODUCTS

2.1 Fixtures and Trim:

A. Refer to schedule on the drawings for fixture specifications, including supply and waste trim. The schedule lists catalog numbers of various manufacturers. These catalog numbers are for the purpose of comparison to establish the construction material, quality and features of the fixtures and their components. Fixtures of equal quality by manufacturers listed in each category will be acceptable.

B. Fixture supply trim shall be of non-ferrous construction and supplies to each fixture shall be individually valved. Valves, supplies and escutcheons shall be furnished with the fixture supply trim.

C. Where exposed to view, all waste trim and supply trim shall be brass chrome plated furnished with wall escutcheons.

D. Screwed nipples serving fixtures from copper tube supply system shall be solid brass to avoid electrolytic corrosion. Exposed nipples shall be chrome plated.

E. Fixtures shall be white unless otherwise noted.

2.2 Joint Sealants

A. Joint sealants shall be by Pecora, Sonneborn, Tremco, or equal by Division 7 listed manufacturers.

B. One part, mildew resistant silicone, ASTM C-920, Type S, Grade NS, Class 25 with fungicide, white, equal to Pecora 898.

PART 3 - EXECUTION

3.1 Installation

A. Space fixtures and rough-in carefully. Fixtures shall be carefully assembled and connected to the required plumbing outlets so the equipment will be ready for use when work is completed. Height shall be within 0.50 inch of specified nominal.

B. Secure supply and waste piping in chases and walls to preclude loose and ill-fitting pipes thru wall. Drop ear ell fittings shall be utilized at all supply nipples and shower arms.

C. After installation of the fixtures is completed, all connecting pipes shall be flushed out through the fixtures to eliminate scale, and all valves shall be properly adjusted and fixtures left complete and ready for use. All fixtures shall be cleaned immediately prior to acceptance by the Owner.

D. Seal joints around each fixture at wall, floor and any adjacent construction.

END OF SECTION

DIVISION 23 – HVAC INDEX

HYATT REGENCY RESTROOM RENOVATION

		HEAPY
Architect		MEP Engineer
Schooley Caldwell	Columbus, Ohio	Project No. 2025-07170

Section INDEX

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OCTOBER, 2025

23 05 01

BASIC HVAC REQUIREMENTS

PART 1 - GENERAL

1.1 Special Note

A. All provisions of the Bidding Requirements, General Conditions, and Supplementary Conditions, including Divisions 00 and 01, apply to work specified in this Division.

B. The scope of the Division 23 work includes furnishing, installing, testing and warranty of all work and complete HVAC systems as shown on the M-series drawings, and as specified in Division 23 and elsewhere in the project documents.

C. Understanding that the contractors for various Divisions are sub-contractors to the Prime Contractor, assignments of work by division are not intended to restrict the Prime Contractor in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

D. The project drawings and specifications define scope of work for the various divisions. Such assignments of work are not intended to restrict the Construction Manager in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

1.2 Permits and Regulations

A. Include payment of all permit and inspection fees applicable to the Division 23 work. Furnish for the Owner certificates of approval from the governing inspection agencies, as a condition for final payment.

B. Work must conform to applicable local, state and federal laws, ordinances and regulations. Where drawings or specifications exceed code requirements, the drawings and specifications shall govern. Install no work contrary to minimum legal standards.

1.3 Inspection of Site

A. Inspect the project site and the premises of the existing building. Conditions shall be compared with information shown on the drawings. Report immediately to the Architect any significant discrepancies which may be discovered. After the contract is signed, no allowance will be made for failure to have made a thorough inspection.

1.4 Drawings and Specifications

A. The drawings indicate the general arrangement of the work and are to be followed insofar as possible. The word "provide", as used, shall mean "furnish and install". If significant deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted to the Architect for approval before proceeding with the work.

B. Make all necessary field measurements to ensure correct fitting. Coordinate work with all other trades in such a manner as to cause a minimum of conflict or delay.

C. The drawings and specifications shall be carefully studied during the course of bidding and construction. Any errors, omissions or discrepancies encountered shall be referred immediately to the Architect for interpretation or correction, so that misunderstandings at a later date may be avoided. The contract drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Having ductwork, pipe and fittings fabricated and delivered in advance of making actual measurements shall not be sufficient cause to avoid making offsets and minor changes as may be necessary to install ductwork, piping and equipment.

D. The Architect shall reserve the right to make minor adjustment in locations of system runs and components where considered desirable in the interest of concealing work or presenting a better appearance where exposed. Any such changes shall be anticipated and requested sufficiently in advance as to not cause extra work, or unduly delay the work. Coordinate work in advance with all other trades and report immediately any difficulties which can be anticipated.

E. Equipment, ductwork or piping shall not be installed in the dedicated electrical space above or in the working space required around electrical switchgear, motor control centers or panelboards as identified by the National Electric Code (NEC).

F. Where any system runs and components are so placed as to cause or contribute to a conflict, it shall be readjusted at the expense of the contractor causing such conflict. The Architect's decision shall be final in regard to the arrangement of ductwork, piping, etc., where conflict arises.

G. Provide offsets in system runs, additional fittings, necessary drains and minor valves, traps, dampers and devices required to complete the installation, or for the proper operation of the system. Exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible.

H. Should overlap of work among the trades become evident, this shall be called to the attention of the Architect. In such event, none of the trades or their suppliers shall assume that they are relieved of the work which is specified under their branch until instructions in writing are received from the Architect.

1.5 Inspection

A. All work shall be subject to inspection of Federal, State and local agencies as may be appropriate, and of the Architect and Engineer.

B. Obtain final inspection certificates and turn over to the Owner.

1.6 Record Drawings

A. Maintain a separate set of field prints of the contract documents and hand mark all changes or variations, in a manner to be clearly discernible, which are made during construction and the coordination process. Upon completion of the work, and within 90 days of system acceptance, these drawings shall be turned over to the Architect. This shall apply particularly to underground and concealed work, and to other systems where the installation varies to a degree which would justify recording the change.

1.7 Operating and Maintenance Manuals

A. Assemble two copies each of operating and maintenance manuals for the HVAC work.

B. All “approved” shop drawings and installation, maintenance and operating instruction pamphlets or brochures, wiring diagrams, parts list and other information, along with warranties, shall be obtained from each manufacturer of the principal items of equipment. In addition, prepare and include a chart listing all items of equipment which are furnished under this contract, indicating the nature of maintenance required, the recommended frequency of checking these points and the type of lubricating media or replacement material required. Name and address of a qualified service agency. A complete narrative of how each system is intended to operate.

C. Final air balance report and specifications shall also be included.

D. These shall be assembled into three-ring loose leaf binders or other appropriate binding. An index and tabbed sheets to separate the sections shall be included. These shall be submitted to the Engineer for review. Upon approval, manuals shall be turned over to the Owner.

1.8 Final Inspection and Punch List

A. As the time of work completion approaches, survey and inspect Division 23 work and develop a punch list to confirm that it is complete and finished. Then notify the Architect and request that a final inspection be made. It shall not be considered the Architect's or Engineer's obligation to perform a final inspection until the Contractor has inspected their work and so states at the time of the request for the final inspection.

B. Requests to the Architect or Engineer for final inspection may be accompanied by a limited list of known deficiencies in completion, with appropriate explanation and schedule for completing these; this is in the interest of expediting acceptance for beneficial occupancy.

C. The Architect and/or Engineer will inspect the work and prepare a punch list of items requiring correction, completion or verification. Corrective action shall be taken to the satisfaction of the Architect and Engineer within 30 days of receipt of the Architect/Engineer's punch list.

1.9 Warranty

A. Warrant all workmanship, equipment and material entering into this contract for a period of one (1) year from date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect. Any materials or equipment proving to be defective during the warranty period shall be made good without expense to the Owner. Use of equipment for temporary heating or cooling is not the start of the warranty period.

1. Certain items of equipment are specified to have multi-year parts and labor warranties. Refer to individual equipment specifications.

B. This provision is intended specifically to cover deficiencies in contract completion or performance which are not immediately discovered after systems are placed in operation. Also included shall be supplementary assistance in balancing, adjusting or providing operating instructions as the need develops, and replacing overload heater elements in starters where necessary to keep systems in operation. Heater element sizes shall not exceed the motor manufacturer's recommendations.

C. This provision shall not be construed to include maintenance items such as replacing filters, re-tightening or repacking glands, greasing, oiling, belt tightening and cleaning strainers after these have been done for final close-out.

D. Provisions of this warranty shall be considered supplementary to warranty provisions under Division 01 General Conditions.

PART 2 - PRODUCTS

2.1 Materials and Equipment

A. Materials and equipment furnished shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more articles of the same material or equipment are required, they shall be of the same manufacturer.

2.2 Listing and Labeling

A. All equipment and appliances shall be listed and labeled in accordance with the Mechanical Code. Testing shall be performed by an Approved Agency, with the seal or mark of the Agency affixed to each piece of equipment or appliance.

2.3 Reference Standards

A. Where standards (NFPA, NEC, ASTM, UL, etc.) are referenced in the specifications or on the drawings, the latest edition is to be used except, however, where the Authority Having Jurisdiction has not yet adopted the latest edition, the edition so recognized shall be used.

2.4 Shop Drawings

A. Electronic copies of shop drawings and descriptive information of equipment and materials shall be furnished. Submit to the Architect and/or Engineer for review as stated in the General Conditions and Supplementary Conditions. These shall be submitted as soon as practicable and before equipment is installed and before special equipment is manufactured. Submittal information shall clearly identify the manufacturer, specific model number, approval labels, performance data, electrical characteristics, features, specified options and additional information sufficient to evidence compliance with the contract documents. Product catalogs, brochures, etc. submitted without project specific items marked as being submitted for review will be rejected and returned without review. Shop drawings for equipment, fixtures, devices and materials shall be labeled and identified same as on the Contract Documents. If compliance with the above criteria is not provided shop drawings will be subject to rejection and returned without review. Samples shall be submitted when requested or as specified here with-in.

B. The review of shop drawings by the Architect or Engineer shall not relieve the Contractor from responsibility for errors in the shop drawings. Deviations from specifications and drawing requirements shall be called to the Engineer’s attention in a separate clearly stated notification at the time of submittal for the Engineer’s review.

C. Shop drawings of the following HVAC equipment and materials shall be submitted:

1. Air outlets and inlets.
2. Ductwork insulation.
3. Dampers.

PART 3 - EXECUTION

3.1 Operation and Adjustment of Equipment

A. As the air distribution system is put into operation, all items of equipment included therein shall be adjusted to proper working order. This shall include balancing the air system, adjusting fan speeds, belts, pulleys, , and adjusting all operating equipment.

3.2 Operating Demonstration and Instructions

A. Set the various systems into operation and demonstrate to the Owner and Architect / Engineer that the systems function properly and that the requirements of the Contract are fulfilled.

B. Provide the Owner's representatives with detailed explanations of operation and maintenance of equipment and systems. A thorough review of the operating and maintenance manuals shall be included in these instructional meetings.

C. O&M manuals shall be submitted, reviewed and approved prior to scheduling of demonstrations.

END OF SECTION

23 05 02

AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES

PART 1 - GENERAL

1.1 The Engineer, at his sole discretion and without obligation, makes graphic portions of the contract documents available for use by the contractor in electronic format. These electronic files are proprietary, and remain the Engineer's Instruments of Service and shall be for use solely with respect to this project, as provided in the Standard Form of Agreement between Owner/Architect and Engineer.

1.2 Electronic files shall be released only after bids have been received for the project and contracts have been signed with the contractors.

1.3 The contractor shall acknowledge receipt of electronic files in the requested format for this project. The electronic files are provided as a convenience to the User, for use in preparing shop drawings and/or coordination drawings related to the construction of only the project identified in the Agreement. The electronic files and the information contained within are the property of the Engineer and/or the Architect and/or the Owner, and may not be reproduced or used in any format except in conjunction with the project identified in the Agreement.

1.4 The User acknowledges that the information provided in the electronic files is not a substitution or replacement for the Contract Documents and does not become a Contract Document. The User acknowledges that neither the Engineer, the Architect, the Consultants, the Client or the Owner make any warrant or representation that the information contained in the electronic files reflect the Contract Documents in their entirety. The User assumes full responsibility in the use of the electronic files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

1.5 The User acknowledges that the receipt of electronic files in no way relieves the User from the responsibility for the preparation of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

1.6 Electronic files are available in a .DWG or .RVT format for a cost as indicated in the Agreement and Waiver Form. **Providing the documents in a .DWG version that differs from the product version that the .DWG files were initially created in will incur additional charges per sheet, as indicated in the Agreement and Waiver Form.** Charges are for the Engineer's time to prepare the documents in the format stated. They are available through the Engineer's office on a C.O.D. basis only. A sample of the format will be provided by the Engineer upon request by the contractor, for the purpose of testing the compatibility of the format to the contractor's systems.

1.7 All drawings will be in an AutoCAD file format, when requested to be .DWG format.

1.8 All project models will be furnished without views.

1.9 All electronic files shall be stripped of the Project's name and address, the Architect's / and / Engineer's / and / any consultant's name and address, and any professional licenses indicated on the contract documents, (and all dimensions, verbiage, and statistical information). Use of these electronic files is solely at the contractor's risk, and shall in no way alter the contractor's Contract for Construction.

1.10 The User agrees to indemnify, hold harmless and defend the Engineer, the Architect, the Consultants, the Owner, the Client and any of their agents from any litigation resulting from the use of (by any means of reproduction or electronic media) these files. The Engineer makes no representation regarding fitness for any particular purpose, or suitability for use with any software or hardware, and shall not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Engineer's or its consultant's computer software or hardware defects or errors; the Engineer's or its consultant's electronic or disk transmittal of data, information or documents; or the Engineer's or its consultant's reformatting or automated conversion of data, information or documents electronically or disk transmitted from the Engineer's consultants to the Engineer.

1.11 The contractor waives all claims against the Engineer, its employees, officers and consultants for any and all damages, losses, or expenses the contractor incurs from such defects or errors in the electronic files. Furthermore, the contractor shall indemnify, defend, and hold harmless the Engineer, and its consultants together with their respective employees and officers, harmless from and against any claims, suits, demands, causes of action, losses, damages or expenses (including all attorney's fees and litigation expenses) attributed to errors or defects in data, information or documents, including drawings and specifications, resulting from the contractor's distribution of electronic files to other contractors, persons, or entities.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Attached "Agreement" shall be submitted with accompanying payment to the Engineer prior to delivery of electronic files.

END OF SECTION

23 05 02A
ELECTRONIC FILES HEAPY RELEASE FORM TO CONTRACTORS

Project: Hyatt Regency Restroom Renovation
500 North High Street
Columbus, Ohio

Owner: Franklin County Convention Facilities Authority

Heapy Engineering Project Number: 2025-07170

Heapy Engineering Project Manager: David Lovano

The Provider, named below, will furnish the Recipient, named below, certain documents prepared by the Provider or its sub consultants in an electronic format. These documents are hereinafter collectively referred to as "Electronic Files". The Electronic Files are instruments of the Provider services performed solely for the Owner's benefit and to be used solely for this Project. The Provider does not represent that the information contained in the Electronic Files are suitable for use on any other project or for any other purpose. If the Electronic Files are used for any other project or purpose without the Provider's specific written permission, the risk of such use shall be assumed solely by the Recipient or other user.

Prior to the use of the Electronic Files the Provider and the Recipient agree to the following terms and conditions:

1. The Provider and Recipient fully understand that the data contained in these electronic files are part of the Provider's Instruments of Service. The Provider shall be deemed the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights.

2. The Recipient confirms their request to the Provider for Electronic Files for the Project listed above, which the Recipient understands are to be provided only in accordance with, and conditioned upon, the terms and conditions of the Agreement and Waiver for Use of Electronic Files).

3. The Provider agrees that the Recipient may use the Electronic Files for the sole purpose of preparing shop drawings and/or coordination drawings for the above Project only. Any Electronic Files provided are strictly for the use of the Recipient in regard to the Project named above, and shall not be utilized for any other purpose or provided by the Recipient to any entity other than its subcontractors for the Project named above.

4. The Recipient acknowledges that the furnishing of Electronic Files in no way relieves the Recipient from the responsibility of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

5. The Recipient acknowledges:

    a. That the Electronic Files do not contain all of the information of the Bid Documents or Contract Documents for the construction of the Project above.

    b. That information in the Bid Documents or Contract Documents may be revised or modified in the future.

c. The Provider does not have, and will not have, any duty or obligation to advise or give notice to the Recipient of any such revisions or modifications.

d. That the Recipient agrees that its use of the Electronic Files is at the Recipient's sole risk of liability, and that the Recipient shall make no claim or demand of any kind against the Provider arising out of Recipient's receipt or use of the Electronic Files.

6. The Provider makes no representation or warranty of any kind, express or implied, with respect to the Electronic Files and specifically makes no warranty that the Electronic Files shall be merchantable or fit for any particular purpose, or accurate or complete. Furthermore, any description of said Electronic Files shall not be deemed to create an implied or express warranty that such Electronic Files shall conform to said description.

7. Due to the unsecured nature of the Electronic Files and the inability of the Provider or the Recipient to establish controls over their use, the Provider assumes no responsibility for any consequences arising out of the use of the data. It is the sole responsibility of the Recipient to check the validity of all information contained within the Electronic Files. The Recipient shall at all times refer to the Construction Documents of the project during all phases of the project. The Recipient shall assume all risks and liabilities resulting from the use of this data, and the Recipient agree(s) to waive any and all claims and liability against the Provider and its sub consultants resulting in any way from the use of the Electronic Files.

8. Electronic Files are provided strictly as a courtesy by the Provider solely for the convenience of the Recipient, and are not part of the Bid Documents or Contract Documents for the Project. The Electronic Files do not replace or supplement the paper copies of any drawings, specifications, or other documents included in the Contract Documents for use on the project.

    a. The Recipient assumes full responsibility in the use of Electronic Files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

9. As stated herein, the possibility exists that the Electronic Files provided may differ from the Bid Documents or Contract Documents for construction of the Project. The Provider shall not be responsible, nor be held responsible, for differences between Electronic Files, the Bid Documents, and Contract Documents. The Bid Documents or Contract Documents for the Project may be modified by the Provider at any time, either before or after construction begins. The Provider has no responsibility, either before or after any such modification, to determine or to advise the Recipient whether any such modification causes Electronic Files provided to the Recipient to be out of date, inconsistent with the Bid Documents or Contract Documents, or otherwise unsuitable or unfit for use in any way.

10. The Recipient assumes all risk and liability for any losses, damages, claims, or expenses (including defense and attorney fees) resulting from its receipt, use, or possession of Electronic Files furnished by the Provider. The Provider makes no representation, warranty or guarantee that the Electronic Files:

    a. Are suitable for any other usage or purpose.

    b. Have any particular durability.

    c. Will not damage or impair the Recipient's computer or software.

    d. Contain no errors or mechanical flaws or other discrepancies that may render them unsuitable for the purpose intended by the Recipient.

11. Recipient agrees to indemnify, defend and hold harmless the Provider, agents, employees, and the Owner from, and against, any and all claims, suits, losses, damages or costs, of any kind or nature, including attorney's fees, arising from or by reason of the Recipient's use of Electronic

Files provided by the Provider, and such defense and indemnification obligation duties shall survive any use under this Agreement and Waiver for Use of Electronic Files.

12. The Recipient agrees that the Provider shall have no responsibility whatsoever for problems of any nature arising from transmitting and storing electronic files at a Recipient requested FTP or project management site or the conversion of the Electronic Files by the Recipient or others for use in non-native applications. The Provider will not provide Electronic Files in compressed formats. Recipient agrees to accept the files in the format provided by the Provider, and that Recipient's conversion or electronic file storage at the Recipient's requested site, shall be at Recipient's sole risk.

13. Recipient acknowledges:

    a. That the Electronic Files provided by the Provider are a graphical representation of the building in order to generate two-dimensional industry standard drawings.

    b. That the data contained in the Electronic Files may not be 100% accurate and should not be used for dimensional control, building layout, shop drawings, or any other similar purpose

    c. That any schedule of materials produced directly from the Electronic Files has not been checked for accuracy.

    d. That the information in the Electronic Files should be used only for comparative purposes and shall not be relied upon for accurate quantity estimates or used in establishing pricing.

14. Electronic Files provided by the Provider will only contain elements and content that the Provider deems necessary and appropriate to share. No specific Level of Development (LOD) is implied or expected. The Recipient agrees that no proprietary content, MvParts or Revit Families or any other AutoCAD MEP or Revit MEP content shall be removed from the model and/or used for any other purpose but to support this specific project.

15. The Provider, at its sole discretion, may modify the Electronic files before they are provided to the Recipient. Such modifications may include, but are not necessarily limited to, removal of certain information. The Provider, at its sole discretion, may refuse to provide some or all Electronic Files requested by Recipient.

16. The availability of Electronic Files that were not prepared by the Provider is subject to the consent of the Owner or consultant that prepared those Electronic Files. The Provider will not negotiate with the Owner or consultant or repeatedly solicit the Owner or consultant to obtain such consent. Neither this Agreement and Waiver for Use of Electronic Files nor any such separate Consultant's consent may be assigned or transferred by Recipient to any other person or entity.

Provider (Name of Company): _____

Recipient (Name of Company): _____

Name of authorized Recipient Representative: _____

Title of authorized Recipient Representative: _____

E-mail address of authorized Recipient Representative: _____

Signature of authorized Recipient Representative: _____

Date: _____

NOTE: Select requested Electronic File Format, File Transfer Medium and complete applicable Cost Summary.

A. Electronic File Format (select one):

1. ☐ .DWG Format - List of Drawings Requested: _____

_____

2. ☐ Revit Project Model Requested (Model only, no Views included)

B. File Transfer Medium (select one):

☐ Heapy FTP ☐ User's FTP site

C. Delivery of Electronic Files Cost Summary:

Available Electronic .DWG file format:
☐ 2024 DWG

If a different file version is required than the indicated available version state the requested version:

_____ .DWG

Note that an additional charge per sheet will be incurred.

Cost of Preparation of Division 21 Electronic .DWG Files:

First Drawing: $50.00		$50.00
Additional Drawings $15.00 each _____ x $15.00	=	$ _____
Conversion to .DWG version different from available .DWG: $5.00 additional/sheet _____ x $ 5.00	=	$ _____

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ _____
All files will be bound together.
Available electronic Revit file format:
☐ 2024 .RVT

Cost of Preparation of Division 21 Electronic Revit Model Files:

Revit Project Model without Views	$500.00

Total Cost: (Please make check payable to Heapy Engineering and include a copy of this form.) $ of this form.)

23 05 04

BASIC HVAC MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Continuity of Services

A. Work shall be so planned and executed as to provide reasonably continuous service of existing systems throughout the construction period. Where necessary to disrupt services for short periods of time for connection, alteration or switch-over, the Owner and Construction Manager shall be notified in advance and outages scheduled at the Owner's reasonable convenience.

B. Submit, on request, a written step-by-step sequence of operations proposed to accomplish the work. The outline must include tentative dates, times of day for disruption, downtime and restoration of services. Submit the outline sufficiently in advance of the proposed work to allow the Architect or Engineer and Construction Manager to review the information with the Owner. Upon approval, final planning and the work shall be done in close coordination with the Owner.

C. Shutdown of systems and work undertaken during shutdowns shall be bid as being done during normal working hours. If the Owner should require such work be performed outside of normal working hours, reimbursement shall be made for premium time expenses only, without mark-up.

PART 2 - PRODUCTS

2.1 Access Panels

A. Provide ceiling and wall access panels where indicated on the drawings, or where otherwise required to gain access to concealed valves, traps, devices and equipment requiring service or adjustment.

B. Materials used in plenums shall be rated for plenum use conforming to the ASTM E84 25/50 smoke development and flame spread restrictions.

PART 3 - EXECUTION

3.1 Workmanship

A. Materials and equipment shall be installed and supported in a first-class and workmanlike manner by mechanics skilled in their particular trades. Workmanship shall be first-class in all respects, and the Architect and Engineer shall have the right to stop the work if highest quality workmanship is not maintained.

3.2 Protection

A. Each Contractor shall be entirely responsible for all material and equipment furnished in connection with their work. Special care shall be taken to properly protect all parts thereof from theft, damage or deterioration during the entire construction period in such a manner as may be necessary, or as directed by the Architect or Construction Manager.

B. The Owner's property and the property of other contractors shall be scrupulously respected at all times. Provide drop cloths and visqueen or similar barriers where dust and debris is generated, to protect adjacent areas.

3.3 Removals, Alterations and Reuse

A. Refer to the drawings for the scope of remodeling in the existing building.

B. Cooperate with all trades and Construction Manager regarding all removal and remodeling work. Unless otherwise noted, remove existing work which is associated with Division 23 and which will be superfluous when the new work is installed and made operational.

C. Extraneous ductwork and piping which is or becomes accessible shall be removed and stubs shall be capped at the first active duct or pipe encountered. Ductwork and piping that is and remains inaccessible shall be abandoned. Ends of abandoned duct and pipe shall be capped so as to be concealed by finished surfaces. Upon completion of the work no abandoned duct, pipe, valve or stub shall extend thru finished floors, walls or ceilings.

D. When it is necessary to reroute a section of active ductwork the rerouted section shall be installed before removing the existing in order to minimize system down time. Rerouted sections shall be insulated as required for new work. Patch insulation on existing ductwork and piping which has been damaged or removed in this work.

E. Materials and equipment which are removed shall not be reused within the scope of this project unless specifically noted to be relocated or reused. Turn over to the Owner and place where directed on the premises all removed material and equipment so designated by the Owner. All material and equipment not claimed by the Owner shall become the property of the Contractor responsible for removal and shall be removed from the premises.

F. Remove, store and reinstall lay-in ceiling tile and grid as needed to perform work in areas where such removal and re-installation is not to be done by others. Damaged tile and/or grid shall be replaced with new matching tile and/or grid.

G. In areas of minor work where the space is not completely vacated, temporarily move portable equipment and furnishings within the space as required to complete the work. Coordinate this activity with Owner / Construction Manager. Protect the Owner's property by providing dust covers and temporary plastic film barriers to contain dust. Remove barriers and return equipment and furniture upon completion of the work.

H. Refinish any surface disturbed under this work to match existing, except where refinishing of that surface is included under the General Contract.

3.4 Access Panels

A. Install access panels or pay general trade to do so. Final appearance is subject to approval by the Architect or Engineer.

B. Location of access panels shall be planned to clear ceiling lights, ceiling support grids and other obstructions so as to allow, wherever possible, full shoulder clearance beside the device to be inspected, adjusted or repaired.

C. Panels with recessed doors are to be fitted with insert panels of drywall or, those for plaster, infilled with plaster. Caution the Installing Contractor to provide appropriate framing with

drywall or plaster beading to ensure a finished appearance. Shim strips may be required to bring the insert panel flush with the plane of the door and wall / ceiling.

3.5 Miscellaneous Component Installations

A. Certain miscellaneous items and components are furnished loose and require installation into the duct systems, piping systems, and other HVAC systems. These items shall be installed per the suppliers and manufacturers instructions.

B. This shall include, but by no means be limited to, items such as balancing dampers, backdraft dampers, and components and other similar items.

C. Provide compatible connection means for all items being installed.

D. Provide all required access means (access doors, etc…) required for installation, service and inspection.

END OF SECTION

23 05 30

BASES AND SUPPORTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 Equipment shall be supported on concrete bases, roof curbs and structural steel supports as shown on drawings or as specified. All bases, curbs and supports shall be included except as otherwise noted.

1.2 Wind Load Analysis

A. HVAC equipment, ductwork, piping, conduits, etc. exposed to wind shall have positive attachment to the building structure or ground to comply with wind load requirements of the building and mechanical codes.

B. Wind speed design shall be 115 MPH Refer to structural drawings for additional design requirements.

C. The contractor shall retain a specialty consultant to perform wind load calculations in accordance with the code and additional requirements specified in this Section. A professional engineer experienced in wind load attachment design and installation and licensed in the state where the project is located shall be responsible for calculations, attachment selections and installation details.

D. The Wind Load Analysis consisting of attachment design, calculations, attachment selection, installation details including anchoring methods, fastener specifications, embedment and/or welded length, etc..shall be submitted for review and record. This submittal shall be signed and sealed by a professional engineer, as stated above. This submittal will become part of the project design calculations, included in the project records, and when required, will be submitted to the authority having jurisdiction.

E. The wind load attachment design shall clearly indicate the attachment points to the building structure and design forces in all horizontal and vertical axes at the attachment points. The wind load attachment engineer shall coordinate all attachments with the projects structural engineer of record, who shall verify the attachment methods and the ability of the building structure to accept the loads imposed.

F. The wind load attachment design shall be based on actual equipment data (dimensions, weight, center of gravity, etc.) obtained from submittals or the manufacturers. The equipment manufacturer shall verify that the attachment points on the equipment can accept the combination of wind load, weight, and other loads imposed. For systems required to be seismically restrained and having an importance factor of 1.5 (systems that must remain operational during and after an earthquake), the manufacturer shall provide certification that the equipment can accept the loads imposed and remain operational. Refer to specification 23 05 48 Seismic Control for HVAC Systems for additional requirements.

G. At the project Engineer of Record’s discretion, equipment submittals may not be approved until the Wind Load Analysis has been submitted. It is the contractor’s responsibility to schedule and coordinate the process in a timely fashion, including follow-up Wind Analysis submittals for equipment approved pending a Wind Analysis submittal.

PART 2 - PRODUCTS

2.1 Support for equipment shall be by one or more of the following methods:

A. Concrete bases and pads with anchor bolts cast in place. Provide a 4" thick concrete pad that is minimum 4" wider than the equipment in each direction, formed on all sides and hand troweled to a smooth, dense finish with neatly chamfered corners. Large concrete pads on grade shall be constructed with reinforcing steel or reinforcing roadway mesh. Set anchor bolts as required for the equipment.

B. Structural steel angles, beams or channels, unistrut type channels or pipe. Supports shall be fabricated into a rigid framework with welded or bolted connections and cross bracing or sway bracing. Supports shall be set on slab with base plates, or attached to the building structure as required. Brackets for relatively lightweight equipment may be attached to the wall. Equipment shall be set on and attached to the framework.

C. Solid steel hanger rods supported from the structure above similar to pipe hangers. Provide sway bracing for equipment supported in this manner.

2.2 Provide exact dimensions, locations and other detail for the specific equipment provided that requires bases or supports. Set anchor bolts as required for the equipment.

2.3 Equipment roof supports shall be heavy gauge galvanized steel support curbs with base plate, continuous welded corner seams, integral raised cant to match roof insulation, internal insulation, wood nailer and counterflashing. Unless otherwise noted, top of curbs shall extend 12" above the finished roof surface, 18" above for intake applications. For sloped roofs, the curb shall have a built-in slope to match roof slope so that top of curb is level..

2.4 Rooftop heat pump condensing unit shall be roof curb mounted. Curbs shall be furnished with the equipment and meet the following requirements:

A. The roof curb shall be 18" minimum height. Gasketing shall be furnished for field installation to ensure a weather-tight condition. For sloped roofs, the roof curb shall be sloped to match the roof slope to provide a level unit support. The roof curb shall be consistent with the footprint of the unit, including the piping cabinet and other unit components.

B. Minimum 2" continuous internal insulation.

2.5 Refer to 23 34 00 HVAC Fans and 23 34 23 HVAC Gravity Roof Ventilators for roof curb requirements associated with that equipment.

PART 3 - EXECUTION

3.1 Roof support curbs shall be installed and leveled and secured to the roof deck/structure. Roof insulation and roofing shall be removed and repaired to maintain the integrity of the roofing system. Provide wood cant strips around the curb only if recommended for the roofing system.

3.2 Bracing and Attachment

A. All equipment and curbs exposed to wind shall be installed and attached to structure in strict accordance with the wind load attachment design provided by the engineer to conform with requirements of the Code and referenced standards and in strict accordance with the manufacturers written instructions.

B. No rigid connections between equipment and the building structure shall be made that would degrade noise and vibration control.

C. Coordinate work with other trades. When conflicts develop in installation, they shall be brought to the attention of all involved parties and a suitable solution must be determined.

D. Each manufacturer of equipment shall furnish a statement stamped by a professional engineer indicating that the equipment is designed and constructed to withstand wind loads required by the code. Statement shall be based on analysis, testing or experience data, and supporting documentation shall be available upon request.

3.3 Attachment to manufactured trusses, joists, purlins, and other engineered structural members and supports shall be done in strict accordance with the structural engineer's or manufacturer's recommendations. Refer to the architectural and structural drawings for type of engineered structural systems being used. Connections to these structural members shall be made with connection devices and methods approved by the structural engineer or manufacturer. Provide additional supports with supplemental steel shapes when spacing between structural members exceeds specified distances. In the case of existing trusses, the structural engineer must review and approve hanger attachment methods.

END OF SECTION

23 05 53

IDENTIFICATION OF HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 Identification of Division 23 equipment shall consist of duct marking as specified hereinafter.

1.2 Duct markings shall be applied to all ductwork.

1.3 Labels, tags and markers shall comply with ANSI A13.1 for lettering size, colors and length of color field.

1.4 Submit product data noting materials, sizes and dimensions for identification systems.

PART 2 - PRODUCTS

2.1 Duct markings shall be laminated plastic color-coded pressure sensitive vinyl tape, 2.50 inches width, 3 mils minimum thickness. Identification shall include service (supply, return, exhaust, outside air) and direction of flow.

2.2 Duct access door and panel markings shall be similar to duct markings to identify the device (CONTROL DAMPER, SMOKE DETECTOR, etc.).

PART 3 - EXECUTION

3.1 Identification labeling, marking and tagging shall be applied after insulation and painting has been completed.

3.2 Coordinate names, abbreviations and other designations used in mechanical identification work, with corresponding designations shown, specified or scheduled on drawings.

3.3 The Contractors shall coordinate labeling, marking and tagging to attain coordinated and consistent systems of identification.

3.4 Equipment labeling shall consist of unit designation as shown on the drawings. Exhaust fan labeling shall also indicate service or room or area of service.

3.5 Duct markers shall be placed:

A. At 50 ft. centers in exposed finished areas, but at least once per room.

B. On mains at each branch take-off.

C. On duct access panels.

END OF SECTION

23 05 93

TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 Provide air balancing of the new systems and existing systems affected by the new work. Balancing work shall be performed by qualified personnel of a member firm of the Associated Air Balance Council (AABC) or a member firm of the National Environmental Balancing Bureau (NEBB), who has no affiliation with the Contractor or any of its Sub-Contractors. Include a certification sheet signed and sealed by the certified testing and balancing authority. Include a list of instruments to be used for procedures, along with proof of calibration.

1.2 Methods, procedures, equipment, certifications, report forms and reporting information shall be in accordance with the standards of AABC or NEBB and latest edition of the SMACNA TAB Procedural Guide and industry practice.

1.3 During the bid period, call to attention any requirements for additional balancing dampers, test ports, gage cocks, thermometer wells, flow control devices, valves, balancing valves and fittings and manual volume dampers which are deemed necessary in addition to those shown on the drawings, and provide such so that proper balancing can be performed. Prior to installation of the systems, verify that the proper number and location of balancing devices are adequate for completion of the balancing work.

1.4 Prepare a balancing plan that includes strategies and step-by-step procedures. This plan should include a list of items that must be completed before balancing can proceed. Prepare a schedule to ensure adequate time for the balancing process and submit this schedule to the Architect or Construction Manager for review.

1.5 When project is in phases and partial occupancy is planned, determine process to allow balancing work to be completed before occupancy.

1.6 Verify that all equipment start-up services have been completed before the beginning of any balancing work. After initial start-up has been completed, inform the balancer that the systems are operating properly, that all safety interlocks and protective devices are functioning, and the systems are ready to be balanced. **Refer to SMACNA Guide 2.6.1 for items to be included in system check.**

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Air Balance

A. Each air outlet device shall be balanced to the quantities listed on the drawings within plus or minus 10 percent. Intended pressure relationships in areas required by recognized standards and practice shall be attained.

B. Witness all duct pressure and leakage tests. Refer to 23 31 13 and coordinate accordingly.

C. Check for airflow blockages.

D. Check for proper sealing of air-handling unit components. Report all issues in balancing report.

E. Check for proper sealing of air duct systems. Minor issues shall be reported in the balancing report. If a major issue is found, stop balancing work and report issue to the Engineer / Construction Manager.

F. Balancing of air devices shall be done to provide adequate but not excessive pressure in the branch ducts to air control units and air devices. Dampers incorporated in air devices shall be used only as secondary balancing means when other branch dampers are provided.

G. Mark equipment and balancing device setting with paint or other suitable, permanent identification material, including damper-control positions, valve position indicators, fan-speed-controls levers, and similar controls and devices, to show final setting.

3.2 After completion of the balancing work, a full report shall be prepared in pencil and two copies (only) submitted to the Engineer for preliminary review. After review, additional balancing, adjustments, drive replacements, readings and recordings deemed necessary shall be done and the report revised. Six typed copies of the final report shall be submitted to the Engineer for review and approval. An approved copy of the report shall be included in each set of operating and maintenance manuals.

3.3 Final Report contents: In addition to certified field report data, include the following:

A. Table of Contents with total number of pages defined for each section of the report.

B. Summary of Contents - include the following:

1. Indicated versus final performance.
2. Notable characteristics of systems.

C. Nomenclature sheets for each item of equipment.

D. Notes to explain why certain final data in the body of reports varies from indicated values.

E. Manufacturers' test data.

3.4 Inspection after testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance reading documented in the final report. Submit random sampling percentages and results.

END OF SECTION

23 07 13

DUCT INSULATION

PART 1 - GENERAL

1.1 All supply air ductwork and plenums shall be insulated unless specifically noted as “uninsulated” in the Duct Construction Schedule on the drawings, including ductwork in crawl spaces, attics, and buried under slab.

1.2 Equipment and devices, accessories and stiffeners in insulated ductwork shall also be insulated. The backside of supply air diffusers shall also be insulated to prevent condensation, except if the air device is factory insulated.

1.3 Ductwork shall not be internally lined, unless shown otherwise for return or exhaust.

1.4 Composite insulation assemblies shall meet UL 723 or ASTM E84 requirements and not exceed maximum flame spread of 25 and smoke development of 50, except as specifically allowed below, and “discrete” combustible components as defined by the mechanical code may be UL 2043 listed in lieu of UL 723 or ASTM E84. Identification of manufacturer, thermal resistance (R-value), flame spread and smoke-development shall be clearly marked on the exterior of the insulation at intervals as required by code.

1.5 Submittals

A. Submit product description, thermal characteristics and list of materials and thickness for each service and location.

B. Submit manufacturers published literature indicating proper installation procedures.

1.6 Delivery, Storage and Handling

A. Materials on site shall be stored in original factory packaging, labeled with manufacturer’s identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical and damage, in addition to storing in original wrapping.

PART 2 - PRODUCTS

2.1 Insulation shall be manufactured by Johns Manville, Owens Corning, Certainteed, Knauf, Manson. Insulation for duct systems required to be insulated shall have a minimum installed R-value of 4.2 (at a 75 degrees F mean rating temperature):

“Installed” R-value for blanket insulation is the calculated R-value with 25 percent compression. “Installed” R-value for board insulation is the published nominal R-value.

2.2 Insulation on concealed ductwork shall be fiberglass blanket insulation with factory applied reinforced foil and kraft paper vapor barrier jacket, minimum 1.50 inches thickness and 0.75 inch p.c.f. density, formaldehyde-free or GreenGuard Certified for low formaldehyde and VOC emissions.

EXECUTION

3.1 Site Inspection

A. Before starting work, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of insulation materials and accessories can begin.

B. Verify that all insulation materials and accessories can be installed in accordance with project drawings and specifications and material manufacturers' recommendations.

C. Verify, by inspecting product labeling, submittal data, and/or certifications which may accompany the shipments, that all insulation materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.

3.2 Preparation

A. Ensure that all surfaces over which insulation is to be installed are clean and dry.

B. Ensure that insulation is clean, dry and in good mechanical condition with all factory-applied vapor or weather barriers intact and undamaged. Wet, dirty or damaged insulation shall not be acceptable for installation.

C. Ensure that pressure testing of ductwork and fittings has been completed prior to installing insulation.

3.3 Installation

A. Installation shall be done by tradesmen specializing in this work in strict accordance with manufacturer's recommendations.

B. Install all insulation materials and accessories in accordance with manufacturer's published instructions and recognized industry practices. External duct stiffeners and bracing shall be insulated same as for duct.

C. Blanket insulation shall be wrapped tight to the duct. Insulation shall be secured to ducts 20 inches wide and greater with weld pins and fasteners, 18 inches on center maximum. Adhesive shall be applied to the duct as an aid to installation and adhesion. Vapor barrier jacket shall be lapped, stapled and sealed with adhesive and 3 inches wide FSK pressure sensitive tape.

D. Board insulation with factory applied jacket shall be secured to the duct with weld pins and fasteners, 12 inches on center maximum. Vapor barrier jacket shall be lapped, stapled and sealed with adhesive and 3 inches wide ASJ pressure sensitive tape.

E. Maintain the integrity of factory-applied vapor barrier jacketing on all insulation, protecting it against puncture, tears or other damage. All staples used on cold insulation shall be coated with suitable sealant to maintain vapor barrier integrity.

F. Externally insulate the backsides of supply air devices that are mounted in ceilings and not internally insulated.

3.4 Protection

A. Advise as to requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.

B. Replace damaged insulation, which cannot be satisfactorily repaired, including insulation with vapor barrier damage and moisture-saturated insulation.

3.5 Safety Precautions

A. Employees shall be properly protected during installation of all insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include (but not be limited to) disposable dust respirators, gloves, hard hats, and eye protection.

B. Conduct all job site operations in compliance with applicable provisions of the Occupational Safety and Health Act, as well as with all state and/or local safety and health codes and regulations that may apply to the work.

3.6 Reinsulate ductwork where existing insulation has been damaged or removed in the performance of work in this project.

END OF SECTION

23 31 13

HVAC DUCTWORK

PART 1 - GENERAL

1.1 Ducts, sheet metal plenums and associated devices, accessories and work items shall be provided as shown on the drawings and as specified hereinafter.

1.2 Ductwork, materials, construction, reinforcing and installation shall conform to SMACNA HVAC Duct Construction Standards, latest edition, and other applicable SMACNA standards. In addition, duct systems, components and accessories shall comply with applicable provisions of NFPA 90A, 90B, 96 and 255, and UL 181, 181A, and 181B, including smoke and flame ratings.

1.3 Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 Refer to the Duct Construction and Sealing Schedule on the drawings for information pertinent to the various duct systems, such as duct materials, SMACNA pressure class, seal and leakage class, external insulation, duct liner, etc.

1.5 Refer to the drawings for ductwork that is to be internally lined. Ductwork shall only be internally lined where scheduled or noted on the drawings.

PART 2 - PRODUCTS

2.1 Sheet metal shall be lock forming quality galvanized steel, ASTM A924/A924M and A653/A653M, G60 coating designation, 24 gauge minimum, except as otherwise noted or specified. Other materials and construction for special applications required are as shown on the drawings and specified below.

2.2 Ductwork, as noted on the drawings, which will be painted shall be fabricated of sheet metal with galvannealed or bonderized (phosphated) coating.

2.3 Flexible duct shall be installed as detailed on the drawings and shall not pass through any wall, floor, or ceiling. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly.

A. Flexible air (duct) connectors for galvanized steel ductwork shall be:

Constructed of galvanized steel spiral wire mechanically locked to an airtight laminated aluminum foil, fiberglass and aluminized polyester duct fabric. Duct shall be rated at a minimum of 10 inches w.c. positive pressure and 4 inches w.c. negative pressure. Unless otherwise detailed on the drawings, length shall be limited to 4 feet for Air Terminal Units and 5 feet for Air Devices .

Insulated flexible duct shall have 1 inch thick R-4.2 fibrous glass insulation and .10 perm polyethylene vapor barrier outer jacket, equal to Flexmaster Type 5B. Insulated duct assembly shall conform to be UL 181 and listed as Class I Flexible Air Connector.

Non-insulated flexible duct shall be equal to Flexmaster NI-55, shall conform to UL181 and be listed as Class I Flexible Air Connector.

2.4 Round:

A. Round duct shall be factory or shop formed spiral lock seam, United McGill Air Products "Uni Seal" or "Uni Rib" or equal by Langdon, Semco, Tangent Air, Precision Duct or approved equal.

B. Elbows and fittings for spiral lock seam round shall be factory solid welded, equal to United McGill Air Products "Uni Seal" with beaded sleeve transverse joint connectors, or equal by Langdon, Semco, Tangent Air, Precision Duct or approved equal. For duct systems classified at less than 3" w.c., elbows and fittings may be roll pressed type. Elbows shall be long radius type and, where shown, square type ells shall be mitered with turning vanes. Branch take offs shall utilize a 45 degree entry low loss tap or a conical lateral tap to minimize pressure loss, except that streamlined conical taps may be used where space constraints dictate. Tee fittings shall include elongated proportional turning vanes to equalize airflow around the ells. Wye branches shall be used at end of runs unless shown otherwise. Offsets and transitions shall conform to SMACNA. Transition angles shall be limited to 60 degrees on converging transitions as measured on the interior, and 30 degrees on diverging transitions as measured on the interior. Divided flow branches shall conform to SMACNA. Bull head tees without vanes are not permitted.

C. Construction, reinforcing, supports, etc. shall either conform to SMACNA or to the duct manufacturer's standards, whichever is more stringent.

D. Round duct of 1 inch and less (positive and negative) static pressure construction class may be longitudinal seam. Elbows for longitudinal seam round ductwork shall be factory or shop formed segmented standing seam or pleated. Other fittings shall be comparable to the elbows.

2.5 Air device duct connections for round duct branch connections to rectangular sheet metal ducts shall be 24 gauge sheet metal, equal to Flexmaster Series FL, straight side, minimum 24 gauge with and without manual damper, as described on the drawings. When manual damper is provided it shall be minimum 22 gauge with stamped re-enforcements and include .375" square shaft and locking quadrant equal to Ventlok 639 or Rossi "Everlock", with 2" standoff and nylon bushings. Air terminal unit duct connections for round duct branch connections to rectangular sheet metal ducts shall be 24 gauge sheet metal conical type equal to Flexmaster Series CB. Connectors installed on interior lined rectangular duct shall have an integral insulation guard sleeve. Rectangular tap-to-round branch connection with static boot configuration shall be equal to Flexmaster Type STO. Buckley "Air Tite" fittings or similar by "Snap Rite", equal to the specified Flexmaster fittings, with neoprene gasket and adhesive facing, additionally secured with minimum four sheetmetal screws, may be used for air device duct taps to rectangular sheet metal duct which is not internally lined.

2.6 Duct sealants containing asbestos are prohibited. All duct sealants, tapes and connectors shall be listed and labeled in accordance with UL 181A, 181B or 181C as applicable to the application. Duct sealant materials shall be one or more of the following (compatible with the application):

A. LEED Compliant solvent based sealers and mastics equal to Design Polymerics, with a maximum VOC content of 50 grams/liter.

B. Water base duct sealers and mastics equal to United McGill or Foster Products when the installation environment is above 40 degrees F.

C. Acetone based duct sealers and mastics, equal to Precision Adhesives, when the installation environment is between 0 degrees F and 40 degrees F, zero reportable V.O.C.'s.

D. Mineral impregnated fiber tape with liquid sealant duct joint sealer equal to that manufactured by Hardcast, Inc., Two Part II Sealing System, maximum V.O.C. of 135 g/l.

PART 3 - EXECUTION

3.1 Duct thickness, construction, reinforcing, support and installation including cabling systems, shall conform to SMACNA HVAC Duct Construction Standards, latest edition and other applicable SMACNA standards. Duct reinforcing shall be external to the duct except that rectangular ducts of 3 inches s.p. class or greater with a dimension exceeding 48 inches may utilize internal tie-rod supports in accordance with SMACNA. Only round tubing, rods or conduit is permitted as tie-rods, utilizing the minimum diameters required by SMACNA.

3.2 Transverse joints and longitudinal seams shall be assembled with sealant to conform to SMACNA sealing requirements as indicated in the Duct Construction Schedule on the drawings. Selection of sealant materials shall be compatible with the application. Sealants shall be applied in accordance with manufacturer's recommendations, including application temperature ranges.

3.3 Attachment of hangers and straps to the structure shall be with:

A. After-set concrete inserts, in 4 inches minimum depth concrete, set in drilled holes. Powder actuated driven fasteners are not permitted.

B. Beam clamps in steel construction. Provide anchoring where clamps are attached to sloping surfaces of beam flanges and where otherwise required to ensure permanent attachment.

C. Side beam bracket in wood construction, secured to the wood joist with lag screws set in drilled pilot holes.

D. Unistrut type channel support system may be utilized. Channel shall be pre-set or attached to the structure with inserts or clamps.

E. Attachment to steel deck is prohibited. Span from steel structural members with supplementary steel shapes where direct attachment to structural members is not practical. This does not apply to steel deck with concrete slab poured on the deck. Refer to A. and B. above.

F. Attachment to manufactured trusses, joists, purlins, and other engineered structural members and supports shall be done in strict accordance with the structural engineer’s or manufacturer’s recommendations. Refer to the architectural and structural drawings for type of engineered structural systems being used. Connections to these structural members shall be made with connection devices and methods approved by the structural engineer or manufacturer. Provide additional supports with supplemental steel shapes when spacing between structural members exceeds specified distances. In the case of existing trusses, the structural engineer must review and approve hanger attachment methods.

3.4 Flexible air (duct) connectors shall be attached to metal duct with Panduit nylon banding straps or stainless steel clamps. Nylon banding straps shall be tightened utilizing a cable tie gun. Outer jacket of insulated flexible duct shall be closed at the ends with sealant and nylon banding straps or U.L. listed aluminum foil duct tape equal to Nashua No. 617022 with UL 181 listing printed on the face. Maximum length shall be 7 ft. with support at 4 ft. maximum spacing. Duct shall be free of sags and sharp bends. Utilize flexible duct elbow supports at all elbows. Flexible supports shall be UL listed for ceiling return air plenum use per UL 2043, UL 723 or ASTM E84, as manufactured by Titus (Flexright) or Thermaflex (Flex Flow) or approved equal. Independently supported radius’d sheet metal elbows may be used in lieu of flexible duct elbow supports when installed directly on air devices.

3.5 Flexible air (duct) connectors shall not be installed:

A. Where ductwork is exposed.

B. Thru any wall, ceiling, floor or fire rated or smoke rated assembly.

C. In the immediate vicinity of, and connecting to, air devices in fire rated ceilings where the assembly details require steel ductwork.

3.6 Duct access doors shall be provided for access to equipment, damper operators, devices and instruments inside the duct, and duct smoke detector (refer to Electrical drawings) and where otherwise shown. A wall or ceiling access panel shall be provided where duct access is required thru a wall or inaccessible ceiling. Refer to 23 05 04 Basic HVAC Materials and Methods for such access panels.

END OF SECTION

23 33 00

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 Ductwork accessories specified herein shall include manual balancing dampers. Refer to the drawings for scope and application.

1.2 Balancing dampers are also specified to be furnished with "spin-in" duct taps specified in Section 23 31 13 HVAC Ductwork and in Section 23 37 00 Air Outlets and Inlets.

1.3 Manual balancing dampers, which will be required to effect a positive balancing of air in the system shall be provided in the ductwork. The company or agent who is to balance the air systems shall call the HVAC Contractor's attention to requirements for additional balancing dampers which are deemed necessary.

PART 2 - PRODUCTS

2.1 Dampers and accessory items shall be constructed of galvanized steel, except those in ducts of stainless steel, aluminum, PVC coated or other such materials shall be stainless steel to maintain the intended corrosion resistance of the system.

2.2 Balancing dampers shall be single cross-blade up to 12 inches blade width and in larger sizes, multiple blade type 6 inches maximum width with opposed blade arrangement. Dampers shall have a full length continuous drive shaft and be controlled by a locking quadrant positioner with handle and minimum .375” square shaft, equal to Rossi “Everlock” or Ventlok #641 and for externally insulated ducts Rossi “Everlock” with 2” stand-off or Ventlok #644. For ductwork classified as 2” and greater, provide HiVel Ventlok Acorn Nut, End Bearing and gasket hardware.

PART 3 - EXECUTION

END OF SECTION

23 37 00

AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 Air outlet and inlet devices include diffusers and registers associated with ceiling and lighting systems.

1.2 Refer to the schedule on the drawings for description, catalog numbers, materials, finishes, accessories, mounting and other details of the devices required.

1.3 Supply air devices in ceilings shall have their backsides externally insulated for condensation control. This external insulation shall be field installed, same as that specified for supply air ductwork / factory installed, minimum R-4.2 mineral fiber with foil jacket.

PART 2 - PRODUCTS

2.1 Air distribution devices shall be Titus, Tuttle & Bailey, Kreuger, Price. All devices of a common type shall be by the same manufacturer.

2.2 Air outlet and inlet devices shall be equal to those specified by catalog number and description in the schedule on the drawings. Dampers shall be galvanized steel, unless otherwise noted, opposed blade configuration. Damper operators shall be concealed screw type. An auxiliary mounting frame shall be furnished with each grille and register except those mounted on exposed ducts or in lay in application. The ceiling grid is a regressed narrow “T” bar system. Lay-in devices shall be designed to fit in the grid.

PART 3 - EXECUTION

3.1 Verify & ensure compatibility of ceiling mounted devices with the ceilings and suspension systems (lay in, concealed spline, plaster, drywall, etc.). Verify with the architectural drawings.

3.2 Carefully align square and rectangular devices with the vertical and horizontal building lines. Diffusers shall be attached rigidly to the ductwork. Where connected by flexible ducts, special supports shall be provided as required, either from the ceiling suspension system or by independent suspension wires or rods from the building structure.

3.3 Externally insulate the backsides of supply air devices that are mounted in ceilings. Insulation shall comply with 23 07 13 DUCT INSULATION.

3.4 Inside of ducts behind grilles, registers and diffusers shall be painted flat black, as needed, to eliminate the sight of shiny surfaces.

END OF SECTION

23 81 28

DX MINI SPLIT SYSTEMS – AIR-COOLED

PART 1 - GENERAL

1.1 The systems shall be variable capacity, DX split heat pump systems. The systems shall consist of one indoor fan coil unit matched to one outdoor air-cooled heat pump condensing unit, and associated controls. Refer to drawings for capacities and arrangements.

1.2 The design is based on Mitsubishi equipment. The other manufacturers listed in Part 2 are acceptable manufacturers but shall include in their bid price all necessary revisions from the basis of design required to install their system, including but not limited to variations in electrical services, branch controllers, pipe sizing, quantities and arrangements.

1.3 Equipment shall be rated in accordance with ARI 210/240 and so labeled, and shall be Listed by UL or ETL and so labeled.

1.4 The condensing units shall be factory charged with R-454B refrigerant.

1.5 Provide a set of spare filters for each indoor unit.

1.6 The systems shall carry a five (5) year warranty from date of installation. In addition, the compressors shall be covered by the manufacturer's limited warranty for a period of seven (7) years from date of installation. If, during these periods, any part shall fail to function properly due to defects in workmanship or material, it shall be replaced or, at the discretion of the manufacturer, repaired. The 2nd thru 5th year and 2nd thru 7th year warranties do not include labor.

1.7 Refer to the HVAC and Electrical drawings for electrical power feeds. Compare unit requirements to feeder sizes shown. Refer to 23 05 13 Electrical Requirements for HVAC Equipment.

1.8 Installing contractor shall be factory trained and certified to install the systems. Training shall be documented by the manufacturer and certification shall be submitted for review with shop drawings, prior to the installation of the systems.

1.9 Mechanical equipment, appliances and supports that are exposed to wind shall be designed and installed to resist the wind pressure determined in accordance with the building and mechanical code. Refer to specification 23 05 30 Bases and Supports for HVAC Equipment for additional requirements.

PART 2 - PRODUCTS

2.1 Each Air-Cooled Heat Pump Condensing Unit shall consist of:

A. General:

1. Each outdoor unit shall be specifically matched to the corresponding indoor unit size(s), factory assembled and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of inverter scroll or rotary compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separators, service ports and refrigerant regulator. High/low pressure gas line, liquid and suction lines, individually insulated between the outdoor and indoor units.

2. Accumulator with refrigerant level sensors and controls; high-pressure safety switch, over-current protection and DC bus protection.
3. High efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.
4. Auto-charging feature and a refrigerant charge check function. The unit shall be capable of metering the refrigerant charge as additional refrigerant is added to the system and will calculate how much additional refrigerant is to be added to the system.
5. Oil recovery cycle shall be automatic occurring after start of operation and then at re-occurring intervals during unit operation.
6. Heating operation down to 5°F dry bulb ambient temperature. Manufacturers that cannot provide heating operation at 5°F shall provide supplemental electric heat or additional low ambient heating components in the condensing unit to allow for operation down to -10°F. All additional engineering, electrical, and installation costs shall be by the unit manufacturer.
7. The system shall automatically restart operation after a power failure and will not cause any settings to be lost, thus eliminating the need for re-programming.
8. Unit shall have a sound rating no higher than 64 dB(A) measured at 3 feet from any side of the unit.

B. Cabinet shall be fabricated of galvanized or rust-proofed steel, bonderized and finished with a powder coated baked enamel. The outdoor unit shall come furnished with four (4) mounting feet, mounted across the base pan, to allow bolting to an equipment pad.

C. Condenser fans shall be statically and dynamically balanced direct drive, variable speed propeller type. Fan motor shall have inherent protection, permanently lubricated bearings, and be completely variable speed. Fan motor shall be mounted for quiet operation. Fan shall be provided with a raised guard to prevent contact with moving parts. Provide high static motors for units installed indoors.

D. Condenser coils shall be copper or other nonferrous construction with corrugated fin tube. The fins shall be aluminum or covered with an anti-corrosion acrylic resin and hydrophilic, rated for up to 500 hours salt spray. Automatic defrost shall remove any frost from the outdoor unit allowing the system to maintain heating capacity.

E. Compressor

1. Compressors shall be inverter scroll or rotary type, inverter-driven variable speed, capable of changing the speed to follow the variations in total cooling and heating load.
2. Each compressor shall be equipped with a crankcase heater (if required for specified design and operating conditions), high pressure safety switch, and internal thermal overload protector.
3. The capacity control range shall be minimum 10% to 100%.
4. Compressor assembly shall be installed on vibration isolators.
5. The following safety devices shall be included on the condensing unit: high pressure switch, control circuit fuses, fusible plug, high pressure switch, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter and anti-recycling timers.

F. Units shall be rated under AHRI 210/240 and 340/360. Single-Phase cooling-only units shall meet or exceed the DOE requirement of 14 SEER. Single-Phase heat pump units shall meet or exceed the DOE requirement of 14 SEER and 8.2 HSPF.

Note: Shop drawing submittals shall include AHRI ratings to show compliance with the requirements.

2.2 Fan Coil Units

A. Wall Mounted Units

1. General
   a. Wall mounted units shall be completely factory assembled and tested. Included in the unit shall be factory wiring with on/off switch, piping, electronic proportional expansion valve, control circuit board, fan motor thermal protector, flare connections, condensate drain pan, self-diagnostics, auto-restart function, time delay fusing, and test run switch. The unit shall have an auto-swing louver which ensures efficient air distribution, which closes automatically when the unit stops. The local controller shall be able to adjust the discharge angle.
   b. A mildew-proof, polystyrene air filter and condensate drain pan shall be included. The indoor units sound pressure shall be no more than 54 dB(A) at high speed measured at 3.3 feet from the unit.
   c. Refer to drawings for required capacities.
2. Cabinet shall be zinc-coated bonderized steel finished with a baked enamel paint. Inlet grilles shall be attractively styled, high-impact polystyrene. Matching mounting brackets shall be provided.
3. Fans
   a. Fan shall be tangential direct-drive blower type with air intake at the upper front face of the unit and discharge at the bottom front. Automatic, motor-driven vertical air sweep shall be provided standard.
   b. Horizontal and vertical air sweep operations shall be user selectable.
   c. Motors shall be open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors shall be 3-speed.
4. Coil shall be a 2-row copper tube with aluminum fins and galvanized steel tube sheets. Fins shall be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for hose attachment to remove condensate. Condensate pan shall have internal trap and auxiliary drip pan under coil header. The drain pipe shall be able to be fitted from either left or right sides.
5. Electrical Requirements
   a. Unit shall operate on 115 volt, 208 volt, or 230 volt, 60 Hz single-phase power supply as specified on the equipment schedule. Power and control connections shall have terminal block connections.
6. Controls
   a. Controls shall consist of a microprocessor-based control system, which shall control space temperature, determine optimum fan speed, and run self-diagnostics. The space temperature control range shall be from 64F to 84F.
   b. Provide hard wired wall-mounted local programmable controller with integral space sensor for each unit, with features as specified in the “Controllers” paragraph below.
   c. Controls shall be 24 volt, and shall be easily operated by the user from the wall-mounted local controller.
7. Accessories
   a. Condensate Overflow Switch -- A level sensor on the condensate pan shall stop cooling operation and alarm the BAS if the level in the condensate pan is near overflow condition.
   b. Condensate Pump – Provide a factory-furnished UL 2043 plenum-rated condensate pump and sensing unit compatible with the fan coil voltage to remove condensate from the drain pan. Pump shall be thermally-protected (auto reset) and designed for

quiet operation (less than 27 dBA) and consist of two parts: a reservoir/sensor assembly, and a remote sound-shielded pump assembly. The lift capability of the condensate pump shall be minimum 36". Pump shall be powered and wired from the fan coil unit power connection, downstream of safeties.

2.3 Controllers:

A. Local Controllers (Room Thermostats)

1. Wall mounted local remote controllers (thermostats) shall be provided to allow the user to change on/off, temperature setting, and fan speed setting for each fan coil unit. The room temperature shall be sensed at this wall mounted remote controller (thermostat) unless noted otherwise. The controller shall display a four-digit error code in the event of system abnormality/error.
2. The fan coil thermostats shall have their buttons locked out thru software so that the setpoints are only adjustable thru the BACnet interface. Review with Owner prior to implementation.
3. The Local Controller shall be mounted into a standard 2" x 4" junction box.
4. Unit Display
   a. The Local Remote Controller shall be a backlit LCD display with contrast adjustment.
   b. The controller shall display On/Off Status, Operation Mode, Setpoint, and Fan Speed. The controller shall display temperature setpoint in one degree increments with a range of 60-90 degF. On/Off status shall be displayed with an LED.
   c. Error codes shall be displayed in the event of system abnormality/error.
   d. The following system temperatures shall be capable of being displayed to assist service personnel in troubleshooting:
      1) Return air temperature
      2) Liquid line temperature
      3) Gas line temperature
      4) Discharge air temperature (if available on the unit)
      5) Remote temperature sensor temperature (if applicable)
      6) Indoor space temperature setpoint
5. Operation
   a. The controller shall be capable of controlling a group of up to 5 indoor units coupled to a common outdoor unit. Refer to drawings for groupings. The following operation groups shall be controlled:
      1) On/Off, Operation Mode (Cool, Heat, Fan, Dry and Auto* (*with VRV Heat Recovery System))
      2) Independent cooling and heating setpoints in the occupied mode
      3) Independent cooling setup and heating setback
      4) Fan speed
      5) Airflow direction
      6) The controller shall be able to limit the user adjustable setpoint ranges individually for cooling and heating in the occupied period
      7) Lock out key settings
      8) Indoor unit group assignments.
6. Program Functions
   a. Controller shall support schedule settings with selectable weekly pattern options.
      1) Seven day week
      2) Weekday + weekend
      3) Weekday + Saturday + Sunday
      4) Independently settable Cooling and/or Heating setpoints when unit is on (occupied).

5) Setup (Cooling) and Setback (Heating) setpoints when unit is off (unoccupied)
6) A maximum of 5 operations schedulable per day
7) Time setting in 1-minute increments.

b. The Controller shall support auto-changeover mode for both heat pump and heat recovery systems allowing the optimal room temperature to be maintained by automatically switching the indoor unit's mode between Cool and Heat according to the room temperature and temperature setpoint.
   1) Changeover to cooling mode shall occur at cooling setpoint + 1oF .
   2) Changeover to heating mode shall occur at heating setpoint - 1oF .

c. The Controller shall support an Auto-Off-Timer for temporarily enabling indoor unit operation during the unoccupied period.
   1) When the Off Timer is enabled and when the unit is manually turned on at the remote controller, the controller shall shut off the unit after a set time period.
   2) The time period shall be configurable in the controller menu with a range of 30-180 minutes in 10 minute increments.

d. The space temperature shall be sensed at the local controller unless noted otherwise to be in the return air of the unit or as a remote temperature sensor.

2.4 Refrigerant Piping:

A. Refrigerant piping shall be copper tubing conforming to ANSI B31.5 and ASTM B280. Refrigerant piping systems and components shall be engineered, installed, tested and placed in operation in accordance with ASME B31.5, latest edition.

B. Copper tubing shall be Type ACR, hard-drawn straight lengths. Fittings shall be copper, UL or ETL tested to UL 207, and certified to a working pressure of 600 psig. All joints shall be brazed using silver brazing alloy while flowing an inert gas such as dry nitrogen through the piping. Copper tubing that is downstream of branch controllers and .625" size and smaller may be Type ACR soft annealed coils for lengths under 25 ft if approved by the equipment manufacturer. Refer to 23 23 00 for additional information.

C. Pipe arrangement, devices and sizing information shown on the drawings is limited due to variations in equipment manufacturers' requirements. The equipment supplier shall prepare project-specific drawings of each piping system showing numbers and sizes of piping, devices and accessories, coil circuitry, traps, double suction risers and other such detail required for the application shown on the drawings and as specified herein. Drawings shall be submitted to the Engineer for review with the equipment shop drawings.

D. The equipment supplier shall provide piping installation instructions to the Contractor and supervision as needed to ensure that the piping system is installed in accordance with the equipment manufacturer's recommendations.

2.5 Connectivity

A. Each system shall have integral wireless WiFi via the Owner's network or hard-wired network connectivity to a remote cloud service such that fan coil and each condensing unit can be accessed via the web for informational and troubleshooting activities.

B. Owner's access thru the cloud shall be free of charge for the condensing unit warranty period plus one year. Cost for extending the access period beyond that stated above shall be made available to the Owner via a formal contract proposal.

C. Access shall be password protected, via IOS or Android or Windows operating systems, with secure outbound only data transmission of the following live information as a minimum via a Graphical Dashboard Display:
   1. Space Temperature
   2. Fan Coil Status
   3. Condensing Unit Status
   4. Alarms.
   5. Customizable email notifications.
   6. System and Data History
   7. Service Log History

The split systems shall be manufactured by Mitsubishi.

PART 3 - EXECUTION

3.1 Installers shall have received training by the manufacturer of the systems being supplied for the project. If they have not received training the system manufacturer shall schedule and perform required installation training.

3.2 Piping Installation

A. Pipe arrangement, devices and sizing information shown on the drawings is schematic in nature, limited due to variations in equipment manufacturers' requirements. The equipment supplier shall prepare project-specific drawings of each piping system showing numbers and sizes of piping, devices and accessories, coil circuitry, traps, double suction risers and other such detail required for the application shown on the drawings and as specified herein. Exact routing, and pipe quantities and sizing shall be per manufacturer’s requirements. Refrigerant piping shall conform to ANSI B31.5 and ASTM B280. Refrigerant piping systems and components shall be engineered, installed, tested and placed in operation in accordance with ASME B31.5, latest edition. Drawings shall be submitted to the Engineer for review with the equipment shop drawings. Exact routing, and pipe quantities and sizing shall be per manufacturer’s requirements.

B. At time of equipment submittal approval a piping diagram shall be provided by the equipment manufacturer to the Installing Contractor for each split system. The equipment manufacturer shall review the piping diagram with the Installing Contractor.

C. A copy of the Approved piping diagrams shall be kept at the jobsite.

D. The Installing Contractor shall update the piping diagrams with any field changes such as re-routing, shortening, lengthening or changing diameter of a pipe segment, adding or eliminating elbows and or fittings, resizing adding or eliminating indoor units, changing the mounting height, or moving the location of a device or fitting during installation. Those changes shall be communicated to the equipment manufacturer PRIOR TO INSTALLATION. The equipment manufacturer shall review and provide written approval or required modifications prior to installation.

E. The equipment manufacturer shall update their Piping Program to an “As-Built” program. Proper refrigerant charge shall be calculated and communicated to the Commissioning/Startup Technician along with the As-Built piping program.

F. The equipment manufacturer’s representative shall inspect the piping system prior to charging and start-up, and document their approval or required changes.

G. System shall be leak checked, evacuated and charged by the Installing Contractor. Refer to 23 23 00.

3.3 Control wiring shall be installed between indoor units, condensing units in strict accordance with the manufacturer's instructions. All control wiring shall be low-voltage plenum rated type.

3.4 Coordinate connectivity requirements, including any required network connections, with the project IT contractor and the Owner.

3.5 Furnish and install all controls, wiring and accessories for a complete and operational system. Coordinate control integration into the BAS with the BAS installer.

3.6 Locate equipment so as to afford adequate service space.

3.7 Roof mounted condensing units shall be installed a minimum of 10'-0" from any roof edge not protected with a code compliant guard rail regardless of location indicated on plans. Units shall be installed in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances. Set with Type C2 isolators and secured to roof equipment rails attached to the roof deck and flashed into the existing roofing system. All bases and curbs for roof mounted equipment shall be constructed and attached to the roof deck such that installed equipment can withstand 90 mph wind loads. Piping shall be connected utilizing flexible connectors.

3.8 Install fan coil units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances. For gravity drained units, provide a drain pipe with trap from fan coil drain pans and extend piping to a floor drain or other point of discharge as shown and terminated per the Code. For fan coils fitted with condensate pumps, install pump and sensing devices in evaporator condensate drain piping, and provide and/or extend power and control and safety wiring, all in strict accordance with the manufacturer's instructions. Condensate piping shall be extended to a floor drain or other point of discharge as shown and terminated per the Code.

3.9 Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26. Do not proceed with equipment start-up until wiring installation is acceptable to equipment Installer.

3.10 The system shall be checked, started, tested, adjusted and commissioned by a factory trained service agent of the manufacturer prior to operation. The unit manufacturer will be responsible for the start-up, programming, and commissioning of the entire variable refrigerant volume system. This shall include coordinating the interface requirements and system points with the temperature controls contractor. Manufacturer shall test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

3.11 Provide services of manufacturer's technical representative for 2 days to instruct Owner's personnel in operation and maintenance of units. Schedule training with Owner.

3.12 In addition to the adjustments and fine tuning, the Contractor shall include as a part of this contract the equivalent of three (3) man days of service technician time for work as may be specified by the Engineer.

3.13 The control equipment supplier shall provide 4 hours of instruction and training of the Owner's personnel regarding the hardware and software of the system. Software training shall include

programs, methods of programming, control loops, scheduling and reports. Site training classes shall not be scheduled for longer than 4 hours duration except at the discretion of the Owner. Contractor shall videotape the demonstrations and make copies available to the Owner.

END OF SECTION

DIVISION 26 – ELECTRICAL INDEX

HYATT REGENCY RESTROOM RENOVATION

HEAPY

Architect | MEP Engineer

Schooley Caldwell | Columbus, Ohio | Project No. 2025-07170

Section INDEX

COMMON WORK RESULTS FOR ELECTRICAL

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LIGHTING

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OCTOBER, 2025

26 05 01 BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 Special Note

A. All provisions of the Bidding Requirements, General Conditions and Supplementary Conditions, including Division 00 and Division 01, apply to work specified in this Division.

B. The scope of the Division 26 work includes furnishing, installing, testing and warranty of all Division 26, 28 work and complete systems as shown on the Division 26, 28 drawings and as specified in Division 26, 28 and elsewhere in the project documents..

C. Understanding that the contractors for various Divisions are sub-contractors to the Prime Contractor, assignments of work by division are not intended to restrict the Prime Contractor in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

D. The project drawings and specifications define scope of work for the various divisions. Such assignments of work are not intended to restrict the Construction Manager in assignment of work among the contractors to accommodate trade agreements and practices or the normal conduct of the construction work. If there is a conflict of assigned work between Divisions 02 thru 33 and Divisions 00 and 01, Divisions 00 and 01 shall take precedence.

1.2 Permits and Regulations

A. Include payment of all permit and inspection fees applicable to the work in this Division. Furnish for the Owner certificates of approval from the governing inspection agencies, as a condition for final payment.

B. Work must conform to the National Electrical Code, National Electrical Safety Code and other applicable local, state and federal laws, ordinances and regulations. Where drawings or specifications exceed code requirements, the drawings and specifications shall govern. Install no work contrary to minimum legal standards.

C. All electrical work shall be inspected and approved by the local jurisdictional authority.

D. All electrical work shall be inspected and approved by the Ohio Division of Industrial Compliance who will issue the inspection certificate.

E. Upon completion of work, the Contractor shall furnish to the consulting State Architect the certificate of inspection and approval before final payment on contract will be allowed.

F. Final acceptance of all work will also be subject to the approval of the University Physical Plant Department.

1.3 Inspection of Site

A. Inspect the project sit. Conditions shall be compared with information shown on the drawings. Report immediately to the Architect / Construction Manager any significant discrepancies which may be discovered. After the contract is signed, no allowance will be made for failure to have made a thorough inspection.

1.4 Drawings and Specifications

A. The drawings indicate the general arrangement of the work and are to be followed insofar as possible. The word "provide", as used, shall mean "furnish and install". If significant deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted to the Architect / Construction Manager for approval before proceeding with the work.

B. Make all necessary field measurements to ensure correct fitting. Coordinate work with all other trades in such a manner as to cause a minimum of conflict or delay.

C. The drawings and specifications shall be carefully studied during the course of bidding and construction. Any errors, omissions or discrepancies encountered shall be referred immediately to the Architect / Construction Manager for interpretation or correction, so that misunderstandings at a later date may be avoided. The contract drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Having bus duct, wireways and fittings fabricated and delivered in advance of making actual measurements shall not be sufficient cause to avoid making offsets and minor changes as may be necessary to install bus duct, wireways, fittings and equipment.

D. The Architect / Construction Manager shall reserve the right to make minor adjustment in locations of system runs and components where they consider such adjustments desirable in the interest of protecting and concealing work or presenting a better appearance where exposed. Any such changes shall be anticipated and requested sufficiently in advance as to not cause extra work, or unduly delay the work. Coordinate work in advance with all other trades and report immediately any difficulties which can be anticipated.

E. Equipment, ductwork and piping shall not be installed in the dedicated electrical space above or in the working space required around electrical switchgear, motor control centers or panelboards as identified by NEC 110.26 Spaces about Electrical Equipment – 600 Volts Nominal or Less. For equipment rated over 600 volts nominal – 110.32 Work Space About Equipment – 110.33 Entrance to Enclosures and Access to Work Space – 110.34 Work Space and Guarding. Caution other trades to comply with this stipulation.

F. Where any system runs and components are so placed as to cause or contribute to a conflict, it shall be readjusted at the expense of the contractor causing such conflict. The Architect’s / Construction Manager’s decision shall be final in regard to the arrangement of bus duct, conduit, etc., where conflict arises.

G. Provide offsets in system runs, additional fittings, necessary conduit, pull boxes, conductors, switches and devices required to complete the installation, or for the proper operation of the system. Exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible.

H. Should overlap of work among the trades become evident, this shall be called to the attention of the Architect / Construction Manager. In such event, none of the trades or their suppliers shall assume that they are relieved of the work which is specified under their branch until instructions in writing are received from the Architect / Construction Manager.

1.5 Asbestos Materials

A. Abatement, removal or encapsulation of existing materials containing asbestos is not included in the Division 26 Contract. Necessary work of this nature will be arranged by the Owner / Construction Manager to be done outside of this construction and remodeling project by a company regularly engaged in asbestos abatement. Such work will be scheduled and performed in advance of work in the construction and remodeling project.

B. If, in the performance of the work, materials are observed which are suspected to contain asbestos, the Contractor shall immediately inform the Architect / Construction Manager who in turn will notify the Owner. Work that would expose workers to the inhalation of asbestos

particles shall be terminated. Work may be resumed only after a determination has been made and unsafe materials have been removed or encapsulated and the area declared safe.

1.6 Coordination Drawings

A. The Division 23 Contractor shall initially prepare and be responsible for 0.25 inch scale coordination drawings. These drawings shall be produced using a computer aided drafting software of a mutually agreed upon format and distributed to the Division 21, 22, 23, 26, and 28 Contractors. Each Contractor shall prepare their own electronic drawings, using common backgrounds obtained from the Architect and Structural Engineer. The Division 23 Contractor shall be responsible for consolidating (merging) the drawings into combined coordination drawings, and lead the conflict resolution process, with all contractors working together to obtain finished coordinated drawings. No work shall be installed until all contractors have approved and signed-off with their approval and drawings have been submitted and reviewed by the Engineer.

B. Review by the Engineer is cursory. It is the Contractors responsibilities to ensure that all work is coordinated, including fit above ceilings and that specified ceiling heights are maintained.

1.7 Coordination Drawings

A. Refer to Divisions 00 and 01 for requirements.

1.8 Inspection

A. All work shall be subject to inspection of Federal, State and local agencies as may be appropriate, and of the Architect and Engineer.

B. Obtain final inspection certificates and turn over to the Owner.

1.9 Record Drawings

A. Maintain a separate set of field prints of the contract documents and hand mark all changes or variations, in a manner to be clearly discernible, which are made during construction. Upon completion of the work and within 90 days of system acceptance, these hand marked drawings shall be turned over to the Architect / Construction Manager. This shall apply particularly to underground and concealed work, and to other systems where the installation varies to a degree which would justify recording the change.

1.10 Operating and Maintenance Manuals

A. Assemble three copies each of operating and maintenance manuals for the Electrical work.

B. All “approved” shop drawings and installation, maintenance and operating instruction pamphlets or brochures, wiring diagrams, parts list, and other information, along with warranties, shall be obtained from each manufacturer of the principal items of equipment. In addition, prepare and include a chart listing all items of equipment which are furnished under this contract, indicating the nature of maintenance required, the recommended frequency of checking these points and the type of lubricating media or replacement material required. Name and address of a qualified service agency. A complete narrative of how each system is intended to operate. Major items of equipment shall consist of not less than the following:

1. Medium voltage switches and switchgear.
2. Unit substations and transformers.
3. Distribution switchgear and switchboards.
4. Motor controllers and motor control centers.
5. Specialty equipment.
6. Fire alarm, communications and sound systems.

7. Lighting equipment and lighting controls.

C. Standard NEMA publications on the operation and care of equipment may be furnished in lieu of manufacturer's data where the manufacturer's instructions are not available.

D. Original purchase order number; date of purchase; name, address, and phone number of the vendor; warranty information.

E. Copy of required test reports.

F. These shall be assembled into three-ring loose leaf binders or other appropriate binding. An index and tabbed sheets to separate the sections shall be included. These shall be submitted to the Engineer and Construction Manager for review. Upon approval and within 90 days of system acceptance, manuals shall be turned over to the Owner.

1.11 Final Inspection and Punch List

A. As the time of work completion approaches, survey and inspect Division 26 work and develop a punch list to confirm that it is complete and finished. Then notify the Architect / Construction Manager and request that a final inspection be made. It shall not be considered the Architect's or Engineer's obligation to perform a final inspection until the Contractor has inspected the work and so states at the time of the request for the final inspection.

B. Requests to the Architect, Engineer or Construction Manager for final inspection may be accompanied by a limited list of known deficiencies in completion, with appropriate explanation and schedule for completing these; this is in the interest of expediting acceptance for beneficial occupancy.

C. The Architect and/or Engineer will inspect the work and prepare a punch list of items requiring correction, completion or verification. Corrective action shall be taken by the Contractor to the satisfaction of Architect and Engineer within 30 days of receipt of the Architect/Engineer's punch list.

1.12 Warranty

A. Warrant all workmanship, equipment and material entering into this contract for a period of one (1) year from date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect or Construction Manager. Any materials or equipment proving to be defective during the warranty period shall be made good without expense to the Owner. Use of equipment for temporary electric is not the start of the warranty period.

B. This provision is intended specifically to cover deficiencies in contract completion or performance which are not immediately discovered after systems are placed in operation. These items include, but are not limited to, motor controller malfunction, heater element changes required for motor controller, fuse replacement where fuses blow due to abnormal shorts, adjustments and/or replacement of malfunctioning equipment and adjusting special equipment and communication systems to obtain optimum performance.

C. This provision shall not be construed to include maintenance items such as making normally anticipated adjustments or correcting adjustment errors on the part of the Owner's personnel.

D. Provisions of this warranty shall be considered supplementary to warranty provisions under Division 01 General Conditions.

1.13 Project Close-Out Use on State Projects Only

A. The following schedule summarizes actions to be taken or submittals to be completed prior to issuance of the Contract Completion Certificates. Refer to Division 01 -General Requirements, and applicable paragraphs of this Section and the applicable trade Divisions for additional requirements. This information should be submitted at least thirty days in advance of request for final inspection. Where possible, the information shall be bound in 8.50 inch x 11 inch hard back binders.

ITEM	SPEC SECTION
1) Materials/Suppliers List	26 05 01
2) Record Drawings	26 05 01
3) Certificate of Inspection	26 05 01
4) Electrical Tests and Adjustments	26 05 01
5) Operating Instructions and Maintenance Manuals	26 05 01
6) Identification Nameplates	26 05 53
7) Color Coding of Conduits	26 05 53
8) Primary Cable Hi Pot Test and Certification	26 05 13
9) Manufacturers Certification of Installation:	
a) Hospital Specialty Equipment	26 27 43
10) Receipt for Spare Fuses	26 28 13
11) Fuse Identification	26 28 13
12) Receipt for Keys:	
a) Panelboards	26 24 16
13) Lightning Protection System Certification	26 41 00
14) Transformer Performance Data:	
a) Medium Voltage	26 11 16
b) Secondary	26 22 13
15) Complete Punch List	26 05 01
16) Waiver of Liens	Div. 01
17) Ground Fault and Overcurrent Protection System Recommended Settings and Coordination	26 11 16, 26 13 16, 26 13 19, 26 24 13
18) Affidavit of Wage Compliance	Div. 01
19) Change Orders and Allowance Adjustment	Div. 01

PART 2 - PRODUCTS

2.1 Materials and Equipment

A. Materials and equipment furnished shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more articles of the same material or equipment are required, they shall be of the same manufacturer.

B. All electrical equipment and wiring shall bear the Underwriters Laboratories, Inc. label where UL labeled items are available, and shall comply with NEC (NFPA-70) and NFPA requirements.

2.2 Reference Standards

A. Where standards (NFPA, NEC, ASTM, UL, etc.) are referenced in the specifications or on the drawings, the latest edition is to be used except, however, where the Authority Having Jurisdiction has not yet adopted the latest edition, the edition so recognized shall be used.

2.3 Equipment Selection

A. The selection of materials and equipment to be furnished shall be governed by the following:

1. Where trade names, brands, or manufacturers of equipment or materials are listed in the specification, the exact equipment listed shall be furnished. Where more than one name is used, the Contractor shall have the option of selecting between any one of the several specified. All products shall be first quality line of manufacturers listed.
2. Where the words "or approved equal" appear after a manufacturer's name, specific approval must be obtained from the Engineer during the bidding period in sufficient time to be included in an addendum. The same shall apply for equipment and materials not named in the specifications, where approval is sought.
3. Where the words "equal to" appear, followed by a manufacturer's name and sometimes a model or series designation, such designation is intended to establish quality level and standard features. Equal equipment by other manufacturers will be acceptable, subject to the Engineer's approval.

B. Substitute equipment of equal quality and capacity will only be considered when the listing of such is included as a separate item of the bid. State the deduction or addition in cost to that of the specified product.

C. Before bidding equipment, and again in the preparation of shop drawings, verify that adequate space is available for entry and installation of the item of equipment, including associated accessories. Also verify that adequate space is available for servicing of the equipment and that required NEC clearances are met.

D. If extensive changes in conduit, bus duct, equipment layout or electrical wiring and equipment are brought about by the use of equipment which is not compatible with the layout shown on the drawings, necessary changes shall be deemed to be included in this contract.

2.4 Shop Drawings

A. Six /_sets / electronic copies of shop drawings and descriptive information of equipment and materials shall be furnished. Submit to the Architect and/or Engineer for review as stated in the General Conditions and Supplementary Conditions. These shall be submitted as soon as practicable and before equipment is installed and before special equipment is manufactured. Submittal information shall clearly identify the manufacturer, specific model number, approval labels, performance data, electrical characteristics, features, specified options and additional information sufficient to evidence compliance with the contract documents. Product catalogs, brochures, etc. submitted without project specific items marked as being submitted for review will be rejected and returned without review. Shop drawings for equipment, fixtures, devices and materials shall be labeled and identified same as on the Contract Documents. If compliance with the above criteria is not provided shop drawings will be subject to rejection and returned without review. Samples shall be submitted when requested or as specified here with-in.

B. The review of shop drawings by the Architect or Engineer shall not relieve the Contractor from responsibility for errors in the shop drawings. Deviations from specifications and drawing requirements shall be called to the Engineer's attention in a separate clearly stated notification at the time of submittal for the Engineer's review.

C. Shop drawings of the following equipment and materials shall be submitted:

1. Wireway.
2. Cable trays and firestopping.
3. Manholes and pull boxes.
4. Miscellaneous cabinets.
5. Wiring devices and coverplates.
6. Distribution switchgear.
7. Distribution switchboard.
8. Overcurrent protective device coordination study.
9. Surge suppression.

10. Dry type transformer secondary.
11. Bus duct and firestopping.
12. Panelboards.
13. Cabinets and enclosures.
14. Fuses.
15. Motor controllers, control centers and disconnects.
16. Lighting fixtures and lamps.
17. Lighting standards.
18. Lighting controls/contactor and photocell.
19. Fire alarm system.
20. Security system.
21. Intercom system.
22. Sound system.
23. TV antenna system.
24. Closed circuit television system.
25. Video systems.
26. Telephone equipment and system.

PART 3 - EXECUTION

3.1 Testing

A. As each wiring system is completed, it shall be tested for continuity and freedom from grounds.

B. As each electrically operated system is energized, it shall be tested for function.

C. On all electric services including change-outs, backfeeds, etc. the Contractor shall verify phase rotation and voltage readings to ensure the final installation is proper. Submit to the Engineer in writing a record of voltage readings and current readings taken at no-load and fully loaded conditions.

D. The Contractor shall perform megger and resistance tests and special tests on any circuits or equipment when an authorized inspection agency suspects the system's integrity or when requested by the Architect or Engineer.

E. All signaling and communications systems shall be inspected and tested by a qualified representative of the manufacturer or equipment vendor. Submit four (4) copies of reports indicating results.

F. Tests shall be witnessed by field representatives of the Architect or Engineer or shall be monitored by a recorder. Furnish a written record of each system test indicating date, system, test conditions, duration and results of tests. Copies of all test reports shall be included in the O&M manuals.

G. Instruments required for tests shall be furnished by the Contractor.

3.2 Equipment Cleaning

A. Before placing each system in operation, the equipment shall be thoroughly cleaned; cleaning shall be performed in accordance with equipment manufacturer's recommendations.

B. Refer to appropriate Sections for cleaning of other equipment and systems for normal operation.

3.3 Operation and Adjustment of Equipment

A. As each system is put into operation, all items of equipment included therein shall be adjusted to proper working order. This shall include balancing and adjusting voltages and currents; verifying phase rotation; setting breakers, ground fault and other relays, controllers, meters and timers; and adjusting all operating equipment.

B. Caution: Verify that all bearings of equipment furnished are lubricated, all motors are operating in the right direction, and correct drive settings and overload heater elements are provided on all motors. Do not depend wholly on the other trades judgment in these matters. Follow specific instructions in regard to lubrication of equipment furnished under this Contract.

3.4 Operating Demonstration and Instructions

A. Set the various systems into operation and demonstrate to the Owner and Architect / Engineer / Construction Manager that the systems function properly and that the requirements of the Contract are fulfilled.

B. Provide the Owner's representatives with detailed explanations of operation and maintenance of equipment and systems. A thorough review of the operating and maintenance manuals shall be included in these instructional meetings.

C. O & M manuals shall be submitted, reviewed and approved prior to scheduling of demonstrations.

D. A minimum of 8/24 hours shall be allowed for instructions to personnel selected by the Owner. Instructions shall include not less than the following:

1. Show location of items of equipment and their purpose.
2. Review binder containing instructions and equipment and systems data.
3. Coordinate written and verbal instructions so that each is understood by personnel.
4. Separate instructions shall be given by manufacturer's representatives for the various special and communications systems.
5. All operating demonstrations and instructions for each system shall be audio/video digitally recorded and turned over to the Owner.

E. A minimum of 48 hours continuous trouble-free operating time shall be acceptable to prove that the systems function properly.

END OF SECTION

26 05 02 AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES

PART 1 - GENERAL

1.1 The Engineer, at their sole discretion and without obligation, makes graphic portions of the contract documents available for use by the contractor in electronic format. These electronic files are proprietary, and remain the Engineer's Instruments of Service and shall be for use solely with respect to this project, as provided in the Standard Form of Agreement between Owner/Architect and Engineer.

1.2 Electronic files shall be released only after bids have been received for the project and contracts have been signed with the contractors.

1.3 The contractor shall acknowledge receipt of electronic files in the requested format for this project. The electronic files are provided as a convenience to the User, for use in preparing shop drawings and/or coordination drawings related to the construction of only the project identified in the Agreement. The electronic files and the information contained within are the property of the Engineer and/or the Architect and/or the Owner, and may not be reproduced or used in any format except in conjunction with the project identified in the Agreement.

1.4 The User acknowledges that the information provided in the electronic files is not a substitution or replacement for the Contract Documents and does not become a Contract Document. The User acknowledges that neither the Engineer, the Architect, the Consultants, the Client or the Owner make any warrant or representation that the information contained in the electronic files reflect the Contract Documents in their entirety. The User assumes full responsibility in the use of the electronic files, including the responsibility to see that all manual modifications, addenda, bulletins, clarifications and Change Orders to the drawings executed as a part of the Contract Documents have been incorporated.

1.5 The User acknowledges that the receipt of electronic files in no way relieves the User from the responsibility for the preparation of shop drawings or other schedules as set forth in the Contract between the Contractor and the Owner.

1.6 Electronic files are available in a .DWG or .RVT format for a cost as indicated in the Agreement and Waiver Form. **Providing the documents in a .DWG version that differs from the product version that the .DWG files were initially created in will incur additional charges per sheet, as indicated in the Agreement and Waiver Form.** Charges are for the Engineer's time to prepare the documents in the format stated. They are available through the Engineer's office on a C.O.D. basis only. A sample of the format will be provided by the Engineer upon request by the contractor, for the purpose of testing the compatibility of the format to the contractor's systems.

1.7 All drawings will be in an AutoCAD file format, when requested to be .DWG format.

1.8 All project models will be furnished without views.

1.9 All electronic files shall be stripped of the Project's name and address, the Architect's / and / Engineer's / and / any consultant's name and address, and any professional licenses indicated on the contract documents, (and all dimensions, verbiage, and statistical information). Use of these electronic files is solely at the contractor's risk, and shall in no way alter the contractor's Contract for Construction.

1.10 The User agrees to indemnify, hold harmless and defend the Engineer, the Architect, the Consultants, the Owner, the Client and any of their agents from any litigation resulting from the use of (by any means of reproduction or electronic media) these files. The Engineer makes no representation regarding fitness for any particular purpose, or suitability for use with any software or hardware, and shall not be responsible or liable for errors, defects, inexactitudes, or anomalies in the data, information, or documents (including drawings and specifications) caused by the Engineer's or its consultant's computer software or hardware defects or errors;

the Engineer's or its consultant's electronic or disk transmittal of data, information or documents; or the Engineer's or its consultant's reformatting or automated conversion of data, information or documents electronically or disk transmitted from the Engineer's consultants to the Engineer.

1.11 The contractor waives all claims against the Engineer, its employees, officers and consultants for any and all damages, losses, or expenses the contractor incurs from such defects or errors in the electronic files. Furthermore, the contractor shall indemnify, defend, and hold harmless the Engineer, and its consultants together with their respective employees and officers, harmless from and against any claims, suits, demands, causes of action, losses, damages or expenses (including all attorney's fees and litigation expenses) attributed to errors or defects in data, information or documents, including drawings and specifications, resulting from the contractor's distribution of electronic files to other contractors, persons, or entities.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 Attached "Agreement" shall be submitted with accompanying payment to the Engineer prior to delivery of electronic files.

END OF SECTION

26 05 04 BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Continuity of Service

A. Work shall be so planned and executed as to provide reasonable continuous service of existing systems throughout the construction period. Where necessary to disrupt services for short periods of time for connection, alteration or switch over, the Owner and Construction Manager shall be notified in advance and outages scheduled at the Owner's reasonable convenience.

B. Submit, on request, a written step-by-step sequence of operations proposed to accomplish the work. The outline must include tentative dates, times of day for disruption, downtime and restoration of services. Submit the outline sufficiently in advance of the proposed work to allow the Architect or Engineer and Construction Manager to review the information with the Owner. Upon approval, final planning and the work shall be done in close coordination with the Owner..

C. Shutdown of systems and work undertaken during shutdowns shall be bid as being done during normal working hours. If the Owner should require such work be performed outside of normal working hours, reimbursement shall be made for premium time expenses only, without mark up.

D. Shutdown of systems and work undertaken during shutdown shall be bid as being done outside of normal working hours.

PART 2 - PRODUCTS

2.1 Access Panels

A. Provide ceiling and wall access panels where indicated on the drawings, or where otherwise required to gain access to concealed junction boxes, valves, traps, devices and equipment requiring service or adjustment.

B. Access panels (refer to paragraph C. below for more specialized drywall ceiling access panels) shall be steel construction (except where aluminum or stainless steel is specified) with concealed hinge and door with screwdriver lock / tamperproof screws / industrial grade lock set. Locks in “secured” areas of the building shall have tamperproof screws / be institutional grade locksets. Panels shall be 18 inches x 18 inches size unless larger panels are shown or required. Mounting frames shall be compatible with the material in which they are installed. Access panels shall be:

1. Standard flush type with overlapping flange for masonry and tile walls, Milcor Style “M” or equal.

2. Recessed type having the door recessed to accept a drywall panel insert, for drywall ceilings and walls, Milcor Style “ATR” or equal.

3. Standard flush type for drywall ceilings and walls, Milcor Style “M” or equal.

C. Access panels in drywall ceilings shall be glass reinforced gypsum drywall lay-in panels with flush mounting frames. Corners of panels shall be rounded. Panels shall be 18 inches x 18 inches unless larger panels are shown or required. Panels shall be equal to Chicago Metallic Model CRG.

D. Access panels in fire rated shaft walls and in fire rated ceilings shall be "B" label or greater to match the rating of the wall or ceiling.

E. Materials used in plenums shall be rated for plenum use conforming to the ASTM E84 25/50 smoke development and flame spread restrictions.

PART 3 - EXECUTION

3.1 Workmanship

A. Materials and equipment shall be installed and supported in a first-class and workmanlike manner by mechanics skilled in their particular trades. Workmanship shall be first-class in all respects, and the Architect and Engineer shall have the right to stop the work if highest quality workmanship is not maintained.

B. Electrical work shall be performed by a licensed Contractor in accordance with requirements of the jurisdiction.

3.2 Protection

A. The Contractor shall be entirely responsible for all material and equipment furnished in connection with their work. Special care shall be taken to properly protect all parts thereof from theft, damage or deterioration during the entire construction period in such a manner as may be necessary, or as directed by the Architect, or Construction Manager.

B. The Owner's property and the property of other contractors shall be scrupulously respected at all times. Provide drop cloths and visqueen or similar barriers where dust and debris is generated, to protect adjacent areas.

3.3 Cutting and Patching Projects with Remodeling

A. Refer to Division 01 - General Requirements for information regarding cutting and patching.

B. Plan the work well ahead of the general construction. Where conduits, cable trays, bus ducts and wireways are to pass thru new walls, partitions, floors, roof or ceilings, place sleeves in these elements or arrange with the General Contractor to provide openings where sleeves are not practical. Where sleeves or openings have not been installed, cut holes and patch as required for the installation of this work, or pay other trades for doing this work when so directed by the Architect or Construction Manager. Any damage caused to the building shall be repaired or rectified.

C. Where conduits, cable trays, bus ducts and wireways are to pass thru, above or behind existing walls, partitions, floors, roof or ceiling, cutting, patching, refinishing and painting of same shall be included in this contract. Core drilling and saw cutting shall be utilized where practical. Contractor to examine where floors and walls etc. are to be cut for presence of existing utilities.

D. When cutting or core-drilling floor verify location of existing electrical, plumbing or steel reinforcement. Use X-ray method to verify existence of obstructions. Either re-route existing system brace floor or alter location of new work to maintain existing system.

E. All sleeves and openings not used or partially used shall be closed to prevent passage of fire or smoke.

F. All materials, methods and procedures used in patching and refinishing shall be in accordance with applicable provisions of specifications governing the various trades, and shall be completed by skilled workmen normally engaged in these trades. The final appearance and

integrity of the patched and refinished areas must meet the approval of the Architect. Wall, floor and ceiling refinishing must extend to logical termination lines (entire ceiling of the room repainted, for instance), if an acceptable appearance cannot be attained by finishing a partial area.

G. Provide steel angle or channel lintels to span openings which are cut in existing jointed masonry walls where the opening span exceeds 16 inches. Provide framing around roof openings for required support of the roof deck.

H. Engage a Roofing Contractor on a subcontract basis for roofing and roof insulation work necessitated by the Electrical work. The Roofing Sub-Contractor shall be certified for installation and repair of the Company Name and Roofing Type roofing system so as to maintain the existing roofing warranty.

3.4 Removals, Alterations and Reuse Projects With Remodeling

A. Refer to the drawings for the scope of remodeling in the existing building.

B. Cooperate with the General Contractor and Construction Manager regarding all removal and remodeling work. The Contractor shall remove existing work which is associated with their trade, and which will be superfluous when the new system is installed and made operational. Void unused conduit behind walls or below floors as necessary or as directed. No wire or conduit shall be removed which will impair the functioning of the remaining work unless first replaced with a rerouted section of wire or conduit to ensure continuity. Remove inactive wiring back to the last active junction box, panelboard or piece of equipment.

C. Upon completion, no unused conduit or stub shall extend thru floors, walls or ceilings in finished areas. Abandoned conduit where remaining in place shall have any unused wiring removed. All accessible unused conduit shall be removed.

D. When it is necessary to reroute a section of an active circuit, the rerouted section shall be installed before removing the existing in order to minimize system down time. Rerouted sections shall be installed as required for new work.

E. Materials and equipment which are removed shall not be reused within the scope of this project unless specifically noted to be relocated or reused. Turn over to the Owner and place where directed on the premises all removed material and equipment so designated by the Owner. All material and equipment not claimed by the Owner after a reasonable time frame shall become the property of the Contractor responsible for removal and shall be removed from the premises.

F. Remove, store and reinstall lay-in ceiling tile and grid as needed to perform work in areas where such removal and re-installation is not to be done by the General Contractor. Damaged tile and/or grid shall be replaced with new matching tile and/or grid.

G. In areas of minor work where the space is not completely vacated, temporarily move portable equipment and furnishings within the space as required to complete the work. Coordinate this activity with Owner. Protect the Owner's property by providing dust covers and temporary plastic film barriers to contain dust. Remove barriers and return equipment and furniture upon completion of the work.

H. Refinish any surface disturbed under this work to match existing, except where refinishing of that surface is included under the General Contract.

3.5 Painting

A. In addition to any painting specified for various individual items of equipment, the following painting shall be included in Division 26:

1. Ferrous metal which is not factory or shop painted or galvanized and which remains exposed to view in the finished areas of the building / building including finished areas, mechanical rooms, storage rooms, and other unfinished areas shall be given a prime coat of paint and two finish coats of paint.
2. Ferrous metal installed outside the building which is not factory or shop painted or galvanized shall be given a prime coat of paint and two finish coats of paint.
3. Equipment and materials which have been factory or shop coated (prime or finished painted or galvanized), on which the finish has been damaged or has deteriorated, shall be cleaned and refinished equal to its original condition. The entire surface shall be repainted if a uniform appearance cannot be accomplished by touch up.
4. Apply Z.R.C. Galvilite / 221 cold galvanizing compound, or approved equal, for touch-up and repair of previously galvanized surfaces.
5. Each backboard shall be painted with a minimum of two coats of flame retardant paint, all sides; gray enamel primer with gray matte enamel finish.

B. Paint, surface preparation and application shall conform to applicable portions of the Painting section of Division 09 of the Specifications. All rust must be removed before application of paint.

C. Finish painting is included in the General Contract except where otherwise required under remodeling work. Refer to the Cutting and Patching paragraph in this Section for finishing requirements.

3.6 Access Panels

A. Install access panels or pay general trade to do so. Final appearance is subject to approval by the Architect or Engineer.

B. Access locations thru HVAC ductwork must be coordinated with the ductwork installer. Location of the hinged access door with latch must be coordinated in advance with the HVAC Contractor.

C. Location of access panels shall be planned to clear ceiling lights, ceiling support grids and other obstructions so as to allow, wherever possible, full shoulder clearance beside the device to be inspected, adjusted or repaired.

D. Panels with recessed doors are to be fitted with insert panels of drywall or, those for plaster, infilled with plaster. Caution the Installing Contractor to provide appropriate framing with drywall or plaster beading to ensure a finished appearance. Shim strips may be required to bring the insert panel flush with the plane of the door and wall / ceiling.

END OF SECTION

26 05 05 FIRESTOPPING

PART 1 - GENERAL

1.1 Firestopping assemblies shall be provided at penetrations of conduits, bus ducts, cables, cable trays and other electrical items thru fire rated floors, fire rated floor-ceiling and roof ceiling assemblies, fire rated walls and partitions and fire rated shaft walls and partitions and smoke barriers. In addition, firestopping assemblies shall be provided at penetrations thru 0-hour rated floors. Refer to the drawings for fire rated building elements.

1.2 Firestopping assemblies shall be tested and rated in accordance with ASTM E814, E119 and listed in accordance with ANSI / UL 1479, as published in the UL Fire Resistance Directory. Firestopping shall provide a fire rating equal to that of the construction being penetrated.

1.3 Firestopping materials, assemblies and installation shall conform to requirements of the OBC / Chapter 1, Section 106 and Chapter 7, Section 714 and the Authority Having Jurisdiction.

1.4 For those firestopping applications that exist for which no UL tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests shall be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment drawings must follow requirements set forth by the International Firestop Council.

1.5 Shop drawings shall be prepared and submitted for review and approval. Submittals shall include manufacturer's specifications and technical data of each material, documentation of U.L. firestopping assemblies and installation instructions. Submittals shall include all information required in OBC Chapter 1, Section 106 and Chapter 7, Section 714.

PART 2 - PRODUCTS

2.1 Firestopping materials shall be manufactured and/or supplied by Hilti, 3M, Tremco, or Specified Technologies Inc (STI).

2.2 Materials shall be in the form of caulk, putty, sealant, intumescent material, wrap strip, fire blocking, ceramic wool and other materials required for the UL listed assemblies. These shall be installed in conjunction with sleeves and materials for fill and damming.

2.3 Combination pre-set floor sleeve and firestopping assemblies shall be equal to Hilti CP 680.

PART 3 - EXECUTION

3.1 Installation of all materials and assemblies shall be in accordance with UL assembly drawings and the manufacturer's instructions.

3.2 Installation shall be done by an experienced installer who is certified, licensed or otherwise qualified by the firestopping manufacturer as having the necessary training and experience.

3.3 Refer to 26 05 33 Raceway and Boxes for Electrical Systems for sleeve requirements and treatment of penetrations not requiring firestopping.

END OF SECTION

PART 1 - GENERAL

1.1 This section pertains to the use of copper conductors, 600V insulation class.

PART 2 - PRODUCTS

2.1 All conductors shall be copper: conductors shall be insulated for 600 volts.

2.2 Insulation types referenced are those of NEC. All conductors shall be UL labeled and shall be marked for size and type at regular intervals on its length. Conductors #8 and larger shall be stranded; #10 and smaller may be stranded provided approved terminations are used.

2.3 Types of conductor insulation for general use may be any of the following, subject to limitations listed, in addition to those in the NEC:

A. Type THHN - restrictions - do not use for conductors in slab. Do not use in wet locations.

B. Type THWN - no restrictions.

C. Type XHHW - no restrictions.

2.4 Use only Type XHHW for isolated ungrounded branch circuit wiring such as monitored wiring in hospital operating and special procedures and X ray rooms. Refer to Section "Hospital Specialty Equipment".

2.5 Use Type THHN or XHHW, (90 degrees C. rated) types for connecting luminaires and for running thru fixture housings.

2.6 Use conductors such as type FEP with high temperature insulation as identified in the NEC for connections to resistance heating elements or in other areas subject to temperature exceeding the rating of THWN, XHHW or THHN.

2.7 Color Coding – The use of colored commercial building wire is encouraged.

A. On 208/120 volt, three phase and 240/120 volt, single phase grounded systems, wires colored black, red and blue shall be used for phase conductors. Neutral wires on these systems shall be white. If conductors No. 4 AWG or larger are not available in white or white stripes, the neutral may be a black wire identified with white tape, minimum size 0.50 inch wrapped twice around at the following points:

1. At each terminal.
2. At each conduit entrance.
3. At intervals not more than 12 inches apart in all accessible enclosures.

B. On 480/277 volt, three phase system, wires colored brown, orange and yellow shall be used for phase conductors. Neutral wires on these systems shall be gray or other NEC acceptable means for distinguishing each system grounded conductor from another. If conductors No. 4 AWG or larger are not available in the proper colors, black wire may be used with 0.50 inch tape bands of the proper color at the following points:

1. At each terminal.
2. At each conduit entrance.
3. At intervals not more than 12 inches apart in all accessible enclosures.

C. Equipment grounding conductors shall be green, or for 4 AWG and larger may be completely taped green, at all accessible points.

D. All control circuits shall be red with individual wire identification on each conductor.

E. Where existing wiring systems (remodel work or building additions) have different color coding, consult the Engineer concerning matching existing wire color coding and phasing.

2.8 Wire size ampacity shall equal or exceed its overload protective device. Where wire sizes shown on the drawings are greater than the apparent ampacity requirements, the size shown shall prevail to compensate for voltage drop. In no instance shall conductors be installed that are less than required by N.E.C. Minimum conductor size shall be No. 12 AWG except No. 14 AWG may be used only for control wiring or where otherwise specifically shown.

2.9 When necessary to use a lubricant for pulling wires, lubricant must be listed by Underwriters' Laboratories, Inc. Only cable lubricants approved for the type of jacket material or insulation shall be used, and must be of such consistency that it will dry completely when exposed to air. Lubricant must leave no obstruction or tackiness that will prevent pulling out old wires or pulling in new wires or additional wires, and, after drying, must leave a film of lubrication which will promote easy movement of the wires. The lubricant shall contain no waxes, greases, silicones, or polyalkylene glycol oils or waxes. Lubricant shall be Ideal "Yellow 190", 3M “WL”” Wire Pulling Lubricant, or approved equal.

2.10 Splices No. 10 AWG and smaller shall be made using the following:

A. Preinsulated spring pressure connectors as follows: ITT Holub "Freespring", with metal grip threads 3M "Scotch-Lok", Ideal "Wingnut", Thomas and Betts Type "PT", or Buchanan "B Cap". Other hard insulated wire connectors which have bakelite or ceramic insulation are prohibited. (Non-metallic thread connectors shall not be used.)

2.11 Splices No. 8 AWG and larger shall be made using the following:

A. Approved crimp type connectors with special crimping tool; T&B, Burndy, Buchanan or approved equal. Joints and free ends shall be covered with tape or approved moistureproof insulating kits. Applied insulation shall exceed 150 percent of conductor insulation voltage rating.

B. For two or more taps use Power Distribution Blocks by Square D, Gould, Taylor, Ilsco or Connectron.

2.12 Wiring in vertical raceways shall be supported with strain relief devices; Kellem's grips or approved equal.

2.13 Connections to equipment shall be made with pressure type terminals. On stranded wire, use spade type terminals or terminals approved for use with stranded wire. Connections shall contain only single conductors unless approved for multiples.

A. For conductors No. 10 AWG and smaller, applied crimp type terminals shall be T&B "Sta Kon" or approved equal.

B. For No. 8 AWG and larger conductors, applied crimp type terminals shall be Burndy, T&B or approved equal.

2.14 Where tape is applied over wires and connectors on 600 volt or lower voltage applications, it shall consist of a minimum of two (2) half lapped layers of Scotch "88" or Plymouth No. 4240 for both indoor and outdoor applications, except Scotch 33 Plus or Plymouth No. 4453 is acceptable for use indoors.

2.15 Where fireproofing of cables is noted on the drawings or required by Code, each cable shall be arc and fireproofed with one (1) half lapped layer of Scotch Brand 77 Electric Arc and Fireproofing Tape. Tape shall be secured with a 2 layer band of Scotch Brand 69 Glass Electrical Tape over the last wrap. Installation shall comply with manufacturer's recommendation.

2.16 Where installed underground, splices and terminations shall be listed and approved for waterproof application. Utilize kits approved for the application.

PART 3 - EXECUTION

3.1 Branch circuit conductor identification means shall be permanently posted at each panelboard and switchboard. This identification shall be installed on the inside of the door and shall identify conductor colors for each voltage system in the building. Provide identification at all new panelboards and existing panelboards utilized within this project.

3.2 Conduit systems shall be clear and clean before pulling wire. Branch circuit conductors shall be pulled without resorting to levers or heavy pulling devices.

3.3 Cable pulling tensions shall not exceed recommended values.

3.4 Group ungrounded and grounded circuit conductors for each multiwire branch circuit by cable ties in panelboards and tap boxes.

3.5 Each branch circuit or multiwire branch circuit shall have its own dedicated neutral. Group neutral conductors with phase conductors by wire ties in each enclosure where multiple neutrals provided.

3.6 Shielded VFD cables shall be provided for VFD to motor conductors length longer than 25 feet. VFD motor feed cables shall be terminated per VFD manufacturer’s direction.

3.7 Control conductors shall not be run in same raceway with branch circuit or motor circuit conductors.

3.8 Unless noted otherwise on the drawings, a maximum of 8 conductors shall be installed in a branch circuit conduit. This maximum is a count of all phase and neutral conductors only, ground conductors are not counted when determining maximum fill for this purpose.

3.9 Wire tags shall be provided on all main and feeder conductors in all pull boxes, wireways and panelboard and switchboard wiring gutters. Tags shall identify wire or cable number and/or equipment served. Tags shall be of flame resisting adhesive material, T&B Type WSL or approved equal.

3.10 Perform meggar tests on all feeders and motor branch circuit conductors prior to energization of circuits. Provide documentation in standard NETA format to the Engineer for review. Do not run meggar check on solid state equipment.

END OF SECTION

26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 Work includes grounding and bonding of system neutral, equipment and conduit systems to conform to requirements of NEC and as detailed on the plans and in the specifications.

PART 2 - PRODUCTS

2.1 Grounding rods shall be copper clad, molten-welded copper to steel; unless otherwise designated, 0.625 inch diameter x 10 ft. long.

2.2 Clamps and continuity devices shall be non-ferrous material, UL approved. Connections to ground rods and all underground connections shall be "Thermoweld" or "Cadweld".

2.3 Ground conductors shall be insulated, identified by green insulation or by painting or taping green at all accessible locations and shall be connected with approved connectors and terminators to boxes, devices, equipment, etc. and to ground bars in panels.

PART 3 - EXECUTION

3.1 Provide a listed intersystem bonding termination system with capacity for a minimum of 5 - #4 - 4awg and 1 - #6 – 2 awg bonding conductor terminations. Locate external to the service entrance equipment and connect to the grounding electrode system.

3.2 Wiring devices shall be connected with grounding jumper from ground pole on device to grounding screw in the outlet box. Branch circuit to be connected to grounding screw in the outlet box.

3.3 Extend a minimum #4/0 copper ground cable from the ground bus in the primary service entrance equipment to the street side of the main water meter and to building steel, foundation footing steel (minimum 20 ft. length .50 inch or provide 20 foot #2 AWG, bare copper), driven ground rods outside or buried electrodes; increase ground conductor sizes where required.

3.4 Pad-Mount Transformer Grounding: Bond the high voltage neutral, pothead cases, cable shields, instrument transformer neutrals, low voltage system neutral, all conduits, frame of the transformer, and driven ground rods with copper connections.

3.5 Grounding Bus: Install in electrical service equipment space, telephone equipment rooms, generator room, battery rooms, below raised floors, and elsewhere as indicated.

A. Bus shall be minimum 3/8 inch x 2 inches x 12 inches L. solid copper.

B. Install bus on insulated spacers 1 inch, minimum, from wall 6 inches above finished floor, unless otherwise indicated.

C. The grounding bars shall be bonded to the building grounding electrode system and the building ground ring.

3.6 The complete metal conduit system shall be used for the equipment grounding system. Conduit systems and associated fittings and terminations shall be made mechanically tight to provide a continuous electrical path to ground and shall be safely grounded at all equipment by bonding all metallic conduit to the equipment enclosures with locknuts cutting thru paint or enclosures. Bond all conduits entering primary switchgear, emergency generator control panel and main breaker panel, and secondary service entrance switchboard / switchgear / panelboard with a ground wire connecting the grounding type bushings to the equipment ground bar. Conductors shall be sized per NEC Tables 250.66, 250.102 and 250.122. Bond all communications conduit systems to ground.

3.7 In addition to using the conduit system for grounding, a complete auxiliary green wire equipment grounding system shall be installed, continuous from main ground, thru distribution and branch circuit panelboards and paralleling all feeders and branch circuit wiring. Grounding conductor sizes shall comply with NEC Table 250.122, minimum size shall be #12 copper except #14 on control circuits. This shall apply to all circuits rated 100 volts or more above ground potential.

A. Connect ground terminal on wiring devices to auxiliary green wire equipment grounding system.

3.8 Motor frames shall be bonded to the equipment grounding system by an independent green insulated copper wire, sized to match equipment grounding conductor. Motors with VFD shall be bonded with flat braided tinned copper straps in lieu of wire.

3.9 Cord connected appliance frames shall be grounded to the equipment grounding system thru a green wire in the cord.

3.10 Equipment mounted on vibration isolation hanger and supports shall be bonded so bond does not transmit vibration. Size bond to match equipment ground conductor.

3.11 A green grounding conductor shall be installed in each non-metallic conduit and all flexible conduits, including exterior underground conduits.

3.12 System neutral connections shall be insulated from metal enclosures except at the neutral of the service entrance equipment and on the neutral of a separately derived system. Connections to the panelboard enclosure shall be by means of bonding jumpers.

3.13 The building neutral shall be identified throughout with white conductors. Where there are neutral conductors from a separately derived system (such as 120/208 volt, 3 phase, 4 wire where the main building service is 277/480 volt, 3 phase, 4 wire) the neutrals of the two systems shall be separately identifiable per NEC Article 200.

3.14 Steel frame buildings and metal exterior coverings on buildings that are not effectively grounded (i.e., all metal connections bolted w/o insulating washers) shall be grounded thru a low resistance grounding system whether or not a lightning protection system is required. Ground metal exterior coverings and metal roofs with minimum #4 copper conductor at a minimum of two points, intervals not exceeding 100 feet. Ground steel frame buildings at each corner with maximum of every 60 ft. around the outside perimeter by cadwelding #2/0 (#4/0 for buildings over 75 ft. tall) copper conductor to steel columns and extending below ground to driven ground rods; top of 0.625 inch x 10 ft. ground rod shall be minimum of 12 inches below finished grade and 3 ft. out from building foundation. Bond the water service, street side of water meter, to the adjacent perimeter steel column with #4/0 insulated copper conductor. Sleeve all concrete foundations and masonry walls with PVC sleeve.

3.15 Where a 277/480 volt emergency generator is provided on a system having ground fault protection on the normal service and the generator is located in the vicinity of the main electric service equipment, isolate the generator neutral from the generator frame. The generator neutral will be grounded through the main electric service grounding electrode. Bond the generator frame to the equipment grounding conductor. Provide signs at the grounding locations per NEC 700.7 and 701.7.

3.16 Where metal covers on pull boxes and junction boxes are used, they shall comply with the grounding and bonding requirements of NEC Article 250.

3.17 Connections to driven ground rods or other such electrodes shall be a minimum of three feet from the foundation wall or beyond the roof drip line, whichever is greater.

3.18 The electrodes (driven ground rods) of the electrical grounding system shall not be used for the electrodes for the lightning protection system, and vice versa. However, these two systems shall be bonded together at one point per NEC.

END OF SECTION

26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 This specification section covers common conduit systems, boxes, firestopping and sleeves. Where other methods are specified under separate sections for specific applications, the specific application requirements shall govern.

1.2 Refer to Section 26 05 05 Firestopping for firestopping requirements.

1.3 Refer to Section “Communication System Pathways and Support Equipment” for future communication system.

PART 2 - PRODUCTS

2.1 Conduit Type - Application (Use only conduit types listed)

A. Conduit - Rigid or Intermediate Grade Galvanized Threaded.
Application - restrictions - (Not to be used in):

1. Direct buried in corrosive soils.
2. Corrosive atmospheres.

B. Conduit - Thinwall EMT.
Application - restrictions - (Not to be used in):

1. Poured concrete.
2. Exposed to weather.
3. Underground.
4. Exposed in mechanical equipment or other equipment/process rooms below 48 inches.
5. Hazardous or corrosive atmospheres.
6. Not to be used for medium voltage (2001 volts or higher) cable.
7. Not to be used in utility tunnels.

C. Conduit - PVC Type 40 (Schedule 40) rigid, conforming to ANSI, NEMA specifications and each length UL labeled.
Application - use limited to:

1. In or under concrete slabs on grade where permitted by electric legend on the drawings.
2. Exterior use when encased in 3 inch concrete.
3. Direct buried, underground when indicated on drawings.

D. Conduit - PVC, NEMA Type TC 6, rigid, conforming to ANSI, NEMA specifications and each length UL labeled.
Application - use limited to:

1. Exterior use when encased in 3 inch concrete, for duct bank use only.

E. Conduit - Liquidtight Flexible Metal.
Application - use and limitations:

1. Connections to all motors, except in air stream or plenum.
2. Connections to controls on dynamic equipment, transformers, etc., outdoors and indoors in wet locations.
3. Use not permitted underground or where subject to physical damage.

F. Plastic jacketed rigid steel conduit shall be ETL performance verified. Application – use in corrosive atmospheres including swimming pool areas, pool equipment rooms, chlorine storage areas, etc. and other areas as noted on the drawings.

G. Conduit Reinforced Thermosetting Resin RTRC shall meet UL 1684 for extinguishing flame and shall not contain any compounds that release halogens.
Application use limited to:

1. In or under concrete slabs on grade where permitted by electric legend on drawings.
2. Exterior uses when encased in 3” concrete.
3. Direct buried, underground when indicated on drawings.
4. Exposed corrosive atmospheres including pool equipment rooms, chlorine storage areas, etc. and other areas as noted on drawings.
5. Where subject to physical damage shall be identified for use i.e., types RTRC-X W.

2.2 Conduit sizes

A. Conduit sizes shall be code minimum, except where conduit sizes shown on the drawings exceed code minimum, the size shown on the drawings shall prevail..

B. Conduits shall be 0.75 inch minimum size except 0.50 inch size may be used for switch legs and flexible connections to lighting fixtures.

2.3 Conduit Fittings

A. Fittings and workmanship shall ensure electrical continuity. All conduit systems in poured concrete shall be concrete tight.

B. Application of bushings, locknuts and insulated fittings shall comply with NEC requirements.

C. Use conduit fittings as manufactured by Efcor, Steel City, Raco, Midwest, Appleton, ETP / O-Z / Gedney, American Fitting Corporation or T&B, equal to the following catalog numbers:

1. Rigid and intermediate conduit
   - all fittings, couplings and connectors shall be threaded type.
   - grounding bushings, malleable iron; insulated; Steel City BG-801; Midwest Series GLL.
2. EMT
   - fittings shall be all steel, set screw or compression type, concrete tight.
   - set-screw type couplings; Midwest Series 460; Steel City TK 121; Appleton TW 50S.
   - compression type couplings; Midwest series 660S; Steel City TK111; Appleton TWC50CS.
   - set-screw type connectors; Midwest Series 450; Steel City TC 121; Appleton TWC 50S.
   - compression type connectors; Midwest Series 650; Steel City TC111; Appleton TW50CS.
3. Flexible metal conduit
   - malleable iron, "squeeze" type, non-insulated; Midwest series 1708; Steel City XC 901; Appleton 7481V. (For lighting fixture whips only - all steel or die cast screw in connector; Midwest 771; Steel City XC 241; Appleton SGC 50DC).
4. Liquid tight conduit
   - steel or malleable iron; Midwest Series LT; Steel City LT 100; Appleton ST.
5. PVC Type 40 and Type TC-6
   - couplings and fittings socket type solvent weld, coupling and solvent by same manufacturer as conduit.
6. RTRC

- Coupling and fittings socket type adhesive jointing. Coupling and adhesive by same manufacturer as conduit. Gasketed jointing system may be used underground where encased in conduit.

2.4 Boxes

A. Junction boxes and pull boxes shall be code gauge galvanized steel with multiple screw fasteners and galvanized steel covers.

B. Outlet boxes all steel construction with galvanized or plated finish or otherwise all metal, by Steel City, Appleton, Crouse Hinds, R&S or Raco.
   1. Lighting fixture outlet boxes 4 inches square or octagonal, 2.125 inches deep, with 0.375 inch fixture studs. Equal to Steel City Series 54171; Series 52171 with FE 421 stud. Fixtures weighing more than 50 lbs. shall be supported independently of the outlet box.
   2. Flush mounted device outlet boxes shall be minimum 4 inches square. Provide extension rings as required. Use Erico Caddy No. H2-3 mounting support plate where metal studs are used.
   3. Device rings in finished masonry or tile walls shall be square corner masonry type with no extended ears, to allow flush mounting of plates.
   4. Surface mounted device boxes shall be cast "FS" type or special surface mounted boxes for use with surface raceway systems.

C. Floor boxes shall be UL listed for its application as manufactured by Hubbell, Steel City, Walker, Raco or Wiremold. Drawings identify material type.

D. Provide water tight boxes, slip expansions and bonding jumpers where dictated by construction conditions.

E. Terminations at boxes shall be secured by locknuts or approved bushings.

2.5 Surface Metal Raceways

A. Snap on cover types by Mono-Systems, Panduit or Wiremold / Walkermold with prime gray finish (enamel finish coat to match room finishes in remodel areas). Application - permitted only when specifically shown on the drawings.

   1. Fittings, boxes and extension rings: Furnish manufacturer’s standard accessories; match finish of raceway.

2.6 Sleeves and Openings

A. Sleeves and formed openings shall be placed in walls, partitions, floor slabs and poured concrete roof decks for the passage of conduit, cable, wireway, cable tray and bus duct. Sleeves and formed openings are not required:

   1. In floor slabs on grade.
   2. Where conduit is installed before the wall, partition or slab is constructed.
   3. Openings are cut for conduit passage and patched with equal or comparable material to close the space around the conduit.
   4. In stud and gypsum board or plaster walls and partitions which are not fire rated.
   5. For conduit passing thru masonry walls and partitions and stud and gypsum board or plaster walls and partitions. Sleeves are required however, for which expansion, contraction and other movement can be expected.
   6. In core drilled openings in solid concrete not requiring water protection. Sleeves are required, however, at core drilling thru hollow pre-cast slabs and concrete block walls, to facilitate containment of required firestopping material.

7. In large floor openings for multiple pipe and duct risers which are within a fire rated shaft, unless the opening is to be closed off with concrete or other material after conduits are set.
8. Sleeves for passage of conduit and cables shall be schedule 40 black steel pipe or galvanized rigid conduit. Rectangular sleeves for cables, wireway, cable tray and bus duct shall be 18 gauge galvanized steel in poured concrete floors, walls and roof decks; 26 gauge galvanized sheet steel in other than poured concrete.
9. Sleeves shall be sized to afford 0.25 inch to 0.75 inch clearance space.

2.7 In areas having special membrane waterproofing in or on the floor slab, a Josam 26420, or equal approved by the Architect, riser sleeve with clamping ring and auxiliary conduit sleeve extending 4 inches above finished floor or 8 inches above finished roof shall be used. Waterproofing membrane for roof and floor construction shall be secured by the clamping ring. These are to be used in areas having special membrane water-proofing in or on the floor slab and at roof decks.

2.8 Multiple conduits extending through the roof may be fitted with a manufactured pipe curb weatherproofing assembly equal to Pate # pca, lpca and mpca as an alternative to that specified in paragraph 2.7 above.

2.9 Escutcheon plates shall be split-ring chromium plated pressed steel. Plates shall be sized to cover the surface penetration and sleeve. Plates shall be installed on exposed piping in finished rooms and areas where conduits penetrate walls, floors, ceilings or overhead structure.

2.10 Anchors and Fasteners

A. Anchors and fasteners shall be of a type designed and intended for use in the base material to which the material support is to be attached and shall be capable of supporting the intended load and withstanding any associated stresses and vibrations.

B. In general, screws shall be used in wood, masonry anchors on concrete or brick, toggle bolts in hollow walls, and machine screws, bolts or welded studs on steel.

C. Nails shall not be used except for temporary support or for light loads in wood frame construction.

D. In outdoor locations or other corrosive atmospheres, the anchors and fasteners shall be non-corrosive or have suitable corrosion resisting coatings.

PART 3 - EXECUTION

3.1 Conduit shall be run concealed in all finished areas of new construction and elsewhere unless specifically indicated or upon specific permission by the Architect. All conduit shall parallel building lines..

3.2 Conduit shall be run overhead and shall not be run in or below concrete slabs unless specifically indicated on the drawings and in the legend on the drawings.

3.3 Where feeders are permitted to be run below floor slab on grade, they shall be installed in non-metallic conduit encased in 3 inch concrete using galvanized rigid steel or RTRC (equal to Champion Fiberglass) elbows with all necessary fittings and couplers. (NOTE: Where not required to be run overhead, branch circuits may be installed in 1 inch or smaller Schedule 40 PVC conduit below the vapor barrier, shall have a minimum of 6-inch fill over the conduit below the vapor barrier without concrete encasing the PVC. This PVC conduit shall not stub up more than 18 inches above the finished floor and shall be concealed in walls./ The 90 degree elbow and stub up shall be galvanized rigid steel).

3.4 All conduits installed below concrete slab on grade shall have a minimum of 6-inches fill over the conduits in order to prevent accidental damage to conduits should the floor be saw-cut in the future.

3.5 Conduits shall not be installed above the vapor barrier in concrete floors poured on grade.

3.6 Conduit crossing building expansion joints shall have expansion provisions with grounding continuity; use special expansion fittings or other NEC approved method. Refer to the Architectural and Structural floor plans and details for locations of expansion joints.

3.7 Do not install wall-mounted boxes back-to-back in opposite sides of wall; in stud walls, boxes shall be on opposite side of studs. In acoustic rated and fire rated walls boxes shall be separated a minimum of 24 inches.

3.8 Boxes not otherwise accessible in ceilings and walls shall be made accessible by installation of hinged door access panels. Refer to Section 26 05 04 - Basic Electrical Materials and Methods.

3.9 Use cast floor boxes for installation in slab on grade; formed steel boxes are acceptable for other installations.

3.10 Work shall be so planned as to:

A. Minimize the number of offsets and junction boxes. For feeder conduits, use all long radius conduit bends or accessibly located large junction boxes with screw covers.

B. Generally run conduit and conductors as high as practicable against underside of floor slab in concrete construction or immediately below the top chord of bar joist construction unless otherwise shown. This high level zone shall be used for running electrical raceways. Running conduits promiscuously at various levels and directions will not be acceptable. Runs at bottom chord level or ceiling grid level will not be acceptable.

C. Where spray on fireproofing is used, coordinate with the General Contractor about installing supports, panel feeders and larger conduits before fireproofing is applied. Branch circuit conduits and smaller size conduits may be run as high as possible on stud walls that go all the way up to the structure; this will minimize damage to spray on fireproofing. Patch and repair damaged spray on fireproofing caused by electrical installation; conduits shall not be fully covered with fireproofing.

D. Coordinate activity in advance to avoid interference with other trades.

E. Provide access to all junction and pull boxes.

F. Maintain 6 inches from conduit to paralleled hot water piping and 4 inches from cross piping and 12 inches from generator exhaust piping.

3.11 Secure feeder conduit to basic structural elements with galvanized strap hangers and clamps; use of trapeze type hangers is encouraged for multiple conduits where space will permit. Galvanized metal clamps and screws may be used for attaching and supporting branch circuit conduit. Non-metallic fasteners shall not be used except plastic inserts may be used in concrete for small conduits. Vertical conduits shall be supported at each floor by clamps.

3.12 Surface mounted horizontal and vertical conduit supports on walls up to a height of 7 feet-0 inches above the floor shall be one or two hole sheet metal pipe straps. Pinch type hangers similar to Minerallac type may only be used at heights greater than 8 feet-0 inches. The use of pinch type hangers similar to Minerallac type are expressly prohibited on ductwork, air handling units and other mechanical equipment below 8 feet-0 inches.

3.13 During construction temporarily cap open ends of conduit. Caution trades to take special care of runs in concrete slabs during pouring.

3.14 Empty conduit installed for communications use or for future systems shall have an insulated pull wire or heavy nylon cord inserted for use in pulling wires.

3.15 Pull mandrel or large swab thru conduit to ensure freedom from debris before pulling wires. Use pulling lubricants sparingly.

3.16 Sleeves for passage of conduit, cables, wireway, cable tray and bus duct shall be placed in the initial stages of construction before concrete, masonry and other general construction activity. Means shall be taken to ensure that the sleeve will not move during or after construction. Beams, columns and other structural members shall not be sleeved except upon approval of the Architect.

3.17 Length of wall sleeves shall be such that the sleeve ends are substantially flush with both sides of the wall or partition. Floor sleeves shall be flush with the bottom and top of the floor slab except, in mechanical rooms and other areas which might have water on the floor, sleeves shall project a minimum of 1 inch above finished floor. Refer to the following paragraph for qualifications and exceptions relating to firestopping.

3.18 Refer to 26 05 05 Firestopping. Sleeves which are a part of firestopping assemblies shall conform to the requirements of the assembly with particular emphasis regarding size, annular space, length, passage or non-passage of insulation and the installation of the sleeves.

3.19 Where firestopping is not required, the annular space between the sleeve, core drilling or opening and the conduit, cable, cable tray, bus duct and raceway shall be closed with caulking to retard the passage of smoke.

3.20 Where permitted by OBC Section 712 Penetrations, metallic conduits requiring no pipe sleeves in passing thru concrete floors or concrete or masonry walls and partitions, the annular space shall be closed full depth of the penetration with materials and methods compatible with the floor, wall or partition material (concrete, grout or mortar).

3.21 Openings for multiple conduits extending through floors where water protection is required (mechanical rooms, kitchens, other potentially wet areas) may be protected with a 4 inch high by 4 inch wide concrete curb with chamfered corners in lieu of individual sleeves. These concrete curbs may be used in lieu of the Josam 26420 riser sleeve and clamping ring provided the floor membrane and curbing are arranged to maintain the integrity of the membrane.

3.22 Conduits extending through the roof shall be made watertight by means compatible with the roofing system and as directed by the Roofing Contractor (the company who presently holds the warranty on the roof) and approved by the Architect.

3.23 Conduit, wire and cable, where exposed to different temperatures, shall have raceway or sleeve filled with approved material to prevent circulation of warm air to cold.

3.24 Power actuated fasteners of any type are prohibited in occupied buildings. This includes anchors which are driven into place by any device which produces an impact force by use of a powder charge, compressed air, gas or any other propellant.

3.25 Provide four (4) 1 inch diameter spare conduits for each flush mounted branch circuit panelboard; extend from top of panelboard to above an accessible ceiling for future use.

3.26 All conduit that serves the fire pump in the room containing the fire pump, including the fire pump power circuits and control circuits, shall be rigid, intermediate or liquid tight flexible metal conduit (NFPA-20 and NEC Article 695).

3.27 All conduit terminations to be equipped with locknuts and bushings. Conduits 1-1/2 inches and larger shall have insulating bushings, grounding lug and shall have locknuts inside and outside the enclosure.

3.28 Outlet Box Installation

A. Set box square and true with finished building surfaces and trim.

B. Secure boxes firmly to building structure.

C. Verify location of outlets and switches in finished rooms with Architectural Drawings of interior details and finish. In centering outlets and locating boxes, allow for overhead pipes, ducts and mechanical equipment, variations in fireproofing and plastering, window and like, and correct any inaccuracy from failure to do so without expense to the Owner.

D. Maintain symmetry of all outlets as closely as possible contained within Architectural Elevation. For example, the Contractor shall center light fixture over doorway or receptacle in section of masonry wall, if shown in that approximate position. If receptacle is shown in same location as counter or bench, determine countertop height and set receptacle to clear top and trim of counter and render outlet easily accessible.

E. In the event of conflict between locations of electrical outlets as shown on the Electrical Drawings and on the Architectural Drawings, outlets shall be installed in accordance with the latter.

F. Locate light switches on latch side of door and verify door hinge location in field prior to switch outlet installation.

G. The Owner reserves the right to relocate any device as much as 10 feet-0 inches (measured horizontally) from its indicated location at no additional cost, provided the contractor is notified prior to roughing that device in.

3.29 Contractor shall record carefully on a set of "as built" prints the exact location of all feeder conduits.

3.30 Unless noted otherwise on the drawings, a maximum of 8 conductors shall be installed in a branch circuit conduit. This maximum is a count of all phase and neutral conductors only - ground conductors are not counted when determining maximum fill for this purpose.

END OF SECTION

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 Equipment Identification

A. Identify all the following items with laminated plates:

1. Unit substations, medium voltage and secondary distribution switchgear, and switchboards, including all subassembly switches.
2. Every motor, lighting and equipment controller and disconnect switch.
3. Panelboards.
4. Motor control centers and motor controller panelboards and individual motor starters within panelboards.
5. Transformers.
6. Automatic transfer switches.

B. Nameplate on motor controllers, disconnect switches, automatic transfer switches, switchgear, switchboards, panelboards and transformers shall indicate source, voltage, disconnect location, and load served.

C. Equipment on the emergency systems shall be identified with nameplates having a red background. Outlets on the emergency systems shall be identified red. This shall be accomplished by using red devices or by providing a coverplate with "EMERGENCY" engraved on the face; fill engraving with red paint or equal.

D. All emergency receptacles in surgery and delivery rooms, recovery rooms and intensive care unit and other areas required by the NEC, shall each have a nameplate indicating panel and circuit number serving outlet / as noted in Section 26 27 26 Wiring Devices and Coverplates.

E. Branch circuit panelboards:

1. Identify panel designation on directory card within the panel.
2. Fill out branch circuit directory indicating circuit number and area served, rooms, group of rooms, lighting, convenience outlets, motors, etc. Card index shall be neatly typed. Provide electronic file for card using Excel.
3. Update or replace branch circuit directory in existing panelboards in areas of alteration.
4. Branch circuit phase conductor color format shall be permanently identified inside each panelboard.

F. Conduit and junction boxes:

1. Color code or label all junction boxes and exposed conduit at 20 ft. intervals. Coding shall be painted or labels of the pre manufactured type permanently mounted with metal or plastic band.
2. Provide a color identification scheme under heavy plastic cover hanging in the electrical rooms; identification shall be:
   a. Emergency - Orange
   b. Normal - Black
   c. Fire Alarm - Red
   d. Nurses Call - Green
   e. Sound - Blue
   f. Telephone - Yellow

G. Wire identification:

1. Identify communications and signaling system wiring and branch circuit wiring by circuit number in panels and motor control center wiring gutters by means of permanent durable

wire markers wrapped around or fastened to conductors. This shall be done concurrently with pulling of conductors.

2. Wiring or fiber cabling installed by Contractor for termination by Owner's vendor such as for telephone or data systems shall be identified at both ends utilizing the alpha/numerical identification schedule established by the system vendor.

PART 2 - PRODUCTS

2.1 Nameplates

A. Nameplates shall be laminated phenolic with black surface (red surface for emergency) and white core. Use 0.0625 inch thick material for plates up to 2 inches x 4 inches and 0.125 inch thick for larger sizes. The lettering shall be Condensed Gothic with space between the lines equal to the width of the letters. Use 0.25 inch minimum height letters on the small plates increasing the size proportionately to plate size.

B. The lettering on the plate shall indicate the name of equipment, the specific unit number, voltage, phases, which panel, switchboard or motor control center the equipment is served from, and any other reference data pertinent to the operation. Names and numbers shall coincide with those listed on the drawings. Sample: Panel 3A; 277/480 V, 3 phase, 4 wire, served from unit substation USI.

PART 3 - EXECUTION

3.1 Nameplates shall be secured with screws, one on each end.

END OF SECTION

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 Equipment Identification

A. Identify all the following items with laminated plates:

1. Every motor, lighting and equipment controller and disconnect switch.
2. Panelboards.

B. Nameplate on motor controllers, disconnect switches, automatic transfer switches, switchgear, switchboards, panelboards and transformers shall indicate source, voltage, disconnect location, and load served.

C. Equipment on the emergency systems shall be identified with nameplates having a red background. Outlets on the emergency systems shall be identified red. This shall be accomplished by using red devices or by providing a coverplate with "EMERGENCY" engraved on the face; fill engraving with red paint or equal.

D. All emergency receptacles in surgery and delivery rooms, recovery rooms and intensive care unit and other areas required by the NEC, shall each have a nameplate indicating panel and circuit number serving outlet / as noted in Section 26 27 26 Wiring Devices and Coverplates.

E. Branch circuit panelboards:

1. Identify panel designation on directory card within the panel.
2. Fill out branch circuit directory indicating circuit number and area served, rooms, group of rooms, lighting, convenience outlets, motors, etc. Card index shall be neatly typed. Provide electronic file for card using Excel.
3. Update or replace branch circuit directory in existing panelboards in areas of alteration.
4. Branch circuit phase conductor color format shall be permanently identified inside each panelboard.

F. Conduit and junction boxes:

1. Color code or label all junction boxes and exposed conduit at 20 ft. intervals. Coding shall be painted or labels of the pre manufactured type permanently mounted with metal or plastic band.
2. Provide a color identification scheme under heavy plastic cover hanging in the electrical rooms; identification shall be:
    a. Emergency - Orange
    b. Normal - Black
    c. Fire Alarm - Red
    d. Nurses Call - Green
    e. Sound - Blue
    f. Telephone - Yellow

G. Wire identification:

1. Identify communications and signaling system wiring and branch circuit wiring by circuit number in panels and motor control center wiring gutters by means of permanent durable wire markers wrapped around or fastened to conductors. This shall be done concurrently with pulling of conductors.
2. Wiring or fiber cabling installed by Contractor for termination by Owner’s vendor such as for telephone or data systems shall be identified at both ends utilizing the alpha/numerical identification schedule established by the system vendor.

PART 2 - PRODUCTS

2.1 Nameplates

A. Nameplates shall be laminated phenolic with black surface (red surface for emergency) and white core. Use 0.0625 inch thick material for plates up to 2 inches x 4 inches and 0.125 inch thick for larger sizes. The lettering shall be Condensed Gothic with space between the lines equal to the width of the letters. Use 0.25 inch minimum height letters on the small plates increasing the size proportionately to plate size.

B. The lettering on the plate shall indicate the name of equipment, the specific unit number, voltage, phases, which panel, switchboard or motor control center the equipment is served from, and any other reference data pertinent to the operation. Names and numbers shall coincide with those listed on the drawings. Sample: Panel 3A; 277/480 V, 3 phase, 4 wire, served from unit substation USI.

PART 3 - EXECUTION

3.1 Nameplates shall be secured with screws, one on each end.

END OF SECTION

26 09 23 LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 Lighting control devices are identified on the drawings per legend symbols or as specifically noted. Catalog numbers from acceptable manufacturers for the common wiring devices shall be as listed herein. Catalog numbers are not listed for all devices. Other devices, such as key switches, clock hanger outlets, etc. shall be furnished by one of the manufacturers listed and shall be equal in quality to the device series listed.

1.2 When shop drawings are required for wiring devices the submittal shall be comprehensive for all wiring device configurations listed in the legend and for devices specifically noted on the drawings, including wall box dimmers, occupancy sensors and load control relays.

PART 2 - PRODUCTS

2.1 Toggle type AC switches shall be listed by Underwriters Laboratories, Inc. Switches shall be 20 ampere, 120/277 volt AC and ivory (select color) in color unless noted otherwise.

Acceptable Manufacturer	General Purpose	Red Pilot Lighted	Illuminated Handle	Momentary
Eaton	AH1221 series	AH1221 PL series	AH1221 LT series	1995 series
Bryant	4901 series	4901 PL series	4901 GL series	4921 series
Hubbell	HBL1221 series	HBL1221 PL series	HBL1221 lL series	HBL1557 series
Leviton	1221-S series	1221 PL series	1221 LH series	1257 series
P&S	PS20AC2 series	PS20AC2 RPL series	20AC1 SL series	1251 series

2.2 Ceiling/Wall Mount Occupancy Sensor

A. Sensor shall be dual technology to detect human presence in controlled area by ultrasound and passive infrared. Dual sensing with both technologies must occur to activate lighting system. Sensor to be fully adaptive with self-adjusting and self-calibration.

B. Sensor shall have signal processing to respond to only those signals caused by human motion. Sensor to operate instantly for room motion and time off delay adjustable for 5 – 30 minutes. Sensor to be equipped with a walk-thru mode.

C. Sensor area coverage to be minimum of 1000 SF for one sensor. Provide multiple sensors where needed for space coverage.

Sensor shall have provisions for manual-off function for lighting circuit from remote momentary switch (reset when not occupied) or maintained (off override).

D. Power pack for remote mounting to match occupancy sensor.

E. Verify color with Architect.

F. All components to have 5-year warranty.

G. Manufactured by Watt-Stopper, Greengate (Cooper Controls), Hubbell Control Solutions, Leviton, Sensor Switch or Lutron.

2.3 Wall Switch Occupancy Sensor (Small Offices and similar room w/single entry door).

A. Switching w/manual and automatic control. Sensor shall use PIR sensing and shall have photocell/daylight override, vandal resistant lens. Sensor to be fully adaptive with self-adjusting and self-calibration.

B. Switches to provide two level and incorporate two dedicated relays in addition to the manual switches.

C. Verify color with Architect.

D. All components to have 5-year warranty.

E. Manufactured by Watt Stopper, Greengate (Cooper Controls), Hubbell Control Solutions, Leviton, Sensor Switch or Lutron.

2.4 Automatic Load Control Relays

A. Emergency Bypass Relay – 20 amp electrically held relay to power lights on during loss of normal power circuit is operated by switch circuit when normal power available. Relay to be UL 924 listed. An integral LED indicator shall indicate the unit's current remote activation status and remote LED's which indicate device state. Status LED shall be lit green if normal power is present and emergency output is not required. Status LED shall be lit red to indicate emergency output is active (on) due to remote activation of "emergency" or due to loss of normal power.

Remote LED shall be lit (amber) indicate whether the normal lighting control is commanding the emergency light to be active (normal control on) and shall be unlit (dark) when the normal control is open (normal control off). The unit shall provide dedicated leads and 24 VDC source for connection to remote triggering device such as test switch, fire alarm system, or other external system capable of providing a normally closed dry contact closure. Breaking the loop (or contact between the terminals) shall force and hold the emergency lighting on until the loop (terminals) is again closed. Programmable "return to normal" delay shall be available which keeps lights on for a period of up to 15 minutes after normal state returns such that any egress in progress can complete before a normally dark area is allowed to return to its dark state.

Unit to have automatic test functions (hold emergency light on 2.5 sec. or equal). Unit to be mounted in junction box either above accessible ceiling or in flush box when installed below ceiling. Unit housing shall be plenum rated. Provide a 5-year replacement warranty. Manufactured by LVS Controls Inc. Model EPC-A or equal by Hubbell Control Solutions or ETC Inc.

2.5 Branch Circuit Emergency Lighting Transfer Switch (Bcelts)

A. The Branch Circuit Emergency Lighting Transfer Switch (BCELTS) shall be the model SC1008 as manufactured by ETC, Inc., or equal by Dual-lite.

B. The BCELTS shall provide automatic transfer of a single 120V or 277V branch circuit from normal to emergency power source, when normal power fails.

C. The BCELTS shall transfer a lighting load branch circuit from a dimmer/ relay or secondary control output to a second power source in the event of a loss of power to the primary power source, a normal system failure, or activation of a fire alarm

D. The system shall be listed under ANSI / UL1008 Transfer Switch Equipment for Emergency systems and comply with ANSI / NFPA 110 Standard for Emergency and Standby Power Systems, and ANSI / NFPA 70 (NEC), including Article 700, 701 and 702 safety standards. Emergency transfer systems that do not comply with the below stated NEC articles and sections shall not be permitted

1. Satisfies requirements of the National Electrical Code (NFPA 70):
    a. Article 700 – Emergency Systems
    b. Article 701 – Legally Required Standby Systems
    c. Article 702 – Optional Standby Systems
    d. Section 518.3(C) – Assembly Occupancies
    e. Section 520.7 – Theatres and Similar Locations
    f. Section 540.11(C) – Motion Picture Projection Rooms

E. Transfer Switch

1. The switch shall be positively latched and unaffected by voltage variations or momentary outages so that constant contact pressure is maintained and temperature rise at the contacts is minimized
2. The switch shall be electrically interlocked to ensure only one position, either Normal or Emergency, is engaged at any time
3. The switch shall be break-before-make to ensure that normal and emergency sources are never interconnected within the unit
4. Built-in fuses shall provide 10,000 Ampere Short Circuit Current Rating (SCCR) on the connected emergency circuit
5. Switch contacts shall withstand transfer without welding, with 180º phase displacement between normal and emergency power sources if both sources are energized
6. Transfer switch contacts shall be rated for mixed loads, including electric discharge lamps and tungsten filament lamps
7. Transfer switch shall be rated for a minimum of 6,000 cycles at full tungsten load

F. Control Circuitry

1. The control circuitry shall direct the operation of the transfer switch
2. A field-configurable normally closed (NC) or normally open (NO) dry contact closure input shall be provided
    a. Up to (10) BCELTS devices may be connected to a single remote loop
3. The BCELTS shall support transfer of a 0-10V or DALI controlled circuit
    a. Upon activation of emergency transfer the BCELTS shall break the 0-10V or DALI control circuit, driving connected 0-10V circuits to full output and DALI circuits to their default level.

G. Operation

1. Transfer to alternate emergency supply will occur when normal supply senses voltage drops below 80V when used at 120V or 277V

H. Enclosure

1. The SC1008 shall be mounted in a NEMA 1 interior type enclosure finished in fine-textured epoxy paint with screw on cover.
2. The system shall be provided with an approved overlay mounted on the front of the enclosure, stating, “BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH”

2.6 Emergency Lighting Transfer System – Multi Circuit

A. General

1. The Emergency Lighting Transfer System (model ELTS2 by ETC Inc. or equal) shall provide automatic transfer of branch circuits from normal to emergency power when normal power fails. Each system shall consist of power transfer switches and a control circuitry interconnected to provide complete, automatic protection.

2. The ELTS shall transfer designated lighting load branch circuits from dimmers or secondary control outputs to a second power source in the event of a loss of power to the dimmer rack, a normal system failure, or activation of fire alarm.
3. The system shall comply with ANSI / UL1008 Transfer Switch Equipment, ANSI / NFPA 110 Standard for Emergency and Standby Power Systems, and ANSI / NFPA 10 (NEC), including Article 700, 701 and 702 safety standards. Emergency transfer systems that do not comply with the below stated NEC articles and sections shall not be permitted
    a. Satisfies requirements of the National Electrical Code (NFPA 70):
        1) Article 700 – Emergency Systems
        2) Article 701 – Legally Required Standby Systems
        3) Article 702 – Optional Standby Systems
        4) Section 518.3(C) – Assembly Occupancies
        5) Section 520.7 – Theatres and Similar Locations
        6) Section 540.11(C) – Motion Picture Projection Rooms
4. Emergency Transfer equipment shall comply with the US seismic requirements of the International Building Code (IBC) referencing Standards ASCE 7-10 and ICC AC-156 for equipment in the emergency life-safety chain and be approved for seismic applications. Seismic certification shall include installation applications for Roof, Grade, Below Grade, and Intermediate Level installation in the USA with an S_s level of 3.42 and S_{DS} level of 2.28.
5. The ELTS shall be a self-contained system for up to 24 circuits at 20 amps and available for single or three phase power (120/208V, 120/240V or 277/480V). The unit shall be available with either discrete emergency branch circuit feeds from an external circuit breaker panel (by others) or emergency main feed with built-in branch circuit distribution and over current protection.

B. Transfer Switch

1. The switch shall be a UL 1008 LISTED, electrically operated and mechanically held (maintained) transfer switch.
2. The switch shall be positively locked and unaffected by voltage variations or momentary outages so constant contact pressure is maintained and temperature rise at the contacts is minimized.
3. The switch shall be mechanically interlocked to ensure only one of the two possible positions, either Normal or Emergency.
4. Each switch shall be configured as guaranteed break-before-make
5. Built-in fuses shall provide up to 65000A Short Circuit Current Rating (SCCR) on connected emergency circuits.
6. Built-in fuses class G shall be provided on each output for compliance with NEC Section 700.32 Coordination – larger upstream breakers cannot be tripped by downstream branch circuit faults.
7. Switch contacts shall withstand transfer without welding, with 180º phase displacement between Normal and Emergency power sources, both sources energized and with 80% load.
8. Transfer switch contacts shall be rated for mixed loads, including electric discharge lamps and tungsten filament lamps.
9. Transfer switches shall be rated for 6000 cycles at full tungsten load.

C. Control Circuit

1. The control circuitry shall direct the operation of the transfer switch.
2. User configurable timing delays shall be provided for power transfer between:
    a. loss of normal power and the transfer to emergency up to 10 seconds.
    b. restoration of normal power and the transfer from emergency back to normal power up to 60 seconds.
3. A normally closed dry contact closure fire alarm input shall be provided.
4. Transfer switch shall support connections for up to 5 Remote Stations which can manually switch between normal and emergency power.

D. Operation

1. Transfer to alternate supply will occur when normal supply voltage drops below 80V when used at 120V, or 185V for the A phase and 80V for the B and C phase when used at 277V.
2. A self-supervising isolated signal input shall be provided for connection to the facility fire alarm. The ELTS2 shall automatically transfer the loads to the Emergency power source when the facility fire alarm is activated as part of a normally-closed loop.
3. A key-operated switch shall be provided to manually control the ELTS2. All automatic functions shall override this control. Two indicator lights shall be provided to show the position of the transfer switch.
4. All automatic functions shall override remote control functions. Any combination of open or shorted wiring to remote stations shall not affect automatic functions, or disable the local switch.

E. Remote Stations (Optional)

1. Optional remote control stations shall be available for the ELTS2. Each remote control station shall contain a 3-postion key switch. The left and right positions shall be momentary and the switch shall always return to the center position.
2. The faceplate shall be labeled Normal for the left switch position, Emergency for the right switch position and Auto for the center position.
3. The faceplate shall contain two LEDs to confirm transfer switch position.
4. Each remote station shall mount in a standard, two-gang wall box (4” x 4” x 3.5”).
5. Remote stations shall not be incorporated into or mounted onto other equipment.
6. All wiring to remote stations shall be by 5-conductor, Class 2 wiring (24V DC). A terminal strip shall be provided for contractor wiring.

F. Enclosure

1. The ELTS2 shall be mounted in a NEMA 1 interior or NEMA 4 watertight type enclosure finished in textured epoxy paint. It shall be equipped with a hinged locking door. Material shall be no less than 14 gauge steel.
2. An enclosure containing no more than 12 (twelve) 20A circuits shall be 36”H x 24”W x 8.5”D.
3. An enclosure containing up to 24 (twenty-four) 20A circuits shall be 48”H x 30”W x 8.5”D.
4. The enclosure shall provide power distribution and branch circuit protection for all emergency power circuits. Systems requiring external emergency power circuit protection shall not be acceptable.
5. The enclosure shall be separate and independent of all other equipment. In no instance shall the ELTS2 be enclosed in a dimmer rack or in an enclosure containing other equipment.
6. The system shall be provided with an approved overlay mounted on the front of the enclosure, stating, “EMERGENCY LIGHTING TRANSFER SYSTEM”.
7. The enclosure shall be provided with an approved label indicating that the system is UL1008 LISTED.

2.7 Electronic Low Voltage (0 – 10V) Dimmer

A. General Requirements

1. Utilize air gap off, activated when user selects "off" to disconnect the load from line supply.
2. Operates at the rated capacity across the full ambient temperature range including modified capacities for ganged configurations which require removal of fins.
3. Provide radio frequency interference suppression.
4. Surge Tolerance: Designed and tested to withstand surges of 6,000 V, 200 amps according to IEEE C62.41.2 without impairment to performance.

5. Dimmers: Provide full range, continuously variable control of light intensity.
6. Dimmers for Electronic Low Voltage (ELV) Transformers:
    a. Provide circuitry designed to control the input of electronic (solid-state) low voltage (ELV) transformers. Do not use dimmers that utilize standard phase control.
    b. Provide resettable overload protection that provides automatic shut-off when dimmer capacity is exceeded. Do not use protection methods that are non-resettable or require device to be removed from outlet box.
    c. Designed to withstand a short, per UL 1472, between load hot and either neutral or ground without damage to dimmer.
7. Fluorescent Dimmers:
    a. Provides direct control of fluorescent dimming ballasts up to the ballast manufacturer's specified rating.

B. Preset Smart Wall Dimmers and Switches:

1. Dimmer Control: Multi-function tap switch with raised rocker for dimmer adjustment.
    a. Rocker raises/lowers light level, with new level becoming the current preset level.
    b. Switch single tap raises lights to preset level or fades lights to off.
    c. Switch double tap raises light to full on level.
    d. Switch tap and hold slowly fades lights to off over an extended period.
    e. LEDs adjacent to tap switch indicate light level when dimmer is on, and function as locator light when dimmer is off.
    f. Preset Smart Dimmer: 3-wire fluorescent ballast/LED driver (6 A, 120 V); multi-location capability using companion dimmers (up to nine companion dimmers may be connected); minimum load requirement.
    g. Companion Dimmer: Provides multi-location capability for compatible dimmers.

C. Preset Smart Wall Dimmers and Switches with Wireless Communication Inputs:

1. Communicates via radio frequency with up to nine compatible occupancy/vacancy sensors and/or wireless control stations, and one daylight sensor.
2. Dimmer Control: Multi-function tap switch with small, raised rocker for dimmer adjustment.
    a. Rocker raises/lowers light level, with new level becoming the current preset level.
    b. Switch single tap raises lights to preset level or fades lights to off.
    c. Switch double tap raises light to full on level.
    d. Switch tap and hold slowly fades lights to off over period of 10 seconds.
    e. LEDs adjacent to tap switch indicate light level when dimmer is on, and function as locator light when dimmer is off.

D. Dimmer shall be rated for the wattage it is supplying. Contractor shall coordinate lighting load on each respective dimmer and provide properly rated dimmer accordingly (600w to 1000w).

E. Contractor is responsible to coordinate the dimmer with each lighting manufacturer and verify that dimmer is compatible and capable of controlling lighting loads/fixtures from fixture manufacturer being supplied on the job.

F. Verify color of dimmer with architect prior to ordering.

G. Dimmer shall control loads down to 10%.

H. 0-10V electronic digital dimmer shall be Lutron Maestro Series, Leviton Decora, Crestron Cameo, Cooper Decorator, Watt Stopper Miro, or approved equal.

I. 0-10V electronic digital dimmer shall be Lutron Skylark Contour, Leviton IllumaTech, Hunt Simplicity, Cooper Slide, Watt Stopper Architectural or approved equal.

2.8 Provide a device plate to suit each particular application. Cover all empty outlet boxes with a blank plate. Coverplates shall be manufactured by Pass and Seymour, Hubbell, Cooper, Bryant, Leviton or Mulberry; Taymac is an acceptable manufacturer for weatherproof non-metallic coverplates Multi-Mac Series, “While-In-Use” type, 3.5 inches depth, opaque grey, locking tab, marked “EXTRA Duty”. Provide jumbo sized plates for outlets installed in masonry walls.

2.9 In finished spaces, wall plates shall be nominal .032 inch thick, made of 302 high nickel stainless steel with brushed satin finish and beveled edges. Screws shall be metal with countersunk heads and finished to match plates. Sectional plates will not be permitted.

2.10 In finished spaces, wall plates shall be unbreakable Lexan or nylon, non-combustible, minimum 0.100 inch thick, with color matching metal screws; "smooth" styling. Plates shall match color of devices.

2.11 In finished spaces, wall plates shall be thermoset plastic (phenolic, urea), non-combustible, mar proof, minimum 0.100 inch thick, with color matching metal screws; "smooth" styling. Plates shall match color of devices.

2.12 Installations consisting of three or more wall switches or wall box dimmers mounted together with either separate coverplates or a common coverplate shall have each coverplate engraved so as to identify the circuits or fixtures being controlled by each switch or dimmer. Refer to the drawings for special instructions.

2.13 Switches controlling luminaires served by emergency circuits shall be covered by a plate engraved "EMERGENCY" in 0.25 inch high letters with letters filled in with red or white dye or paint. Coverplates for emergency devices shall be engraved to identify panelboard and circuit number for hospital critical care areas.

2.14 Switches controlling luminaires served by emergency circuits shall be red and covered by a red plate / standard plate. Coverplates for emergency devices shall be engraved to identify panelboard and circuit number for hospital critical care areas.

PART 3 - EXECUTION

3.1 Locate devices as shown on the drawings, coordinate exact location with other trades, to avoid interference. Check for potential interference from door swings, cabinets, HVAC equipment and other wall mounted devices.

3.2 Clean debris from device boxes prior to installation of devices. Adjust devices and coverplates to be flush and level.

3.3 Control Cabling Installation

A. Lighting control low voltage wiring shall be furnished and installed in accordance with manufacturer’s recommendations in compliance with all Local, State and National codes. This Contractor shall be responsible for furnishing and installing all required cabling between components to form a complete and operational system meeting all the requirements of this specifications.

B. Provide firestop material and seal all cable penetrations as required.

C. All wiring shall be organized and run parallel or perpendicular to building lines above ceilings. Provide all required cable management systems such as J-hooks to support wiring to meet building codes and manufacturer’s recommendations.

D. Cables shall not be laid upon ceilings, structure or equipment or supported in a manner that would violate any codes or standards.

E. All cabling installed in accessible ceiling spaces shall be UL plenum rated.

F. All control and signal cable shall be installed continuous and without splices. Provide appropriate connectors or pre-manufactured cables for each application.

3.4 Identification/Labeling

A. Contractor shall identify all major items of equipment and tag all cables with permanent type markers to denote equipment served. Cables shall be tagged at both ends and at each point where the cable is administered.

3.5 Occupancy Sensor Installation

A. Verify location of occupancy sensor(s) with selected manufacturer prior to rough-in to minimize false activation of the device. Locate sensor and adjust activation field to avoid nuisance activation by movement outside of the controlled space. Sensors shall sense any human motion in the space and allow turn on with entrance into the space.

B. Provide all material and labor for a complete and operational system including power and slave packs, auxiliary relay modules and backboxes. Verify application voltage rating and provide proper rated devices.

C. Low voltage wiring can be open wired above accessible ceilings, utilize plenum rated cabling. Installation in exposed or inaccessible locations shall be installed in conduit.

D. Coordinate time delay off setting of each occupancy sensor with the Owner. Maximum time delay off shall be 30 minutes. Minimum off delay is 10 minutes for intermittent use spaces.

E. Maintain 6 feet (minimum) to 8 ft. distance from an HVAC air outlet.

3.6 Emergency Lighting Control Relay Installation

A. Install per manufacturer's instructions. System operation to be connected to be operable at all times.

B. Provide all material and labor for a complete and operational system including verify voltage rating and provide properly rated devices.

C. Emergency and normal circuits are to be identified on relay or box cover.

D. Verify operation for each operating condition.

3.7 Functional Testing – Lighting control devices and control systems shall be tested to ensure that control hardware and software are calibrated, adjusted, programmed, and in proper working condition in accordance with the construction documents and manufacturer's installation instructions. When occupant sensors, time switches, programmable schedule controls, or photosensors are installed, at a minimum, the following procedures shall be performed:

A. Occupant Sensors

1. Certify that the sensor has been located and aimed in accordance with manufacturer recommendations.
2. For projects with up to seven (7) occupancy sensors, all occupancy sensors shall be tested.
3. For projects with more than seven (7) occupancy sensors, testing shall be done for each unique combination of sensor type and space geometry.
   a. For each sensor to be tested, verify the following:

1) Status indicator (as applicable) operates correctly
2) Controlled lights tum off or down to the permitted level within the required time
3) For auto-on occupant sensors, the lights tum on to the permitted level when someone enters the space
4) For manual-on sensors, the lights turn on only when manually activated
5) The lights are not incorrectly turned on by movement in nearby areas or by HVAC operation

B. Automatic Time Switches

1. Confirm that the automatic time-switch control is programmed with appropriate weekday, weekend, and holiday (as applicable) schedules.
2. Document for the owner automatic time-switch programming, including weekday, weekend, and holiday schedules, as well as all setup and preference program settings.
3. Verify that correct time and date are properly set in the time switch.
4. Verify that any battery backup (as applicable) is installed and energized.
5. Verify that the override time limit is set to no more than two (2) hours.
6. Simulate occupied condition. Verify and document the following:
   a. All lights can be turned on and off by their respective area control switch.
   b. The switch only operates lighting in the enclosed space in which the switch is located.
7. Simulate unoccupied condition. Verify and document the following:
   a. All nonexempt lighting turns off
   b. Manual override switch allows only the lights in the enclosed space where the override switch is located to tum on or remain on until the next scheduled shut off occurs

C. Testing shall be performed by equipment supplier. Provide report certifying operation and performance level to Engineer.

3.8 Training Requirements

A. Provide all training and utilize specified manuals and record documentation. Training shall be provided to all Owner designated staff at the project site.

B. Demonstrate adjustment, operation and maintenance of the system including each component and control.

END OF SECTION

26 51 19 LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 Refer to schedule on the drawings for information on luminaires, drivers and manufacturers. Luminaires of manufacturers other than those listed, if offered, shall be on a substitute basis and so listed as a substitute with the bid. (Refer to Section 26 05 01, para. 2.4 B.)

1.2 The catalog numbers listed on the luminaire schedule do not necessarily have complete prefix and suffix designations for placing the luminaire order. The Contractor shall verify these numbers (with associated notes on the luminaire schedule) and include in their bid the necessary accessories, trims, mounting hardware, etc. to achieve a coordinated installation with ceiling types indicated on the architectural drawings and in specifications. The Contractor shall provide any hardware indicated by notes on the fixture schedule.

1.3 Luminaires, drivers and individual components shall bear UL label.

1.4 Where luminaires are installed in fire rated ceilings the following methods may be utilized: fire rated light covers, fire boxes or custom-built boxes. Detail of method shall be submitted.

1.5 Submittals

A. Detailed cut sheets for all LED luminaire complete assemblies shall be submitted for approval with shop drawings. Identify pertinent information such as the manufacturer, frequency operation, reset thermal protection, etc. Also, submit emergency battery driver cut sheets for review. Shop drawings will be rejected if required information is not submitted.

B. Submittals shall include dimensions, ratings, performance data and components of each luminaire. Where indicated on schedule, submit two (2) color chips illustrating luminaire finish color.

PART 2 - PRODUCTS

2.1 LED Luminaire Components

A. LED Luminaire

1. LED luminaire shall be rated for an installation/ambient temperature from -40 degrees C to +40 degrees C.
2. LED luminaire shall be modular in design (when applicable per the basis of design) with the ability to replace drivers, light engines, arrays, optics, reflectors, etc., without having to replace the entire luminaire.
3. The heat sink shall be easily accessible for maintenance or cleaning to maintain the overall thermal performance of the luminaire within specifications. The light engine and driver shall be easily accessible for maintenance.
4. LED luminaire (type V distribution) shall have an even distribution of luminous intensity within the 0 degree to 90 degree zone. Luminous intensity at any angle within this zone shall not differ from the mean luminous intensity for the entire 0 degree to 90 degree by more than 10 percent.
5. Exterior LED luminaire shall be full cutoff or fully shielded as defined by IESNA-RP-8.
6. LED luminaire shall come standard with the ability for full dimming. When luminaire is to be powered by generator for emergency operation the luminaire is to be UL 924 listed.
7. LED Luminaire shall have a minimum of 5 year warranty.
8. Solid State Lighting (LED) – UL 1598.

B. LED/LED Module

1. LED/LED Module(s) shall be manufactured by:

a. Nichia
b. Cree
c. Achriche
d. Phillips
e. Osram/Sylvania
f. Approved Equal (By Engineers approval)

2. LEDs shall be of the highest production quality.
3. LED/LED Module shall be rated for 50,000 hours of life at 70 percent output (L70) and shall have been tested in accordance with IESNA LM-79, LM-80, and TM-21.
4. LED/LED Module manufacturers shall adhere to LED package manufacturer guidelines, certification programs, and test procedures for thermal management.
5. LED/LED Module(s) shall be rated for a minimum luminous efficacy of 90 Lumens per Watt (lm/W).
6. Color consistency NEMA SSL-3.
7. LED/LED module shall have a minimum CRI of 80. High CRI where noted shall be minimum 90 (sample R1 – R8) with sample R9 minimum 80.
8. LED/LED Module(s) shall have one of the following designated CCTs (Correlated Color Temperature) per ANSI C78.377-2008 and all within the 7-step chromaticity quadrangles as defined below:
   a. 2700 K
   b. 3000 K
   c. 3500 K
   d. 4000 K
   e. 5000 K
9. LED/LED Modules shall originate from a common manufactured batch source.
10. Contractor shall provide 5 percent of each module specified as spare in original sealed packaging and transport to the Building (and put in storage) as directed by the Owner.

C. LED Driver

1. The driver shall have 50,000 hrs. of anticipated/rated life. Minimum efficiency of 85 percent at full load conditions.
2. UL 8750 approved.
3. Driver shall meet UL Class 2 for use in dry or damp location.
4. FCC rule title 47CFR Part 15, Class A minimum compliant.
5. Driver shall have inherent short-circuit protection, self-limited, overload protected. (UL 1449)
6. Driver shall have a Class A sound rating.
7. Driver rated for 100 to 277 volt input. Power factor .90 or higher.
8. All drivers shall provide full LED dimming range (or as indicated on the drawings). The drivers in every LED fixture shall have the capability to be dimmable, whether indicated to be dimmed or not on the drawings. When luminaire is to be powered by generator for emergency operation the driver is to be UL 924 listed.
9. Driver shall have a minimum of 5 year warranty.
10. Contractor shall provide 5 percent of each driver specified as spare in original sealed packaging and transport to the building (and put in storage) as directed by the Owner.

D. The complete LED luminaire assembly shall be of the latest and highest efficacy design available.

2.2 Battery Powered Exit and Emergency Lighting Luminaires

A. Each unit shall consist of a sealed, maintenance free nickel-cadmium battery,which delivers 90 minutes capacity to emergency lamps. LEDs, drivers, automatic controls and connection to the lighting circuit ahead of all switches. Operation shall be such that the battery is maintained constantly charged under normal conditions; upon a loss of normal power, the light shall be switched on and the operating current obtained from the battery.

B. Units shall be UL labeled. Refer to drawings for mounting, capacity and manufacturer.

C. Fasten battery operated exit and emergency lighting units to wall or ceiling using factory-furnished bracket and make rear concealed electrical connection.

D. Electric source shall be from unswitched active lighting circuits only, to ensure that battery will be charged from an active circuit.

E. Test switch provides manual activation of 30 second diagnostic testing for visual inspection. Where noted for self-diagnostic testing, fixture to operate 30 seconds every 30 days and 90 minutes once annually. Performing diagnostics of LED light source, AC to DC transfers, charging and battery condition.

2.3 LED AC/Emergency Driver Units – Battery Type

A. Emergency lighting shall be UL listed and labeled and shall be provided by using standard LED luminaires equipped with a self-contained mounted battery-inverter power pack. Furnish and install with each designated luminaire a power pack unit to operate luminaire assembly upon loss of normal power. Initial output rating shall be minimum 50% lumen output (or as coordinated with manufacturer). Warranty shall be 5 years from date of acceptance.

B. Emergency operation shall be fully automatic with the power pack unit capable of driving the selected luminaire at rated output for a minimum of 90 minutes with a lumen depreciation no greater than 50 percent.

C. Power pack units shall include a sealed maintenance-free nickel cadmium battery, a solid-state charger, an automatic transfer circuit, a low voltage battery disconnect circuit to prevent battery damage from deep discharge and a high frequency inverter. An accessible test switch and AC “on” pilot light shall be installed in the fixture and require no field wiring.

D. The power pack’s inverter electronics and battery driver shall, without requiring modification, be compatible with standard driver and luminaire assembly supplied and shall not affect normal luminaire operation and shall be used with either a switched or unswitched luminaire. Connect to an unswitched hot leg for either base for charging/loss of power.

E. Unit to include test switch, status indicator and rechargeable battery. Charger to have two charge rates and automatically recharges after battery discharge.

F. Provide remote test switch for installation where indicated on plan or where routine testing would be difficult due to luminaire location or accessibility. This option shall consist of a pushbutton test switch and AC “on” pilot light mounted on a white nylon single gang switch plate.

G. Self diagnostics testing, where noted, operates 30 seconds every 30 days and 90 minutes once annually. Performing diagnostics of LED light source, AC to DC transfers, charging and battery condition.

H. LED type inverter units shall be Dual Lite or equal by Chloride, Siltron, Power Sentry, Bodine, Side Lite or IOTA Engineering Company.

2.4 Luminaires with Integral Controls

PART 3 - EXECUTION

3.1 Luminaire Hanging and Supporting

A. Support each surface mounted or suspended luminaire in a minimum of two locations. In addition, where luminaires are in a continuous row, they shall be fastened together on each end

in two places. For suspended luminaires provide pendant length required to suspend luminaire at indicated height.

B. Recessed luminaires shall be supported at all four corners. Additionally, securely fasten each luminaire to the ceiling framing member by mechanical means such as bolts, screws, rivets or approved clips; install a minimum of one on each of the four sides of luminaire. This Contractor shall coordinate luminaire locations and luminaire weight with the trade installing the ceiling system to ensure adequate hangers are installed to support the weight of the ceiling plus twice the weight of each luminaire.

C. Surface or flush LED luminaires in ceilings of the suspended lay in type shall be installed so that the long dimension of the luminaire is supported on the main support members of the ceiling system.

D. In addition, all recessed LED luminaires for lay in ceilings shall be equipped with at least two galvanized steel safety support wires, or chains, attached from the luminaire housing to the structure independent of the ceiling system; hangers supporting ceiling system shall not be used.

E. Install safety cable / chain support for gymnasium luminaires per manufacturer's direction. Coordinate structural connection with Architect.

F. Do not support light fixtures directly from light weight roof decks. Provide supplemental angle iron support as required. Do not connect to bottom cord of roof joist without supplemental angle iron ties to the upper cord of joist.

G. For wall mounted exterior luminaires include gasketed cast junction box.

H. Wire battery powered emergency fixtures to circuit which is constantly on. For LEDs in fixtures which are switched the charging / sensing circuit shall be extended from ahead of room switch.

3.2 Alignment and Cleaning

A. Luminaires shall be mounted straight, level and true to the building lines. Warped or damaged luminaires shall be replaced or repaired to the satisfaction of the Architect and Owner.

B. Immediately preceding the final inspection, this Contractor shall thoroughly clean all luminaires of dust, dirt, grease, fingermarks, etc. All LED luminaires shall be operating at the time of Owner's acceptance.

C. Coordinate location of luminaires carefully with the Architectural reflected ceiling plan. Verify that no surface mounted luminaire interferes with door swings.

1. Coordinate locations of luminaires with mechanical ducts, sprinkler pipes/heads, smoke alarms and fire alarm devices prior to rough-in to prevent conflicts.
2. Where reflected ceiling plans indicate a larger quantity of luminaires than that shown on the electrical drawings for a particular space, the reflected ceiling plan shall be followed for that space.

D. Adjust all adjustable fixtures to the satisfaction of the Engineer and the Owner.

3.3 Turn over required spare LED components, identified in above specification sections, to Owner.

3.4 Exit and Emergency Lighting Installation

A. Exit lighting and emergency lighting system wiring shall be run in conduit system which is completely independent of normal wiring systems.

B. Equipment to transfer power from a normal source to an emergency source are to be listed and labeled for load transfer.

C. All circuits shall have dedicated neutral conductor.

D. Adjust the coverage of related occupancy sensors and dimming control.

E. Test system operation for full 90 minutes witnessed by the AHJ. Provide report of required corrections, if any.

F. Batteries shall carry a five (5) year warranty.

END OF SECTION

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

Prepared For:

FRANKLIN COUNTY CONVENTION FACILITIES AUTHORITY

400 NORTH HIGH ST. 3RD FLOOR, COLUMBUS OHIO 43215

Architect

Schooley Caldwell Associates
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614.628.0300

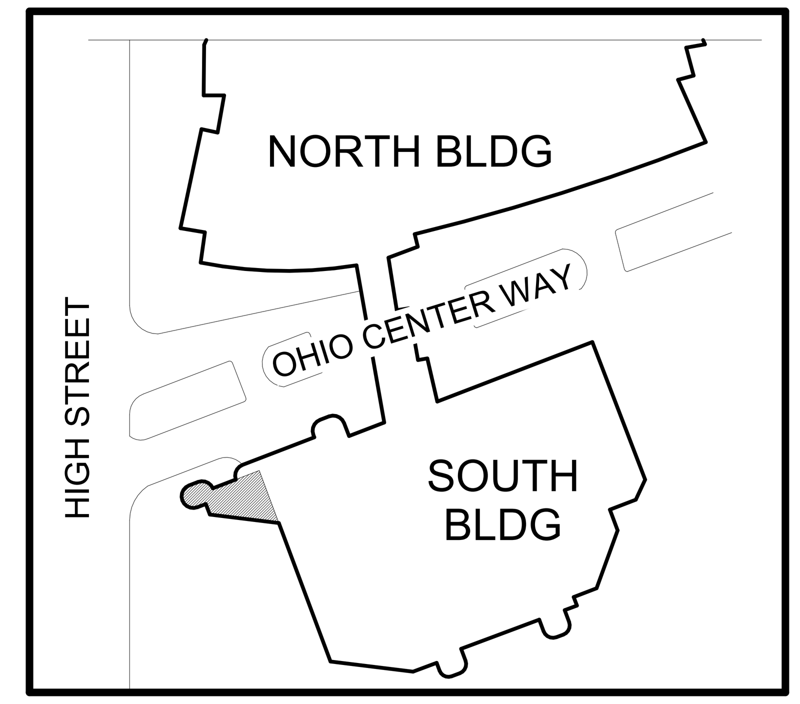
schooleycaldwell.com

Mechanical, Plumbing, Electrical Engineer

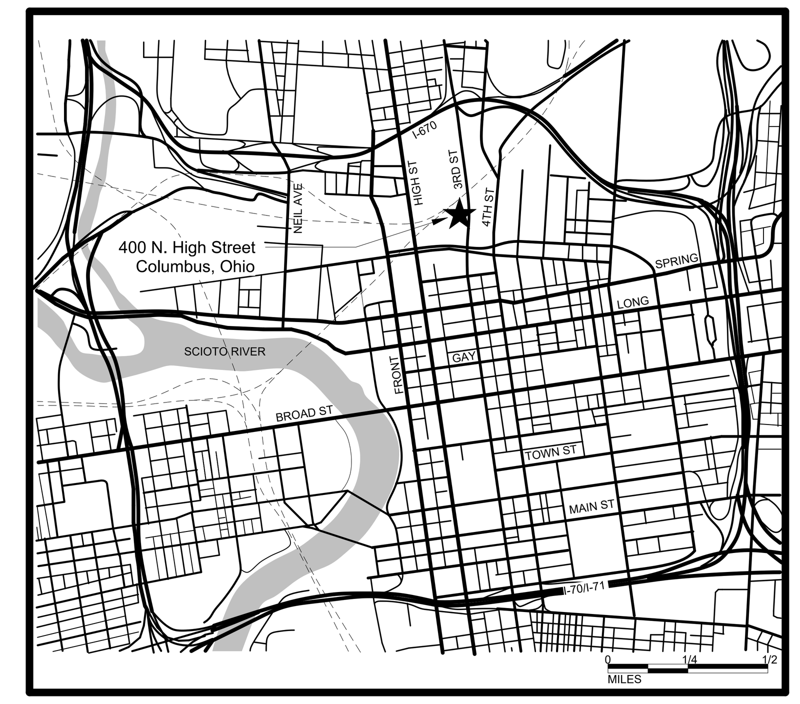
HEAPY Engineering
1800 Watermark Drive, Stuite 410
Columbus, Ohio 43215
614.457.2696

HEAPY.com

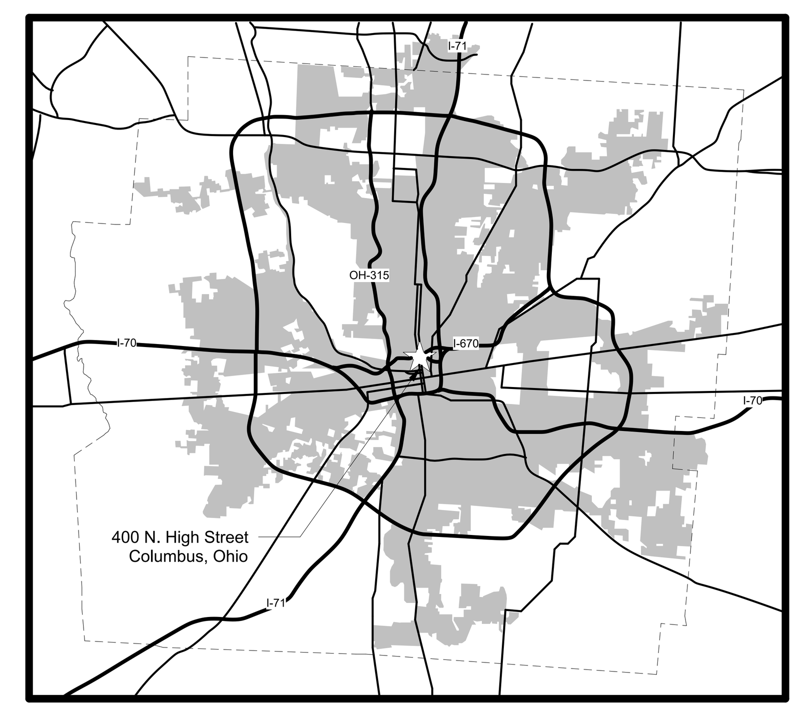
BUILDING KEY PLAN - GREATER COLUMBUS CONVENTION CENTER



PROJECT LOCATION - DOWNTOWN COLUMBUS OHIO

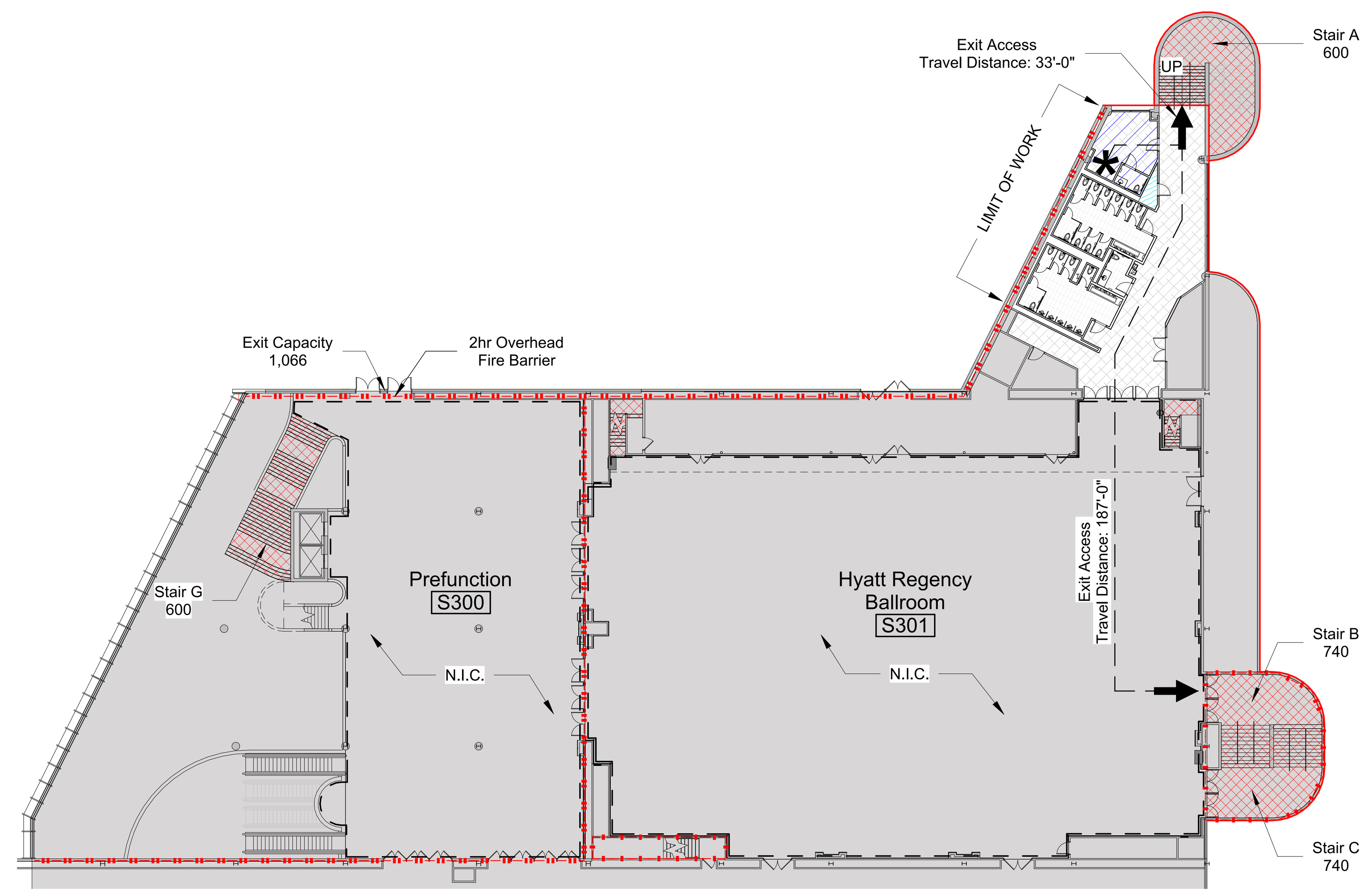


VICINITY MAP - COLUMBUS OHIO & FRANKLIN COUNTY



CODE DATA - SYMBOL LEGEND

HFB	HOUR FIRE BARRIER
HFW	HOUR FIRE WALL
HFS	HOUR FIRE SEPARATION
	USE AND OCCUPANCY: S-1, MODERATE-HAZARD STORAGE 300 GROSS SQ FT PER OCCUPANT
	USE AND OCCUPANCY: B, BUSINESS 100 GROSS SQ FT PER OCCUPANT
	EGRESS
	ONE (1) HOUR FIRE BARRIER (HFB) COMPLY WITH UL FIRE ASSEMBLIES
	TWO (2) HOUR FIRE BARRIER (HFB) COMPLY WITH UL FIRE ASSEMBLIES
	TWO (2) HOUR FIRE SEPARATION (HFS) COMPLY WITH UL FIRE ASSEMBLIES
	PATH OF EGRESS
	COMMON PATH OF TRAVEL
	EGRESS EXIT
	OCCUPANT LOAD SIGNAGE
FE	NEW FIRE EXTINGUISHER
FEC	EXISTING FIRE EXTINGUISHER CABINET, RECESSED IN WALL



1 Level 3 (788'-0") - Life Safety Plan
1" = 30'-0"

ZONING INFORMATION & BUILDING CODE DATA

PROJECT SUMMARY:

Interior alteration of the Hyatt Restrooms, on the third floor of the Greater Columbus Convention Center adjacent to the Grand Ballroom (South Building), in Columbus Ohio. No changes to egress paths, or widths are occurring in this alteration. Existing restrooms are to be demolished, and new restrooms are to be installed, along with a new VIP Office and a separate, en-suite private restroom. Existing restrooms are understood to meet plumbing code requirements for number of fixtures and lavatories; this project increases the current fixture count. No updated plumbing fixture calculations are provided as the use and occupancy of the facility is remaining the same.

APPLICABLE CODES:

ZONING:	City of Columbus Title 33	
	Base Zoning:	Ordinance 1532-2013 Effective 2013.08.14
		DD - Downtown District (Chapter 3359)
		H-UNLD
	Parcel ID:	**010-187793**
FLOOD ZONE:	Flood Zone	X
	FEMA Map Number(s)	30949C0307K & 309049C0326K - (June 17, 2008)
FIRE CODE:	OAC 1301-7:7	2017 Ohio Fire Code (2015 IFC with Ohio amendments)
BUILDING CODE:	OAC 4101:1 (1-35)	2024 Ohio Building Code (2021 IBC with Ohio amendments)
ACCESSIBILITY:	OAC 4101:1 (11)	OBC Chapter 11 + ICC / ANSI A 117.1 (2009)
ENERGY CODE:	OAC 4101:1 (13)	International Energy Conservation Code or ASHRAE 90.1 (2022)
ELECTRICAL CODE:	OAC 4101:1 (27)	2023 – National Electric Code NFPA 70-23
MECHANICAL CODE:	OAC 4101:2 (1-15)	2024 – Ohio Mechanical Code (2021 IMC with Ohio amendments)
PLUMBING CODE:	OAC 4101:3 (1-15)	2024 – Ohio Plumbing Code (2021 IPC with Ohio amendments)
ELEVATOR CODE:	OAC 4101:5 (1,3)	2024 – OBC Chapter 30 (ASME A 17.1)

Additional Referenced Standards frequently requested are as follows:
NFPA 13 – Standard for the Installation of Sprinkler Systems (2025 edition)
NFPA 14 – Installation of Standpipe and Hose System (2024 edition)
NFPA 72 – National Fire Alarm and Signaling Code (2025 Edition)

PROVISIONS FOR COMPLIANCE METHODS - OHIO EXISTING BUILDING CODE 2024:

OEBC 301.3: ALTERATION, ADDITION OR CHANGE OF OCCUPANCY OF ALL EXISTING BUILDINGS SHALL COMPLY WITH ONE OF THE METHODS LISTED:

OEBC 301.3.1 THIS PROJECT WILL USE **THE PRESCRIPTIVE COMPLIANCE METHOD.**

USE AND OCCUPANCY CLASSIFICATION (South Building Convention Center)
OBC 303.4 A-3 ASSEMBLY

GENERAL BUILDING HEIGHTS AND AREAS:
OBC TABLE 504.3: ALLOWABLE HEIGHT:
Type I-B Construction A-2, A-3, B, S-2 Use (Sprinklered):
Allowable: 180 Feet above grade plane
Actual: 82 Feet
OBC TABLE 504.4: ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE:
Type I-B Construction A-2, A-3, B, S-2 Use (Sprinklered):
Allowable: 12 Stories above grade plane
Actual: 4 Stories above grade plane
OBC TABLE 506.2: ALLOWABLE AREA
Type I-B Construction A-2, A-3, B Use (Sprinklered-multistory):
Allowable: Unlimited (Per Level)
Actual: 26,000 SF (Level 3)

OBC 508.4: Separated Occupancies
The S-2 below grade parking garage is separated from the building above

TYPE OF CONSTRUCTION:
OBC TABLE 601:
TYPE I-B CONSTRUCTION

PRIMARY STRUCTURAL FRAME:	2-HOURS
BEARING WALLS, EXTERIOR:	2-HOURS
BEARING WALLS, INTERIOR:	2-HOURS
NON-BEARING WALLS AND PARTITIONS:	0-HOUR
FLOOR CONSTRUCTION & SECONDARY STRUCTURE:	2-HOURS
ROOF CONSTRUCTION:	1-HOURS

OBC Table 602:
Fire-Resistance Ratings for Exterior Walls Based on Fire Separation Distance
Fire Separation Distance to existing structure: 10 < X < 30 | Type I-B Construction

FIRE PROTECTION SYSTEMS:
OBC 903.3.1.1: NFPA 13 Sprinkler system installed throughout
OBC 906.1 / 906.2 Fire Extinguishers shall be provided in accordance with NFPA 10
OBC 907.2: NFPA 72 Manual and automatic fire alarm system throught

MEANS OF EGRESS:

Room Name	Area	Occupants	0.2" / occ
VIP Offie	280 SF	3 Occupants	48" minimum clear
Service Closet	24 SF	1 Occupant	48" minimum clear
Restrooms	675 SF	n/a	n/a
Total	979 SF	4 Occupants	

OBC 1006.3.1: Four exits required per level; 5 provided
OBC 1009.3: Stairs shall have 48" clear width between handrails; 48" provided at all stairs
OBC 1017.2: Exit Access Travel Distance - 250 feet allowable; Actual - 187 feet max.

DRAWING INDEX

GENERAL

G000 Cover Sheet and Drawing Index

ARCHITECTURAL

A000 Architecutral Notes, Legends and Symbols
A100 Hyatt Restrooms - Enlarged Plans and Elevations
A600 Finish Plan and Schedules
A620 Toilet Accessory Mounting Diagram
A800 Interior Details

HVAC

M001 HVAC Legend, Notes, & Sheet Index
MD101 HVAC Demolition Plan
M101 HVAC New Work Plan - Level 1
M102 HVAC Plans - Level 2
M500 HVAC Details
M600 HVAC Schedules

ELECTRICAL

E001 Electrical Legends and Index
E002 Electrical Load Calculations and Details
E003 Electrical Schedules and Details
E004 ComCheck (Interior Lighting)
E100 Electrical Demolition Plan
E200 Proposed Electrical Plans

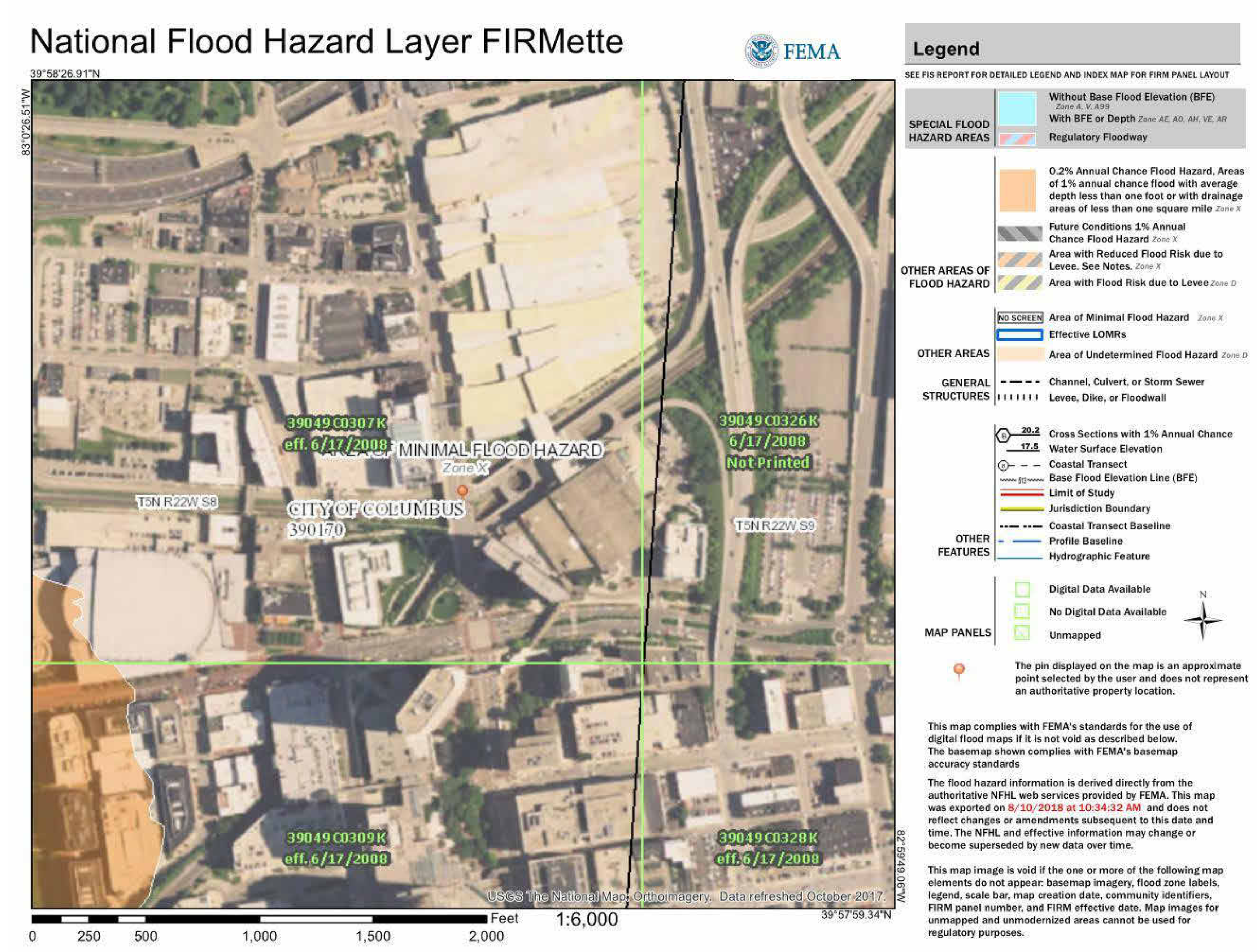
PLUMBING

P001 Legend, Notes, Sheet List
P002 Schedules and Details
PD100 Plumbing Demolition Work Plans
P100 Plumbing New Work Plans

FIRE PROTECTION

F001 Legend, Notes and Sheet List
F101 Fire Suppression Plans

National Flood Hazard Layer FIRMette



SCHOOLEY CALDWELL
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Consultants:
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HEAPY Engineering
1800 Watermark Drive, Suite 410
Columbus, OH 43215

Drawing Issue Dates
Schematic Design Submittal
Design Development Submittal
Construction Documents
Permit Drawings
10/15/2025
Conformed Drawing Set

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street,
Columbus Ohio 43215

Samuel J. Rosenthal, License #1416070
Expiration Date 12/31/2025

Cover Sheet and Drawing Index

General

G000

2025.10.08

25300

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SSMA Product Identification

Member Depth:
(Example 6" = 600X1/100 inches)
All member depths are taken in 1/100 inches.

For all "T" sections member depth is the inside to inside dimension.

Flange Width:
(Example: 1 5/8" = 1.625 x 1/100 inches)
All Flange Widths are taken in 1/100 inches

600 S 162 - 54

Style:
S Stud or Joist Sections
T Track Sections
U Channel Sections
F Furring Channel Sections
CH Shaftwall Studs

Material Thickness:
(Example: 0.054 in = 54 mils; 1mil = 1/1000 in)
Material thickness is the minimum base metal thickness in mils.
Minimum base metal thickness represents 95% of the design thickness.

Material Thickness

Designation Thickness (mils)		Reference Gauge	*(CSI Spec Division)*
18	25		
27	22		9 Non-Structural Metal Framing
30	20-Drywall		
33	20-Structural		
43	18		
54	16		5 Cold Formed Metal Framing
68	14		
97	12		
118	10		

Unless otherwise indicated by the structural drawings utilize the following:
Cold Formed Metal Framing - 18 gauge (43 mil)
Non-Structural Metal Framing - 20 gauge (30 mil)

Key for Wood & Metal Stud Partitions

Construction Type:
(CSI Spec Division)

5 Cold Formed Metal Framing
6 Wood Framing
9 Non-Structural Metal Framing

90-X-X

Sheathing Designation:

Size:

	Steel Construction		*Wood Construction*	
0	7/8"	*Furring Channel*	-	
1	1 1/2"	*Furring Channel*	3/4"	*Furring*
2	2 1/2"	*C-Stud*	4x2	*Stud*
3	3 5/8"	*C-Stud*	-	
4	4"	*C-Stud*	2x4	*Stud*
5	5 1/2"	*C-Stud*	-	
6	6"	*C-Stud*	2x6	*Stud*
8	8"	*C-Stud*	2x8	*Stud*
S2	2 1/2"	*CH-Shaftwall*	-	
S4	4"	*CH-Shaftwall*	-	
V	varies	C-Stud	2x4	Stud

Head Condition:

	Stud Height	*Finish Height*
1	Underside of Ceiling	Underside of Ceiling
2	6" Above Ceiling	6" Above Ceiling
3	Structure Above	Underside of Ceiling
4	Structure Above	6" Above Ceiling

If no condition is noted, stud and finish extend to structure above

Key for Concrete, Masonry & Special Construction

Construction Type:
(CSI Spec Division)

3 Concrete Construction
4 Masonry Construction
13 Special Construction

400-0

Nominal Size
(In Inches)

or

E - Existing

Head Condition:

	Partition Height	*Finish Height*
2	Structure Above	Underside of Ceiling
3	Structure Above	6" Above Ceiling
4	Structure Above	Structure Above

**If no condition is noted, partition and finish extend to structure above

Sheathing Designation

	# of Layers	*Material Thickness*	*Material(s)*
A	1	5/8"	Gypsum board on one side, no finish on other side
B	1	5/8"	Gypsum board on each side
C	2	5/8"	Gypsum board on each side
D	1	5/8"	Gypsum board on one side
	1	5/8"	Gypsum board on 1/2" resilient channels other side
E	2	5/8"	Gypsum board on one side
	2	5/8"	Gypsum board on 1/2" resilient channels other side
F	1	5/8"	Gypsum board on one side
	1	1"	Gypsum shaftliner in CH stud
G	2	5/8"	Gypsum board on one side
	1	1"	Gypsum shaftliner in CH stud

Fire & Smoke Ratings

Smoke Partition
1-Hour Rated Partition
2-Hour Rated Partition
3-Hour Rated Partition

Board Types by Location

Regular Duty Gypsum Board Locations
1. Throughout Project - Interior throughout

Abuse Resistant Gypsum Board Locations
1. Corridors

Mold and Moisture Resistant Gypsum Board Locations
1. Bathrooms
2. Janitor Closets

Cement Board Locations
1. Bathroom walls with tile

Fire Rated Walls and Structural Enclosures
1. Type "X" gypsum board

Ceilings
1. Type "C" gypsum board minimum

Partition General Notes

1. Interior partitions shall utilize wall board types in accordance with the table "Board Types by Location".

2. Partitions to be rated as shown on floor plans.

3. Fire rated assemblies shall be installed in accordance with the specified UL Assemblies, including dimensions, manufacturers, products, fastenings, and other such requirements.

4. Interior partitions are to be acoustic in accordance with the table "Acoustic Partitions by Location"

5. Extend all walls to the underside of the structure unless noted otherwise.

6. Wall assemblies that allow horizontal travel within the concealed wall space shall be fire-blocked at 10'-0" O.C. maximum, in accordance with O.B.C. Section 717.2, including assemblies utilizing resilient channels.

Acoustic Partitions by Location

No Acoustic rated partitions are required on this project.

Project Keynotes

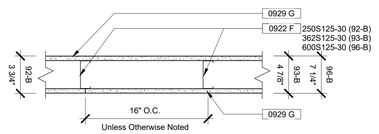
REFER TO SCHEDULE OF FINISHES AND SPECIFICATIONS FOR KEYNOTES

General Notes

1. Schedules: Partition Type Schedule see this sheet. Window, Door and Frame Schedule see drawing A600.
2. All dimensions shall be verified at the job by the Construction Manager and each Sub-Contractor. The Architect must be notified of any discrepancies before proceeding with the work.
3. All dimensions are to the face of finish, face of concrete, to centerlines of columns and other grid points, and to centerlines of doors and other scheduled openings unless otherwise noted. All door locations not dimensioned are located by details on Sheet A600 for framed walls.
4. Offset studs and/or shim as required to align finish material.
5. All vertical elevations and working points are relative to the Convention Center Level 3 (788'-0").
6. The drawings are the graphic portion of the contract documents showing the design, location, and dimensions of the work. Do not scale the drawings to determine a dimension in question, consult the architect for clarification.
7. Contractor(s) are to investigate and verify location, condition, and capacity of all existing utilities within the limits of work, prior to beginning construction. See site utility, mechanical and electrical drawings for further information.
8. The structure is designed to be self-supporting and stable after the building is fully completed. It is solely the contractor(s) responsibility to determine erection procedures and sequences and to ensure the safety of the building and its component parts during erection. It is the contractor(s) sole responsibility to follow all applicable safety and construction regulations, ordinances and codes during the course of construction.

02/A000

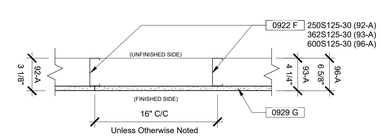
PARTITION TYPES: 92-B, 93-B & 96-B



NOTES:
- 92-B: limiting unbraced partition height 11-7" (10'-2" AT 24" C/C)
- 93-B: limiting unbraced partition height 13'-6" (11'-8" at 24" C/C)
- 96-B: limiting unbraced partition height 20'-0" (16'-8" at 24" C/C)
- Non-loadbearing partition

01/A000

PARTITION TYPES: 92-A, 93-A & 96-A



NOTES:
- Non-rated partition
- Limiting unbraced partition height 13'-6" (11'-8" at 24" C/C)
- Non-loadbearing partition
- Provide 1" space between unfinished side and adjacent concrete or masonry walls

Symbols

SITE

+481.0 — Point Elevation
130 — Existing Contours
130 — New Contours
Property / Boundary Line

ARCHITECTURAL

A / 1 — Column Grid (Use letters in horizontal direction, Use numbers in vertical direction)
ROOM 104 — Room Number & Name
B000 — Door Number (See door schedule in A600 series)
XX-XX-XX — Partition Type (See partition schedule this Sheet)
Exst Basement EL. 139'-1" — Datum Point
1 A101 — Building Section (Detail number, Sheet number)
1 A101 — Wall Section (Detail number, Sheet number)
1 A101 — Elevation (Detail number, Sheet number)
1 A101 — Detail (Detail number, Sheet number)
Coded Note
Wall Finish / Floor Finish / Base Finish — Finish Tag
Center Line
1 — Revision Mark
North Arrow

Abbreviations

&	And
∠	Angle
ø	Diameter
Φ	Electrical Phase
#	Pound(s)
AB	Anchor Bolt
ACT	Acoustic Ceiling Tile
AD	Area Drain
A/E	Architect And / Or Engineer
AFF	Above Finished Floor
ALT	Alternate
ARCH	Architectural
BM	Beam
BOF	Bottom of Footing
BOS	Bottom of Steel
BRCG	Bracing
BRG	Bearing
C	Center
C/C	Center to Center
CJ	Control Joint
CJT	Construction Joint
CL / ℄	Center Line
CLR	Clear
CMU	Concrete Masonry Unit
CO	Clean Out
COL	Column
CONC	Concrete
CONT	Continuous
COORD	Coordinate
DEMO	Demolish
DS	Down Spout
EA	Each
EJ	Expansion Joint
ELEC	Electrical
EQ	Equal
EXIST	Existing
EXT	Exterior
FA	Fire Alarm
FD	Floor Drain
FE	Fire Extinguisher.
FEC	Fire Extinguisher Cabinet
F.F.	Finished Floor
FF EL	Finish Floor Elevation
FOC	Face of Concrete
FO	Finish Opening
FOF	Face of Finish
FOM	Face of Masonry
FOS	Face of Stud
FRMG	Framing
FTG	Footing
GA	Gauge
GALV	Galvanized
GR SF	Gross Square Feet
GYP	Gypsum
HB	Hose Bibb
HM	Hollow Metal
HSS	Tube Steel
HVAC	Heating/Ventilating/Air Conditioning
INSUL	Insulation
J-BOX	Junction Box
JT	Joint
LAM	Laminate
LAV	Lavatory
LB / Lbs.	Pound(s)
LH	Left Hand
LL	Live Load
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
MAX.	Maximum
MECH	Mechanical
MFR	Manufacturer / Supplier
MH	Manhole
MIN	Minimum
MO	Masonry Opening
NA / N/A	Not Applicable
NIC	Not in Contract
NO / #	Number
NRC	Noise Reduction Coefficient
NTS	Not to Scale
O.C.	On Center
OD	Outside Diameter
OH / OPH	Opposite Hand
OPP	Opposite
Oz	Ounce
PL /	Property Line
PLAM	Plastic Laminate
PNL	Panel
PR	Pair
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
P.T. / PT	Post Tensioned
PVC	Poly Vinyl Chloride
RA	Return Air
RCP	Reflected Ceiling Plan
RD	Roof Drain
REBAR	Reinforcing Steel Bars
REQD	Required
RO	Rough Opening
ROW	Right of Way
SCHED	Schedule
SD	Storm Drain
SF	Square Feet
SHT	Sheet
SIM	Similar
S.O.G.	Slab On Grade
SPEC	Specifications
SQ	Square
SST	Stainless Steel
STD	Standard
STL	Steel
STRUCT	Structural
SUSP	Suspended
SYM	Symmetrical
T/	Top of (T/STL, T/CONC)
THK	Thickness
TOC	Top of Concrete
TOM	Top of Masonry
TOS	Top of Steel
TYP	Typical
UNO	Unless Noted Otherwise
V / VERT	Vertical
VIF	Verify in Field
W/	With
WF	Wide Flange
WP	Working Point
WWF	Welded Wire Fabric

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Conformed Drawing Set

Revision Schedule

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Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

STATE OF OHIO
Samuel J. Rosenthal
1416070
REGISTERED ARCHITECT

Samuel J. Rosenthal, License #1416070
Expiration Date 12/31/2025

Architectural Notes, Legends & Details

Architectural

A000

2025.10.08

25300

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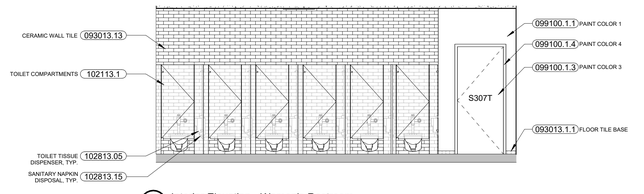
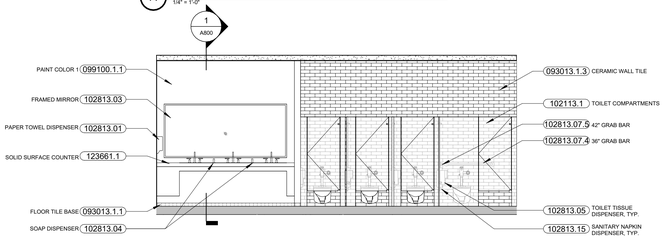
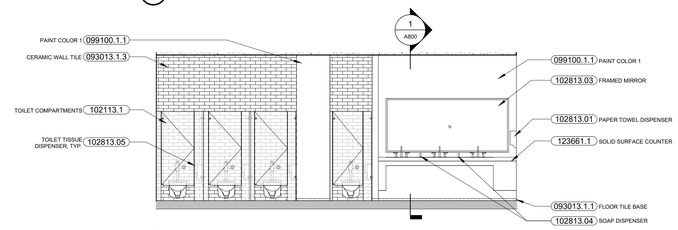


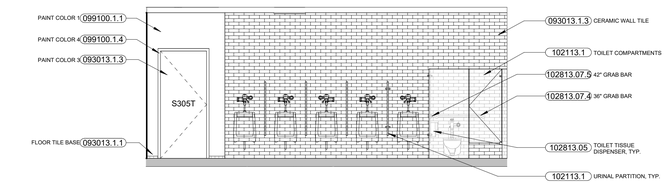
A Interior Elevation - Women's Restroom
1/4" = 1'-0"



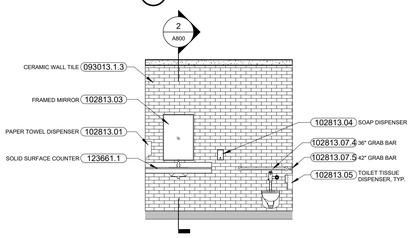
B Interior Elevation - Women's Restroom
1/4" = 1'-0"



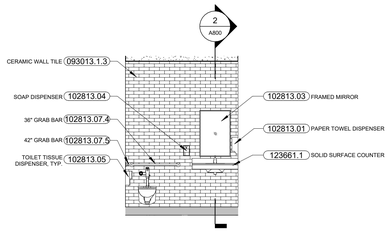
C Interior Elevation - Men's Restroom
1/4" = 1'-0"



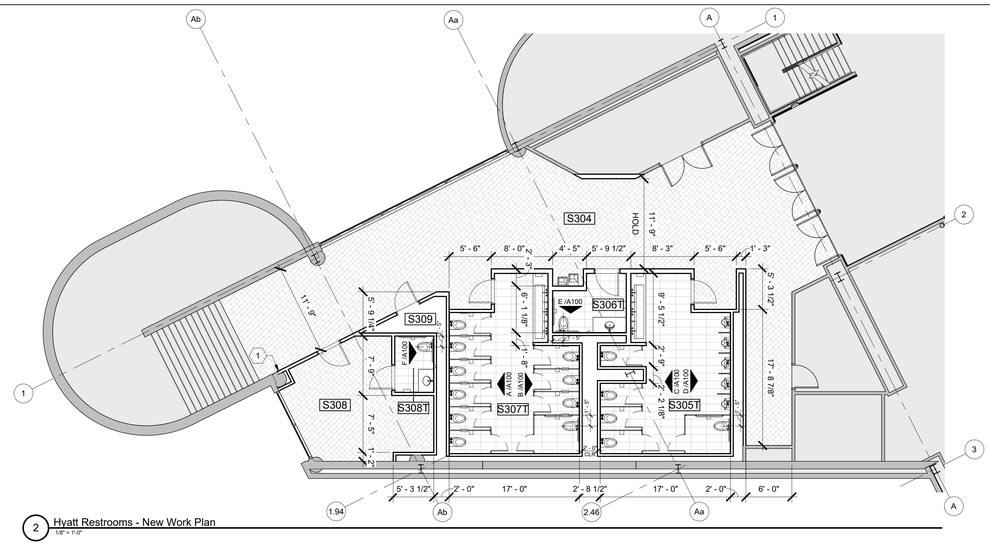
D Interior Elevation - Men's Restroom
1/4" = 1'-0"



E Interior Elevation - Gender Neutral Restroom
1/4" = 1'-0"



F Interior Elevation - VIP Restroom
1/4" = 1'-0"



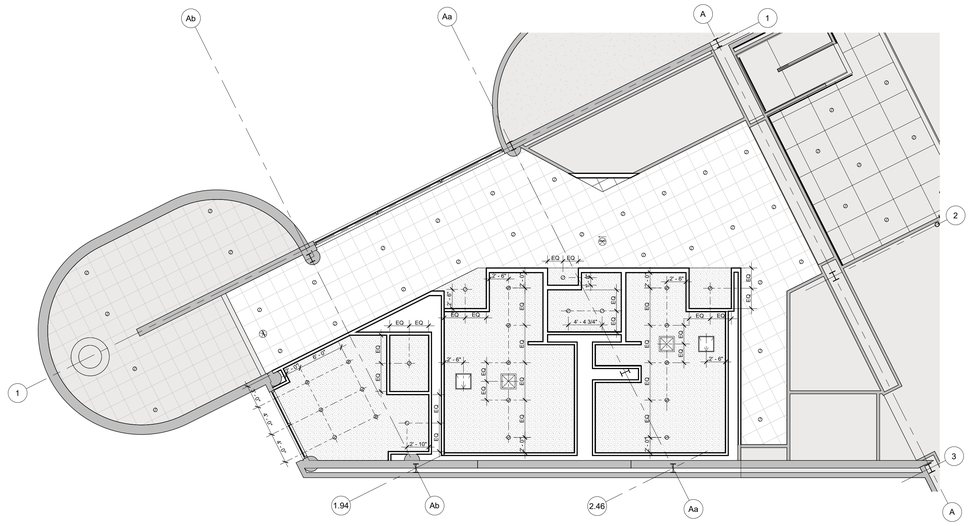
2 Hyatt Restrooms - New Work Plan
1/8" = 1'-0"

NEW WORK - GENERAL NOTES

A. Do not scale drawings. Dimensions in details shall govern over small scale drawings. If the dimensions are in question, the contractor shall request clarification from the Architect before continuing with construction.
B. All dimensions shall be verified at the job by the Construction Manager and each Sub-Contractor and the Architect must be notified of any discrepancies with the plans before proceeding with the work.
C. All dimensions are to the face of finish, face of concrete, face of masonry, to centerlines of columns and other grid points, and to the centerlines of doors and other scheduled openings unless otherwise noted. Walls shown on column centerlines are to be centered on column grid lines.
D. The Construction Manager and Sub-Contractor(s) shall build out partitions to accommodate the depth required by fire-extinguisher cabinets, recessed power panels, and any other conduit or utilities which are required to be finished flush with adjacent wall surfaces. Coordinate with engineering drawings. All final locations of devices shall be approved by the Architect's field representative.
E. Provide all hardware listed in Section 08 71 00.
F. Remove existing ceiling tiles; existing grid to remain and be infilled with new compatible ceiling tiles. Scab in new grid as necessary at demolished walls at utility closet corner.
G. Provide code required signage at all rooms. Confirm signage requirements meet owner and building standards.

NEW WORK - CODED NOTES

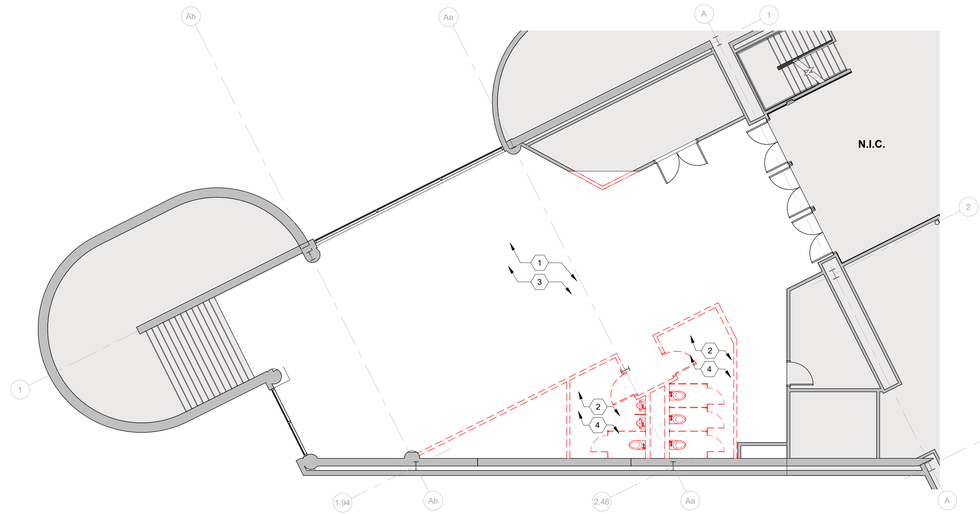
1. Trim track and studs to existing building geometry and provide new flush finish to wall. Seal with sealant joint.



3 Hyatt Restrooms - Reflected Ceiling Plan
1/8" = 1'-0"

RCP GRAPHIC LEGEND

- NO WORK / EXISTING
- NEW GYPSUM BOARD CEILING; PAINT (0991 P#)
- EXISTING 2x2 WHITE A.C.T.
- RECESSED/SUSPENDED LED DOWNLIGHT; TYPE PER ELEC DRAWINGS
- HVAC DIFFUSER; TYPE PER MECH
- DRYWALL CEILING ACCESS PANEL; COORDINATE LOCATION IN FIELD
- EXIT SIGN



1 Hyatt Restrooms - Demo Plan
1/8" = 1'-0"

DEMOLITION - GENERAL NOTES

A. The intent of demolition work is to remove all items which are in conflict with the finished work. these demolition drawings may not show every item present which is to be removed.
B. Refer to demolition of other disciplines prior to commencing demolition work.
C. Items shown as red-dashed on the demolition plans are to be removed in their entirety unless otherwise noted.
D. Coordinate all work for any hazardous materials removal with FCCFA's abatement contractor.
E. Protect existing finishes which are to remain. Where it is required to impact finishes to remain the Contractor (or contractors) shall repair the affected areas to like-new condition at the completion of the work.

DEMOLITION - CODED NOTES

1. LAY-IN (ACT) TO BE REMOVED - GRID TO REMAIN.
2. DRYWALL CEILING TO BE REMOVED.
3. ALL EXISTING CARPET TO BE REMOVED.
4. ALL EXISTING PLUMBING FIXTURES TO BE REMOVED.

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Samuel J. Rosenthal, License #1416070
Expiration Date 12/31/2025

Hyatt Restrooms - Enlarged Plans and Elevations

Architectural Demolition

A100

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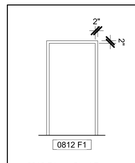
Room Finish Schedule					
Name	Number	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
North Prefunction	S304	096813.1	096513.1	099100.1.1	095.13.1.3
Men's Restroom	S305T	093013.1.2	093013.1.1	N:099100.1.2 / E: 093013.1.3 / S: 099100.1.2 / W: 093013.1.3	099100.1.1
Gender Neutral Restroom	S306T	093013.1.2	093013.1.1	N: 099100.1.2 / E: 099100.1.1 / S: 093013.1.3 / W: 099100.1.1	099100.1.1
Women's Restroom	S307T	093013.1.2	093013.1.1	N:099100.1.2 / E: 093013.1.3 / S: 099100.1.2 / W: 093013.1.3	099100.1.1
VIP / Show Office	S308	096800.2	096513.1	099100.1.1	099100.1.1
VIP Restroom	S308T	093013.1.2	093013.1.1	N: 099100.1.1 / E: 093013.1.3 / S: 099100.1.1 / W: 099100.1.2	099100.1.1
Utility	S309				

Door & Frame Schedule

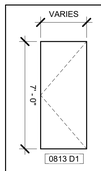
	DOOR					FRAME				HARDWARE		
			SIZE									
DOOR MARK	STATUS	TYPE	W	H	FINISH	STATUS	TYPE	FRAME FINISH	FIRE RATING	SET NO	ELEC	REMARKS
Battelle Hall												
S305T	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-01		Men's Restroom
S306T	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-03		Gender Neutral Restroom
S307T	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-01		Women's Restroom
S308	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-04		VIP Office / Showroom
S308T	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-02		VIP Restroom
S309	New	0813 D1	3' - 0"	7' - 0"	099100.1.3	New	HM	099100.1.4	-	DD-05		Utility

0812 F - HOLLOW METAL FRAME TYPES



0812 F1 Steel Frame

0813 D - HOLLOW METAL DOOR TYPES

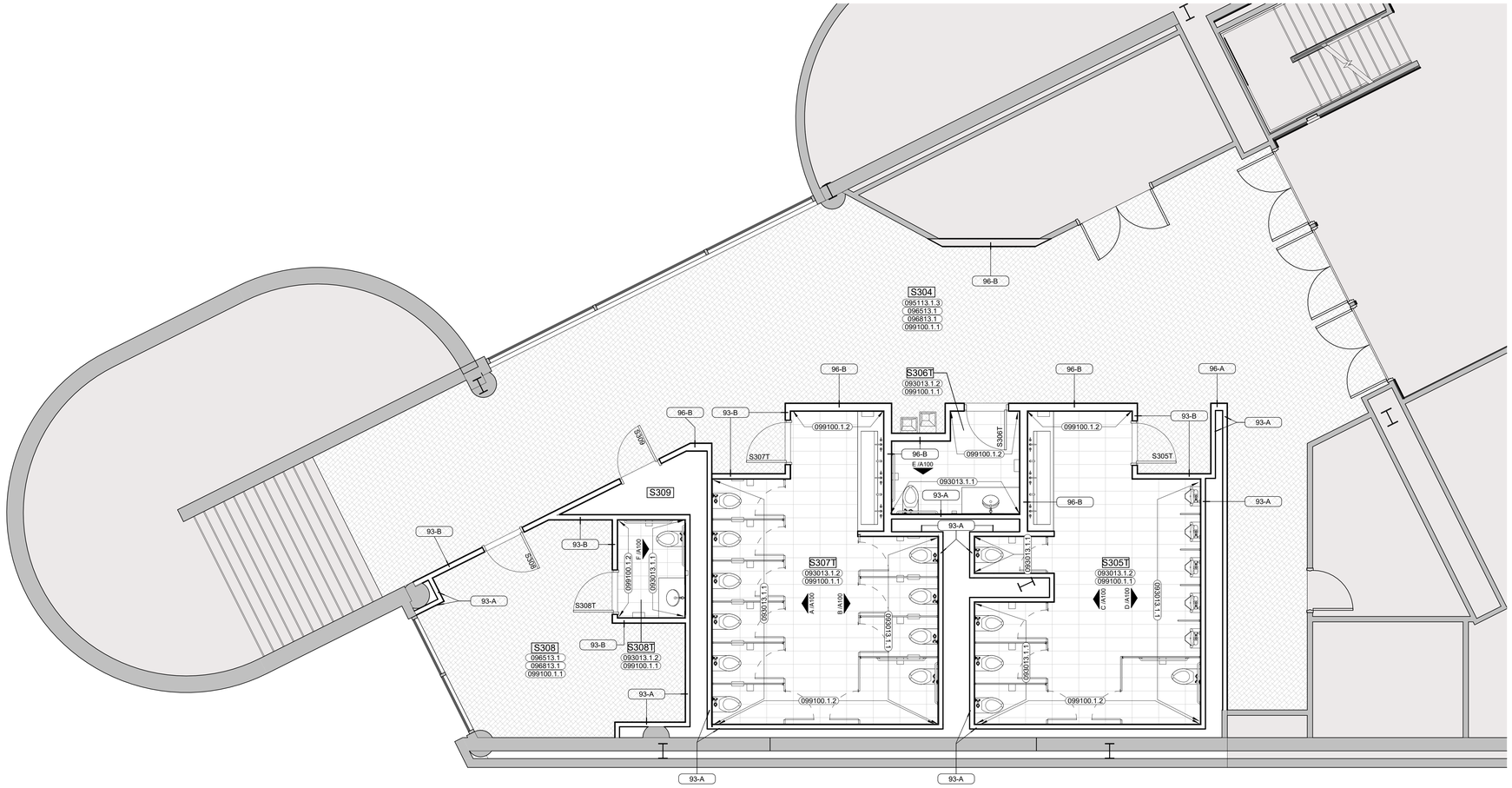


0813 D1 STEELCRAFT, B-18 Series - Flush Steel Door - 18 gauge for interior use, factory primed.

90-MINUTE & 45-MINUTE rated steel doors are indicated in the door schedule

Schedule of Finishes

KEYNOTE	ITEM	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN PRODUCT	COLOR/FINISH	SIZE	EDGE/PROFILE	NOTES	SPECIFICATION SECTION (hidden)
09 30 13 Tiling								
093013.1.1	Floor Tile Base	Daltile	Fabrique	Noir Linen #P689	3" x 12" x 3/8"		Grout: Bostik, Color H142 French Gray Restrooms	09 30 13 Tiling
093013.1.2	Floor Tile	Daltile	Fabrique	Noir Linen #P689	12"x 24" x 3/8"		Grout: Bostik, Color H142 French Gray Restrooms	09 30 13 Tiling
093013.1.3	Wall Tile	Florida Tile	Amplify	White	14" x 39"		Grout: Bostick, Color H168 Silver Bullet Restrooms	09 30 13 Tiling
09 51 13 Acoustical Panel Ceilings								
095113.1.3	Ceiling Tile	Armstrong	Optima #3352	White	2' x 2'	Square Tegular edge	Existing grid to remain, replace ceiling tiles	09 51 13 Acoustical Panel Ceilings
09 65 13 Resilient Base and Accessories								
096513.1	Resilient Base	To match existing	-	-	-	-	North Prefunction	09 65 13 Resilient Base and Accessories
09 68 13 Carpet Tile								
096813.1	Carpet Tile	Bentley	Root	Buru 410436		Pattern repeat 24" W x 24" L	North Prefunction with Prestige PlusRC (TM) backing	09 68 13 Carpet Tile
09 91 00 Painting								
099100.1.1	Paint	Benjamin Moore	896	Oxford White	-	Eggshell	Field	09 91 00 Painting
099100.1.2	Paint	PPG	PPG1148-7	Deep Emerald	-	Eggshell	Restroom Accent	09 91 00 Painting
099100.1.3	Paint	PPG	PPG0997-6	Industrial Revolution	-	Semi-Gloss	Hollow Metal Door Finish	09 91 00 Painting
0991001.4	Paint	PPG	PPG0997-7	Black Widow	-	Semi-Gloss	Hollow Metal Door Frame Finish	09 91 00 Painting
10 21 13 Toilet Compartments								
102113.1	Toilet Compartments	Scranton	Hiny Hider	White OP Fire Rated	55" Standard HT	Floor mounted w/ overhead brace	Traditional Panel (2600) stall doors Fire Rated Class A	10 21 13 Toilet Compartments
12 36 61 Solid Surface Compartments								
123661.1	Solid Surface Counter	Corian	Solid Surface	Deep Nocturne	-	Matte	Restrooms Trough Sink	12 36 61 Solid Surface Compartments



1 Hyatt Restrooms - New Work Finish Plan
1/4" = 1'-0"

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ARCHITECTURE. INSPIRED.

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Samuel J. Rosenthal, License #1416070
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Finish Plan and Schedules

Architectural

A600

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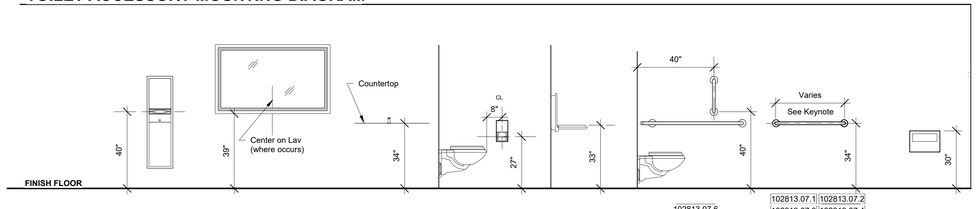
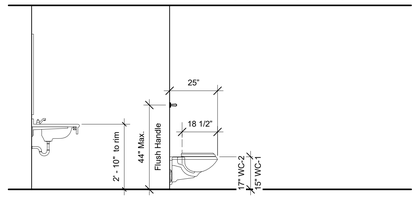
TOILET ACCESSORY MOUNTING DIAGRAM



KEYNOTE	102813.01	102813.03	102813.04	102813.05	102813.06	102813.07.6	102813.07.1 102813.07.3 102813.07.5 102813.07.2 102813.07.4	102813.16
TOILET ACCESSORY TYPE	Paper Towel Dispenser/ Waste Receptacle Combo	Lighted Mirror (over counter)	Soap Dispenser	Toilet Tissue Dispenser - Vertical	Changing Table	Vertical Grab Bar	Horizontal Grab Bars	Toilet Seat Cover Dispenser
MOUNTING TYPE	Semi Recessed	Surface mounted	countertop mounted	Surface mounted / partition mounted	Surface mounted	Surface mounted / partition mounted	Surface mounted / partition mounted	Surface mounted
MODEL	Bobrick B-43944	Electric Mirror, Integrity 60"W x 36"H	Bobrick B-82216	Bobrick B-2888 Bradley 5402 ASI 20030	American Specialties 9013-9	American Specialties 3700 Series	American Specialties 3700 Series	Bobrick B-221 series Bradley 5831 ASI 0477-SM

FIXTURE AND PARTITION MOUNTING DIAGRAM



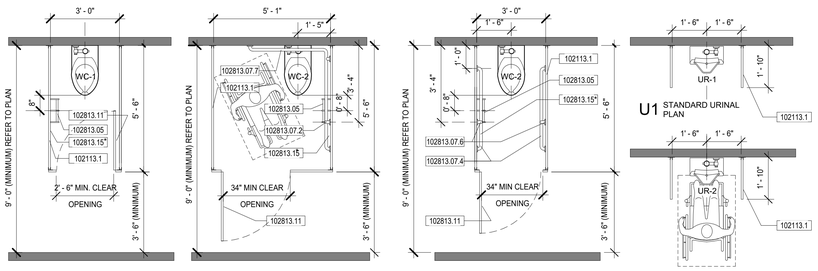
UNDERMOUNT LAVATORY

WALL MOUNTED TOILET

Project Keynotes

102813.01	PAPER TOWEL DISPENSER
102813.02	WASTE RECEPTACLE
102813.03	FRAMED MIRROR
102813.04	SOAP DISPENSER
102813.05	TOILET TISSUE DISPENSER
102813.06	CHANGING TABLE
102813.07.1	12" GRAB BAR
102813.07.2	18" GRAB BAR
102813.07.3	24" GRAB BAR
102813.07.4	36" GRAB BAR
102813.07.5	42" GRAB BAR
102813.07.6	18" VERTICAL GRAB BAR
102813.07.7	16" X 31" L-SHAPED GRAB BAR
102813.07.8	42" X 54" L-SHAPED GRAB BAR
102813.11	GARMENT HOOK
102813.15	SANITARY NAPKIN DISPOSAL
102813.16	TOILET SEAT COVER VENDOR

STANDARD TOILET STALLS AND ACCESSIBLE TOILET ROOMS



S1 STANDARD TOILET COMPARTMENT PLAN

* AT FEMALE ONLY

S2 ACCESSIBLE TOILET COMPARTMENT PLAN

S4 AMBULATORY ACCESSIBLE TOILET COMPARTMENT

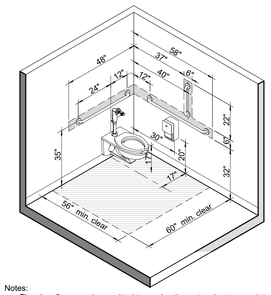
U1 STANDARD URINAL PLAN

U2 ACCESSIBLE URINAL PLAN

T1 SINGLE OCCUPANT ACCESSIBLE TOILET ROOM PLAN

T4 SINGLE OCCUPANT ACCESSIBLE TOILET ROOM PLAN

ACCESSIBLE TOILET STALLS & ROOMS



Notes:

- The clear floor area is permitted to overlap the water closet, associated grab bars, paper dispensers, sanitary napkin receptacles, coat hooks, shelves, clear floor space at other fixtures and the turning space.
- No other fixture shall be within the required water closet clearance.
- Flush controls shall be located on the open side of the water closet.
- Hatched zone at walls indicates minimum extent of continuous in-wall reinforcement.
- Combination L-shaped grab bars (Item 1028G8) may be utilized in lieu of items 1028G4 and 1028G5.

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Toilet Accessory
Mounting Diagram

Architectural

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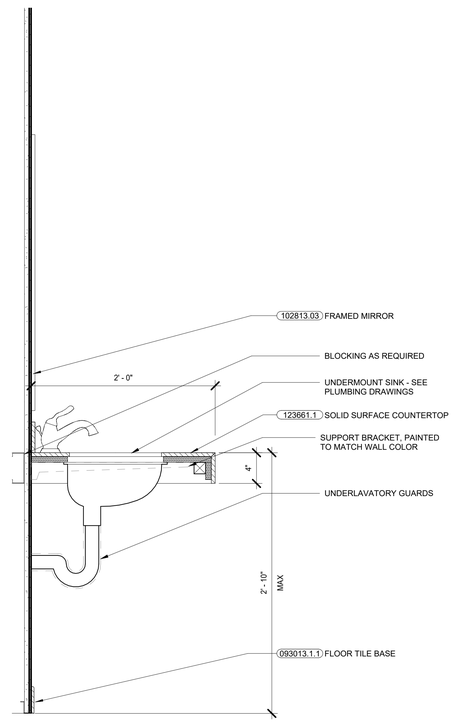
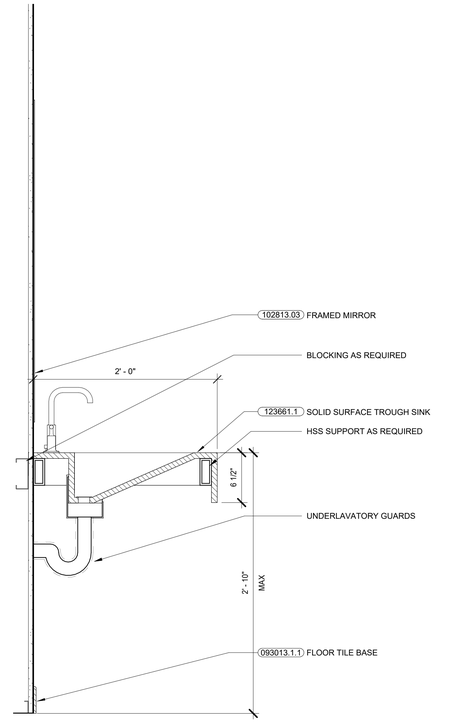
Keynote Legend

REFER TO SCHEDULE OF FINISHES AND SPECIFICATIONS FOR KEYNOTES



2 Section Detail - Undermount Sink
1 1/2" = 1'-0"



1 Section Detail - Trough Sink
1 1/2" = 1'-0"

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Interior Details

Architectural

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DUCTWORK SYMBOLS

RECTANGULAR	ROUND / OVAL	
	CONICAL FITTING	ROUND BRANCH DUCTWORK
ACOUSTIC FITTING	ACOUSTIC FITTING	RECTANGULAR BRANCH DUCTWORK
		SQUARE TEE WITH TURNING VANES NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND / OVAL DUCTWORK SHALL BE PROVIDED WITH TURNING VANES. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
		RADIUS'D TEE
		RADIUS'D BRANCH
		UNLESS NOTED OTHERWISE ON DRAWINGS, 15° MAX FOR DIVERGING, 30° MAX FOR CONVERGING TRANSITION
		EXISTING DUCTWORK TO REMAIN
		EXISTING DUCTWORK TO REMOVED
		RETURN AIR, RELIEF AIR, OR TRANSFER AIR DUCTWORK. (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		SUPPLY AIR OR OUTDOOR AIR DUCTWORK (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		EXHAUST AIR DUCTWORK. (UP AND DOWN) RADIUSED OR SQUARE WITH TURNING VANES.
		RECTANGULAR AND ROUND / OVAL DUCTWORK RISE / DROP WITH 90° RADIUSED OR SQUARE ELBOWS AND TURNING VANES.
		RADIUS ELBOW
		90° SQUARE ELBOW (WITH TURNING VANES) NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND DUCTWORK SHALL BE PROVIDED WITH TURNING VANES.
		SQUARE THROAT / RADIUS HEEL FITTINGS NOT ACCEPTABLE
AD	AD	ACCESS DOOR OR PANEL
R	R	DUCTWORK RISE IN DIRECTION OF AIR FLOW
D	D	DUCTWORK DROP IN DIRECTION OF AIR FLOW
		FLEXIBLE DUCTWORK
		DUCTWORK WITH ACOUSTICAL LINER. LISTED DUCT SIZES ARE INSIDE CLEAR DIMENSIONS.
		FLEXIBLE CONNECTION
		DUCTWORK CONSTRUCTED OF SPECIAL MATERIAL AS NOTED
		DIRECTION OF PITCH
26x20		RECTANGULAR DUCTWORK DIMENSIONS (W x H)
26ø		ROUND DUCTWORK DIMENSIONS (DIA)
26x20 OV		OVAL DUCTWORK DIMENSIONS (W x H)

DUCTWORK DEVICE SYMBOLS

A3 10ø 300	AIR DEVICE. A3 = DESIGNATION (REFER TO FLOOR PLANS AND AIR DEVICE SCHEDULE FOR VARIOUS DESIGNATIONS). 10ø = NECK SIZE (IN INCHES). 300 = REQUIRED CFM. ALL AIR DEVICE DISCHARGE 4-WAY UNLESS NOTED WITH FLOW ARROWS. AIR DEVICE SHOWN IS 2-WAY SIDE THROW. METHOD OF IDENTIFICATION ALSO APPLIES TO OTHER CEILING MOUNTED AIR DEVICES.
SG1 20x12 300 BOG: 9'-0"	WALL OR DUCTWORK MOUNTED AIR DEVICE. SG1 = DESIGNATION (REFER TO AIR DEVICE SCHEDULE). 20x12 = DUCT CONNECTION SIZE (IN INCHES). 300 = REQUIRED CFM. 9'-0" = MOUNTING HEIGHT FROM FLOOR TO BOTTOM OF GRILLE.
	MANUAL BALANCING DAMPER WITH LOCKING DEVICE
XXX	BDD = BACK DRAFT DAMPER CBD = COUNTER-BALANCED BACK DRAFT DAMPER
A-D	FIRE DAMPER A = TYPE (REFER TO FLOOR PLANS FOR VARIOUS TYPES) D OR S = DYNAMIC OR STATIC
XX	SD = SMOKE DAMPER FS = COMBINATION FIRE - SMOKE DAMPER MDD = MOTORIZED DAMPER AFMS = AIR FLOW MEASURING STATION
SD	DUCT MOUNTED SMOKE DETECTOR. COORDINATE LOCATION.
H	HUMIDITY SENSOR - DUCT MOUNTED
SP	STATIC PRESSURE SENSOR - DUCT MOUNTED
C	CARBON DIOXIDE SENSOR - DUCT MOUNTED
S	TEMPERATURE SENSOR - DUCT MOUNTED

VALVES AND FITTINGS

	CHECK VALVE
	SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	COMBINATION SHUTOFF AND BALANCING VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	CONCENTRIC PIPE REDUCER
FOT / FOB	ECCENTRIC PIPE REDUCER
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE OR THERMOMETER
	UNION
	CLEANOUT
	STRAINER
	STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION
	DRAIN VALVE WITH HOSE END CONNECTION
	AUTOMATIC FLOW CONTROLLER WITH P/T PLUG IN AND OUT
	EXPANSION JOINT
	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
	PRESSURE REDUCING VALVE
M	MODULATING 2 PORT AUTOMATIC CONTROL VALVE
M	2 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
M	MODULATING 3 PORT AUTOMATIC CONTROL VALVE
M	3 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE
M	AUTOMATIC PRESSURE INDEPENDENT CONTROL VALVE
	QUICK OPENING MANUAL VALVE
	SAFETY RELIEF VALVE. FOR HYDRONIC SYSTEMS PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE. FOR STEAM SYSTEMS PIPE DISCHARGE TO OUTDOORS.
	VACUUM BREAKER
N	NEEDLE VALVE
	PRESSURE AND TEMPERATURE TEST PLUG
V	VACUUM GAUGE WITH STOP
	END CAP
	GLOBE VALVE
VB	SHUTOFF VALVE AND BOX
	SHUTOFF VALVE ON RISER
S	SOLENOID VALVE
M	WATER METER
F	FLOW METER
BM	BI-METALIC STEAM TRAP AND DRIP ASSEMBLY
TD	THERMODYNAMIC STEAM TRAP AND DRIP ASSEMBLY
IB	INVERTED BUCKET STEAM TRAP AND DRIP ASSEMBLY
FT	FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
TS	THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
	PRESSURE GAUGE WITH COCK AND SIPHON LOOP

MISC SYMBOLS

C	CARBON DIOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
CO	CARBON MONOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
DP	DIFFERENTIAL PRESSURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
H	HUMIDITY SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
S	TEMPERATURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
S	TEMPERATURE SENSOR MOUNTED IN CEILING PLENUM.
SP	STATIC PRESSURE SENSOR.
T	SPACE TEMPERATURE SENSOR / THERMOSTAT. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
	EMERGENCY SHUTOFF STATION. 46" MOUNTING HEIGHT UNLESS NOTED OTHERWISE.

GENERAL FLOOR PLAN NOTES

3	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
3	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
A1	EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
H1 OR H1	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
2	RISER OR STACK NUMBER
B / H2	DETAIL: B = DETAIL DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
1 / H2	SECTION: 1 = SECTION DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
A1	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)
TOE: 3' - 0" / BOE: 0' - 6"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE
10" ELEV: 8' - 0" / 10" ELEV: 8' - 0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
20x20 TOD: 8' - 10" / 20x20 BOD: 7' - 2"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE
UC-X	DOOR UNDERCUT. X = HEIGHT OF UNDERCUT IN INCHES; 0.75 INCH UNDERCUT IF NO HEIGHT IS NOTED. COORDINATE WITH GC.
DL-1	DOOR LOUVER. 1 = SQUARE FEET OF LOUVER.
	CONNECT TO EXISTING

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
D	D	DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
		PUMP
R	R	RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

HVAC PIPING DESIGNATIONS

CHS	CHILLED WATER SUPPLY PIPE
CHR	CHILLED WATER RETURN PIPE
CWS	CONDENSER WATER SUPPLY PIPE
CWR	CONDENSER WATER RETURN PIPE
CHGS	CHILLED WATER GLYCOL SOLUTION SUPPLY PIPE
CHGR	CHILLED WATER GLYCOL SOLUTION RETURN PIPE
D	DRAIN LINE. PITCH IN DIRECTION INDICATED
HWR	HEATING HOT WATER RETURN PIPE
HWS	HEATING HOT WATER SUPPLY PIPE
MU	WATER MAKE-UP PIPE
V	VENT PIPE
ET	EXPANSION TANK PIPE
HG	REFRIGERANT HOT GAS LINE
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
S	STEAM SUPPLY PIPE - NUMBER INDICATES P.S.I.G.
HPC	HIGH PRESSURE CONDENSATE RETURN PIPE
HPS	HIGH PRESSURE STEAM SUPPLY PIPE
LPC	LOW PRESSURE CONDENSATE RETURN PIPE
LPS	LOW PRESSURE STEAM SUPPLY PIPE
MPC	MEDIUM PRESSURE CONDENSATE RETURN PIPE
MPS	MEDIUM PRESSURE STEAM SUPPLY PIPE
PC	PUMPED CONDENSATE RETURN PIPE

ABBREVIATIONS

AC	- AIR COMPRESSOR OR AIR CONDITIONER	ID	- INSIDE DIAMETER
ACCU	- AIR COOLED CONDENSING UNIT	INV	- INVERT ELEVATION
AD	- ACCESS DOOR OR AREA DRAIN	IN	- INCHES
ADJ	- ADJUSTABLE		
AFF	- ABOVE FINISHED FLOOR	KEC	- KITCHEN EQUIPMENT CONTRACTOR
AFG	- ABOVE FINISHED GRADE		
AFMS	- AIR FLOW MEASURING STATION	L	- LENGTH
ALT	- ALTERNATE	LAT	- LEAVING AIR TEMPERATURE
AP	- ACCESS PANEL	LAV	- LAVATORY
APPROX	- APPROXIMATE	LBS	- POUNDS
ARCH	- ARCHITECT OR ARCHITECTURAL	LPC	- LOW PRESSURE CONDENSATE RETURN
ASSY	- ASSEMBLY	LPS	- LOW PRESSURE STEAM SUPPLY
ATC	- AUTOMATIC TEMPERATURE CONTROL (SYNONYMOUS WITH BAS)	LWT	- LEAVING WATER TEMPERATURE
		MAX	- MAXIMUM
BAS	- BUILDING AUTOMATION SYSTEM	MOD	- MOTORIZED DAMPER
BDD	- BACK DRAFT DAMPER	MEZZ	- MEZZANINE
BFP	- BACKFLOW PREVENTER	MFR	- MANUFACTURER
BLDG	- BUILDING	MH	- MANHOLE
BOB	- BOTTOM OF BEAM	MIN	- MINIMUM OR MINUTE
BOD	- BOTTOM OF DUCT	MISC	- MISCELLANEOUS
BOE	- BOTTOM OF EQUIPMENT	MTD	- MOUNTED
BOF	- BOTTOM OF FOOTING	MTG	- MOUNTING
BOG	- BOTTOM OF GRILLE	MPC	- MEDIUM PRESSURE CONDENSATE RETURN
BOP	- BOTTOM OF PIPE		
BOT	- BOTTOM	MPS	- MEDIUM PRESSURE STEAM SUPPLY
BTU	- BRITISH THERMAL UNIT	MU	- WATER MAKE-UP
BTUH	- BRITISH THERMAL UNIT PER HOUR		
		N/C	- NORMALLY CLOSED
CBD	- COUNTER BALANCED BACKDRAFT DAMPER	NIC	- NOT IN CONTRACT
CFCI	- CONTRACTOR FURNISHED CONTRACTOR INSTALLED	N/O	- NORMALLY OPEN
		NOM	- NOMINAL
CFM	- CUBIC FEET PER MINUTE	NPT	- NATIONAL PIPE THREAD
CHS	- CHILLED WATER SUPPLY	NTS	- NOT TO SCALE
CHR	- CHILLED WATER RETURN		
CHGR	- CHILLED WATER GLYCOL SOLUTION RETURN	OA	- OUTDOOR AIR
CHGS	- CHILLED WATER GLYCOL SOLUTION SUPPLY	OBD	- OPPOSED BLADE DAMPER
CLG	- CEILING	OD	- OUTSIDE DIAMETER
CMU	- CONCRETE MASONRY UNIT	OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
CO	- CLEAN OUT		
CO2	- CARBON DIOXIDE	OFOI	- OWNER FURNISHED OWNER INSTALLED
CONN	- CONNECT OR CONNECTION		
CONTR	- CONTRACTOR	P	- PROPANE GAS
CTR	- CENTER	PC	- PLUMBING CONTRACTOR (DIVISION 22)
CU	- COPPER		OR PUMPED CONDENSATE RETURN
CW	- COLD WATER	PLBG	- PLUMBING
CWR	- CONDENSER WATER RETURN	PRESS	- PRESSURE
CWS	- CONDENSER WATER SUPPLY	PRV	- PRESSURE REGULATING VALVE
		PSF	- POUNDS PER SQUARE FOOT
D	- DRAIN LINE	PSI	- POUNDS PER SQUARE INCH
DB	- DRY BULB	PSIG	- POUNDS PER SQUARE INCH GAUGE
DDC	- DIRECT DIGITAL CONTROLS		
DI	- DEIONIZED WATER	RA	- RETURN AIR
DIA	- DIAMETER	RAD	- RADIUS
DIM	- DIMENSION	RCP	- REFLECTED CEILING PLAN
DN	- DOWN	RD	- ROOF DRAIN
DWG	- DRAWING	REC	- RECESSED
		REQD	- REQUIRED
EA	- EACH OR EXHAUST AIR	RI	- ROUGH IN
EAT	- ENTERING AIR TEMPERATURE	RL	- REFRIGERANT LIQUID
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)	ROS	- REVERSE OSMOSIS WATER SUPPLY
EJ	- EXPANSION JOINT	ROR	- REVERSE OSMOSIS WATER RETURN
ELEC	- ELECTRICAL	RPM	- REVOLUTIONS PER MINUTE
ELEV	- ELEVATOR	RS	- REFRIGERANT SUCTION
EQUIP	- EQUIPMENT		
ET	- EXPANSION TANK	S	- SPRINKLER (WET)
ETR	- EXISTING TO REMAIN	SA	- SUPPLY AIR
EQS	- EQUIPMENT SUPPLIER	SAN	- SANITARY OR SANITARY DRAIN
EWT	- ENTERING WATER TEMPERATURE	SCH	- SCHEDULE
EXH	- EXHAUST	SCW	- SOFT COLD WATER
EXP	- EXPANSION	SHT	- SHEET
EXT	- EXTERIOR	SPEC	- SPECIFICATIONS
EX	- EXISTING	SQ	- SQUARE
		SR	- SUPPLY RISER
FD	- FLOOR DRAIN	SRV	- SAFETY RELIEF VALVE
FF	- FINISHED FLOOR ELEVATION	SS	- STAINLESS STEEL
FLR	- FLOOR	STD	- STANDARD
FOB	- FLAT ON BOTTOM	STM	- STORM OR STORM DRAINAGE
FOF	- FUEL OIL FLOW	STRUC	- STRUCTURAL OR STRUCTURE
FOG	- FUEL OIL GAUGE	SUC	- SITE UTILITY CONTRACTOR
FOR	- FUEL OIL RETURN		
FOS	- FUEL OIL SUPPLY	TEMP	- TEMPERATURE
FOT	- FLAT ON TOP	TOB	- TOP OF BEAM
FPM	- FEET PER MINUTE	TOD	- TOP OF DUCT
FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	TOE	- TOP OF EQUIPMENT
FT	- FEET	TOF	- TOP OF FOOTING
FTG	- FOOTING	TOJ	- TOP OF JOIST
		TOP	- TOP OF PIPE
G	- GAS OR NATURAL GAS	TOS	- TOP OF SLAB OR TOP OF STEEL
GA	- GAUGE	TYP	- TYPICAL
GAL	- GALLON		
GALV	- GALVANIZED	UNO	- UNLESS NOTED OTHERWISE
GC	- GENERAL TRADES CONTRACTOR		
GPM	- GALLONS PER MINUTE	V	- VENT
		VAC	- VACUUM
HB	- HOSE BIBB	VEL	- VELOCITY
HC	- HVAC CONTRACTOR (DIVISION 23)	VB	- VALVE IN BOX
HD	- HUB DRAIN	VOL	- VOLUME
HG	- REFRIGERANT HOT GAS	VTR	- VENT THROUGH ROOF
HP	- HORSEPOWER	VR	- VENT RISER
HPC	- HIGH PRESSURE CONDENSATE RETURN		
HPS	- HIGH PRESSURE STEAM SUPPLY	W/	- WITH
HR	- HOUR	W/O	- WITHOUT
HT	- HEAT TRACE	WB	- WET BULB
HTR	- HEATER	WCO	- WALL CLEANOUT
HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING		
HW	- HOT WATER		
HWR	- HEATING HOT WATER RETURN		
HWS	- HEATING HOT WATER SUPPLY		

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

GENERAL NOTES

A. COORDINATE THE LOCATION OF ALL DEVICES LOCATED IN THE CEILING WITH THE ARCHITECT'S REFLECTED CEILING PLAN AND OTHER TRADES DURING CONSTRUCTION. ALL CEILING DEVICES SMALLER THAN THE GRID DIMENSIONS SHALL BE MOUNTED CENTERED WITHIN THE CEILING GRID TILE.

B. H.C. TO COORDINATE LOCATIONS OF ALL DUCTWORK AND AIR DEVICES WITH EXISTING STRUCTURAL MEMBERS AND THE WORK OF OTHER TRADES PRIOR TO FINAL INSTALLATION.

C. IN GENERAL, KEEP DUCT MAINS HIGH IN CEILING CAVITY, TIGHT TO STRUCTURE, WHERE POSSIBLE. ALL DUCTS SHALL BE RUN ABOVE CEILING UNLESS NOTED OTHERWISE.

D. RUN-OUTS TO SUPPLY DIFFUSERS SHALL INCLUDE MANUAL DAMPERS PER DETAILS (NOT SHOWN ON PLANS FOR CLARITY). PROVIDE ADDITIONAL DAMPERS WHERE REQUIRED FOR SYSTEM BALANCING REGARDLESS OF BEING SHOWN OR NOT.

E. ALL OPENINGS IN DUCTWORK RESULTING FROM DEMOLITION WORK SHALL BE PATCHED WITH SHEETMETAL. INSULATE PATCH WHERE DUCT BEING PATCHED IS INSULATED.

F. H.C. IS RESPONSIBLE FOR REMOVALS OF ALL DUCTWORK, INSULATION, SUPPORTS, ETC. WHICH BECOME ANTIQUATED/INACTIVE DUE TO NEW WORK UNDER THIS PROJECT. NOT ALL REMOVAL WORK IS NECESSARILY SHOWN ON THE DRAWINGS.

G. THE CONTRACTORS SHALL REFER TO ALL SPECIFICATION SECTIONS AND PLANS ON DRAWINGS FOR DETAILS OF BUILDING CONSTRUCTION TO ENSURE SPACE AND SATISFACTORY ARRANGEMENT FOR THEIR WORK. THE VARIOUS DRAWINGS COMPRISING THE SET ARE INTERDEPENDENT AND MUST BE USED JOINTLY AT ALL TIMES. EACH CONTRACTOR SHALL REFER TO THE GENERAL REQUIREMENTS OF THE CONTRACT. THE NOTES AND SYMBOLS INDICATED ON DRAWINGS ARE FOR THE GUIDANCE OF ALL TRADES INVOLVED IN THE PROJECT AND MUST BE FOLLOWED TO EXECUTE THE WORK AS INTENDED. IF DISCREPANCIES OCCUR, CONTACT THE PROJECT ENGINEER THRU THE GENERAL CONTRACTOR FOR CLARIFICATION BEFORE PROCEEDING.

H. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR THE CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK THIS WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. SEE SPECIFICATIONS FOR MORE SPECIFIC DETAILS ON RESPONSIBILITIES.

I. ALL WORK SHALL BE PERFORMED IN COMPLETE COMPLIANCE WITH ALL GOVERNING CODES AND STANDARDS.

J. EXISTING CONDITIONS SHOWN HAVE BEEN BASED OPON VISUAL OBSERVATION AND/OR AVAILABLE DRAWING INFORMATION, AND MAY BE AT VARIANCE WITH ACTUAL WORK IN PLACE. ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE WORK SHOWN ON THE CONTRACT DOCUMENTS WHICH MAY IMPACT THE PROGRESS OF THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER IN WRITING FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

K. DIFFUSER SIZES SHOWN ON FLOOR PLANS ARE NECK SIZES. GRILLE SIZES SHOWN ARE FACE SIZES.

L. THE CONTRACT DRAWINGS ARE NOT INTENDED TO SHOW EVERY VERTICAL OR HORIZONTAL OFFSET WHICH MAY BE NECESSARY TO COMPLETE THE SYSTEMS. COORDINATE WORK IN ADVANCE WITH ALL OTHER TRADES AND REPORT IMMEDIATELY ANY DIFFICULTIES WHICH CAN BE ANTICIPATED.

M. ALL EXISTING DUCTWORK SHOWN ON REMOVAL PLANS SHALL BE REMOVED. THE MAJORITY OF WORK TO BE REMOVED IS SHOWN. REMOVE ALL INCIDENTAL AND/OR ABANDONED DUCTOWRK THAT MAY NOT BE SHOWN BUT IS ASSOCIATED WITH THE REMOVAL WORK.

N. INSULATE DUCTWORK WHERE EXISTING INSULATION HAS BEEN DAMAGED AND/OR REMOVED IN THE PERFORMANCE OF WORK IN THIS PROJECT.

O. ALL INSULATED DUCTWORK SHALL HAVE DAMPER HANDLE EXTENSIONS.

HVAC SHEET LIST

SHEET NUMBER	SHEET NAME
M001	HVAC LEGEND, NOTES, & SHEET INDEX
MD101	HVAC DEMOLITION PLAN
M101	HVAC NEW WORK PLAN - LEVEL 1
M102	HVAC PLAN - LEVEL 2
M500	HVAC DETAILS
M600	HVAC SCHEDULES

SCHOOLEY CALDWELL
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250 E Broad St, Suite 600
Columbus, OH 43215

Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 State Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/15/25
REGISTERED
PROFESSIONAL ENGINEER

HVAC LEGEND, NOTES, & SHEET INDEX

Mechanical

M001

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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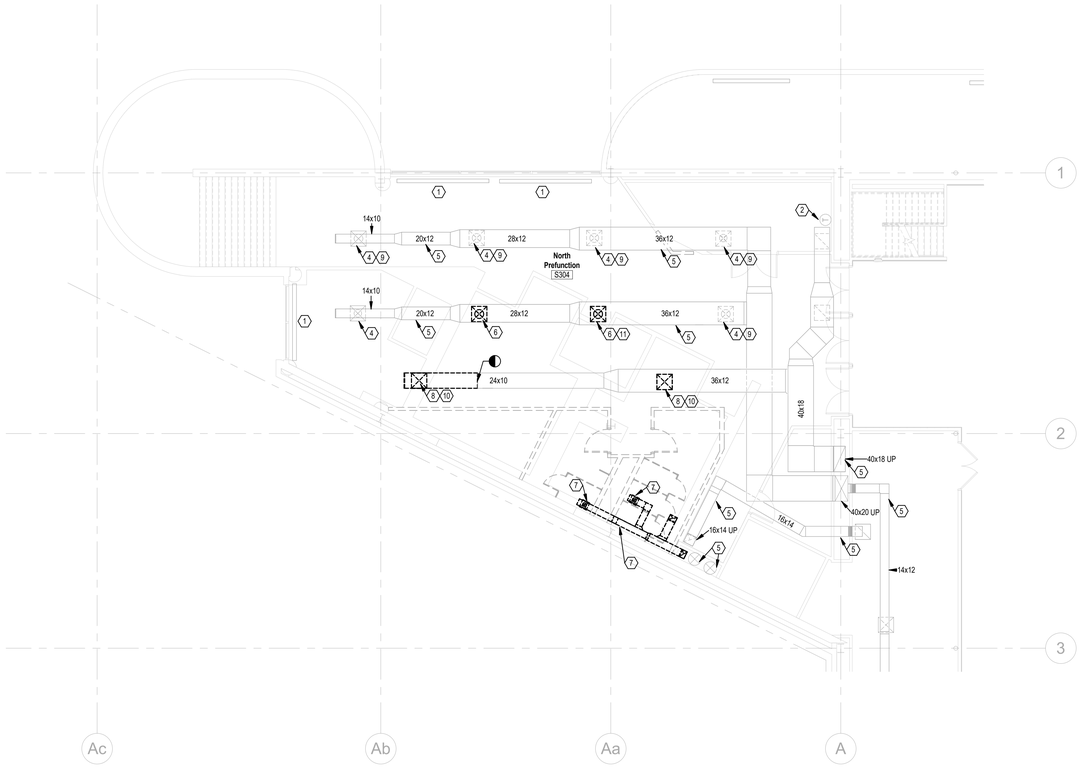
DEMOLITION PLAN NOTES

1. EXISTING TO REMAIN FINNED TUBE HEATER.
2. EXISTING TO REMAIN THERMOSTAT.
3. NOT USED.
4. EXISTING TO REMAIN SUPPLY AIR GRILLE.
5. EXISTING TO REMAIN DUCTWORK.
6. EXISTING SUPPLY DIFFUSER AND RUNOUT DUCTWORK TO BE DEMOLISHED.
7. EXISTING EXHAUST DIFFUSER AND ASSOCIATED DUCTWORK TO BE DEMOLISHED AS SHOWN.
8. EXISTING RETURN DIFFUSER AND ASSOCIATED DUCTWORK TO BE DEMOLISHED AS SHOWN.
9. CONTRACTOR SHALL PERFORM PRE-TAB AIRFLOW MEASUREMENTS OF EXISTING TO REMAIN SUPPLY DIFFUSER PRIOR TO DEMOLITION WORK.
10. CONTRACTOR SHALL PERFORM PRE-TAB AIRFLOW MEASUREMENTS OF EXISTING RETURN DIFFUSER PRIOR TO DEMOLITION WORK.
11. CONTRACTOR SHALL PERFORM PRE-TAB AIRFLOW MEASUREMENT OF EXISTING SUPPLY DIFFUSER PRIOR TO IT BEING DEMOLISHED.



1 **HVAC REGENCY RESTROOMS - LEVEL 1**
SCALE: 1/8" = 1'-0"

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Restroom
Renovation

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STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

HVAC
DEMOLITION
PLAN

Mechanical Demolition

MD101

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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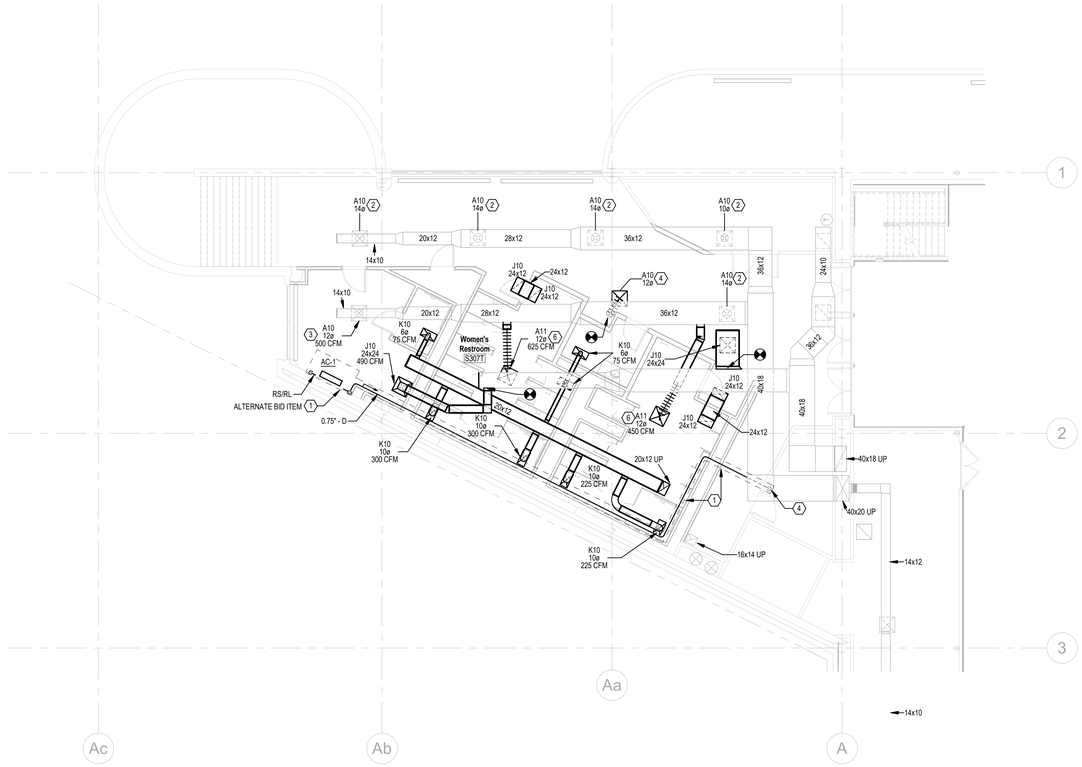
NEW WORK PLAN NOTES

1. INDOOR DUCTLESS SPLIT AND ASSOCIATED PIPING ARE AN ALTERNATE BID ITEM. CONTRACTOR SHALL VERIFY WITH OWNER AND ENGINEER PRIOR TO PURCHASE AND INSTALL.
2. CONTRACTOR SHALL REBALANCE EXISTING SUPPLY DIFFUSERS BASED ON PRE-TAB MEASUREMENTS PERFORMED PRIOR TO DEMOLITION. REFER TO NOTE 9 ON SHEET MD101.
3. REBLANCE EXISTING SUPPLY DIFFUSER TO 500 CFM.
4. BALANCE NEW SUPPLY DIFFUSER AIRFLOW TO MATCH PRE-TAB MEASUREMENT. REFER TO NOTE 11 ON SHEET MD101.
5. TERMINATE DRAIN LINE AT HUB DRAIN WITH 2" AIR GAP.
6. CONTRACTOR SHALL INSTALL SUPPLY DIFFUSERS EVENLY BETWEEN NEAREST CAN LIGHTS. REFER TO SHEET E200 FOR LOCATIONS.



1 HVAC REGENCY RESTROOMS

SCALE: 1/8" = 1'-0"

0 4 8 16 24

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Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 State Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

HVAC NEW WORK PLAN - LEVEL 1

Mechanical

M101

2025.10.08

25300

HEAPY

PROJECT NO. 2025-07170

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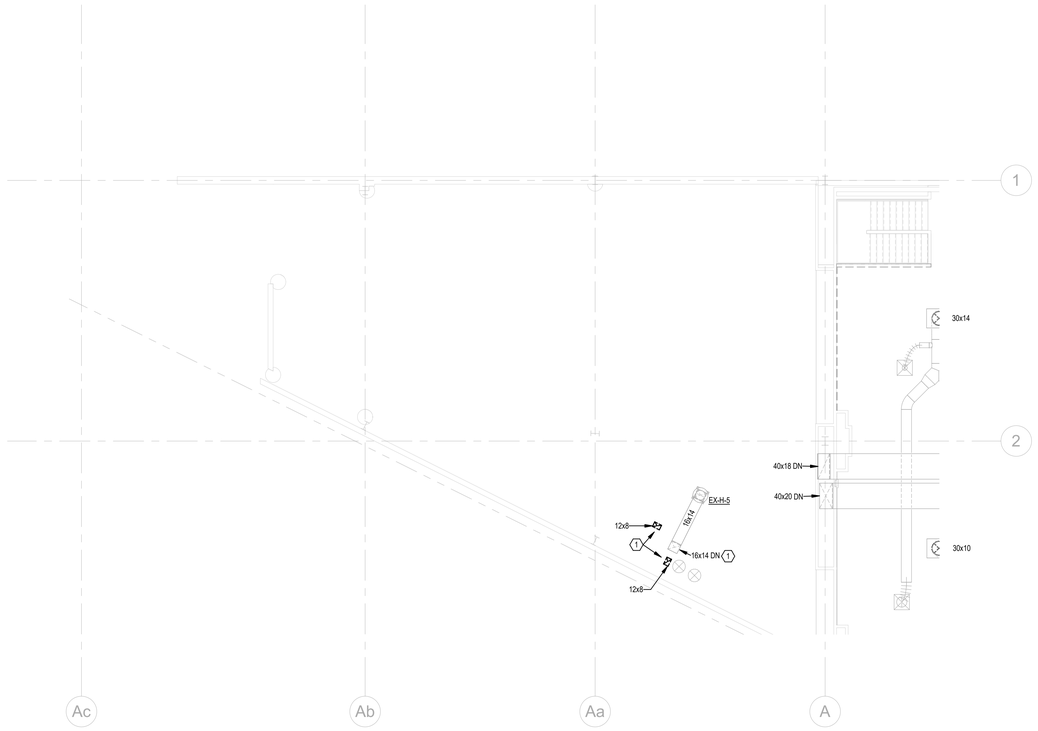
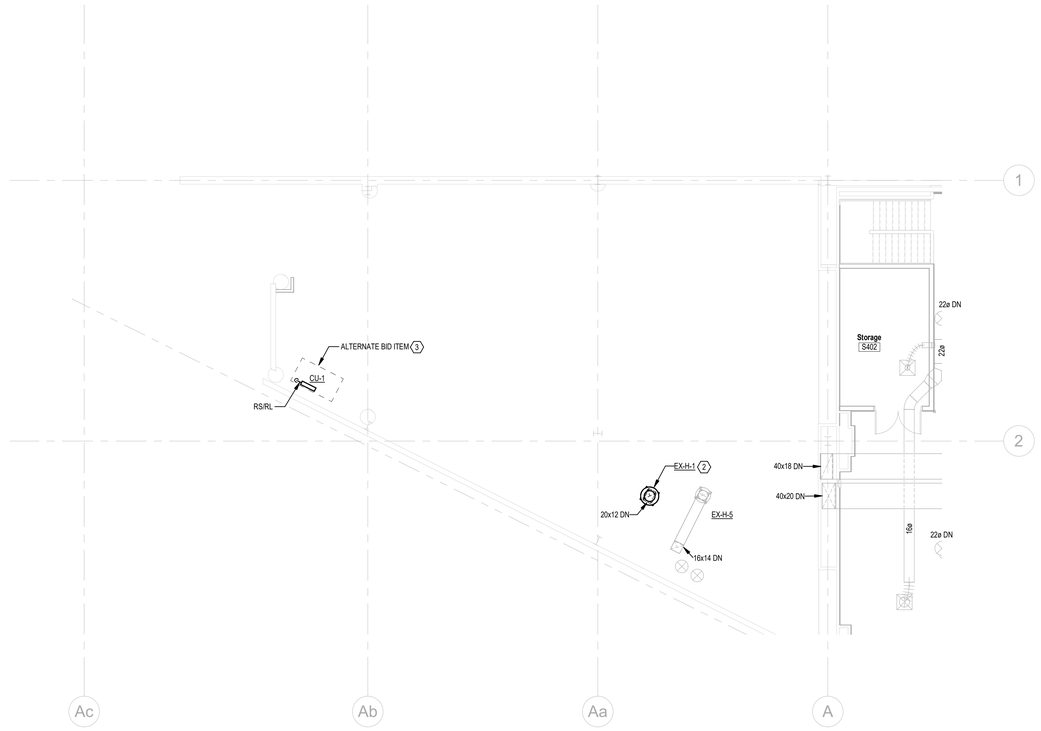
PLAN NOTES

1. EXISTING EXHAUST DUCT TO BE DEMOLISHED.
2. CONTRACTOR SHALL COORDINATE WITH OWNER ON EXISTING NAMING CONVENTION OF ROOFTOP EXHAUST FANS TO RENAME EX-H1 ACCORDINGLY.
3. OUTDOOR HEAT PUMP CONDENSING UNIT AND ASSOCIATED COMPONENTS ARE AN ALTERNATE BID ITEM. CONTRACTOR SHALL CONFIRM WITH OWNER AND ENGINEER PRIOR TO PURCHASE AND INSTALL.



1 **HVAC REGENCY ROOFTOP BALCONY - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"

0 4 8 16 24



2 **HVAC REGENCY ROOFTOP BALCONY - NEW WORK PLAN**
SCALE: 1/8" = 1'-0"

0 4 8 16 24

SCHOOLEY CALDWELL

ARCHITECTURE. INSPIRED.

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Revision Schedule

#	Description	Date
2	BULLETIN 02	07/21/2022

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/6/25
REGISTERED
PROFESSIONAL ENGINEER

HVAC PLAN - LEVEL 2

Mechanical

M102

2025.10.08

25300

HEAPY
P: 937-224-0851 www.heapy.com
PROJECT NO. 2025-07170

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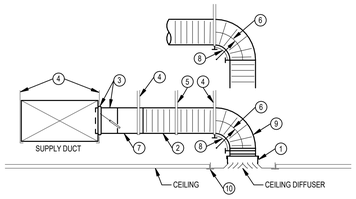
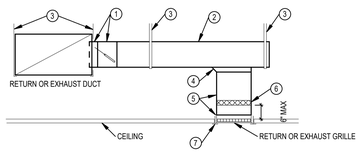


NOTES

1. SQUARE-TO-ROUND ADAPTER IF DIFFUSER NECK IS SQUARE. CONNECT ADAPTOR TO DIFFUSER. SEAL TO AIR DEVICE, SEAL CLASS A. INSULATE ADAPTOR AND EXPOSED BACKSIDE SURFACES OF AIR DEVICE.
2. INSULATED FLEXIBLE DUCT SAME DIAMETER AS BRANCH DUCT (7), 5 FT. MAXIMUM TOTAL LENGTH PER AIR DEVICE. STRETCH FLEXIBLE DUCT TO AT LEAST 90% OF FULLY EXTENDED LENGTH.
3. SPIN-IN BRANCH TAP FITTING, STRAIGHT SIDE WITH MANUAL DAMPER. DAMPER SHAFT IN HORIZONTAL. INTEGRAL INSULATION GUARD SLEEVE REQUIRED FOR TAP FITTING TO MAIN DUCT WITH INTERNAL INSULATION, AND EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF TO ACCOMMODATE EXTERNAL INSULATION.
4. DUCT STRAP HANGER. ATTACH TO STRUCTURE.
5. STRAP HANGER REQUIRED IF LENGTH OF FLEXIBLE DUCT IS LONGER THAN 4 FT.
6. MINIMUM CENTERLINE RADIUS EQUAL TO DUCT DIAMETER.
7. ROUND SHEET METAL BRANCH DUCT, SAME SIZE AS DIFFUSER INLET UNLESS NOTED OTHERWISE.
8. FLEXIBLE DUCT ELBOW SUPPORT, INSTALLED WITH NYLON BANDING PER MANUFACTURER'S INSTRUCTIONS.
9. A RADIUSD SHEET METAL ELBOW MAY BE USED IN LIEU OF A FLEXIBLE ELBOW SUPPORT WHEN CONNECTED DIRECTLY TO AIR DEVICE.
10. CEILING T-BAR SUPPORT (FOR LAY-IN APPLICATIONS). COORDINATE AND VERIFY T-BAR TYPE FOR COMPATIBILITY WITH DIFFUSER.

1 CEILING DIFFUSER DUCT CONNECTION

SCALE: NONE

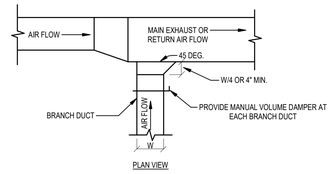


NOTES

1. 45 DEGREE STATIC BOOT AND MANUAL DAMPER. INTEGRAL INSULATION GUARD SLEEVE REQUIRED WHEN MAIN DUCT HAS INTERNAL INSULATION. EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF REQUIRED FOR EXTERNALLY INSULATED DUCTWORK.
2. SHEET METAL DUCT, SIZE AS NOTED ON PLANS.
3. DUCT STRAP HANGER.
4. STATIC BOOT SIMILAR TO (1) EXCEPT NO DAMPER.
5. SHEET METAL DUCT, FULL SIZE OF GRILLE NECK SIZE. CONNECT AND SEAL DUCT TO GRILLE. SEAL CLASS A.
6. FLEXIBLE DUCT CONNECTOR.
7. CEILING T-BAR SUPPORT (FOR LAY-IN APPLICATIONS). COORDINATE AND VERIFY T-BAR TYPE FOR COMPATIBILITY WITH GRILLE.

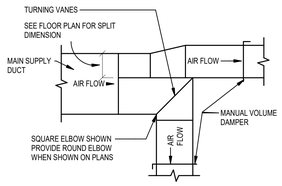
2 EXHAUST GRILLE DUCT CONNECTION

SCALE: NONE

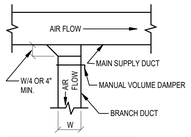


3 EXHAUST OR RETURN BRANCH DUCTWORK

SCALE: NONE



AIR SPLIT DUCT TAKE-OFF PLAN VIEW

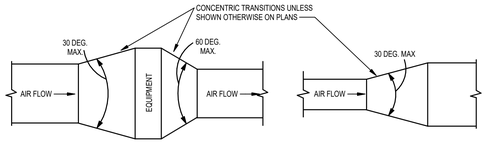


BRANCH DUCT TAKE-OFF PLAN VIEW

THE BRANCH DUCT TAKE-OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM, AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM OR LESS. THE AIR SPLIT DUCT TAKE-OFF SHALL BE USED IN ALL OTHER CASES

4 SUPPLY DUCTWORK BRANCH TAKE-OFFS

SCALE: NONE



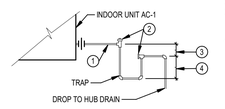
TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT PLAN OR SIDE VIEW

TYPICAL DUCTWORK TRANSITION PLAN OR SIDE VIEW

NOTE:
A. UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.
B. TRANSITION ANGLES IN AND OUT OF FANS SHALL BE 50% OF THOSE SHOWN ABOVE.

5 DUCTWORK TRANSITIONS

SCALE: NONE



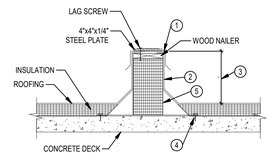
DRAW-THRU UNIT

NOTES

1. DRAIN PIPE SAME SIZE AS UNIT DRAIN PAN CONNECTION.
2. TEE WITH CLEANOUT PLUG.
3. CENTERLINE - TO - CENTERLINE DIMENSION NOT LESS THAN SUPPLY FAN T.S.P. (INCH W.G.) +1 INCH.
4. CENTERLINE - TO - CENTERLINE DIMENSION SHALL BE 50% OF DIMENSION FOUND IN 3 ABOVE.

6 MINI SPLIT UNIT DRAIN PIPING - SUSPENDED UNIT

SCALE: NONE



NOTES

1. PROVIDE COUNTER-FLASHING.
2. HEAVY GAUGE CONTINUOUS SUPPORT EXTENDS 8" BEYOND LAST EQUIPMENT LEG. SCREW ATTACHMENT TO DECK.
3. MINIMUM 12 INCHES.
4. EXPANSION LAGS TO DECK.
5. 18 INCH HIGH INSULATED STEEL CURB.

7 CU-1 ROOF EQUIPMENT SUPPORT

SCALE: NONE

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HVAC DETAILS

Mechanical

M500

2025.10.08

25300

HEAPY

PROJECT NO. 2025-07170

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HVAC DESIGN DATA

GENERAL NOTES:
A. OUTDOOR DESIGN CONDITIONS: 91.1°F DB SUMMER, 73.5°F WB SUMMER, 1°F DB WINTER
B. DESIGN ALTITUDE: 816 FT.

NOTES:
1. LISTED RH IS MAXIMUM ANTICIPATED AT LISTED DB TEMPERATURE.
2. REFER TO ATC SEQUENCES FOR ACTUAL ROOM SETPOINTS.
3. "FLOATING" MEANS THERE IS NO ACTIVE CONTROL.
4. OUTDOOR AIR VENTILATION ONLY.

	INTERIOR DESIGN DATA				
	SUMMER		WINTER		
SPACE NAME / TYPE	°F DB	% RH (NOTE 1)	°F DB	% RH	SEE NOTE
OFFICES	74	55	72	FLOATING	2,3

DUCT CONSTRUCTION, SEALING, AND INSULATION

GENERAL NOTES:
A. REFER TO SPECIFICATIONS FOR DUCT CONSTRUCTION: SHEET METAL DUCT; INTERIOR LINING; EXTERIOR INSULATION; FIBERGLASS DUCTBOARD; ETC.
B. DUCT CONSTRUCTION AND SEALING SHALL BE PER LATEST S.M.A.C.N.A. STANDARDS.

	S.M.A.C.N.A. CLASS.								
			LEAKAGE CLASS						
DUCT SYSTEM	S.P. CONSTRUCT.	SEAL CLASS	RECT	RND	INTERNALLY LINED	EXTERNAL INSULATION	DOUBLE WALL INSULATED	NOT INSULATED	SEE NOTE
SUPPLY AIR DUCTWORK	+1"	A	16	8	-	●	-	-	-
RETURN OR TRANSFER AIR DUCTWORK	-2"	A	16	8	-	-	-	●	-
TOILET OR GENERAL EXHAUST DUCTWORK	-1"	A	16	8	-	-	-	●	-

AIR DISTRIBUTION DEVICES

GENERAL NOTES:
A. ALL LAY-IN AIR DEVICES SHALL FIT IN 24"X24" LAY-IN CLG SYSTEM. VERIFY GRID TYPE AND COORDINATE AIR DEVICE COMPATIBILITY.
B. FINISH KEY: "W.B.E." - WHITE BAKED ENAMEL; "E.C.L." - ETCHED CLEAR LACQUER OR ANODIZED; "C.C.B.A." - CUSTOM COLOR SELECTED BY ARCHITECT.
C. SUPPLY AIR DIFFUSERS SHALL BE 4-WAY BLOW, UNLESS INDICATED OTHERWISE ON DRAWINGS.
D. PROVIDE AUX. FRAMES FOR AIR DEVICES IN PLASTER, GYPSUM BOARD, TILE OR OTHER HARD SURFACES.

NOTES:

		MOUNTING TYPE					MATERIAL		FINISH					BASIS OF DESIGN		
MARK	DESCRIPTION	LAY-IN	SURFACE	DUCT	SPLINE	SNAP-IN	STEEL	ALUMINUM	STAINLESS STEEL	W.B.E.	E.C.L.	C.C.B.A.	OPPOSED BLADE DAMPER	SQ.TO.RD NECK ADAPTOR	MANUFACTURER	MODEL	SEE NOTE
A10	PREFUNCTION STANDARD SQ. PLAQUE CEILING DIFFUSER - ROUND NECK - 24 X 24	●						●		●					TITUS	OMNI	
A11	STANDARD SQ. PLAQUE CEILING DIFFUSER - ROUND NECK - 24 X 24		●												TITUS	OMNI	
J10	PREFUNCTION EGGCRATE CEILING CRILLE	●						●		●					TITUS	50F	
K10	EGGCRATE CEILING GRILLE, EXHAUST		●					●		●			●		TITUS	50F	

FANS

GENERAL NOTES:
A. ALL FANS SHALL BE A.M.C.A. 211 AND 311 PERFORMANCE CERTIFIED AND SHALL BEAR THE A.M.C.A. LABEL.
B. SONES VALUES BASED ON A.M.C.A. 301 MEASURED AT 5 FT.
C. MOTOR HORSEPOWERS LISTED SHALL BE CONSIDERED MINIMUM.
D. ROOF & WALL OPENINGS ARE APPROX. VERIFY SIZE & COORDINATE.
E. COORDINATE STEEL FRAMING AROUND ROOF OPENING WHERE REQUIRED FOR DECK SUPPORT, AND WALL LINTELS FOR WALL OPENINGS.
F. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS.
G. VFD'S SHALL BE CONSTRUCTED AND LABELED FOR REQUIRED SCCR (SHORT CIRCUIT CURRENT RATING). COORDINATE WITH DIVISION 26.
H. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.

								MOTOR								BASIS OF DESIGN	
MARK	DESCRIPTION	SERVICE	CONNECTED CFM	FAN CFM	STATIC PRESSURE (IN. W.C.)	APPROX. WHEEL DIAMETER	MAXIMUM SONES	HORSEPOWER (HP)	VOLTAGE - PHASE	ELECTRONICALLY COMMUTATED	MCA (AMPS)	MOCP (AMPS)	VARIABLE FREQUENCY DRIVE	MINIMUM SCCR (AMPS)	APPROX. ROOF/WALL OPENING (INCHES)	APPROX. WEIGHT (LBS.)	MANUFACTURER	MODEL
EX-H-1	DIRECT DRIVE CENTRIFUGAL ROOF EXHAUST FAN	FIRST FLOOR RESTROOM GROUP	1,200	1500	0.4	14.6"	8.2	0.5	208 / 1	●	5	15	-	5000	22 x 22	73	GREENHECK	G-140-VG

SPLIT SYSTEM HEAT PUMP UNITS

GENERAL NOTES:
A. UNLESS NOTED OTHERWISE, CAPACITIES SHALL BE BASED ON INTERIOR DESIGN CONDITIONS OF ___DB / ___WB COOLING, ___DB HEATING.
B. HEAT PUMP COOLING CAPACITY SHALL BE BASED ON 95°F AMBIENT CONDITIONS.
C. HEAT PUMP HEATING CAPACITY SHALL BE BASED ON ____°F AMBIENT CONDITIONS.
D. CONDENSING UNITS SHALL INCLUDE LOW AMBIENT COOLING & HEATING CONTROLS AND ACCESSORIES, OPERATIONAL TO ____°F.
E. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS.
F. REFRIGERANT PIPING - SIZES LISTED ARE APPROX. CIRCUITING, SIZING, NUMBER OF PIPES AND CIRCUITS, ARRANGEMENT, ETC. SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
G. ELECTRIC SERVICES FOR OUTDOOR UNIT AND INDOOR UNIT - SINGLE POINT POWER SERVICE CONNECTIONS TO EACH UNIT UNLESS NOTED OTHERWISE, ADEQUACY OF LISTED CIRCUIT SIZES MUST BE VERIFIED BY H.C. AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRIC SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY H.C.
H. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.
I. COOLING COIL CONDENSATE PUMPS SHALL BE FACTORY-FURNISHED, COMPATIBLE WITH INDOOR FAN COIL UNIT VOLTAGE AND POWERED FROM THE INDOOR FAN COIL UNIT SINGLE POINT POWER CONNECTION.

NOTES:
1. INDOOR UNIT SHALL HAVE PUMPED CONDENSATE DRAIN LINE EQUIVALENT TO BLUE DIAMOND X85-003

INDOOR UNIT																															OUTDOOR HEAT PUMP CONDENSING UNIT - AIR COOLED									
		TYPE				LOCATION		FAN				COIL CAPACITY				FILTERS		ELECTRIC HEAT / REHEAT		ELECTRICAL SERVICE				APPROX. DIMENSIONS				BASIS OF DESIGN						ELECTRICAL SERVICE				BASIS OF DESIGN		
												COOLING		HEATING																											
MARK	DESCRIPTION	WALL-MOUNTED	CEILING-MOUNTED	CEILING RECESSED	DUCTED	ROOM NAME	ROOM NUMBER	CFM	EXTERNAL STATIC PRESSURE (IN. W.C.)	MOTOR (HP)	ELECTRONICALLY COMMUTATED MOTOR	ENT. AIR TEMP DBWB	TOTAL / SENSIBLE CAPACITY (MBH)	ENTERING AIR TEMP. DB	CAPACITY (MBH)	MERV RATING	MAXIMUM FACE VELOCITY (FPM)	MINIMUM NO. STAGES (NOT INCLUDING "OFF")	SCR CONTROL	SERVED THRU OUTDOOR UNIT (NOTE 1)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MINIMUM SCCR (AMPS)	LENGTH	WIDTH	HEIGHT	COOLING COIL CONDENSATE DRAIN PUMP (NOTE I)	MANUFACTURER	MODEL	SEE NOTE	MARK	DESCRIPTION	NOMINAL TONS (SIZED TO MATCH COIL)	VARIABLE SPEED COMPRESSOR(S)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCCR (AMPS)	MANUFACTURER	MODEL	
AC-1	DUCTLESS MINI SPLIT	●	-	-	-	VIP / Show Office	S308	450	0.5	30	-	91.1 / 73.5	18,000 / 10,800	65	23,600	8		-	●	-	208 / 1	20	5,000	35"	9"	12"	●	MITSUBISHI	PKA-AL-18NL		CU-1	ROOF MOUNTED CONDENSING UNIT	1.5	●	208 / 1		16	27	5,000	MITSUBISHI	PUZ-AK18NL	

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TIMOTHY M. KRZYWICKI
E-73980
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

HVAC SCHEDULES

Mechanical

M600

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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AV SYMBOLS WITH ELECTRICAL REQUIREMENTS

15 W	SINGLE FACED WALL MOUNTED CLOCK (102" MH UNLESS NOTED OTHERWISE). 12" DIAMETER FACE ANALOG CLOCK UNLESS SUBSCRIPT "15" FOR 15" DIAMETER FACE ANALOG CLOCK OR "LED" FOR LED DIGITAL CLOCK. SUBSCRIPT "W" INDICATES WIREGUARD. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26.
15	DOUBLE FACED WALL MOUNTED CLOCK (102" MH UNLESS NOTED OTHERWISE). 12" DIAMETER FACE ANALOG CLOCK UNLESS SUBSCRIPT "15" FOR 15" DIAMETER FACE ANALOG CLOCK OR "LED" FOR LED DIGITAL CLOCK. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26.
A X	ROOF MOUNTED ANTENNA. REFER TO ANTENNA MOUNTING DETAIL FOR MORE INFORMATION. SUBSCRIPT INDICATES TYPE.
CA	WALL MOUNTED CALL ANNUNCIATOR FOR PAGING/INTERCOM SYSTEM (90" MH UNLESS NOTED OTHERWISE). CUSTOM BACKBOX FURNISHED PER DIV 27, INSTALLED WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. ANNUNCIATOR, INSTALLATION AND WIRING PER DIV 27.
CO	WALL MOUNTED CALL ORIGINATION SWITCH FOR PAGING/INTERCOM SYSTEM (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. CALL SWITCH, FACEPLATE AND WIRING PER DIV 27.
CS W	CLASSROOM SOUNDFIELD SYSTEM RECEIVER/AMPLIFIER/MIXER AND WALL OUTLET (44" MH UNLESS NOTED OTHERWISE). TWO 1-GANG BOXES WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SUBSCRIPT "W" INDICATES WALL MOUNTED ON SHELF. SOUNDFIELD SYSTEM, GROMMETED FACEPLATES AND CABLING PER DIV 27.
M# X	MICROPHONE JACKPLATE (18" MH UNLESS NOTED OTHERWISE). "#"=NUMBER OF GANG, "X"=NUMBER OF JACKS IF OTHER THAN TWO (2). PROVIDE 0.75" CONDUIT FOR 1-GANG BOX OR 1" CONDUIT FOR 2-GANG AND LARGER BOX TO ABOVE ACCESSIBLE CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27.
M H(x)	HANGING MICROPHONE OUTLET. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SUBSCRIPT "X" INDICATES QUANTITY OF MICROPHONES IF MORE THAN ONE (1). MICROPHONE, JACK, FACEPLATE AND WIRING PER DIV 27.
M S	LOCAL SOUND SYSTEM SENSING MICROPHONE. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. MICROPHONE WITH GROMMETED FACEPLATE, INSTALLATION AND WIRING PER DIV 27.
MA	MIC/AUX WALL MOUNTED INPUT (18" MH UNLESS NOTED OTHERWISE). 2-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27.
ME	MONITOR/EFFECTS WALL OUTLET (18" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. JACKS, FACEPLATE AND WIRING PER DIV 27.
MP	MULTI-PIN CONNECTOR WALL OUTLET (18" MH UNLESS NOTED OTHERWISE). NEMA BOX FOR 8"x8" PLATE WITH 2" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. 8"x8" PLATE WITH CONNECTORS AND WIRING PER DIV 27.
MS	MICROPHONE/SPEAKER WALL MOUNTED JACKPLATE (18" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27.
P	PROGRAM SOURCE CABINET FOR PAGING/INTERCOM SYSTEM. TWO 1-GANG BOXES WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. GROMMETED FACEPLATES, CABINET, INSTALLATION AND WIRING PER DIV 27.
PR X	WALL MOUNTED PROJECTOR. BACKBOX WITH 1-1.25" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. PROJECTOR, MOUNT AND CABLING PER DIV 27. SUBSCRIPT "X" INDICATES CONFIGURATION TYPE, REFER TO FACEPLATE DETAILS.
PS E	CEILING MOUNT ELECTRIC PROJECTION SCREEN. 1-GANG BOX WITH 1" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SCREEN AND LOW VOLTAGE CONTROL PER DIV 27.
PS E	WALL MOUNT ELECTRIC PROJECTION SCREEN. 1-GANG BOX WITH 1" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SCREEN AND LOW VOLTAGE CONTROL PER DIV 27.
R	REMOTE POWER SWITCH OUTLET (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SWITCH, FACEPLATE AND WIRING PER DIV 27.
SF R	RECESSED SOUND SYSTEM SPEAKER. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. GROMMETED FACEPLATE, SPEAKER, INSTALLATION ADJACENT TO BOX AND WIRING PER DIV 27. REFER TO ARCHITECTURAL DRAWINGS FOR RECESSED ENCLOSURE DETAILS.
SF W	WALL MOUNTED SOUND SYSTEM SPEAKER. 1-GANG BOX WITH 1" CONDUIT TO ABOVE CEILING PER DIV 26. SPEAKER AND CABLING PER DIV 27.
SJ	SPEAKER JACKPLATE (18" MH UNLESS NOTED OTHERWISE). 3-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26.
SP	HORN TYPE PAGING/INTERCOM SYSTEM SPEAKER (120" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. GROMMETED FACEPLATE, SPEAKER, INSTALLATION AND WIRING PER DIV 27.
SP W	SURFACE MOUNTED PAGING/INTERCOM SPEAKER (120" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. SPEAKER, INSTALLATION AND CABLING PER DIV 27.
V	PAGING/INTERCOM SYSTEM WALL MOUNTED SPEAKER VOLUME CONTROLLER (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX AND 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. VOLUME CONTROLLER WITH FACEPLATE, INSTALLATION AND WIRING PER DIV 27.
WC X	WALL MOUNTED AV SYSTEM CONTROL INTERFACE. SUBSCRIPT "X" INDICATES TYPE. REFER TO SYSTEM DIAGRAMS. BACKBOX (46" MH UNLESS NOTED OTHERWISE) WITH 1" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. CONTROLLER WITH CABLING PER DIV 27.

SECURITY SYMBOLS WITH ELECTRICAL REQUIREMENTS

BR	WALL MOUNTED BIOMETRIC READER (46" MH UNLESS NOTED OTHERWISE). 2-GANG BOX WITH 0.75" CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. READER AND CABLING PER DIV 28. REFER TO SECURITY ROUGH-IN DETAILS.
CC X	CCTV SYSTEM WALL MOUNTED CAMERA (REFER TO CAMERA SCHEDULE FOR MOUNTING HEIGHT AND CAMERA SPECIFICATIONS). SUBSCRIPT "X" INDICATES ENTRY IN CAMERA SCHEDULE. 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. CAMERA AND CABLING PER DIV 28.
CM	WALL MOUNTED MONITOR OUTLET FOR CCTV SYSTEM (84" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 1" CONDUIT TO ABOVE CORRIDOR CEILING PER DIV 26. JACK, FACEPLATE AND CABLING PER DIV 28.
CR	WALL MOUNTED PROXIMITY CARD READER (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. CARD READER AND CABLING PER DIV 28. REFER TO SECURITY ROUGH-IN DETAILS.
CR EL	ELEVATOR CAB MOUNTED CARD READER. READER TO BE INSTALLED IN ELEVATOR CAB AS COORDINATED WITH ELEVATOR CONTRACTOR. WIRING FROM CAB THRU TRAVELING CABLE TO ELEVATOR CONTROLLER IN ELEVATOR MACHINE ROOM AND INTERFACE WITH ELEVATOR CONTROLLER AND SMS PER DIV 28, COORDINATE WITH ELEVATOR CONTRACTOR. REFER TO SECURITY ROUGH-IN DETAILS.
DC	LOCAL IP BASED 2-DOOR ACCESS CONTROL PANEL SERVING LOCAL CARD READER/SECURITY CONTROLLED DOORS. LOCATE ABOVE ADJACENT ACCESSIBLE CEILING. PROVIDE DATA DROP IN 0.75" CONDUIT TO LOCAL DATA CLOSET. EXTEND 1" CONDUIT WITH DOOR SECURITY WIRING TO LOCAL SECURITY SYSTEM JUNCTION BOX. REFER TO SECURITY ROUGH-IN DETAILS.
DM	DOOR POSITION SWITCH WITH WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. PROVIDE ONE CONTACT FOR EACH LEAF IN MULTI-DOOR OPENINGS. REFER TO SECURITY ROUGH-IN DETAILS.
EDC X	ELECTRONIC DOOR CONTROL. SUBSCRIPT "X" INDICATES SPECIFIC DOOR. REFER TO ELECTRONIC DOOR CONTROL SCHEDULE FOR REQUIREMENTS.
EL	ELECTRONIC DOOR LOCK AND INSTALLATION BY OTHERS. LOW VOLTAGE WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. REFER TO SECURITY ROUGH-IN DETAILS.
EM	ELECTRONIC MAG LOCK AND INSTALLATION BY OTHERS. LOW VOLTAGE WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. REFER TO SECURITY ROUGH-IN DETAILS.
ES	ELECTRONIC STRIKE AND INSTALLATION BY OTHERS. LOW VOLTAGE WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. REFER TO SECURITY ROUGH-IN DETAILS.
HA	WALL/PEDESTAL MOUNT HANDICAP DOOR ACTUATOR BUTTON, FURNISHED BY OTHERS. BOX AS REQUIRED BY SYSTEM MANUFACTURER WITH INSTALLATION AND CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. ALL LOW VOLTAGE WIRING AND INTERFACE WITH SMS AND DOOR MOTOR PER DIV 28. REFER TO SECURITY ROUGH-IN DETAILS.
HD	HANDICAP DOOR OPERATOR MOTOR ASSEMBLY BY OTHERS. 120V POWER CONNECTION AND CONDUIT FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. LOW VOLTAGE WIRING AND INTERFACE WITH SMS AND DOOR ACTUATOR BUTTONS PER DIV 28. REFER TO SECURITY ROUGH-IN DETAILS.
HO FA	WALL/FLOOR MOUNTED ELECTROMAGNETIC DOOR HOLD OPEN WITH POWER SUPPLY INSTALLED BY OTHERS. 120V POWER AND CONNECTION, BOX AS REQUIRED BY MANUFACTURER AND CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. LOW VOLTAGE WIRING FROM POWER SUPPLY TO HOLD OPEN AND INTERFACE WITH SMS PER DIV 28. SUBSCRIPT "FA" INDICATES DEVICES POWERED FROM FIRE ALARM SYSTEM AND INTERFACE FROM SMS TO FIRE ALARM SYSTEM REQUIRED FOR DOOR RELEASE PER DIV 28. REFER TO SECURITY ROUGH-IN DETAILS.
IC	WALL MOUNTED INTERCOM DOOR STATION (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. INTERCOM AND CABLING PER DIV 28.
JB M	SECURITY SYSTEM JUNCTION BOX TO BE LOCATED ABOVE ACCESSIBLE CEILING (MIN 6"X6"X4"). ROUTE LOCAL DOOR SECURITY WIRING CONDUITS/RACEWAYS TO JUNCTION BOX. EXTEND 1" CONDUIT WITH DOOR SECURITY WIRING TO LOCAL 2-DOOR CONTROL PANEL/REMOTE DOOR CONTROL PANEL AS INDICATED ON DRAWINGS. REFER TO SECURITY ROUGH-IN DETAILS.
K	WALL MOUNTED SECURITY KEYPAD ENTRY STATION (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. KEYPAD AND CABLING PER DIV 28.
KC	WALL MOUNTED COMBINATION KEYPAD/CARDREADER (46" MH UNLESS NOTED OTHERWISE). 2-GANG BOX WITH 0.75" CONDUIT TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. DEVICE AND CABLING PER DIV 28.
LB	ELECTRONIC LATCH BOLT MONITORING. HARDWARE AND INSTALLATION BY OTHERS. LOW VOLTAGE WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SECURITY JUNCTION BOX ABOVE CEILING PER DIV 26. REFER TO SECURITY ROUGH-IN DETAILS.
MD	CEILING MOUNTED MOTION DETECTOR. 1-GANG BOX MOUNTED IN CEILING PER DIV 26. DETECTOR AND CABLING PER DIV 28.
MD	WALL MOUNTED MOTION DETECTOR (90" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. MOTION DETECTOR, WALL MOUNT HARDWARE, AND CABLING PER DIV 28.
MIC	CEILING MOUNTED SECURITY/CCTV SYSTEM AUDIO MICROPHONE. 1-GANG BOX MOUNTED IN CEILING PER DIV 26. MICROPHONE AND CABLING PER DIV 28.
PB W	WALL MOUNTED PUSH BUTTON FOR LOCAL ELECTRONIC DOOR RELEASE (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. BUTTON AND CABLING PER DIV 28.
PL	SITE POLE FOR MOUNTING SECURITY CAMERAS (REFER TO SPECIFICATIONS FOR SIZE/TYPE). PROVIDE POLE WITH CONCRETE BASE AS INDICATED ON PLANS. EXTEND AND CONNECT TO SITE CONDUIT SYSTEM AS INDICATED ON PLANS. PROVIDE NEMA 3R JUNCTION BOX AT BASE OF POLE FOR CAMERA EQUIPMENT (120V POWER SUPPLY, FIBER CONVERTERS, ETC.). REFER TO SECURITY ROUGH-IN DETAILS.
PP W	WALL MOUNTED PANIC/DURESS BUTTON (46" MH UNLESS NOTED OTHERWISE). 1-GANG BOX WITH 0.75" CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. BUTTON AND CABLING PER DIV 28.
PS X	LOCAL LOW VOLTAGE POWER SUPPLY FOR EXTERIOR CAMERA. SUBSCRIPT "X" INDICATES ASSOCIATED CAMERA. 120V POWER INTO LOCAL JUNCTION BOX ABOVE CEILING AND CONNECTION TO POWER SUPPLY PER DIV 26. POWER SUPPLY MOUNTED ABOVE CEILING AND LOW VOLTAGE WIRING TO LOCAL CAMERA PER DIV 28.
RX	REQUEST TO EXIT SWITCH IN DOOR HARDWARE BY OTHERS. LOW VOLTAGE WIRING PER DIV 28. CONDUIT PATHWAYS FROM DOOR FRAME TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. REFER TO SECURITY ROUGH-IN DETAILS.
X	WALL MOUNTED SECURITY SYSTEM WIRING OUTLET MOUNTED BELOW COUNTER TOP. 2-GANG BOX WITH 2-1" CONDUITS TO COMMON SMS JUNCTION BOX ABOVE ACCESSIBLE CEILING PER DIV 26. GROMMETED FACEPLATE AND SECURITY SYSTEM CABLING PER DIV 28.

ELECTRICAL SYMBOLS

3 $	DASH SYMBOL INDICATES PARTICULAR OUTLET OR DEVICE TO BE REMOVED AND CIRCUITRY MADE CONTINUOUS WHERE REQUIRED.
3 $	EXISTING OUTLET OR DEVICE TO REMAIN. MAINTAIN EXISTING CIRCUITING.
	ELECTRICAL CONNECTION.
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R (18" MH UNLESS NOTED OTHERWISE). WHEN ⏻ SHOWN, RECEPTACLE TO HAVE "CONTROLLED" MARKINGS.
	20A-125V SINGLE RECEPTACLE, NEMA 5-20R (18" MH UNLESS NOTED OTHERWISE).
	SPECIAL PURPOSE RECEPTACLE. REFER TO NOTE ON PLAN.
	20A-125V DOUBLE DUPLEX RECEPTACLE. NEMA 5-20R, (18" MH UNLESS NOTED OTHERWISE) TWO GANG ASSEMBLY.
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R WITH BOTTOM OUTLET CONTROLLED BY WALL SWITCH. (18" MH UNLESS NOTED OTHERWISE).
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R (46" MH UNLESS NOTED OTHERWISE).
	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R WITH 2 INTEGRAL USB CHARGERS (18" MH UNLESS NOTED OTHERWISE).
GF	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R, WITH GROUND FAULT CIRCUIT INTERRUPTER (18" MH UNLESS NOTED OTHERWISE).
WP	20A-125V WEATHERPROOF DUPLEX RECEPTACLE, NEMA 5-20R (HORIZONTAL 18" MH UNLESS NOTED OTHERWISE) WITH TAYMAC #MM420G EXTRA DUTY GRAY COVER, VERTICAL MOUNT.
WP/GF	20A-125V WEATHERPROOF DUPLEX RECEPTACLE, NEMA 5-20R WITH GROUND FAULT CIRCUIT INTERRUPTER (18" MH UNLESS NOTED OTHERWISE), WITH TAYMAC #MM420G EXTRA DUTY GRAY COVER, VERTICAL MOUNT.
EM	20A-125V DUPLEX RECEPTACLE, NEMA 5-20R, ON EMERGENCY POWER (18" MH UNLESS NOTED OTHERWISE).
T	20A-125V POWERLOCK GROUNDING TYPE RECEPTACLE, HOSPITAL USE (66" MH UNLESS NOTED OTHERWISE).
	20A-125V DUPLEX PEDESTAL TYPE FLOOR RECEPTACLE, NEMA 5-20R, IN HUBBELL BA-2527 FLOOR BOX WITH SA-2525 COVERPLATE AND SC-3091 HOUSING. PROVIDE CARPET FLANGE WHERE REQUIRED.
# X	FLOOR BOX, # INDICATES TYPE, REFER TO FLOOR BOX (FB) SCHEDULE. IF NO #, PROVIDE HUBBELL BA-2527 FLUSH FLOOR BOX WITH ROUND SA-3925 COVERPLATE AND ONE 20A-125V DUPLEX RECEPTACLE. PROVIDE CARPET FLANGE WHERE REQD.
# X	FIRE RATED POKE-THRU, # INDICATES TYPE, REFER TO POKE-THRU (PT) SCHEDULE. IF NO #, PROVIDE HUBBELL 6 INCH RECESSED ACCESS POKE-THRU WITH TWO 20A-125V DUPLEX RECEPTACLES. PROVIDE CARPET FLANGE WHERE REQD.
IG	20-125V DUPLEX RECEPTACLE, NEMA 5-20R, WITH ISOLATED GROUND (18" MH UNLESS NOTED OTHERWISE).
20A	20A-125/250V-1PH-4W SINGLE RECEPTACLE, NEMA 14-20R (18" MH UNLESS NOTED OTHERWISE).
30A	30A-125/250V-1PH-4W SINGLE RECEPTACLE, NEMA 14-30R (18" MH UNLESS NOTED OTHERWISE).
50A	50A-125/250V-1PH-4W SINGLE RECEPTACLE, NEMA 14-50R (18" MH UNLESS NOTED OTHERWISE).
20A	20A-250V-3PH-4W SINGLE RECEPTACLE, NEMA 15-20R (18" MH UNLESS NOTED OTHERWISE).
30A	30A-250V-3PH-4W SINGLE RECEPTACLE, NEMA 15-30R (18" MH UNLESS NOTED OTHERWISE).
50A	50A-250V-3PH-4W SINGLE RECEPTACLE, NEMA 15-50R (18" MH UNLESS NOTED OTHERWISE).
J	JUNCTION BOX.
	MULTI-OUTLET RECEPTACLES ASSEMBLY, NEMA 5-15R (SINGLE OUTLETS ON 18" CENTERS) (46" MH UNLESS NOTED OTHERWISE).
	WIREMOLD RACEWAY, AS NOTED ON PLANS.
C	CLOCK HANGER OUTLET, SINGLE NEMA 5-15R RECESSED IN COVER PLATE (84" MH UNLESS NOTED OTHERWISE).
$	SINGLE POLE SWITCH (46" MH UNLESS NOTED OTHERWISE).
2 $	TWO POLE WALL SWITCH (46" MH UNLESS NOTED OTHERWISE).
# $	MULTI-WAY WALL SWITCH, # INDICATES NUMBER OF WAYS (46" MH UNLESS NOTED OTHERWISE).
P $	SWITCH WITH NEON PILOT LIGHT. ONE-GANG ASSEMBLY (46" MH UNLESS NOTED OTHERWISE).
K $	KEY OPERATED WALL SWITCH (46" MH UNLESS NOTED OTHERWISE).
L $	LOW-VOLTAGE MOMENTARY WALL SWITCH (46" MH UNLESS NOTED OTHERWISE).
DM $	LIGHTING DIMMER SWITCH (46" MH UNLESS NOTED OTHERWISE) 1000 WATTS UNLESS OTHERWISE INDICATED.
R $	SWITCH WITH RECEPTACLE (46" MH UNLESS NOTED OTHERWISE) STANDARD TWO-GANG ASSEMBLY OF SWITCH AND RECEPTACLE.
M $	FLUSH FRACTIONAL HORSEPOWER MOTOR STARTER WITH NEON PILOT LIGHT. ONE-GANG ASSEMBLY (46" MH UNLESS NOTED OTHERWISE).
H $	HP RATED WALL SWITCH (46" MH UNLESS NOTED OTHERWISE).
	ELECTRICAL PANEL OR SWITCHBOARD PER DRAWINGS.
P/B	PULL BOX.
	DISCONNECT SWITCH.
	MOTOR STARTER.
	COMBINATION MOTOR STARTER AND DISCONNECT SWITCH.
	ELECTRIC MOTOR.
UH	UNIT HEATER.
FC	FAN COIL.
AC	AIR CONDITIONER.
CU	CONDENSING UNIT.
UV	UNIT VENTILATOR.
CR	CORD REEL.
PP	POWER POLE.
T	LINE VOLTAGE THERMOSTAT.
H DH	DUCT HEATER.
H EB	ELECTRIC BASEBOARD HEATER.
M	INTERCOM SYSTEM DESK MOUNTED MASTER CONTROL STATION. SUBSCRIPT "W" INDICATES WALL MOUNT (46" MH UNLESS NOTED OTHERWISE).
I	INTERCOM STAFF STATION (46" MH UNLESS NOTED OTHERWISE).
H	INTERCOM HORN TYPE SPEAKER (84" MH UNLESS NOTED OTHERWISE).
S	INTERCOM SPEAKER FLUSH MOUNT IN CEILING.
	PUSHBUTTON (46" MH UNLESS NOTED OTHERWISE) EDWARDS 852 (120 VOLT).
	BUZZER (90" MH UNLESS NOTED OTHERWISE) EDWARDS 340-A (120 VOLT).
B	4" DIAMETER (90" MH UNLESS NOTED OTHERWISE) EDWARDS "ADAPTABEL" (120 VOLT).
	ELAPSED TIME INDICATOR CLOCK (90" MH UNLESS NOTED OTHERWISE) WITH RESET SWITCH (46" MH UNLESS NOTED OTHERWISE).
PC	PHOTOELECTRIC SENSOR.
LC	LIGHTING CONTACTOR.
OS M	CEILING MOUNTED OCCUPANCY SENSOR.
OS M	WALL MOUNTED OCCUPANCY SENSOR.
DS	CEILING MOUNTED DAYLIGHT SENSOR.
OP	OCCUPANCY SENSOR POWER PACK.

FIRE ALARM SYMBOLS

FACP	FIRE ALARM CONTROL PANEL.
RAP	REMOTE ANNUNCIATOR PANEL.
NAC	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL.
ASSD	AIR SAMPLING SMOKE DETECTOR BASE UNIT.
15 F	FIRE ALARM AND MASS NOTIFICATION COMBINATION SPEAKER & SIGNAL LIGHT (88" AFF). # WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 15 CANDELA IN CORRIDORS AND 30 CANDELA FOR ALL OTHER LOCATIONS. DEVICE SHALL HAVE RED BODY MARKED "ALERT" IN WHITE LETTERING WITH CLEAR LENS.
15 F	FIRE ALARM HORN & SIGNAL LIGHT (88" AFF). # WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 15 CANDELA IN CORRIDORS AND 30 CANDELA FOR ALL OTHER LOCATIONS.
F W	FIRE ALARM BELL (88" AFF UNLESS NOTED OTHERWISE). SUBSCRIPT "W" INDICATES EXTERIOR WEATHERPROOF UNIT.
15 F	FIRE ALARM AND MASS NOTIFICATION SIGNAL LIGHT (88" AFF). # WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 15 CANDELA IN CORRIDORS AND 30 CANDELA FOR ALL OTHER LOCATIONS. DEVICE SHALL HAVE RED BODY MARKED "ALERT" IN WHITE LETTERING WITH CLEAR LENS.
S 15 F	CEILING MOUNTED FIRE ALARM AND MASS NOTIFICATION COMBINATION SPEAKER & SIGNAL LIGHT. # WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 15 CANDELA IN CORRIDORS AND 30 CANDELA FOR ALL OTHER LOCATIONS. DEVICE SHALL HAVE RED BODY MARKED "ALERT" IN WHITE LETTERING AND HAVE CLEAR LENS.
15 F	CEILING MOUNTED FIRE ALARM SIGNAL LIGHT. # WHEN SHOWN INDICATES CANDELA RATING OF STROBE. WHEN A # IS NOT SHOWN, THE STROBE SHALL BE RATED 15 CANDELA IN CORRIDORS AND 30 CANDELA FOR ALL OTHER LOCATIONS.
S F	CEILING MOUNTED FIRE ALARM SPEAKER.
R S	SURFACE MOUNTED FIRE ALARM SPEAKER (88" AFF). SUBSCRIPT "R" INDICATES RECESSED MOUNTING.
F K	FIRE ALARM MANUAL STATION (46" MH UNLESS NOTED OTHERWISE). SUBSCRIPT "K" INDICATES KEY OPERATED.
S	CEILING MOUNTED SMOKE DETECTOR.
H	CEILING MOUNTED HEAT DETECTOR.
S S/R	DUCT MOUNTED SMOKE DETECTOR. SUBSCRIPT "S" INDICATES SUPPLY. SUBSCRIPT "R" INDICATES RETURN.
H S/R	DUCT MOUNTED HEAT DETECTOR. SUBSCRIPT "S" INDICATES SUPPLY. SUBSCRIPT "R" INDICATES RETURN.
B T/R	BEAM DETECTOR. SUBSCRIPT "T" INDICATES TRANSMITTER FUNCTION. SUBSCRIPT "R" INDICATES RECEIVER FUNCTION.
C	ELECTRIC RELEASE DOOR CLOSER.
D	ELECTRO-MAGNETIC DOOR HOLDER.
FS	WATER FLOW SWITCH.
V	VALVE SUPERVISORY SWITCH.
W R	CEILING MOUNTED REMOTE TEST STATION AND ALARM INDICATOR LIGHT FOR DUCT DETECTOR. SUBSCRIPT "W" INDICATES WALL MOUNTED.
SD	SMOKE DAMPER.
FT	FIRE FIGHTER'S TELEPHONE (60" MH UNLESS NOTED OTHERWISE).
PS	PRESSURE SWITCH.
AM C/I	ADDRESSABLE MODULE. SUBSCRIPT "I" INDICATES INPUT. SUBSCRIPT "C" INDICATES CONTROL.
PIV	POST INDICATOR VALVE.
K S	KNOX BOX (46" MH UNLESS NOTED OTHERWISE). SUBSCRIPT "S" INDICATES SUPERVISED UNIT.
A	AIR SAMPLING SMOKE DETECTOR SAMPLING PORT.

TECHNOLOGY SYMBOLS WITH ELEC. REQUIREMENTS

	CONDUIT SLEEVE / FIRE RATED SLEEVE ASSEMBLY THRU WALL (1-2" SLEEVE UNLESS NOTED OTHERWISE) PER DIV 26.
X	WALL MOUNTED DATA OUTLET (18" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT(S) TO ABOVE CORRIDOR CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27. SUBSCRIPT "X" DESIGNATES QUANTITY OF DATA CABLES. REFER TO FACEPLATE DETAILS.
	WALL MOUNTED VOICE/DATA OUTLET (18" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT(S) TO ABOVE CORRIDOR CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27. REFER TO FACEPLATE DETAILS.
	WALL MOUNTED PHONE OUTLET (46" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. JACKS, FACEPLATE AND CABLING PER DIV 27. REFER TO FACEPLATE DETAILS.
AP	WALL MOUNTED WIRELESS ACCESS POINT (96" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT TO ABOVE ACCESSIBLE CEILING PER DIV 26. WAP AND CABLING PER DIV 27.
I X	WALL MOUNTED AV OUTLET (18" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUITS TO ABOVE ACCESSIBLE CEILING PER DIV 26. REFER TO FACEPLATE DETAILS. JACKS, FACEPLATE AND CABLING PER DIV 27. SUBSCRIPT "X" INDICATES ALTERNATE CONFIGURATION.
J	TELECOM BOX AND CONDUIT PER DIV 26, REFER TO PLANS.
R X	WALL MOUNTED AV OUTLET (84" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT PER DIV 26. REFER TO FACEPLATE DETAILS. JACKS, FACEPLATE AND CABLING PER DIV 27. SUBSCRIPT "X" INDICATES ALTERNATE CONFIGURATION.
V X	WALL MOUNTED AV OUTLET (44" MH UNLESS NOTED OTHERWISE). BOX WITH CONDUIT PER DIV 26. REFER TO FACEPLATE DETAILS. JACKS, FACEPLATE AND CABLING PER DIV 27. SUBSCRIPT "X" INDICATES ALTERNATE CONFIGURATION.
W	CUSTOM OUTLET IN SURFACE RACEWAY. SURFACE RACEWAY PER DIV 26. OUTLET JACKS, FACEPLATE AND CABLING PER DIV 27.
# X	FLOOR BOX PER DIV 26. # INDICATES TYPE, REFER TO FLOOR BOX (FB) SCHEDULE. SUBSCRIPT "X" INDICATES TECHNOLOGY DEVICE(S), REFER TO TECHNOLOGY DETAILS.
# X	POKE-THRU PER DIV 26. # INDICATES TYPE, REFER TO POKE-THRU (PT) SCHEDULE. SUBSCRIPT "X" INDICATES TECHNOLOGY DEVICE(S), REFER TO TECHNOLOGY DETAILS.

LUMINAIRE SYMBOLS

A a	LIGHTING FIXTURE. CAPITAL LETTER DENOTES FIXTURE TYPE, LOWER CASE LETTER DENOTES SWITCHING ARRANGEMENT.
	LIGHTING FIXTURE ON NIGHT LIGHT OR EMERGENCY CIRCUIT.
	EXIT LIGHTING FIXTURE, ARROWS AS INDICATED.

ABBREVIATIONS

AAP - AREA ALARM PANEL - MEDICAL GAS
ACC - ACCESS
ADJ - ADJUSTABLE
AF - ARC FAULT CIRCUIT INTERRUPTER
AFCI - ARC FAULT CIRCUIT INTERRUPTER
AFF - ABOVE FINISHED FLOOR TO BOTTOM OF ITEM
AFG - ABOVE FINISHED GRADE TO BOTTOM OF ITEM
ALT - ALTERNATE
AP - ACCESS PANEL
APPROX - APPROXIMATE
ARCH - ARCHITECT OR ARCHITECTURAL
ASSY - ASSEMBLY
ATS - AUTOMATIC TRANSFER SWITCH

BLDG - BUILDING
BOE - BOTTOM OF EQUIPMENT
BOT - BOTTOM
BTWN - BETWEEN

CFCI - CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CKT - CIRCUIT
CLG - CEILING
CMU - CONCRETE MASONRY UNIT
CONN - CONNECT OR CONNECTION
CONTR - CONTRACTOR
CORR - CORRIDOR
CTR - CENTER

D - DEPTH
DET - DETAIL
DIA - DIAMETER
DIM - DIMENSION
DIV - DIVISION
DN - DOWN
DWG - DRAWING

EA - EACH
EC - ELECTRICAL CONTRACTOR (DIVISION 26)
EJ - EXPANSION JOINT
ELEC - ELECTRICAL
ELEV - ELEVATION OR ELEVATOR
EM - EMERGENCY
EQ - EQUAL
EQS - EQUIPMENT SUPPLIER
EQUIP - EQUIPMENT
E/R - EXISTING TO BE RELOCATED
EX - EXISTING TO REMAIN
EXP - EXPANSION
EXT - EXTERIOR

FCE - FIRE CONTROL EQUIPMENT
FF - FINISHED FLOOR ELEVATION
FLR - FLOOR
FSC - FIRE SUPPRESSION CONTRACTOR (DIVISION 21)
FT - FEET
FTG - FOOTING

GC - GENERAL CONTRACTOR
GF - GROUND FAULT CIRCUIT INTERRUPTER
GFCI - GROUND FAULT CIRCUIT INTERRUPTER OR GOVERNMENT FURNISHED CONTRACTOR INSTALLED
GFFT - GROUND FAULT FEED THRU

HC - HVAC CONTRACTOR (DIVISION 23)
HP - HORSE POWER OR HIGH POINT
HVAC - HEATING, VENTILATING, AND AIR CONDITIONING

ID - INSIDE DIAMETER
IN - INCHES

KEC - KITCHEN EQUIPMENT CONTRACTOR

L - LENGTH
LBS - POUNDS

MAP - MASTER ALARM PANEL (MEDICAL GAS)
MAX - MAXIMUM
MEZZ - MEZZANINE
MFR - MANUFACTURER
MH - MANHOLE OR MOUNTING HEIGHT TO CENTER LINE OF ITEM
MIN - MINIMUM OR MINUTE
MISC - MISCELLANEOUS
MTD - MOUNTED
MTG - MOUNTING

NIC - NOT IN CONTRACT
NOM - NOMINAL
NTS - NOT TO SCALE

OD - OUTSIDE DIAMETER
OFCI - OWNER FURNISHED CONTRACTOR INSTALLED
OFOI - OWNER FURNISHED OWNER INSTALLED

PC - PLUMBING CONTRACTOR (DIVISION 22)
PLBG - PLUMBING

RAD - RADIUS
REC - RECESSED
REQD - REQUIRED
RI - ROUGH-IN

S - SURFACE MOUNTED
SC - SECURITY CONTRACTOR
SCH - SCHEDULE
SHT - SHEET
SMS - SECURITY MANAGEMENT SYSTEM
SPEC - SPECIFICATIONS
SQ - SQUARE
SS - STAINLESS STEEL
STD - STANDARD
STRUC - STRUCTURAL OR STRUCTURE
SUC - SITE UTILITY CONTRACTOR

TC - TECHNOLOGY CONTRACTOR
TEMP - TEMPERATURE
TOE - TOP OF EQUIPMENT
TYP - TYPICAL

UNO - UNLESS NOTED OTHERWISE

VFD - VARIABLE FREQUENCY DRIVE
VOL - VOLUME

W/ - WITH
W/O - WITHOUT
WP - WEATHERPROOF

ZVC - ZONE VALVE CABINET

GENERAL FLOOR PLAN NOTES

B / E2	DETAIL: B = DETAIL DESIGNATION E2 = SHEET WHERE DETAIL IS LOCATED
1 / E2	SECTION: 1 = SECTION DESIGNATION E2 = SHEET WHERE SECTION IS LOCATED
T2 1	ELEVATION: 1 = ELEVATION DESIGNATION T2 = SHEET WHERE ELEVATION IS LOCATED
3	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN.
3	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
3	LIGHTING CONTROL DETAIL NOTE. APPLIES TO THE LIGHTING CONTROL SEQUENCE OF OPERATIONS SCHEDULE FOR ROOM CONTROL.
3	DEVICE QUANTITY - POWER NOTE. REFER TO DEVICE QUANTITIES - POWER SCHEDULE.
	LADDER TRAY, 12" x 4" DEEP UNLESS NOTED OTHERWISE.
	CABLE TRAY, 12" x 4" DEEP UNLESS NOTED OTHERWISE.
4"	WIRE & CONDUIT IN WALL OR ABOVE CEILING.
4"	WIRE & CONDUIT IN OR BELOW SLAB OR GRADE.
4"	CONDUIT TO BE REMOVED.
EX	EXISTING WIRE & CONDUIT TO REMAIN.
DAT	CONDUIT FOR DATA CIRCUITRY.
EM	WIRE & CONDUIT FOR EMERGENCY CIRCUITRY.
FA	WIRE & CONDUIT FOR FIRE ALARM CIRCUITRY.
I	WIRE & CONDUIT FOR INTERCOM SYSTEM CIRCUITRY.
NC	WIRE & CONDUIT FOR NURSE CALL CIRCUITRY.
NL	WIRE & CONDUIT FOR NIGHT LIGHT CIRCUITRY.
PHO	CONDUIT FOR PHONE CIRCUITRY.
S	WIRE & CONDUIT FOR SOUND SYSTEM CIRCUITRY.
SEC	WIRE & CONDUIT FOR SECURITY SYSTEM CIRCUITRY.
TV	WIRE & CONDUIT FOR TELEVISION SYSTEM CIRCUITRY.
W	WIRE RUN IN SURFACE WIREWAY.
CM	CABLE MANAGEMENT SYSTEM PATHWAY.
X - 1,2	EACH ARROWHEAD REPRESENTS ONE COMPLETE CIRCUIT; "X" DENOTES PANEL NAME; NUMBER(S) DENOTES CIRCUIT(S).

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

GENERAL NOTES

A. PROVIDE A SEPARATE NEUTRAL FOR ALL RECEPTACLE AND DIMMING CIRCUITS.

B. PROVIDE A GROUND WIRE WITH ALL FEEDERS AND BRANCH CIRCUITS.

C. CONDUITS SHALL BE SIZED FOR .75" MINIMUM.

D. NEW SYSTEM WIRING FOR TELEPHONE AND DATA WILL BE OPEN WIRED. ELECTRICAL CONTRACTOR WILL PROVIDE "J" HOOKS ON THREE (3) FOOT CENTERS DOWN ALL CORRIDORS AND WITHIN LARGE AREAS.

E. FIRESTOP ALL PENETRATIONS THRU WALLS.

F. REMOVAL OF ELECTRICAL ITEMS SHALL INCLUDE REMOVALS BACK TO THE EXISTING ELECTRICAL DISTRIBUTION CENTER, PANEL OR LAST ACTIVE OUTLET, FIXTURE, DEVICE REMAINING.

G. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHTS, DIFFUSERS, SPEAKERS, SPRINKLERS, ETC.

H. BRANCH CIRCUIT WIRE SIZING CHART TO BE UTILIZED AS GUIDELINE FOR VOLTAGE DROP COMPENSATION, INCREASE CONDUIT SIZING PER WIRE SIZE.

A) <u>20A – 120V CIRCUITS</u>:
#12 WIRE – 60FT. LENGTH MAX.
#10WIRE – 94FT. LENGTH MAX.
#8 WIRE – 137FT. LENGTH MAX
#6 WIRE – 218FT. LENGTH MAX.

B) <u>20A – 277V CIRCUITS</u>:
#12 WIRE – 138FT. LENGTH MAX.
#10WIRE – 219FT. LENGTH MAX.
#8 WIRE – 318FT. LENGTH MAX
#6 WIRE – 504FT. LENGTH MAX.

I. FIRE ALARM CONTRACTOR SHALL INTERLOCK THE NEW HYATT BALLROOM AV SYSTEM WITH THE FIRE ALARM VOICE COMMAND SYSTEM. UPON ACTIVATION OF THE FIRE ALARM SYSTEM THE BALLROOM AV SOUND SYSTEM SHALL BE SILENCED. PROVIDE ALL PROGRAMMING, HARDWARE AND INTERLOCKS FOR THIS. THE AV SYSTEM WAS DESIGNED WITH AN INPUT FOR THIS PURPOSE.

E_SHEET LIST

SHEET NUMBER	SHEET NAME
E001	ELECTRICAL LEGENDS AND INDEX
E002	ELECTRICAL LOAD CALCULATIONS AND DETAILS
E003	ELECTRICAL SCHEDULES AND DETAILS
E004	COMCHECK (INTERIOR LIGHTING)
E100	ELECTRICAL DEMOLITION PLAN
E200	PROPOSED ELECTRICAL PLANS

HEAPY
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PROJECT NO. 2025-07170

SCHOOLEY CALDWELL
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Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 Slate Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street,
Columbus Ohio 43215

2025-07170
STATE OF OHIO
WILLIAM F. THOMAS
E-66236
REGISTERED PROFESSIONAL ENGINEER
10/8/2025

ELECTRICAL LEGENDS AND INDEX

Electrical

E001

2025.10.08

25300

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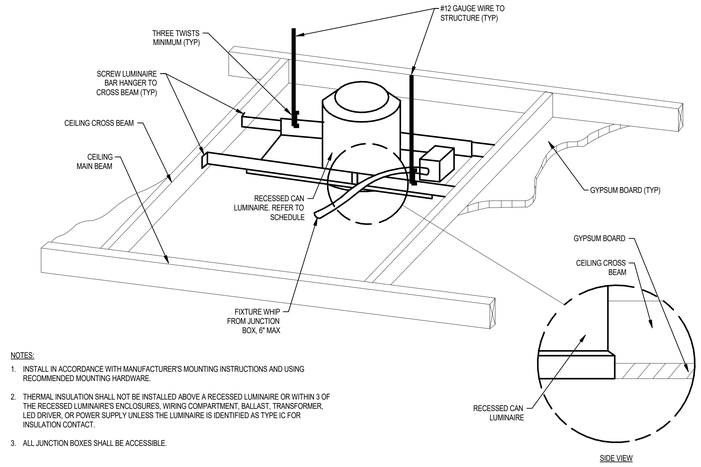
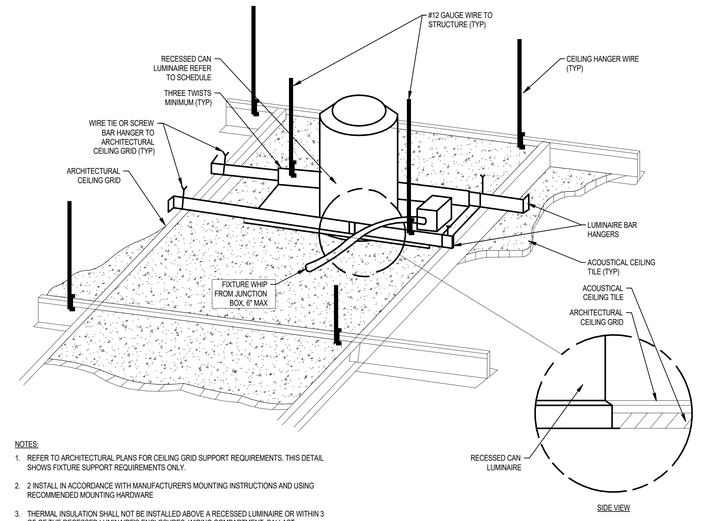


NOTES:

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S MOUNTING INSTRUCTIONS AND USING RECOMMENDED MOUNTING HARDWARE.
2. THERMAL INSULATION SHALL NOT BE INSTALLED ABOVE A RECESSED LUMINAIRE OR WITHIN 3 OF THE RECESSED LUMINAIRE'S ENCLOSURES, WIRING COMPARTMENT, BALLAST, TRANSFORMER, LED DRIVER, OR POWER SUPPLY UNLESS THE LUMINAIRE IS IDENTIFIED AS TYPE IC FOR INSULATION CONTACT.
3. ALL JUNCTION BOXES SHALL BE ACCESSIBLE.

1 DOWNLIGHT MOUNTING GYPSUM BOARD DETAIL

SCALE: NONE



NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR CEILING GRID SUPPORT REQUIREMENTS. THIS DETAIL SHOWS FIXTURE SUPPORT REQUIREMENTS ONLY.
2. 2 INSTALL IN ACCORDANCE WITH MANUFACTURER'S MOUNTING INSTRUCTIONS AND USING RECOMMENDED MOUNTING HARDWARE
3. THERMAL INSULATION SHALL NOT BE INSTALLED ABOVE A RECESSED LUMINAIRE OR WITHIN 3 OF OF THE RECESSED LUMINAIRE'S ENCLOSURES, WIRING COMPARTMENT, BALLAST, TRANSFORMER, LED DRIVER, OR POWER SUPPLY UNLESS THE LUMINAIRE IS IDENTIFIED AS TYPE IC FOR INSULATION CONTACT.

2 DOWNLIGHT MOUNTING LAY-IN CEILING DETAIL

SCALE: NONE

ELECTRICAL LOAD ANALYSIS

LOADS TO BE REMOVED:

TYPE	QUANTITY	LOAD PER FIXTURE (VA)	SUB-TOTAL (VA)
DOWNLIGHT FIXTURES	37	50	1850
1X4 LIGHT FIXTURES	7	150	1050
RECEPTACLES	2	180	360

TOTAL LOADS TO BE REMOVED: 3260 VA

LOADS TO BE ADDED:

TYPE	QUANTITY	LOAD PER FIXTURE (VA)	SUB-TOTAL (VA)
LIGHTS TYPE A2/A2E	48	19.5	936
LIGHTS TYPE B2/B2E	2	14.7	29.4
LIGHTS TYPE G	2	107	214
DRINKING FOUNTAIN	1	360	360
RECEPTACLES	11	180	1980
RP-1	1	40	40
EX-H-1	1	1040	1040

TOTAL LOADS TO BE REMOVED: 4599.4 VA

TOTAL NET CHANGE:	1339.4 VA (INCREASE)
LIGHTING LOADS AT 277V:	1720.6 VA (DECREASE)
POWER RECEPTACLES AT 120V:	3060 VA (INCREASE)

NOTES:

1. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL FIELD-VERIFY THE EXISTING SPARE BREAKERS, AVALIABLE SPACES, AND CONNECTED LOADS TO EXISTING PANELS IN THE ELECTRICAL ROOM.
2. THE ELECTRICAL CONTRACTOR SHALL CONFIRM AND DOCUMENT THE NUMBER OF AVALIABLE SPARE BREAKERS AND SPACES BEFORE BEGINNING ANY WORK.
3. THE CONTRACTOR SHALL VERIFY ALL LOADS TO BE REMOVED AND SHALL REUSE EXISTING CIRCUITS FOR THE SAME INTENT AND LOCATION, PROVIDED THE NEW LOAD IS EQUAL TO OR LESS THAN THE REMOVED LOAD.
4. IF ADDITIONAL BRANCH CIRCUITS ARE REQUIRED, THE CONTRACTOR SHALL UTILIZE A SPARE BREAKER IN THE SAME PANEL AS THE EXISTING CIRCUITS. IF NO SPARE BREAKER IS AVALIABLE, PROVIDE NEW 20A/1P CIRCUIT BREAKERS AS REQUIRED TO CONNECT THE LOADS. THE CONTRACTOR SHALL ENSURE THAT NEW LOADS DO NOT OVERLOAD THE PANEL.
5. CONTRACTOR SHALL VERIFY, TEST, AND LABEL EACH EXISTING BRANCH CIRCUIT IN EACH EXISTING PANEL. EXISTING UNUSED BREAKERS AND ANY BREAKER MADE UNUSED BY DEMOLITION SHALL BE LABELED AS "SPARE" AND SET TO THE OFF POSITION. ALL PANELS, EXISTING AND NEW, SHALL HAVE ACCURATE TYPE WRITTEN PANEL INDEX CARDS BY THE COMPLETION OF CONSTRUCTION. MANY EXISTING CIRCUITS ARE UNMARKED OR INCONCLUSIVELY MARKED. CONTRACTOR SHALL FIELD DETERMINE ALL INTERIOR LIGHTING CIRCUITS.

DETERMINING EXISTING LOADS (NEC 220.87):

- THE CALCULATION OF A FEEDER FOR EXISTING INSTALLATIONS SHALL BE PERMITTED TO USE ACTUAL MAXIMUM DEMAND TO DETERMINE THE EXISTING LOAD UNDER ALL OF THE FOLLOWING CONDITION: THE MAXIMUM DEMAND AT 125% PLUS THE NEW LOAD DOES NOT EXCEED THE AMPACITY OF THE FEEDER OR RATING OF THE PANEL.

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Lighting Design
TecStudio Inc.
7510 State Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

2025-07170

STATE OF OHIO
WILLIAM ROBERT HEAPY
E-66636
REGISTERED
PROFESSIONAL ENGINEER

10/8/2025

ELECTRICAL LOAD CALCULATIONS AND DETAILS

E002

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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LIGHTING CONTROL SEQUENCE OF OPERATIONS

NOTES:
A. LIGHTING IN COMMON AREAS IS INTENDED TO UTILIZE THE EXISTING LIGHTING CONTROL, RELAY, DIMMER PANELS, ETC. THE ELECTRICAL CONTRACTOR SHALL MAKE ALL NECESSARY MODIFICATIONS TO THE EXISTING SYSTEM TO ACCOMMODATE THE...

		OCCUPANCY SENSOR				TIME CLOCK					WALL SWITCH					DAYLIGHT SENSOR				INTEGRATION POINTS					
CONTROL NUMBER	TYPICAL CONTROL	VACANCY MODE (MANUAL ON)	OCCUPANCY MODE (AUTO ON)	SENSOR TIME OUT PERIOD (IN MINUTES)	HIGH / LOW OPERATION: OCCUPIED: 100% / VACANT: 30%	SCHEDULED ON AT	SCHEDULED OFF AT	OCCUPIED TIME START	UNOCCUPIED TIME START	AFTER HOURS OVERRIDE SWITCH (2 HOURS)	ON / OFF ONLY	DIMMER SWITCH	KEY SWITCH	SCENE SWITCH	GRAPHICAL WALL STATION	INDOOR - ON / OFF ONLY	INDOOR - DIMMING	LIGHT LEVEL MAINTAINED AT (IN FOOTCANDLES @ 2'-6" A.F.F.)	EXTERIOR PHOTOCELL - ON / OFF	OCCUPANCY STATUS (BINARY INPUT - READ ONLY - OCCUPIED / UNOCCUPIED)	DIMMING OUTPUT LEVEL (ANALOG VALUE - READ / WRITE - 0-100%)	RELAY STATUS (BINARY VALUE - READ / WRITE - ON / OFF)	MEASURED LIGHT LEVEL (ANALOG INPUT - 0-212FC)	SEE NOTE	DETAIL NUMBER
1	OCCUPANCY W/O DIMMER		•								•														2
2	OCCUPANCY WITH DIMMER		•									•													1

LUMINAIRE SCHEDULE

TYPE	LUMINAIRE WATTS	LUMINAIRE VOLTS	LAMP TYPE	DESCRIPTION	MOUNTING	MANUFACTURER	CATALOG NUMBER	CONTROL PROTOCOL	ALTERNATE	REMARKS
A2	20.6	UNV	INTEGRAL 3500K LED, 2000 LUMENS	FULLY RECESSED LED DOWNLIGHT WITH 4" DIAMETER APERTURE, WIDE OPTIC WITH 1.0 S/MH DISTRIBUTION, MATTE DIFFUSE REFLECTOR AND INTEGRAL DIMMABLE DRIVER.	RECESSED	COOPER LIGHTING	HC4-20-D010-HM4-1020-930-41-MD-H-WF	0-10	GOTHAM, DAYBRITE	
A2E	20.6	UNV	INTEGRAL 3500K LED, 2000 LUMENS	FULLY RECESSED LED DOWNLIGHT WITH 4" DIAMETER APERTURE, 10 EMERGENCY BATTERY PACK, WIDE OPTIC WITH 1.0 S/MH DISTRIBUTION, MATTE DIFFUSE REFLECTOR AND INTEGRAL DIMMABLE DRIVER.	RECESSED	COOPER LIGHTING	HC4-20-D010-HM4-1020-930-41-MD-H-WF-ELSD	0-10	GOTHAM, DAYBRITE	
B2	15	UNV	INTEGRAL 3500K LED, 90 CRI, 1500 LUMENS	FULLY RECESSED LED LENSED WALL WASHER WITH 4" DIAMETER APERTURE, HAZE ALZAK REFELCTOR AND INTEGRAL DIMMABLE DRIVER	RECESSED	GOTHAM LIGHITNG	EVO4LW-35/15-ARLD-MVOLT-EZ1-TRW	0-10V	PORTFOLIO, LIGHTOLIER	
B2E	15	UNV	INTEGRAL 3500K LED, 90 CRI, 1500 LUMENS	SAME AS TYPE "B2" EXCEPT LOWER LUMEN OUTPUT AND EMERGENCY BATTERY PACK	RECESSED	GOTHAM LIGHITNG	EVO4LW-35/15-ARLD-MVOLT-EZ1-TRW-ELRSD	0-10V	PORTFOLIO, LIGHTOLIER	
G	107	120V	INTEGRAL 3500K LED, 90 CRI, 1500 LUMENS	LED BACKLIT VANITY MIRROR, 60"W X 36"H X 1.75"D 3000K, 13,513 LUMEN OUTPUT	SURFACE	INTEGRITY LIGHTED VANITY MIRROR	INT2.3-60.00X 36.00-LSE-30K	0-10V	N/A	

Panel: LP-BR-1

Location:
Supply From:
Voltage: 120/208 Wye-3PH-4W
Mounting: Surface
Enclosure: Type 1
A.I.C. Rating: EXISTING
Mains Type: MLO
Mains Rating: 225 A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	CLG LTS ROOM 505...	20 A	1	720 VA	720 VA					1	20 A	CLG LTS BALLROOM...	2
3	CLG LTS N CENTER ...	20 A	1			720 VA	720 VA			1	20 A	CLG LTS ROOM 501...	4
5	CLG LTS ROOM 501 ...	20 A	1					720 VA	720 VA	1	20 A	CLG LTS ROOM 501...	6
7	CLG LTS ROOM 501...	20 A	1	720 VA	720 VA					1	20 A	RECEPT BALLROOM...	8
9	CLG LIGHTS ROOM...	20 A	1			720 VA	720 VA			1	20 A	RECPT BALLROOM...	10
11	CLG LIGHTS ROOM...	20 A	1					720 VA	720 VA	1	20 A	RECEPT ROOM 501...	12
13	RECEPT BALLROOM...	20 A	1	720 VA	720 VA					1	20 A	RECEPT ROOM 505 S...	14
15	RECEPT BALLROOM...	20 A	1			720 VA	720 VA			1	20 A	RECEPT BALLROOM...	16
17	RECEPT ROOM 501 ...	20 A	1					720 VA	720 VA	1	20 A	RECEPT ROOM 506...	18
19	RECEPT THIS ROOM...	20 A	1	720 VA	720 VA					1	20 A	CONNECTOR...	20
21	RECEPT RESTROOMS	20 A	1			720 VA	720 VA			1	20 A	RECEPT ROOM 506...	22
23	EXHAUST FAN ON...	20 A	1					720 VA	720 VA	1	20 A	CLOCK OUTLET...	24
25	CABINET HEATER N...	20 A	1	720 VA	720 VA					1	20 A	RECEPTACLES...	26
27	EXHAUST FAN TXH3...	20 A	1			720 VA	720 VA			1	20 A	RECEPTACLE...	28
29	DOOR CHECKS SW...	20 A	1					720 VA	720 VA	1	20 A	DOOR CHECKS ROO...	30
31	DOOR CHECKS SE...	20 A	1	720 VA	720 VA					1	20 A	DOOR CHECKS ROO...	32
33		20 A	1			720 VA	720 VA			1	20 A	EMERGENCY...	34
35		20 A	1					720 VA	720 VA	1	20 A	AV CABINET...	36
37		20 A	1	720 VA	720 VA					1	20 A	AV CABINET...	38
39	DOOR CHECKS ROO...	20 A	1			720 VA	720 VA			1	20 A	DOOR CHECKS ROO...	40
41		20 A	1					720 VA	720 VA	1	20 A	SPARE RM #506...	42
			Total Load:	10.08 kVA		10.08 kVA		10.08 kVA					

Load Classification	Connected...	Demand Factor	Estimated...	Panel Totals	
Spare	30240 VA	100.00%	30240 VA		
				Total Conn. Load:	30.24 kVA
				Total Est. Demand:	30.24 kVA
				Total Conn.:	84 A
				Total Est. Demand:	84 A

Notes: EXISTING PANEL, ALL CIRCUITS ARE EXISTING AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL LOAD ANALYSIS ON SHEET E002

TOTAL CONNECTED		ESTIMATED DEMAND
30.24 kVA		30.24 kVA (84 A)

Panel: LP-BR-2

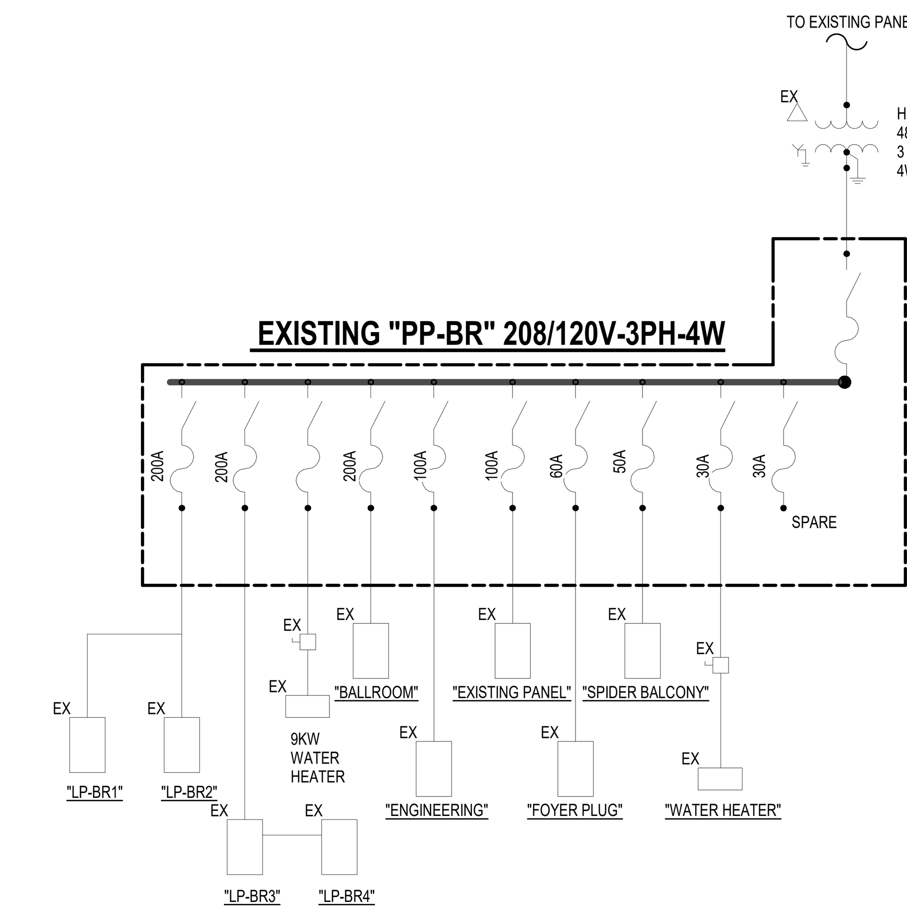
Location:
Supply From:
Voltage: 120/208 Wye-3PH-4W
Mounting: Surface
Enclosure: Type 1
A.I.C. Rating: EXISTING
Mains Type: MLO
Mains Rating: 225 A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RECP RM 504 N...	20 A	1	720 VA	600 VA					1	20 A	RECP RM 504 NW...	2
3	RECP RM 504 NE...	20 A	1			720 VA	600 VA			1	20 A	RECP RM 504 NW...	4
5	RECP RM 504 NE...	20 A	1					720 VA	600 VA	1	20 A	RECP RM 504 W...	6
7	COFFEE HV2	20 A	3	6000...	600 VA					1	20 A	RECP RM 504 WEST...	8
9	--	--	--			6000...	600 VA			1	20 A	RECP RM 504 WEST...	10
11	--	--	--					6000...	600 VA	1	20 A	RECP RM 504 SW...	12
13	RECP RM 504 SW...	20 A	1	720 VA	600 VA					1	20 A	RECP RM 504 SW...	14
15	RECP RM 504 SOUT...	20 A	1			720 VA	600 VA			1	20 A	RECP RM 504 SW...	16
17	ATT TELEPHONE	20 A	1					720 VA	600 VA	1	20 A	NORTH EAST WALL 2...	18
19	WATER HEATER FO...	20 A	2	1000...	600 VA					1	20 A	RECP ROOM SOUTH...	20
21	--	--	--			1000...	600 VA			1	20 A	RECPT BALLROOM N...	22
23	RECP M&W BR	20 A	1					900 VA	600 VA	1	20 A	ONE RECPT NORTH...	24
25	WTR FNTN & PUMP	20 A	1	680 VA	120 VA					1	20 A	RECPT BALLROOM S...	26
27	BALLROOM UNIT...	20 A	1			720 VA	1200...			1	20 A	SPARE	28
29	CONTROLS FOR BAL...	20 A	1					720 VA	720 VA	1	20 A	RECP VIP RM & BR	30
31													32
33													34
35													36
37													38
39													40
41													42
			Total Load:	11.64 kVA		12.76 kVA		12.18 kVA					

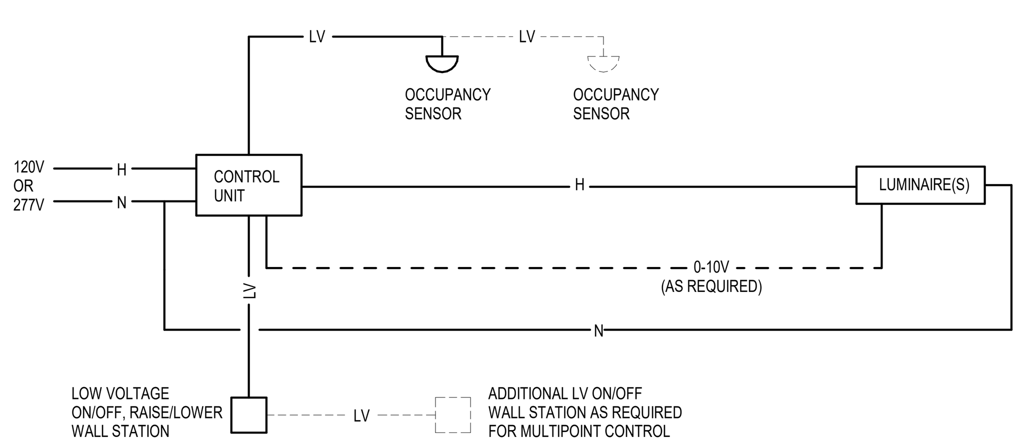
Load Classification	Connected...	Demand Factor	Estimated...	Panel Totals	
Receptacle	2300 VA	100.00%	2300 VA		
Spare	34280 VA	100.00%	34280 VA	Total Conn. Load:	36.58 kVA
				Total Est. Demand:	36.58 kVA
				Total Conn.:	102 A
				Total Est. Demand:	102 A

Notes: EXISTING PANEL, ALL CIRCUITS ARE EXISTING AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL LOAD ANALYSIS ON SHEET E002

TOTAL CONNECTED		ESTIMATED DEMAND
36.58 kVA		36.58 kVA (102 A)



4 PARTIAL ELECTRICAL SINGLE-LINE
SCALE: NONE



LV LOW VOLTAGE CABLE AS REQUIRED BY MANUFACTURER
0-10V DIMMING SIGNAL AS REQUIRED BY MANUFACTURER

GENERAL NOTES

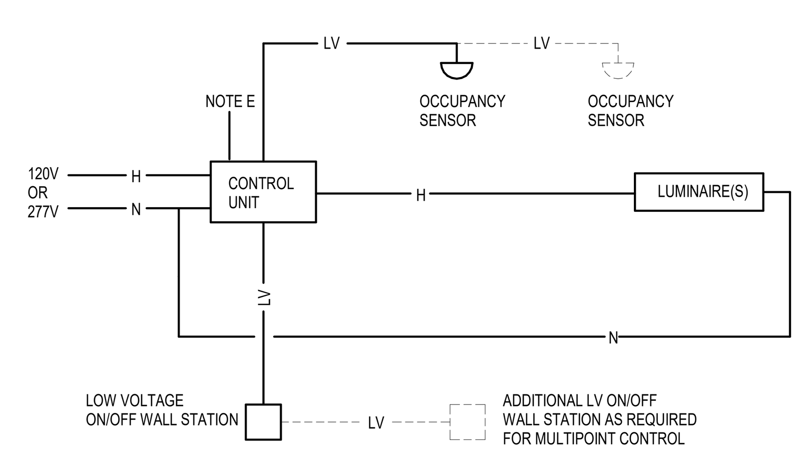
A OPERATION INTENT IS FOR LOW VOLTAGE DIMMING WITH AUTOMATIC ON/OFF AND MULTIPLE ZONE AND AUTO-OFF OPERATION OF ALL LIGHTS (VACANCY SIGNAL). CONTROL UNIT SHALL PROVIDE AN ON/OFF FOR ALL ZONES. WALL STATION(S) TO PROVIDE ON/OFF AND DIMMER LEVEL SWITCHES. REFER TO PLANS FOR QUANTITY OF LIGHTING ZONES.

B CONTROL UNIT SHALL BE MOUNTED IN AN ENCLOSURE PER MANUFACTURER'S DIRECTION. MOUNT CONTROL UNIT ABOVE ACCESSIBLE CEILING AT ROOM ENTRY.

C CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT QUANTITY OF OCCUPANCY SENSORS (FOR COMPLETE ROOM COVERAGE) AND PROVIDE ANY ADDITIONAL COMPONENTS FOR A COMPLETE AND OPERABLE SYSTEM. COORDINATE COMPONENT MOUNTING LOCATIONS FOR PROPER CLEARANCE AND ACCESSIBILITY PRIOR TO ROUGH-IN. COORDINATE PROGRAMMING OF ZONES AND WALL STATION CONFIGURATIONS, AS SHOWN ON DRAWINGS, WITH MANUFACTURER.

D DETAIL IS SCHEMATIC IN NATURE. REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT WIRING INFORMATION.

1 OCCUPANCY SENSOR WITH DIMMING
SCALE: NONE



LV LOW VOLTAGE CABLE AS REQUIRED BY MANUFACTURER
H HOT WIRE LINE VOLTAGE
N NEUTRAL WIRE LINE VOLTAGE

GENERAL NOTES

A OPERATION INTENT IS FOR LOW VOLTAGE AUTOMATIC ON/OFF AND MULTIPLE ZONE AND AUTO-OFF OPERATION OF ALL LIGHTS (VACANCY SIGNAL). CONTROL UNIT SHALL PROVIDE AN ON/OFF FOR ALL ZONES. WALL STATION(S) TO PROVIDE ON/OFF.

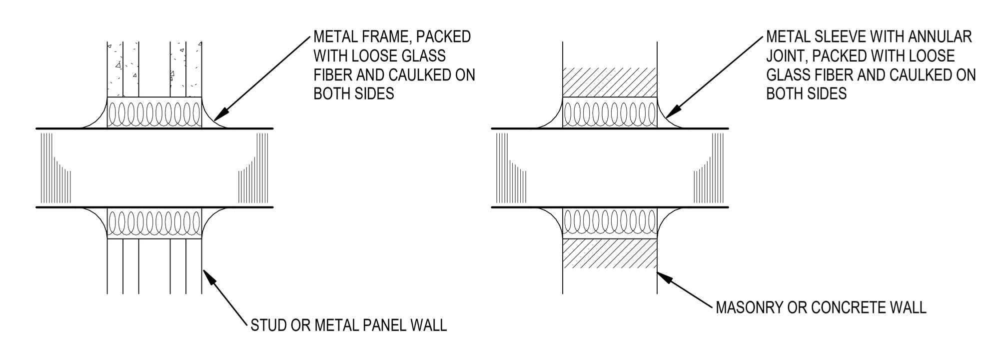
B CONTROL UNIT SHALL BE MOUNTED IN AN ENCLOSURE PER MANUFACTURER'S DIRECTION. MOUNT CONTROL UNIT ABOVE ACCESSIBLE CEILING AT ROOM ENTRY.

C CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT QUANTITY OF OCCUPANCY SENSORS (FOR COMPLETE ROOM COVERAGE) AND PROVIDE ANY ADDITIONAL COMPONENTS FOR A COMPLETE AND OPERABLE SYSTEM. COORDINATE COMPONENT MOUNTING LOCATIONS FOR PROPER CLEARANCE AND ACCESSIBILITY PRIOR TO ROUGH-IN. COORDINATE PROGRAMMING OF ZONES AND WALL STATION CONFIGURATIONS, AS SHOWN ON DRAWINGS, WITH MANUFACTURER.

D DETAIL IS SCHEMATIC IN NATURE. REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR EXACT WIRING INFORMATION.

E PROVIDE ISOLATED FORM C CONTACT OUTPUT INDICATING SPACE OCCUPIED FOR CONTROL, WHERE NOTED.

2 OCCUPANCY SENSOR WITHOUT DIMMING
SCALE: NONE



GENERAL DETAIL NOTES

A ALL PENETRATIONS FROM MECHANICAL SPACE SHALL BE SEALED IN THIS MANNER.

B ALL PENETRATIONS THRU AUDITORIUM, STUDIO AND EDIT ROOMS WALLS SHALL BE SEALED IN THIS MANNER.

C WHEN WALL IS FIRE RATED; DETAIL SHALL BE SIMILAR BUT FOLLOW MATERIAL INSTALLATION REQUIREMENTS PER MANUFACTURER AND FIRE PROOFING SPECIFICATIONS.

3 TYPICAL CONDUIT AND WALL PENETRATIONS
SCALE: 1/8" = 1'-0"

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Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 Slate Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date
3	RFI-23	08/26/2022

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

2025-07170
STATE OF OHIO WILLIAM F. THOMAS E-66236 REGISTERED PROFESSIONAL ENGINEER
10/8/2025

ELECTRICAL SCHEDULES AND DETAILS

Electrical

E003

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 90.1 (2019) Standard
Project Title: (#2025-07170) Hyatt Restrms
Project Type: Alteration

Construction Site:
400 North High Street
Columbus, Ohio 43215

Owner/Agent:
Hyatt Regency Bathroom Renovation

Designer/Contractor:
Heapy Engineering
1400 Dorothy Lane
Dayton, Ohio 45409

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-S308 (Common Space Types:Office - Enclosed <=250 sq ft)	233	0.74	172
2-Women's S307T & Men's S305T (Common Space Types:Restrooms)	855	0.63	539
3-VIP Restroom S308T (Common Space Types:Restrooms)	42	0.63	26
4-Gender Neutral Restroom S306T (Common Space Types:Restrooms)	80	0.63	50
5-North Prefunction S304 (Common Space Types:Lobby - General)	2020	0.84	1697
6-Utility S309 (Common Space Types:Storage <50 sq.ft.)	28	0.51	14
		Total Allowed Watts =	2499

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
S308 (Common Space Types: Office - Enclosed <=250 sq ft, 233 sq ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	7	21	144
Women's S307T & Men's S305T (Common Space Types: Restrooms, 855 sq ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	8	21	165
LED: 0: Backlit vanity mirror: Other:	1	2	107	214
VIP Restroom S308T (Common Space Types: Restrooms, 42 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	1	21	21
Gender Neutral Restroom S306T (Common Space Types: Restrooms, 80 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	2	21	41
North Prefunction S304 (Common Space Types: Lobby - General, 2020 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	29	21	597
LED: B2 / B2E: 4" WASHER: Other:	1	2	15	30
Utility S309 (Common Space Types: Storage <50 sq.ft., 28 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	1	21	21
			Total Proposed Watts =	1233

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2019) Standard requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

WILLIAM P THOMAS - SIGNATURE — Name - Title / Signature

10/8/2025 — Date

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 90.1 (2019) Standard

Requirements: 100.0% were addressed directly in the COMcheck software
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 9.4.3, 9.7 [PR4][3]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
8.4.3 [EL11][2]	New buildings have electrical energy use measurement devices installed. Where tenant spaces exist, each tenant is monitored separately. In buildings with a digital control system the energy use is transmitted to to control system and displayed graphically.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1 [EL1][3]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.1 [EL2][3]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.1f [EL13][3]	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.3 [EL4][3]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.6.2 [EL8][3]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
8.7.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.2.2.3 [FI18][3]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
9.4.4 [FI20][3]	At least 75% of all permanently installed lighting fixtures in dwelling units have >= 55 lm/W efficacy or a >= 45 lm/W total luminaire efficacy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

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Lighting Design
TecStudio Inc.
7510 State Rte 49
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

2025-07170

STATE OF OHIO — WILLIAM P. THOMAS — PE-66236 — REGISTERED PROFESSIONAL ENGINEER

10/8/2025

COMCHECK (INTERIOR LIGHTING)

Electrical

E004

2025.10.08

25300

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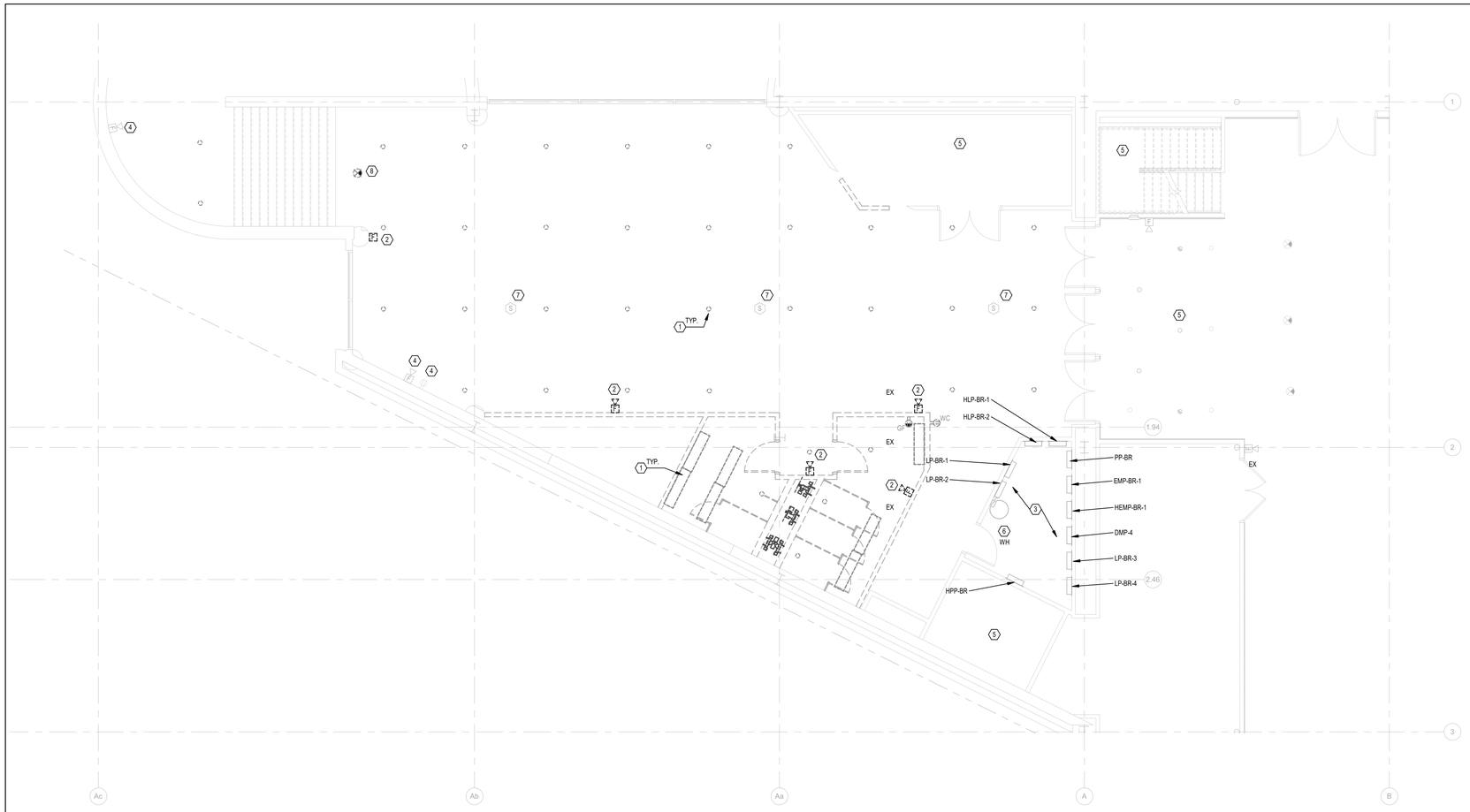

1 ELECTRICAL DEMOLITION PLAN

SCALE: 3/16" = 1'-0"

0 2 4 8 12 16

ELECTRICAL DEMOLITION PLAN NOTES

1. EXISTING LIGHT FIXTURES TO BE REMOVED.
2. EXISTING FIRE ALARM DEVICES TO BE REMOVED STORED AND RELOCATED. REFER TO PROPOSED POWER AND SYSTEMS PLAN FOR DETAILS.
3. EXISTING TO REMAIN ELECTRICAL PANELS.
4. EXISTING ELECTRICAL OR FIRE ALARM DEVICES SHALL REMAIN. THE ELECTRICAL CONTRACTOR SHALL FIELD-VERIFY THE CONDITION OF EACH DEVICE AND NOTIFY THE ARCHITECT IF ANY DEVICE IS FOUND TO BE MALFUNCTIONING OR PRESENTS AN AESTHETIC CONCERN.
5. ROOM/AREA NOT PART OF THE SCOPE OF WORK. EXISTING ELECTRICAL DEVICES SHALL REMAIN UNCHANGED UNLESS OTHERWISE DIRECTED BY OWNER/ARCHITECT.
6. EXISTING WATER HEATER TO BE REUSED. NO ELECTRICAL WORK IS REQUIRED UNLESS OTHERWISE SPECIFIED BY PLUMBING CONTRACTOR ON-SITE.
7. EXISTING SMOKE DETECTORS SHALL BE REMOVED, STORED AND REINSTALLED AT NEW WORK CEILING IN THE SAME COVERAGE PATTERN.
8. EXISTING EXIT SIGNAGE SHALL BE REMOVED AND REINSTALLED IN THE SAME LOCATION AFTER THE NEW CEILING AND WALL WORK IS COMPLETED IN THIS AREA UNLESS OTHERWISE DIRECTED BY THE OWNER/ARCHITECT.

GENERAL ELECTRICAL DEMOLITION NOTES

1. ELECTRICAL PLANS DO NOT INCLUDE A DETAILED DEMOLITION WORK FOR THE RENOVATED AREAS (WALLS, CEILINGS, ETC.).
2. REFER TO THE ARCHITECTURAL PLANS FOR ADDITIONAL DETAILS ABOUT DEMOLITION WORK.
3. THE ELECTRICAL CONTRACTOR SHALL REVIEW THESE PLANS AND COORDINATE WITH THE GENERAL CONTRACTOR ON SITE TO DETERMINE THE EXTENT OF THE DEMOLITION WORK AND PROJECT PHASING REQUIRED AND PROVIDE ACCORDINGLY. ALL ELECTRICAL DEMOLITION WORK SHOWN OR IMPLIED IN THE ELECTRICAL, MECHANICAL, PLUMBING, AND ARCHITECTURAL PLANS SHALL BE PART OF THE ELECTRICAL CONTRACTOR'S WORK.
2. ELECTRICAL DEMOLITION WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, REMOVING LIGHTING FIXTURES, RECEPTACLES, WIRE, CONDUIT, ETC. AS REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT AND REMODELING OF THE EXISTING FACILITY AS INDICATED ON THE PLANS.
3. CONTRACTOR SHALL REMOVE ANY EXPOSED WIRE, CONDUIT, HANGERS, CLAMPS, ETC. WHICH ARE NOT BEING UTILIZED FOR THE NEW INSTALLATION.
4. EXISTING WIRE AND CONDUITS CONCEALED ABOVE CEILING OR IN WALLS AND NOT BEING REUSED SHALL BE REMOVED. EXISTING CONDUITS, WHERE APPLICABLE, MAY BE REUSED.
5. REVISE ALL EXISTING PANEL DIRECTORIES TO REFLECT ALL REVISIONS. PROVIDE TYPED WRITTEN PANEL DIRECTORY AFTER RENOVATION WORK IS COMPLETE.
6. ALL LIGHTING FIXTURES BEING RELOCATED SHALL BE CLEANED, RE-LAMPED, AND REPAIRED TO PROPER WORKING CONDITION IF REQUIRED.
7. CONTRACTOR SHALL PROVIDE RUBBER MATS AND PLYWOOD COVERS TO ALL OWNER'S EQUIPMENT SUSCEPTIBLE TO DAMAGE DURING CONSTRUCTION. VERIFY SPECIFIC LOGATIONS WITH OWNER'S AUTHORIZED REPRESENTATIVE.
8. ALL WORK SHALL BE PERFORMED DURING TIME PERIODS ACCEPTABLE TO THE OWNER. SCHEDULE ALL WORK WITH THE OWNER'S AUTHORIZED REPRESENTATIVE 48 HOURS BEFORE PROCEEDING.
9. CONTRACTOR SHALL VISIT THE JOB SITE AND BE THOROUGHLY FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH THE WORK MUST BE PERFORMED.
10. ALL LIGHTING FIXTURES AND LAMPS BEING REMOVED SHALL BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER. COORDINATE DISPOSITION OF ALL FIXTURES WITH OWNER PRIOR TO REMOVAL.

CONTRACTOR NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL DRAWINGS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL PRIOR TO SUBMITTING A BID.
2. REPORT ANY DISCREPANCIES TO ARCHITECT OR OWNER PRIOR TO BID.
3. BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF THE WORK.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL EXISTING SITE CONDITIONS INCLUDING BUT NOT LIMITED TO, SERVICE LOCATION, SERVICE LAYOUTS, AND TELEPHONE LOCATION, ETC.
5. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED, OR FOR ANY DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE, WILL NOT BE ALLOWED.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ARCHITECT OF ANY DISCREPANCIES ENCOUNTERED ON THE PLANS OR IN EXISTING SITE CONDITIONS PRIOR TO SUBMISSION OF BID.
7. COORDINATE WITH OTHER TRADES FOR ITEMS IN THEIR SCOPE OF WORK WHICH WOULD REQUIRE ELECTRICAL WORK (DISCONNECTION,RECONNECTION, ETC) AND ARE NOT INDICATED ON ELECTRICAL DRAWINGS.

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Revision Schedule

#	Description	Date

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

2025-07170

STATE OF OHIO
WILLIAM E. HEAPY
E-66236
REGISTERED
PROFESSIONAL ENGINEER

10/8/2025

ELECTRICAL
DEMOLITION
PLAN

Electrical Demolition

E100

2025.10.08

25300

HEAPY

PROJECT NO. 2025-07170

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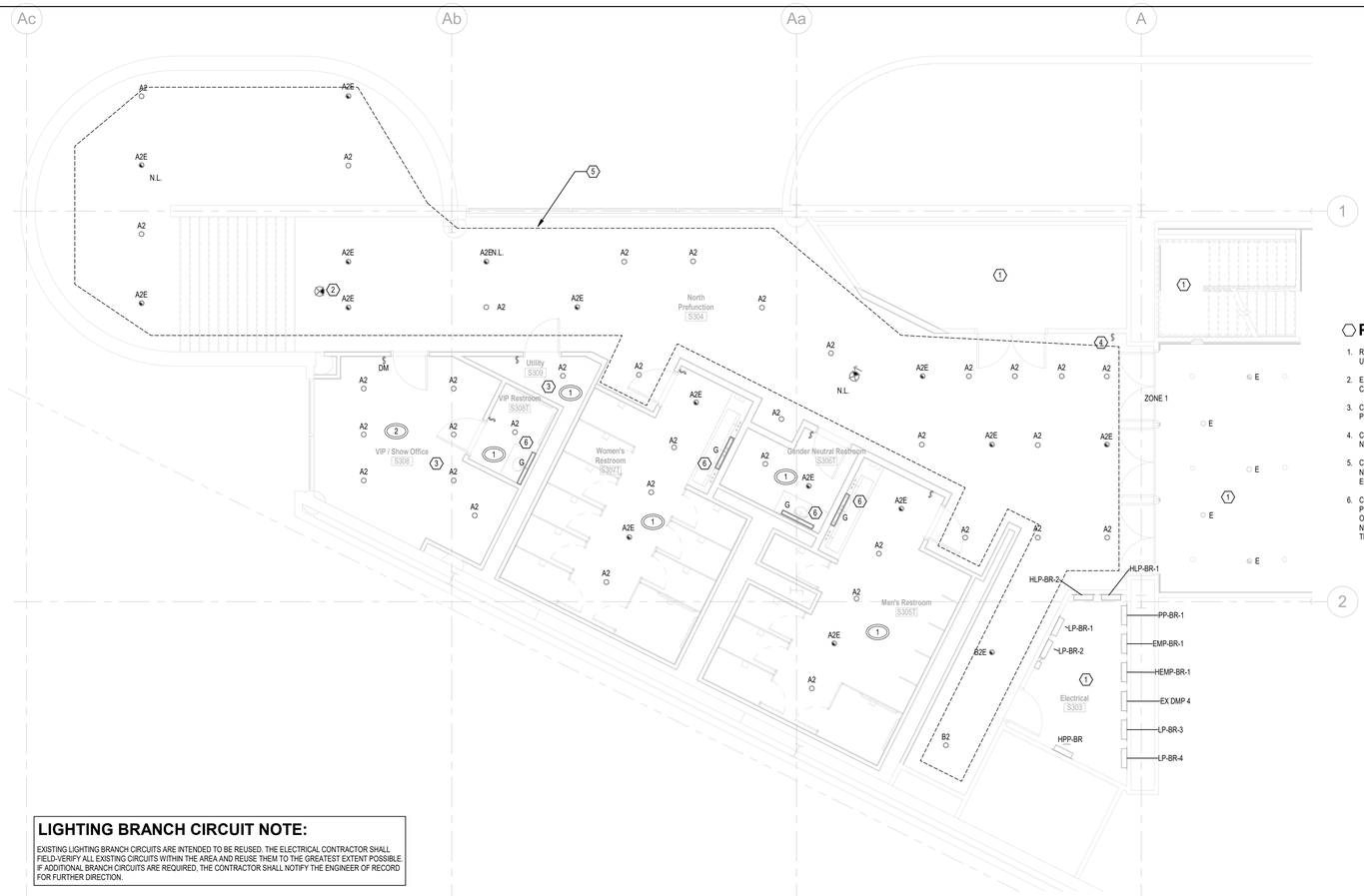


LIGHTING BRANCH CIRCUIT NOTE:

EXISTING LIGHTING BRANCH CIRCUITS ARE INTENDED TO BE REUSED. THE ELECTRICAL CONTRACTOR SHALL FIELD-VERIFY ALL EXISTING CIRCUITS WITHIN THE AREA AND REUSE THEM TO THE GREATEST EXTENT POSSIBLE. IF ADDITIONAL BRANCH CIRCUITS ARE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD FOR FURTHER DIRECTION.

1 PROPOSED LIGHTING PLAN

SCALE: 3/16" = 1'-0"

0 2 4 8 12 16

PROPOSED LIGHTING PLAN NOTES

1. ROOM/AREA NOT PART OF THE SCOPE OF WORK. EXISTING ELECTRICAL DEVICES SHALL REMAIN UNCHANGED UNLESS OTHERWISE DIRECTED BY OWNER/ARCHITECT.
2. EXISTING EXIT SIGNAGE SHALL BE REMOVED AND REINSTALLED IN THE SAME LOCATION AFTER THE NEW CEILING OR WALL WORK IS COMPLETED IN THIS AREA.
3. CONFIRM LOCATION, TYPE AND QUANTITY OF LIGHT FIXTURES IN THIS AREA WITH ARCHITECT/OWNER PRIOR TO START OF WORK. CONTACT ENGINEER OF RECORD IN CASE OF DISCREPANCIES.
4. COORDINATE LOCATION OF OVERRIDE SWITCH WITH ARCHITECT PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY WORK TO ENSURE COMPLETE OPERATIONAL SYSTEM.
5. COORDINATE WITH ARCHITECT FOR THE FINAL LOCATION OF NEW LIGHT FIXTURES IN THIS AREA. CONNECT NEW FIXTURES TO THE EXISTING LIGHTING CONTROL SYSTEM. PROVIDE ADDITIONAL CONDUCTORS TO EMERGENCY AND NIGHT LIGHTS AHEAD OF LOCAL SWITCHING TO ENSURE PROPER OPERATION.
6. COORDINATE WITH MIRROR INSTALLATION PROFESSIONAL TO VERIFY ELECTRICAL REQUIREMENTS. PROVIDE ALL NECESSARY ACCESSORIES, CONNECTIONS, AND COMPONENTS TO ENSURE A FULLY OPERATIONAL SYSTEM. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER REGARDING THE NEED FOR A DEDICATED DIMMING SWITCH AND MAKE ALL REQUIRED ADJUSTMENTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

GENERAL LIGHTING NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND INTERIOR ELEVATIONS FOR COORDINATION OF ALL LIGHTING FIXTURE LOCATIONS.
2. GROUND CONDUCTOR SHALL BE INSTALLED IN ENTIRE RACEWAY SYSTEM INCLUDING WALL SWITCHES AND FLEXIBLE CONDUIT TO LIGHT FIXTURES.
3. LIGHTING SWITCHES SHALL BE GROUPED WITH ONE PLATE AND LOCATED APPROXIMATELY 2 INCHES FROM DOOR FRAME (STRIKE SIDE) UNLESS OTHERWISE NOTED.
4. WHERE A CIRCUIT IS CONTROLLED VIA A LIGHTING CONTROL PANEL,TIMECLOCK, PHOTOCELL, MOTION SENSOR, ETC. AND AN EMERGENCY BATTERY, EXIT LIGHT AND OR NIGHT LIGHT IS ON THE SAME CIRCUIT, AN ADDITIONAL NON-SWITCHED CONDUCTOR, ON THE SAME CIRCUIT, ORIGINATING AHEAD OF ALL LOCAL CONTROLS SHALL BE PROVIDED TO POWER THESE DEVICES.

EMERGENCY AND EXIT SIGN NOTES:

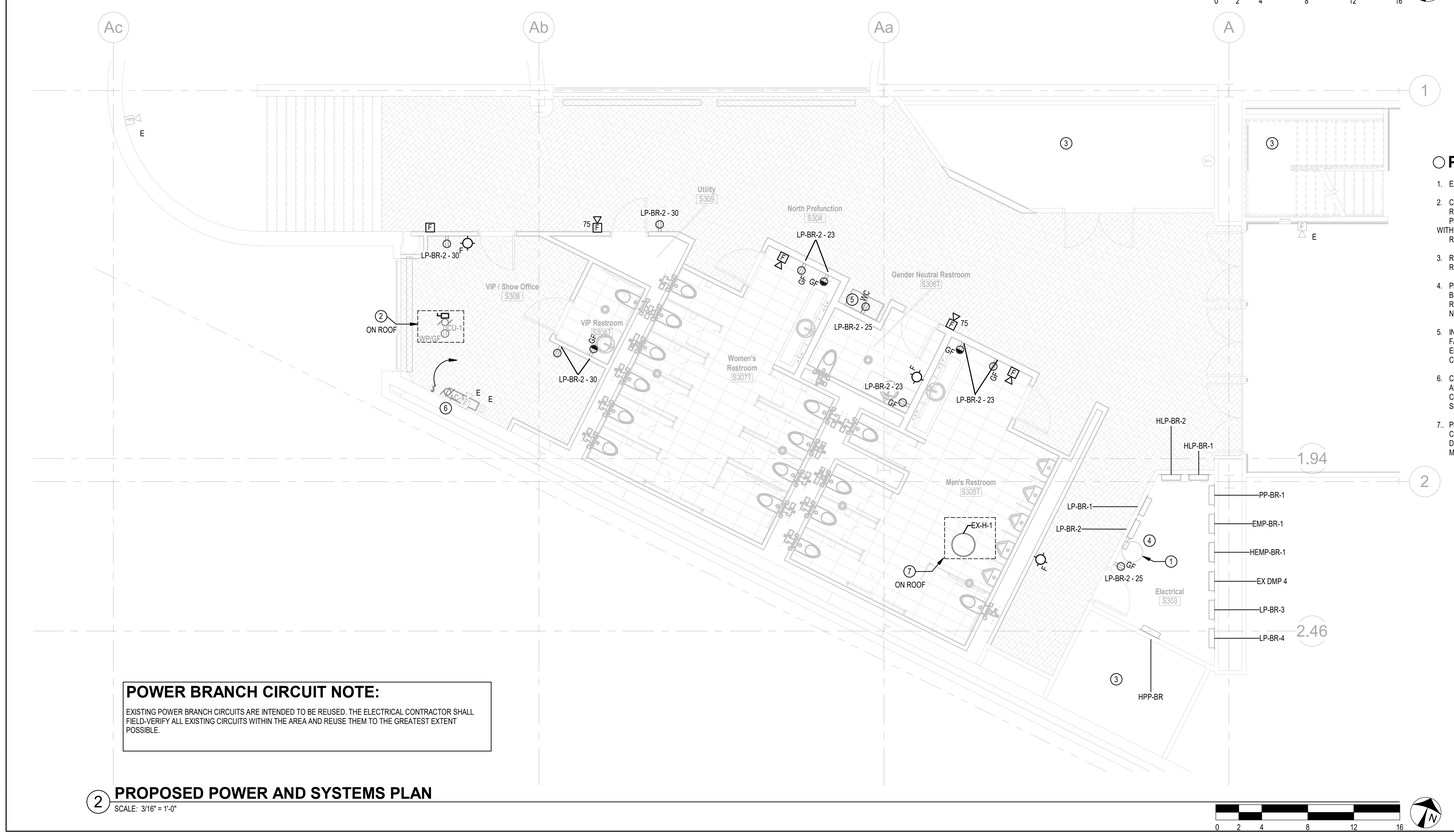
1. COORDINATE WITH ARCHITECT FOR LOCATION AND QUANTITIES OF EXIT SIGNS AND PROVIDE ACCORDINGLY.
2. WHERE AN EXISTING BRANCH CIRCUIT IS CONTROLLED BY A LIGHTING CONTROL PANEL, TIMECLOCK, PHOTOCELL, MOTION SENSOR, OR SIMILAR DEVICE, AND AN EMERGENCY BATTERY UNIT, EXIT SIGN, OR NIGHT LIGHT IS FED FROM THE SAME CIRCUIT, AN ADDITIONAL UNSWITCHED CONDUCTOR SHALL BE PROVIDED TO MAINTAIN POWER TO THESE DEVICES.

MASS NOTIFICATION SYSTEM NOTES

1. THE EXISTING MASS NOTIFICATION SYSTEM/EMERGENCY COMMUNICATION SYSTEM SHALL REMAIN.
2. THE CONTRACTOR SHALL MAKE ALL REQUIRED MODIFICATIONS TO ACCOMMODATE THE PROPOSED WORK.
3. PROVIDE BATTERY CALCULATIONS DEMONSTRATING COMPLIANCE WITH APPLICABLE CODE REQUIREMENTS OR AS DIRECTED BY THE AHJ.
4. PROVIDE VOLTAGE DROP CALCULATIONS FOR ALL PROPOSED WIRE SIZES, TYPES, AND ROUTING.
5. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER.
6. SUBMIT TESTING AND INSPECTION CONTRACT DOCUMENTS TO THE OWNER IN ACCORDANCE WITH NFPA STANDARDS, INCLUDING THE RECORD OF COMPLETION AT THE TIME OF SYSTEM ACCEPTANCE.
7. PROVIDE RECORD DRAWINGS SHOWING THE EXISTING MASS NOTIFICATION SYSTEM CONNECTIONS TO NEW APPLIANCES, BASED ON ACTUAL CONDUIT AND WIRING INSTALLATION.

FIRE ALARM SYSTEM NOTES

1. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN.
2. THE FIRE ALARM CONTRACTOR SHALL MAKE ALL REQUIRED MODIFICATIONS TO ACCOMMODATE THE PROPOSED WORK.
3. PROVIDE ADDITIONAL SIGNAL EXPANDER PANELS AS REQUIRED.
4. PROVIDE BATTERY CALCULATIONS DEMONSTRATING COMPLIANCE WITH APPLICABLE CODE REQUIREMENTS OR AS DIRECTED BY THE AHJ.
5. PROVIDE VOLTAGE DROP CALCULATIONS FOR ALL PROPOSED WIRE SIZES, TYPES, AND ROUTING.
6. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER.
7. SUBMIT TESTING AND INSPECTION CONTRACT DOCUMENTS TO THE OWNER IN ACCORDANCE WITH NFPA STANDARDS, INCLUDING THE RECORD OF COMPLETION AT THE TIME OF SYSTEM ACCEPTANCE.
8. PROVIDE RECORD DRAWINGS SHOWING THE EXISTING FIRE ALARM SYSTEM CONNECTIONS TO NEW FIRE ALARM APPLIANCES, BASED ON ACTUAL CONDUIT AND WIRING INSTALLATION.



POWER BRANCH CIRCUIT NOTE:

EXISTING POWER BRANCH CIRCUITS ARE INTENDED TO BE REUSED. THE ELECTRICAL CONTRACTOR SHALL FIELD-VERIFY ALL EXISTING CIRCUITS WITHIN THE AREA AND REUSE THEM TO THE GREATEST EXTENT POSSIBLE.

2 PROPOSED POWER AND SYSTEMS PLAN

SCALE: 3/16" = 1'-0"

0 2 4 8 12 16

PROPOSED POWER PLAN NOTES

1. EXISTING WATER HEATER TO BE REUSED.
2. COORDINATE WITH MECHANICAL CONTRACTOR FOR LOCATION OF CONDENSING UNIT ON ROOF. REFER TO MECHANICAL SHEET M102 FOR LOCATION. ELECTRICAL CONTRACTOR SHALL PROVIDE NEMA 3R, 2-POLE DISCONNECT MEANS AND WEATHERPROOF, GFCI RECEPTACLE WITH WHILE-IN-USE COVER. MINI-SPLIT OUTDOOR UNIT SHALL PROVIDE POWER TO INDOOR UNIT. REFER TO ALTERNATE BID ITEM NOTES ON THIS SHEET.
3. ROOM/AREA NOT PART OF THE SCOPE OF WORK. EXISTING ELECTRICAL DEVICES SHALL REMAIN UNCHANGED UNLESS OTHERWISE DIRECTED BY OWNER/ARCHITECT.
4. PROVIDE 120V POWER TO 40W RECIRCULATION PUMP RP1 FOR EXISTING WATER HEATER BEING REUSED. COORDINATE WITH PLUMBING CONTRACTOR FOR LOCATION, SPECIFIC REQUIREMENTS, AND PROVIDE ACCORDINGLY. HAVE PLUMBING CONTRACTOR VERIFY THE NEED FOR A DISCONNECT SWITCH AND PROVIDE ACCORDINGLY.
5. INSTALL RECEPTACLE CONCEALED BEHIND DRINKING FOUNTAIN ACCESS COVER. GROUND FAULT PROTECTION SHALL BE PROVIDED BY GFCI TYPE CIRCUIT BREAKER. PROVIDE FACTORY ENGRAVED COVER PLATE WITH "GFCI PROTECTED" LABEL. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO START OF WORK.
6. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION OF INDOOR UNIT AND ADDITIONAL ELECTRICAL REQUIREMENTS. INDOOR UNIT SHALL BE POWERED FROM OUTDOOR CONDENSING UNIT. PROVIDE DISCONNECTING MEANS. REFER TO ALTERNATE BID ITEM ON THIS SHEET.
7. PROVIDE 208V, 1-PH, 5 FLA, 15A MCOP TO NEW EXHAUST FAN EX-H-1 MOUNTED ON ROOF. COORDINATE EXACT LOCATION OF ROOF MOUNTED FAN AND NEMA 3R, 2-POLE, 30A FRAME DISCONNECT WITH MECHANICAL CONTRACTOR PRIOR TO START OF WORK. REFER TO SHEET M102 FOR ADDITIONAL DETAILS.

SPECIAL SYSTEM NOTES

1. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY WORK TO ENSURE THE EXISTING SOUND AND SECURITY SYSTEMS WILL BE FULLY OPERATIONAL AFTER THE RENOVATION.
2. COORDINATE WITH THE SOUND AND SECURITY SYSTEMS CONTRACTORS FOR SPECIFIC DETAILS AND PROVIDE ACCORDINGLY.

ALTERNATE BID ITEM:

PROVIDE ALL NECESSARY WORK FOR THE INSTALLATION OF MINI-SPLIT HVAC SYSTEM IN THE VIP/SHOW OFFICE. THE ADD ALTERNATE ITEM SHALL INCLUDE THE FOLLOWING:

- 240V, 2-POLE, NON-FUSIBLE, NEMA 3R DISCONNECT SWITCH FOR OUTDOOR CONDENSER UNIT LOCATED ON ROOF.
- DISCONNECT SWITCH FOR INDOOR UNIT.
- ELECTRICAL POWER WIRING FROM 208Y/120V, 3-PH, 4-W EXISTING ELECTRICAL PANEL IN THE EXISTING ELECTRICAL ROOM, INCLUDING BRANCH CIRCUIT BREAKER PER NEC.
- ALL LABOR, MATERIAL, PERMITS, AND COORDINATION WITH OTHER TRADES.
- CONTRACTOR IS TO FIELD VERIFY THE EXISTENCE OF A SPARE 240V, 2-POLE BREAKER THAT CAN ACCOMMODATE THE HVAC SYSTEM. CONTRACTOR MUST VERIFY THE ADDITION OF THE HVAC SYSTEM WILL NOT SURPASS THE MAXIMUM AMPERAGE RATING OF THE SELECTED PANEL AND IS TO CALCULATE THE EXISTING LOAD ON THE PANEL.

HEAPY

PROJECT NO. 2025-07170

SCHOOLEY CALDWELL

ARCHITECTURE. INSPIRED.

300 Marconi Boulevard T 614-628-0300
Columbus OH 43215 F 614-628-0311
schooleycaldwell.com

Consultants:

Structural
Paul J. Ford
250 E Broad St, Suite 600
Columbus, OH 43215

Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 Slate Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

2025-07170

STATE OF OHIO — WILLIAM J. THOMAS — E-66248 — REGISTERED PROFESSIONAL ENGINEER

10/8/2025

PROPOSED ELECTRICAL PLANS

Electrical

E200

2025.10.08

25300

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VALVES AND FITTINGS

DOUBLE LINE	SINGLE LINE	
		CHECK VALVE
		SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
		COMBINATION SHUTOFF AND BALANCING VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
		CONCENTRIC PIPE REDUCER
	P	PRESSURE GAUGE
	T	TEMPERATURE GAUGE OR THERMOMETER
		UNION
		CLEANOUT
		STRAINER
		STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION
		DRAIN VALVE WITH HOSE END CONNECTION
		AUTOMATIC FLOW CONTROLLER WITH P/T PLUG IN AND OUT
	P/T	PRESSURE AND TEMPERATURE SAFETY RELIEF VALVE. PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE.
		PRESSURE AND TEMPERATURE TEST PLUG
	CO	CLEANOUT TO GRADE OR FINISHED FLOOR
		END CAP
		HOSE BIB
		WALL HYDRANT
		SHUTOFF VALVE ON RISER

PLUMBING PIPING DESIGNATIONS

	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	EXISTING PIPE TO REMAIN
	EXISTING PIPE TO BE REMOVED
OD	(OVERFLOW) SECONDARY STORM DRAINAGE PIPE
SAN	SANITARY DRAINAGE PIPE
STM	STORM DRAINAGE PIPE
V	SANITARY SEWER VENT

GENERAL FLOOR PLAN NOTES

10" ELEV: 8' - 0" / 10" ELEV: 8' - 0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
TOE: 3' - 0" / BOE: 0' - 6"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE
2	RISER OR STACK NUMBER
B / P2	DETAIL: B = DETAIL DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
1 / P2	SECTION: 1 = SECTION DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
OH 1	FIRE SUPPRESSION HAZARD CLASSIFICATION AND HAZARD CLASSIFICATION GROUP
P1 OR P1	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
A1	EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
	CONNECT TO EXISTING
3	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
3	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
A1	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
D	D	DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
		PUMP
R	R	RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

ABBREVIATIONS

AAP	- AREA ALARM PANEL (MEDICAL GAS)
AC	- AIR COMPRESSOR OR AIR CONDITIONER
ACC	- ACCESS
ACCU	- AIR COOLED CONDENSING UNIT
AD	- ACCESS DOOR OR AREA DRAIN
ADB	- ACID DILUTION BASIN
ADJ	- ADJUSTABLE
AFF	- ABOVE FINISHED FLOOR
AFG	- ABOVE FINISHED GRADE
ALT	- ALTERNATE
AP	- ACCESS PANEL
APPROX	- APPROXIMATE
AR	- AIR RECEIVER OR ARGON
ARCH	- ARCHITECT OR ARCHITECTURAL
ASSY	- ASSEMBLY
AV	- ACID VENT
AW	- ACID WASTE
BDD	- BACK DRAFT DAMPER
BFP	- BACKFLOW PREVENTER
BLDG	- BUILDING
BOB	- BOTTOM OF BEAM
BOD	- BOTTOM OF DUCT
BOE	- BOTTOM OF EQUIPMENT
BOF	- BOTTOM OF FOOTING
BOG	- BOTTOM OF GRILLE
BOP	- BOTTOM OF PIPE
BOT	- BOTTOM
BT	- BATHTUB
BTU	- BRITISH THERMAL UNIT
BTUH	- BRITISH THERMAL UNIT PER HOUR
BTWN	- BETWEEN
CA	- COMPRESSED AIR
CB	- CATCH BASIN
CBD	- COUNTER BALANCED BACKDRAFT DAMPER
CFCI	- CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFM	- CUBIC FEET PER MINUTE
CHS	- CHILLED WATER SUPPLY
CHR	- CHILLED WATER RETURN
CI	- CAST IRON
CK	- CLINICAL SINK
CLG	- CEILING
CMU	- CONCRETE MASONRY UNIT
CO	- CLEAN OUT
CO2	- MEDICAL CARBON DIOXIDE
CONN	- CONNECT OR CONNECTION
CONTR	- CONTRACTOR
CORR	- CORRIDOR
CS	- CLINICAL SINK OR COLD SOFT WATER
CTR	- CENTER
CU	- COPPER
CWS	- COMBINATION WATER SERVICE OR CONDENSER WATER SUPPLY
CWR	- CONDENSER WATER RETURN
D	- DEPTH OR DRAIN LINE
DCW	- DOMESTIC COLD WATER
DD	- DECK DRAIN
DET	- DETAIL
DF	- DRINKING FOUNTAIN OR WATER COOLER OR DIESEL FUEL
DFU	- DRAINAGE FIXTURE UNIT
DHW	- DOMESTIC HOT WATER
DHWR	- DOMESTIC HOT WATER RETURN
DI	- DEIONIZED WATER
DIA	- DIAMETER
DIM	- DIMENSION
DN	- DOWN
DS	- DOWN SPOUT OR SPRINKLER (DRY)
DT	- PERFORATED DRAIN TILE
DWG	- DRAWING
EA	- EACH
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)
EEW	- EMERGENCY EYE WASH
EJ	- EXPANSION JOINT
ELEC	- ELECTRICAL
ELEV	- ELEVATOR
EQ	- EQUAL
EQUIP	- EQUIPMENT
ET	- EXPANSION TANK
ETR	- EXISTING TO REMAIN
ES	- EMERGENCY SHOWER
EQS	- EQUIPMENT SUPPLIER
EWC	- ELECTRICAL WATER COOLER
EXH	- EXHAUST AIR
EXP	- EXPANSION
EXT	- EXTERIOR
EX	- EXISTING
F	- FIRE SUPPRESSION (STANDPIPE/SPRINKLER MAIN)
FCE	- FIRE CONTROL EQUIPMENT
FCO	- FLOOR CLEANOUT
FD	- FLOOR DRAIN
FDC	- FIRE DEPARTMENT CONNECTION
FDV	- FIRE DEPARTMENT VALVE
FF	- FINISHED FLOOR ELEVATION
FHC	- FIRE HOSE CABINET
FLR	- FLOOR
FM	- FORCE MAIN
FOB	- FLAT ON BOTTOM
FOF	- FUEL OIL FLOW
FOG	- FUEL OIL GAUGE
FOR	- FUEL OIL RETURN
FOS	- FUEL OIL SUPPLY
FOT	- FLAT ON TOP
FPM	- FEET PER MINUTE
FR	- FIRE RISER
FS	- FLOOR SINK OR FIRE SERVICE
FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)
FT	- FEET
FTG	- FOOTING
G	- GAS OR NATURAL GAS
GA	- GAUGE
GAL	- GALLON
GALV	- GALVANIZED
GC	- GENERAL TRADES CONTRACTOR
GD	- GARAGE DRAINAGE
GPM	- GALLONS PER MINUTE
GS	- GAS SERVICE
GW	- GREASE WASTE
H2	- HYDROGEN
HB	- HOSE BIBB
HC	- HVAC CONTRACTOR (DIVISION 23)
HD	- HUB DRAIN
HE	- HELIUM
HG	- REFRIGERANT HOT GAS
HP	- HORSEPOWER OR HIGH POINT
HPC	- HIGH PRESSURE CONDENSATE RETURN
HPS	- HIGH PRESSURE STEAM SUPPLY
HPW	- HIGH PURITY WATER
HPWR	- HIGH PURITY WATER RETURN
HR	- HOSE REEL
HT	- HEAT TRACE
HTR	- HEATER
HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING
HW	- HOT WATER
IA	- MEDICAL INSTRUMENT AIR
ID	- INSIDE DIAMETER
INV	- INVERT ELEVATION
IN	- INCHES
IV	- INDIRECT VENT
IW	- INDIRECT WASTE
JS	- JANITOR SINK
K	- KITCHEN WASTE
KEC	- KITCHEN EQUIPMENT CONTRACTOR
L	- LENGTH
LA	- LABORATORY COMPRESSED AIR
LAV	- LAVATORY
LBS	- POUNDS
LCW	- LABORATORY COLD WATER
LEC	- LABORATORY EQUIPMENT CONTRACTOR
LHW	- LABORATORY HOT WATER
LHWR	- LABORATORY HOT WATER RETURN
LPC	- LOW PRESSURE CONDENSATE RETURN
LPS	- LOW PRESSURE STEAM SUPPLY
LV	- LABORATORY VACUUM OR LABORATORY VENT
LW	- LABORATORY WASTE
MA	- MEDICAL COMPRESSED AIR
MAP	- MASTER ALARM PANEL (MEDICAL GAS)
MAX	- MAXIMUM
MB	- MOP BASIN
MC	- MECHANICAL CONTRACTOR (DIVISION 23)
MEZZ	- MEZZANINE
MFR	- MANUFACTURER
MH	- MANHOLE
MIN	- MINIMUM OR MINUTE
MISC	- MISCELLANEOUS
MTD	- MOUNTED
MTG	- MOUNTING
MPC	- MEDIUM PRESSURE CONDENSATE RETURN
MPS	- MEDIUM PRESSURE STEAM SUPPLY
MU	- WATER MAKE-UP
MV	- MEDICAL SURGICAL VACUUM
N2	- MEDICAL NITROGEN
NC	- NORMALLY CLOSED
NG	- GASOLINE (NON-LEAD)
NIC	- NOT IN CONTRACT
NO	- NORMALLY OPEN
N2O	- MEDICAL NITROUS OXIDE
NOM	- NOMINAL
NPW	- NON-POTABLE WATER
NPT	- NATIONAL PIPE THREAD
NTS	- NOT TO SCALE
O2	- MEDICAL OXYGEN
OA	- OUTDOOR AIR
OD	- OUTSIDE DIAMETER OR OVERFLOW DRAIN
OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	- OWNER FURNISHED OWNER INSTALLED
P	- PROPANE GAS
PC	- PLUMBING CONTRACTOR (DIVISION 22) OR PUMPED CONDENSATE RETURN
PD	- PUMP DISCHARGE OR PARAPET DRAIN
PIV	- POST INDICATOR VALVE
PLBG	- PLUMBING
PS	- PRE-ACTION/DELUGE SPRINKLER
PRESS	- PRESSURE
PRV	- PRESSURE REGULATING VALVE
PSF	- POUNDS PER SQUARE FOOT
PSI	- POUNDS PER SQUARE INCH
PSV	- PRESSURE SUSTAINING VALVE
PSIG	- POUNDS PER SQUARE INCH GAUGE
PW	- PURE WATER
RA	- RETURN AIR
RAD	- RADIUS
RCP	- REINFORCED CONCRETE PIPE
RD	- ROOF DRAIN
REC	- RECESSED
REQD	- REQUIRED
RI	- ROUGH IN
RL	- REFRIGERANT LIQUID
ROS	- REVERSE OSMOSIS WATER SUPPLY
ROR	- REVERSE OSMOSIS WATER RETURN
RPM	- REVOLUTIONS PER MINUTE
RS	- REFRIGERANT SUCTION
RV	- RELIEF VALVE
S	- SPRINKLER (WET)
SA	- SHOCK ARRESTOR OR SUPPLY AIR
SAN	- SANITARY OR SANITARY DRAIN
SCH	- SCHEDULE
SCW	- SOFT COLD WATER
SD	- SPRINKLER DRAIN OR SUBSOIL DRAIN
SH	- SHOWER
SHT	- SHEET
SK	- SINK
SPEC	- SPECIFICATIONS
SQ	- SQUARE
SR	- SUPPLY RISER
SS	- SANITARY STACK (SOIL OR WASTE) OR STAINLESS STEEL
STD	- STANDARD
STM	- STORM OR STORM DRAINAGE
STRUC	- STRUCTURAL OR STRUCTURE
SUC	- SITE UTILITY CONTRACTOR
T	- FUEL TANK VENT
TD	- TRENCH DRAIN
TEMP	- TEMPERATURE
TOB	- TOP OF BEAM
TOD	- TOP OF DUCT
TOE	- TOP OF EQUIPMENT
TOF	- TOP OF FOOTING
TOJ	- TOP OF JOIST
TOP	- TOP OF PIPE
TOS	- TOP OF SLAB OR TOP OF STEEL
TF	- TRAP FILLER
TP	- TRAP PRIMER OR TRAP PRIMER DISCHARGE
TW	- TEMPERED WATER
TYP	- TYPICAL
UR	- URINAL
UNO	- UNLESS NOTED OTHERWISE
V	- VENT OR SANITARY SEWER VENT
VAC	- VACUUM
VC	- VACUUM CLEANING
VCV	- VACUUM CLEANING VALVE
VE	- VACUUM EXHAUST
VEL	- VELOCITY
VIB	- VALVE IN BOX
VOL	- VOLUME
VP	- VACUUM PUMP
VS	- VENT STACK
VTR	- VENT THROUGH ROOF
VR	- VENT RISER
W/	- WITH
W/O	- WITHOUT
W	- WASTE
WAGD	- WASTE ANESTHESIA GAS DISPOSAL
WC	- WATER CLOSET
WCO	- WALL CLEANOUT
WH	- WALL HYDRANT OR WATER HEATER
WIV	- WALL INDICATOR VALVE
WS	- WATER SERVICE
YCO	- YARD CLEANOUT
ZVC	- ZONE VALVE CABINET

GENERAL NOTES

A ALL PIPING IS ABOVE THE CEILING (AT THE UNDERSIDE OF STRUCTURE IN EXPOSED STRUCTURE AREAS), UNLESS OTHERWISE NOTED.

B REFER TO SCHEDULES, DETAILS AND DIAGRAMS FOR PIPING, PIPE SIZES AND PIPELINE DEVICES NOT INDICATED ON THE FLOOR PLAN.

C ABOVE CEILING UTILITY SPACE IS LIMITED. COORDINATION WITH ALL TRADES IS CRITICAL, PRIOR TO INSTALLATION ON ANY WORK.

D MANUAL AIR VENTS SHALL BE LOCATED WHERE INDICATED ON THE PLANS AND AT ALL HIGH POINTS OF THE UPPER MOST LEVEL OF DOMESTIC COLD, DOMESTIC HOT, AND DOMESTIC HOT RETURN SYSTEMS. DISCHARGE SHALL BE TO CLOSEST WASTE RECEPTOR ON FLOOR LEVEL SHOWN ON DRAWINGS.

E LOCATIONS AND SIZES OF EXISTING PIPING HAVE BEEN DETERMINED FROM A REVIEW OF EXISTING DRAWINGS AND/OR SITE INSPECTION, WHERE POSSIBLE. FIELD VERIFICATION OF EXACT LOCATIONS, ELEVATIONS, INVERTS, SIZES, DIRECTION OF FLOW, ETC. SHALL BE REQUIRED PRIOR TO BEGINNING NEW WORK.

F ALL PIPING SHALL BE REMOVED BACK TO ACTIVE MAINS AND CAPPED, OR REMOVED BACK TO POINTS OF CONNECTION IN NEW WORK, INACCESSIBLE PIPING, WHERE SO NOTED, TO BE ABANDONED SHALL BE DISCONNECTED FROM ACTIVE SYSTEMS AND CAPPED OR PLUGGED IN CONCEALED LOCATIONS.

G NEW CONNECTIONS TO EXISTING PIPING SHALL BE WITH THE SAME SIZE AS THE EXISTING PIPING, UNLESS OTHERWISE NOTED.

H ALL REMOVED MATERIAL AND EQUIPMENT, SO DESIGNATED BY THE OWNER, SHALL BE TURNED OVER AND PLACED WHERE DIRECTED. ALL MATERIAL AND EQUIPMENT, WHICH THE OWNER DOES NOT WISH TO RETAIN, SHALL BECOME THE PROPERTY OF THE CONTRACTOR RESPONSIBLE FOR THE REMOVAL.

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

PLUMBING SHEET LIST

SHEET NUMBER	SHEET NAME
P001	LEGEND, NOTES, SHEET LIST
P002	SCHEDULES AND DETAILS
PD100	PLUMBING DEMOLITION WORK PLANS
P100	PLUMBING NEW WORK PLANS

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Lighting Design
TecStudio Inc.
7910 State Route Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED PROFESSIONAL ENGINEER

LEGEND, NOTES, SHEET LIST

Plumbing

P001

2025.10.08

25300

HEAPY
PROJECT NO. 2025-07170

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PLUMBING FIXTURES

CATALOG NUMBERS INDICATED ARE THOSE OF THE FIRST NAMED MANUFACTURER IN EACH CATEGORY LISTED BELOW - ADDITIONAL MANUFACTURERS ARE LISTED IN PARENTHESIS

A. KOHLER (AMERICAN STD., TOTO, ZURN)
B. SLOAN (DELANY, ZURN)
C. BEMIS (BENEKE, KOHLER, AMERICAN STD.)
D. SMITH (WADE, ZURN, JOSAM, WATTS)
E. CHICAGO (TOTO, T&S BRASS, ZURN)
F. KOHLER (OR APPROVED EQUAL)
G. McGUIRE (EBC, DEARBORN BRASS, ZURN)
H. FIAT (STERN WILLIAMS, CREATIVE IND., MUSTEE, ZURN)
J. ELKAY (JUST WITH LUG AND SCREW)
K. ELKAY (ACORN, HALSEY TAYLOR, HAWS, OASIS)
L. LEONARD (POWERS, SYMMONS)
M. AQUARIUS (AQUA-BATH, KOHLER, COMFORT DESIGNS)
N. IN-SINK ERATOR (OR APPROVED EQUAL)
O. GUARDIAN (BRADLEY, SPEAKMAN, HAWS)
P. SPEAKMAN (CHICAGO)
Q. TRUEBRO (ZURN, PLUMBEREX)

SCHEDULE ABBREVIATIONS:

ADA	HANDICAP ACCESSIBLE	QD	QUICK DISCONNECT
BO	BACK OUTLET	SB	SINGLE BOWL
BPW	BED PAN WASHER	SST	STAINLESS STEEL
DB	DOUBLE BOWL	UCM	UNDER COUNTER MOUNT
FS	FLOOR SET	VB	VACUUM BREAKER
FT	FLUSH TANK	VR	VANDAL RESISTANT
FV	FLUSH VALVE	WB	WRIST BLADE
GN	GOOSENECK	WH	WALL HUNG
HS	HAND SHOWER		

GENERAL NOTE:
1. SUPPLY PIPE SIZES IN THIS SCHEDULE ARE FIXTURE OR SUPPLY STOP CONNECTION SIZES. DOMESTIC COLD AND HOT WATER SUPPLY PIPE SIZES SERVING FIXTURES SHALL BE, AT A MINIMUM, THE SIZES LISTED UNLESS NOTED OTHERWISE OR LABELED ON THE FLOOR PLANS. DOMESTIC COLD WATER SUPPLY PIPE SIZES SERVING FLUSH VALVES SHALL BE AT MINIMUM ONE PIPE SIZE LARGER THAN THE INDICATED CONNECTION SIZE, OR SIZED AS SHOWN ON THE FLOOR PLANS. PIPING AT THE FLUSH VALVE CONNECTION OF A SIZE EQUAL TO THE CONNECTION SIZE SHALL BE LIMITED TO A MAXIMUM 2 FEET IN DEVELOPED LENGTH AND INCLUDE A MAXIMUM OF ONE 90 DEGREE ELBOW FITTING. FULL SIZE MANIFOLDS, WHERE INDICATED ON THE FLOOR PLANS, SHALL BE PROVIDED FULL SIZE FOR THE LENGTH OF THE PIPING CHASE AND TERMINATED WITH A FULL SIZE CAP.

NOTES:
1. PLUMBING FIXTURE AND INSTALLATION SHALL COMPLY WITH ANSI A117.1-2017 REQUIREMENTS FOR THE HANDICAPPED.
2. PROVIDE ASSE 1070 MIXING VALVE BELOW FIXTURE.
3. PROVIDE 0.5 GPM AERATOR, KOHLER K-1075440.
4. COORDINATE POWER REQUIREMENT WITH EC.

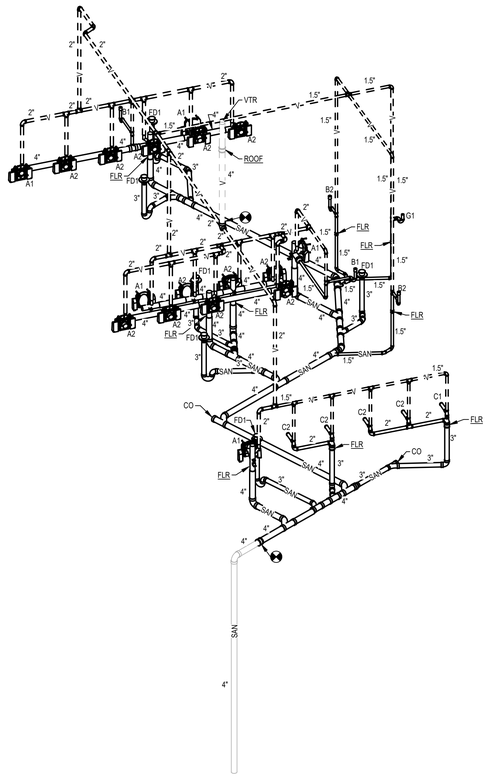
			FLOW		CONTROL				SUPPLY				WASTE & VENT								FIXTURE		SUPPLY TRIM		SUPPLY / STOP		WASTE TRIM		TRAP / FIX. DR.		MISC.		
							SENSOR																										
MARK	DESCRIPTION	MOUNTING HEIGHT	GPM	GPF	MANUAL	METERING	ELECTRIC	BATTERY	COLD WATER	HOT WATER	TEMPERED	NAT. GAS	FIX. OUTLET	TRAP	FIX. DRAIN	WASTE-MIN.	VENT-MIN.	INDIRECT	AIR GAP	AIR BREAK	MFR.	CAT. NO.	MFR.	CAT. NO.	MFR.	CAT. NO.	MFR.	CAT. NO.	MFR.	CAT. NO.	MFR.	CAT. NO.	SEE NOTE
A1	WATER CLOSET / WALL HUNG / ADA	17" TO RIM		1.28				•	1"				4"		4"	4"	2"				A	K-4325	B	REGAL 111 SFSM-1.28	B	UNIT	A	UNIT	A	INTEGRAL	C	1955SSCT	1
A2	WATER CLOSET / WALL HUNG	15" TO RIM		1.28				•	1"				4"		4"	4"	2"				A	K-4325	B	REGAL 111 SFSM-1.28	B	UNIT	A	UNIT	A	INTEGRAL	C	1955SSCT	
B1	LAVATORY / UNDERMOUNT / ADA		0.5		•				0.5"	0.5"			1.25"	1.5"	1.5"	1.5"	1.5"				A	K-2210-N		K-14406-4-CP	G	LFBV2165	G	155AECO	G	8912CBECO			1,2,3
B2	3 STATION WASH SINK / ADA		0.5		•				0.5"	0.5"			1.25"	1.5"	1.5"	1.5"	1.5"					BY GC		(3) K-14406-4-CP	G	LFBV2165	G	155AECO	G	8912CBECO	Q	102E-Z	1,2,3
C1	URINAL / WALL HUNG / ADA	17" TO LIP		0.125				•	0.75"				2"		2"	2"	1.5"				A	K-4991-ET	B	REGAL 186 SFSM-0.125	B	UNIT	A	UNIT	A	INTEGRAL			1
C2	URINAL / WALL HUNG	24" TO LIP		0.125				•	0.75"				2"		2"	2"	1.5"				A	K-4991-ET	B	REGAL 186 SFSM-0.125	B	UNIT	A	UNIT	A	INTEGRAL			
G1	DRINKING FOUNTAIN / BI-LEVEL / BOTTLE FILLER	PER ADA			•				0.5"				1.5"	1.5	1.5"	1.5"	1.5"				K	LZSTL8WSLK	K	UNIT	G	LFBV2166	K	UNIT	G	8912CBECO			1,4

DRAINS

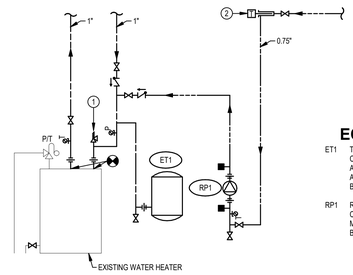
GENERAL NOTES:
1. ALL DRAINS ARE MANUFACTURED BY J.R. SMITH UNLESS NOTED OTHERWISE.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL MANUFACTURERS.
3. ADDITIONAL ACCEPTABLE MANUFACTURERS ARE WADE, JOSAM, WATTS, MIFAB AND ZURN.

NOTES:
1. PROVIDE JAY R SMITH QUAD CLOSE TRAP SEAL DEVICE OR EQUAL.

		TYPE			BODY					OUTLET			STRAINER / GRATE								TOP FINISH					ADDITIONAL FEATURES								
													SIZE																				
MARK	CATALOG NOS.	FLOOR	ROOF	AREAWAY	CAST IRON	BRASS	ACID RESIST.	STAINLESS STEEL	PLASTIC	SIZE	BOTTOM	SIDE	DIAMETER / WIDTH	LENGTH	ADJUSTABLE	FLAT	DOME	RECESSED	FUNNEL	HINGED	STAINLESS STEEL	NICKLE-BRONZE	CAST IRON	ACID RESIST.	STAINLESS STEEL	PLASTIC	DUCTILE IRON	ANCHOR FLANGE	FLASHING CLAMP	DBL DRAINAGE	SED. BUCKET	AUX. STRAINER	BEARING PAN	UNDECK CLAMP	2" STANDPIPE	TRAP PRIMER CON.	WATER DAM	SEE NOTE
FD1	2005	•			•					3"	•		5"		•	•						•					•	•	•							1



2 WASTE AND VENT
SCALE: NONE



EQUIPMENT DATA

ET1 THERMAL EXPANSION TANK – DOMESTIC HOT WATER - DIAPHRAGM TYPE
CAPACITY: 2.0 GALLONS
ACCEPTANCE VOLUME: MINIMUM 0.9 GALLONS
APPROXIMATE SIZE: 8" DIAMETER X 13" LONG
BASIS OF DESIGN: AMTROL ST-5

RP1 RECIRCULATION PUMP – DOMESTIC HOT WATER – IN-LINE TYPE
CAPACITY: 2 GPM AT 6 FT. HEAD
MOTOR: 39 WATT - 120 VOLT - 1 PHASE
BASIS OF DESIGN: BELL AND GOSSETT #NBF-8SILW.

NOTES
1. VACUUM RELIEF VALVE.
2. RECIRCULATION PUMP CONTROL AQUASTAT.

1 DOMESTIC WATER HEATER PIPING
SCALE: NONE

PLUMBING SHEET LIST

SHEET NUMBER	SHEET NAME
P001	LEGEND, NOTES, SHEET LIST
P002	SCHEDULES AND DETAILS
PD100	PLUMBING DEMOLITION WORK PLANS
P100	PLUMBING NEW WORK PLANS

PROJECT NO. 2025-07170

SCHOOLEY CALDWELL
ARCHITECTURE. INSPIRED.
300 Marconi Boulevard T 614-628-0300
Columbus OH 43215 F 614-628-0311
schooleycaldwell.com

Consultants:

Structural
Paul J. Ford
250 E Broad St, Suite 600
Columbus, OH 43215

Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 Slate Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

SCHEDULES AND DETAILS

Plumbing

P002

2025.10.08

25300

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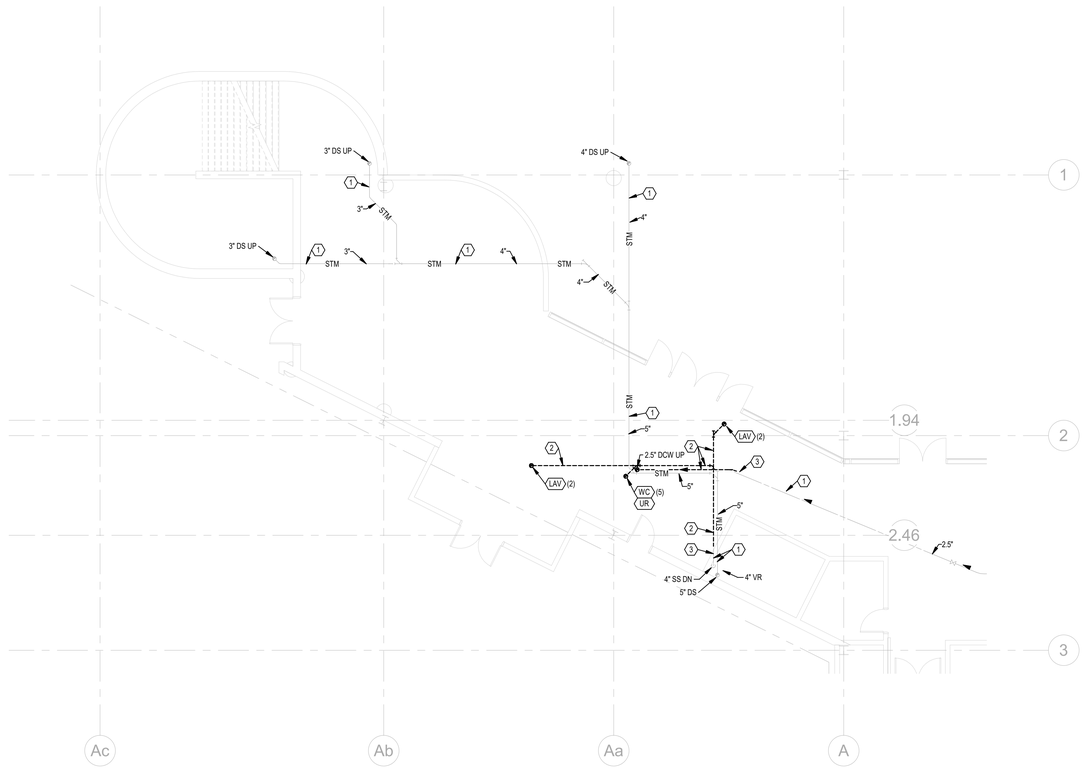

1 PLUMBING DEMOLITION PLAN (ELEV. 770'-0")

SCALE: 1/8" = 1'-0"

2 PLUMBING DEMOLITION PLAN (ELEV 788'-0")

SCALE: 1/8" = 1'-0"

NOTES

1. EXISTING TO REMAIN.
2. REMOVE EXISTING PIPING, HANGERS AND DEVICES.
3. REMOVE PIPING TO THIS POINT. PIPING TO BE BACKFED ON NEW WORK PLAN.
4. EXISTING WATER HEATER TO REMAIN. REMOVE EXISTING COLD AND HOT WATER PIPING.
5. REMOVE EXISTING PLUMBING FIXTURE AND ASSOCIATED TRIM AND PIPING.
6. VENT THRU ROOF TO REMAIN.

HEAPY

PROJECT NO. 2025-07170

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STATE OF OHIO
TIMOTHY M. KRZYWICKI
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PROFESSIONAL ENGINEER

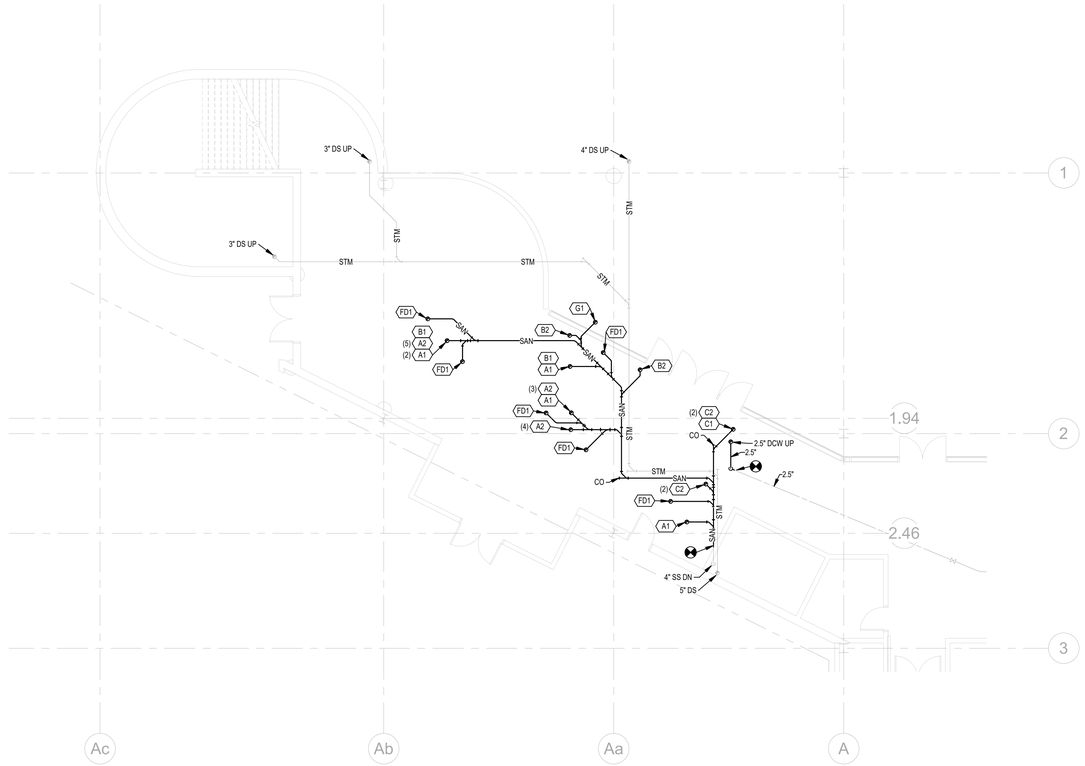
PLUMBING
DEMOLITION
WORK PLANS

Plumbing Demolition

PD100

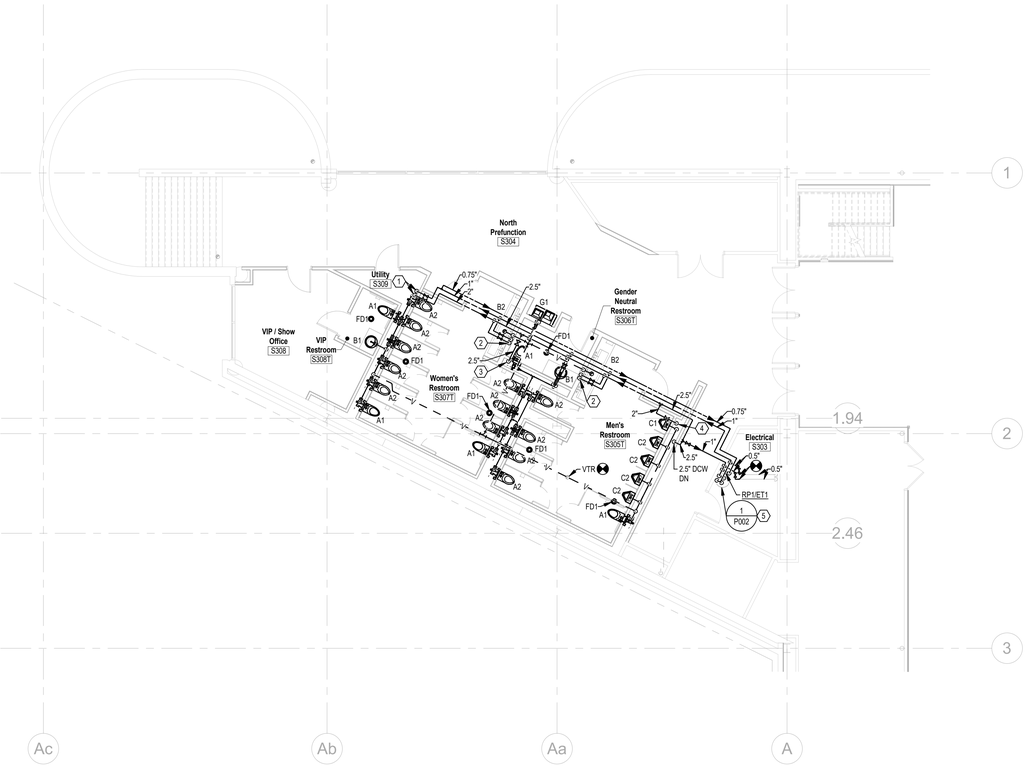
2025.10.08

25300



1 PLUMBING NEW WORK PLAN (ELEV. 770'-0")

SCALE: 1/8" = 1'-0"



2 PLUMBING NEW WORK PLAN (ELEV 788'-0")

SCALE: 1/8" = 1'-0"

NOTES

1. 2" DCW AND 0.5" DHW TO DROP IN CHASE TO SERVE WATER CLOSETS AND LAVATORY. PROVIDE FULL SIZE MANIFOLDS AND SERVE EACH FIXTURE INDIVIDUALLY FROM MANIFOLD. PROVIDE WATER HAMMER ARRESTORS PER PDI STANDARD WH-201.
2. 0.5" DCW AND DHW TO DROP IN WALL. PROVIDE ASSE 1070 MIXING VALVE UNDER COUNTERTOP AND SERVE THREE LAVATORY FAUCETS.
3. 2.5" DCW TO DROP IN CHASE TO SERVE WATER CLOSETS. PROVIDE FULL SIZE MANIFOLD AND SERVE EACH FIXTURE INDIVIDUALLY FROM MANIFOLD. PROVIDE WATER HAMMER ARRESTORS PER PDI STANDARD WH-201.
4. 2" DCW TO DROP IN CHASE TO SERVE WATER CLOSET AND URINALS. PROVIDE FULL SIZE MANIFOLD AND SERVE EACH FIXTURE INDIVIDUALLY FROM MANIFOLD. PROVIDE WATER HAMMER ARRESTORS PER PDI STANDARD WH-201.
5. EXISTING WATER HEATER TO REMAIN.

HEAPY

PROJECT NO. 2025-07170

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Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 State Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date
	CONTRACT DOCUMENTS	04/29/2022

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

PLUMBING NEW
WORK PLANS

Plumbing

P100

2025.10.08

25300

VALVES AND FITTINGS

	CHECK VALVE
	SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	CONCENTRIC PIPE REDUCER
P	PRESSURE GAUGE
	UNION
	DRAIN VALVE WITH HOSE END CONNECTION
	END CAP
	SHUTOFF VALVE ON RISER

FIRE SUPPRESSION PIPING DESIGNATIONS

	EXISTING PIPE TO REMAIN
	EXISTING PIPE TO BE REMOVED
DS	SPRINKLER PIPE (DRY)
F	FIRE SUPPRESSION (STANDPIPE / SPRINKLER MAIN)
FS	FIRE SERVICE
PS	PRE-ACTION / DELUGE SPRINKLER PIPE
S	SPRINKLER PIPE (WET)
SD	SPRINKLER DRAIN PIPE

GENERAL FLOOR PLAN NOTES

10" ELEV: 8' - 0" / 10" ELEV: 8' - 0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
TOE: 3' - 0" / BOE: 0' - 6"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE
2	RISER OR STACK NUMBER
B / P2	DETAIL: B = DETAIL DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
1 / P2	SECTION: 1 = SECTION DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
OH / 1	FIRE SUPPRESSION HAZARD CLASSIFICATION AND HAZARD CLASSIFICATION GROUP
P1 OR P1	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
A1	EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
	CONNECT TO EXISTING
3	PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
3	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
A1	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)

FIRE SUPPRESSION SYMBOLS

DOUBLE LINE	SINGLE LINE	
		CONCEALED PENDENT SPRINKLER
	FDC	FIRE DEPARTMENT VALVE
		FIRE HYDRANT
	FS	FLOW SWITCH
		GATE VALVE OS&Y
		INSTITUTIONAL PENDENT SPRINKLER
		PENDENT SPRINKLER
	PIV	POST INDICATOR VALVE
		RECESSED PENDENT SPRINKLER
		SIDE WALL SPRINKLER
	S	SUPERVISED VALVE
		UPRIGHT SPRINKLER

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
D	D	DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
		PUMP
R	R	RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

ABBREVIATIONS

AAP	- AREA ALARM PANEL (MEDICAL GAS)
AC	- AIR COMPRESSOR OR AIR CONDITIONER
ACC	- ACCESS
ACCU	- AIR COOLED CONDENSING UNIT
AD	- ACCESS DOOR OR AREA DRAIN
ADB	- ACID DILUTION BASIN
ADJ	- ADJUSTABLE
AFF	- ABOVE FINISHED FLOOR
AFG	- ABOVE FINISHED GRADE
ALT	- ALTERNATE
AP	- ACCESS PANEL
APPROX	- APPROXIMATE
AR	- AIR RECEIVER OR ARGON
ARCH	- ARCHITECT OR ARCHITECTURAL
ASSY	- ASSEMBLY
AV	- ACID VENT
AW	- ACID WASTE
BDD	- BACK DRAFT DAMPER
BFP	- BACKFLOW PREVENTER
BLDG	- BUILDING
BOB	- BOTTOM OF BEAM
BOD	- BOTTOM OF DUCT
BOE	- BOTTOM OF EQUIPMENT
BOF	- BOTTOM OF FOOTING
BOG	- BOTTOM OF GRILLE
BOP	- BOTTOM OF PIPE
BOT	- BOTTOM
BT	- BATHTUB
BTU	- BRITISH THERMAL UNIT
BTUH	- BRITISH THERMAL UNIT PER HOUR
BTWN	- BETWEEN
CA	- COMPRESSED AIR
CB	- CATCH BASIN
CBD	- COUNTER BALANCED BACKDRAFT DAMPER
CFCI	- CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFM	- CUBIC FEET PER MINUTE
CHS	- CHILLED WATER SUPPLY
CHR	- CHILLED WATER RETURN
CI	- CAST IRON
CK	- CLINICAL SINK
CLG	- CEILING
CMU	- CONCRETE MASONRY UNIT
CO	- CLEAN OUT
CO2	- MEDICAL CARBON DIOXIDE
CONN	- CONNECT OR CONNECTION
CONTR	- CONTRACTOR
CORR	- CORRIDOR
CS	- CLINICAL SINK OR COLD SOFT WATER
CTR	- CENTER
CU	- COPPER
CWS	- COMBINATION WATER SERVICE OR CONDENSER WATER SUPPLY
CWR	- CONDENSER WATER RETURN
D	- DEPTH OR DRAIN LINE
DCW	- DOMESTIC COLD WATER
DD	- DECK DRAIN
DET	- DETAIL
DF	- DRINKING FOUNTAIN OR WATER COOLER OR DIESEL FUEL
DFU	- DRAINAGE FIXTURE UNIT
DHW	- DOMESTIC HOT WATER
DHWR	- DOMESTIC HOT WATER RETURN
DI	- DEIONIZED WATER
DIA	- DIAMETER
DIM	- DIMENSION
DN	- DOWN
DS	- DOWN SPOUT OR SPRINKLER (DRY)
DT	- PERFORATED DRAIN TILE
DWG	- DRAWING
EA	- EACH
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)
EEW	- EMERGENCY EYE WASH
EJ	- EXPANSION JOINT
ELEC	- ELECTRICAL
ELEV	- ELEVATOR
EQ	- EQUAL
EQUIP	- EQUIPMENT
ET	- EXPANSION TANK
ETR	- EXISTING TO REMAIN
ES	- EMERGENCY SHOWER
EQS	- EQUIPMENT SUPPLIER
EWC	- ELECTRICAL WATER COOLER
EXH	- EXHAUST AIR
EXP	- EXPANSION
EXT	- EXTERIOR
EX	- EXISTING
F	- FIRE SUPPRESSION (STANDPIPE/SPRINKLER MAIN)
FCE	- FIRE CONTROL EQUIPMENT
FCO	- FLOOR CLEANOUT
FD	- FLOOR DRAIN
FDC	- FIRE DEPARTMENT CONNECTION
FDV	- FIRE DEPARTMENT VALVE
FF	- FINISHED FLOOR ELEVATION
FHC	- FIRE HOSE CABINET
FLR	- FLOOR
FM	- FORCE MAIN
FOB	- FLAT ON BOTTOM
FOF	- FUEL OIL FLOW
FOG	- FUEL OIL GAUGE
FOR	- FUEL OIL RETURN
FOS	- FUEL OIL SUPPLY
FOT	- FLAT ON TOP
FPM	- FEET PER MINUTE
FR	- FIRE RISER
FS	- FLOOR SINK OR FIRE SERVICE
FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)
FT	- FEET
FTG	- FOOTING
G	- GAS OR NATURAL GAS
GA	- GAUGE
GAL	- GALLON
GALV	- GALVANIZED
GC	- GENERAL TRADES CONTRACTOR
GD	- GARAGE DRAINAGE
GPM	- GALLONS PER MINUTE
GS	- GAS SERVICE
GW	- GREASE WASTE
H2	- HYDROGEN
HB	- HOSE BIBB
HC	- HVAC CONTRACTOR (DIVISION 23)
HD	- HUB DRAIN
HE	- HELIUM
HG	- REFRIGERANT HOT GAS
HP	- HORSEPOWER OR HIGH POINT
HPC	- HIGH PRESSURE CONDENSATE RETURN
HPS	- HIGH PRESSURE STEAM SUPPLY
HPW	- HIGH PURITY WATER
HPWR	- HIGH PURITY WATER RETURN
HR	- HOSE REEL
HT	- HEAT TRACE
HTR	- HEATER
HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING
HW	- HOT WATER
IA	- MEDICAL INSTRUMENT AIR
ID	- INSIDE DIAMETER
INV	- INVERT ELEVATION
IN	- INCHES
IV	- INDIRECT VENT
IW	- INDIRECT WASTE
JS	- JANITOR SINK
K	- KITCHEN WASTE
KEC	- KITCHEN EQUIPMENT CONTRACTOR
L	- LENGTH
LA	- LABORATORY COMPRESSED AIR
LAV	- LAVATORY
LBS	- POUNDS
LCW	- LABORATORY COLD WATER
LEC	- LABORATORY EQUIPMENT CONTRACTOR
LHW	- LABORATORY HOT WATER
LHWR	- LABORATORY HOT WATER RETURN
LPC	- LOW PRESSURE CONDENSATE RETURN
LPS	- LOW PRESSURE STEAM SUPPLY
LV	- LABORATORY VACUUM OR LABORATORY VENT
LW	- LABORATORY WASTE
MA	- MEDICAL COMPRESSED AIR
MAP	- MASTER ALARM PANEL (MEDICAL GAS)
MAX	- MAXIMUM
MB	- MOP BASIN
MC	- MECHANICAL CONTRACTOR (DIVISION 23)
MEZZ	- MEZZANINE
MFR	- MANUFACTURER
MH	- MANHOLE
MIN	- MINIMUM OR MINUTE
MISC	- MISCELLANEOUS
MTD	- MOUNTED
MTG	- MOUNTING
MPC	- MEDIUM PRESSURE CONDENSATE RETURN
MPS	- MEDIUM PRESSURE STEAM SUPPLY
MU	- WATER MAKE-UP
MV	- MEDICAL SURGICAL VACUUM
N2	- MEDICAL NITROGEN
NIC	- NORMALLY CLOSED
NG	- GASOLINE (NON-LEAD)
NIC	- NOT IN CONTRACT
NIO	- NORMALLY OPEN
NO	- MEDICAL NITROUS OXIDE
NOM	- NOMINAL
NPW	- NON-POTABLE WATER
NPT	- NATIONAL PIPE THREAD
NTS	- NOT TO SCALE
O2	- MEDICAL OXYGEN
OA	- OUTDOOR AIR
OD	- OUTSIDE DIAMETER OR OVERFLOW DRAIN
OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	- OWNER FURNISHED OWNER INSTALLED
P	- PROPANE GAS
PC	- PLUMBING CONTRACTOR (DIVISION 22) OR PUMPED CONDENSATE RETURN
PD	- PUMP DISCHARGE OR PARAPET DRAIN
PIV	- POST INDICATOR VALVE
PLBG	- PLUMBING
PS	- PRE-ACTION/DELUGE SPRINKLER
PRESS	- PRESSURE
PRV	- PRESSURE REGULATING VALVE
PSF	- POUNDS PER SQUARE FOOT
PSI	- POUNDS PER SQUARE INCH
PSV	- PRESSURE SUSTAINING VALVE
PSIG	- POUNDS PER SQUARE INCH GAUGE
PW	- PURE WATER
RA	- RETURN AIR
RAD	- RADIUS
RCP	- REINFORCED CONCRETE PIPE
RD	- ROOF DRAIN
REC	- RECESSED
REQD	- REQUIRED
RI	- ROUGH IN
RL	- REFRIGERANT LIQUID
ROS	- REVERSE OSMOSIS WATER SUPPLY
ROR	- REVERSE OSMOSIS WATER RETURN
RPM	- REVOLUTIONS PER MINUTE
RS	- REFRIGERANT SUCTION
RV	- RELIEF VALVE
S	- SPRINKLER (WET)
SA	- SHOCK ARRESTOR OR SUPPLY AIR
SAN	- SANITARY OR SANITARY DRAIN
SCH	- SCHEDULE
SCW	- SOFT COLD WATER
SD	- SPRINKLER DRAIN OR SUBSOIL DRAIN
SH	- SHOWER
SHT	- SHEET
SK	- SINK
SPEC	- SPECIFICATIONS
SQ	- SQUARE
SR	- SUPPLY RISER
SS	- SANITARY STACK (SOIL OR WASTE) OR STAINLESS STEEL
STD	- STANDARD
STM	- STORM OR STORM DRAINAGE
STRUC	- STRUCTURAL OR STRUCTURE
SUC	- SITE UTILITY CONTRACTOR
T	- FUEL TANK VENT
TD	- TRENCH DRAIN
TEMP	- TEMPERATURE
TOB	- TOP OF BEAM
TOD	- TOP OF DUCT
TOE	- TOP OF EQUIPMENT
TOF	- TOP OF FOOTING
TOJ	- TOP OF JOIST
TOP	- TOP OF PIPE
TOS	- TOP OF SLAB OR TOP OF STEEL
TF	- TRAP FILLER
TP	- TRAP PRIMER OR TRAP PRIMER DISCHARGE
TW	- TEMPERED WATER
TYP	- TYPICAL
UR	- URINAL
UNO	- UNLESS NOTED OTHERWISE
V	- VENT OR SANITARY SEWER VENT
VAC	- VACUUM
VC	- VACUUM CLEANING
VCV	- VACUUM CLEANING VALVE
VE	- VACUUM EXHAUST
VEL	- VELOCITY
VIB	- VALVE IN BOX
VOL	- VOLUME
VP	- VACUUM PUMP
VS	- VENT STACK
VTR	- VENT THROUGH ROOF
VR	- VENT RISER
W/	- WITH
W/O	- WITHOUT
W	- WASTE
WAGD	- WASTE ANESTHESIA GAS DISPOSAL
WC	- WATER CLOSET
WCO	- WALL CLEANOUT
WH	- WALL HYDRANT OR WATER HEATER
WIV	- WALL INDICATOR VALVE
WS	- WATER SERVICE
YCO	- YARD CLEANOUT
ZVC	- ZONE VALVE CABINET

FIRE SUPPRESSION DESIGN NOTES

A. ALL PIPING IS ABOVE THE CEILING (AT THE UNDERSIDE OF STRUCTURE IN EXPOSED STRUCTURAL AREAS) UNLESS OTHERWISE INDICATED.

B. REFER TO ARCHITECTURAL DRAWINGS FOR REFLECTED CEILING PLANS AND GENERAL TRADES CONSTRUCTION INFORMATION. COORDINATE SPRINKLER LOCATIONS WITH CEILING DEVICES (LIGHTING, GRILLES, ETC.) OBTAIN ARCHITECTS APPROVAL OF SPRINKLER LAYOUT PRIOR TO INSTALLATION. FINAL FINISHED APPEARANCE OF WORK MUST BE APPROVED BY THE ARCHITECT.

C. TOTAL SQUARE FOOTAGE OF PROJECT IS APPROXIMATELY 2,600 SQUARE FEET.

D. CONTRACTOR SHALL MAKE REQUIRED FLOW TESTS, LAY OUT SYSTEMS, OBTAIN APPROVALS FROM THE AUTHORITY HAVING JURISDICTION PRIOR TO BEGINNING ANY FABRICATION OR INSTALLATION WORK.

E. FIRE SUPPRESSION SPRINKLER SYSTEMS. REFER TO DRAWING AND SPECIFICATIONS FOR COMPLETE SCOPE OF WORK.

1. RENOVATION AREA(S) TO BE TOTALLY SPRINKLERED. EXISTING SPRINKLER SYSTEMS TO BE MODIFIED TO CONFORM TO THE NEW LAYOUT. NEW SPRINKLERS ARE TO BE INTEGRATED INTO THE EXISTING SPRINKLER SYSTEM. ALL EXISTING SPRINKLERS, REMOVED OR DISTURBED IN RENOVATION AREAS, SHALL BE DISPOSED OF AND REPLACED WITH NEW SPRINKLERS, AS INDICATED ON THE DRAWINGS.

F. BASIS FOR DESIGN OF FIRE SUPPRESSION SYSTEM(S) TO BE:

1. LIGHT HAZARD 1500 SQUARE FEET, 0.10 GPM/SQ. FT., 225 SQUARE FEET MAXIMUM PER SPRINKLER.

2. A MINIMUM EXTERIOR HOSE STREAM OF 100 GPM SHALL BE INCLUDED IN THE HYDRAULIC CALCULATIONS.

   AREA OF OPERATION REDUCTIONS AND INCREASES SHALL BE CALCULATED PER NFPA STANDARDS. VERIFY DENSITIES WITH GOVERNING AUTHORITIES AND OWNER'S INSURER BEFORE PROCEEDING WITH DESIGN OF SYSTEM(S). IF GOVERNING AUTHORITIES OR OWNER'S INSURER REQUIREMENTS ARE MORE STRINGENT THOSE REQUIREMENTS SHALL PREVAIL. ALL AREAS ARE TO BE LIGHT HAZARD CLASSIFICATION, UNLESS OTHERWISE INDICATED ON THE PLANS OR REQUIRED BY THE GOVERNING AUTHORITY.

G. PROVIDE THE FOLLOWING SPRINKLER TYPES, UNLESS OTHERWISE NOTED ON THE DRAWINGS. PENDENT TYPE SPRINKLERS SHALL BE LOCATED IN THE CENTER OF SQUARE PADS AND AT THE CENTER OR AT QUARTERPOINTS OF THE LONG AXIS OF RECTANGULAR PADS.

1. SPRINKLERS IN AREAS WITH CEILINGS SHALL BE CONCEALED TWO PIECE ADJUSTABLE PENDENT QUICK RESPONSE TYPE WITH WHITE FINISH COVERPLATE.

2. SPRINKLERS IN EXPOSED AREAS SHALL BE QUICK RESPONSE BRASS UPRIGHT TYPE.

H. ALL PIPING SHOWN (WITH SIZES) SHALL BE INSTALLED AS SIZED UNLESS HYDRAULIC CALCULATIONS INDICATED A LARGER SIZE IS NECESSARY. FOR PIPING NOT SHOWN OR SIZED ON THE DRAWINGS, PIPE SIZING SHALL BE BASED ON FIRE SUPPRESSION CONTRACTORS HYDRAULIC CALCULATIONS.

I. EXERCISE SPECIAL CARE TO COORDINATE PIPING AND EQUIPMENT LOCATIONS WITH ALL OTHER TRADES.

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

FIRE SUPPRESSION SHEET LIST

SHEET NUMBER	SHEET NAME
F001	LEGEND, NOTES AND SHEET LIST
F101	FIRE SUPPRESSION PLANS

SCHOOLEY CALDWELL

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TecStudio Inc.
7510 State Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency Restroom Renovation

400 North High Street, Columbus Ohio 43215

STATE OF OHIO — TIMOTHY M. KRZYWICKI — E-73990 — 10/8/25 — REGISTERED — PROFESSIONAL ENGINEER

LEGEND, NOTES AND SHEET LIST

Fire Suppression

F001

2025.10.08

25300

HEAPY

PROJECT NO. 2025-07170

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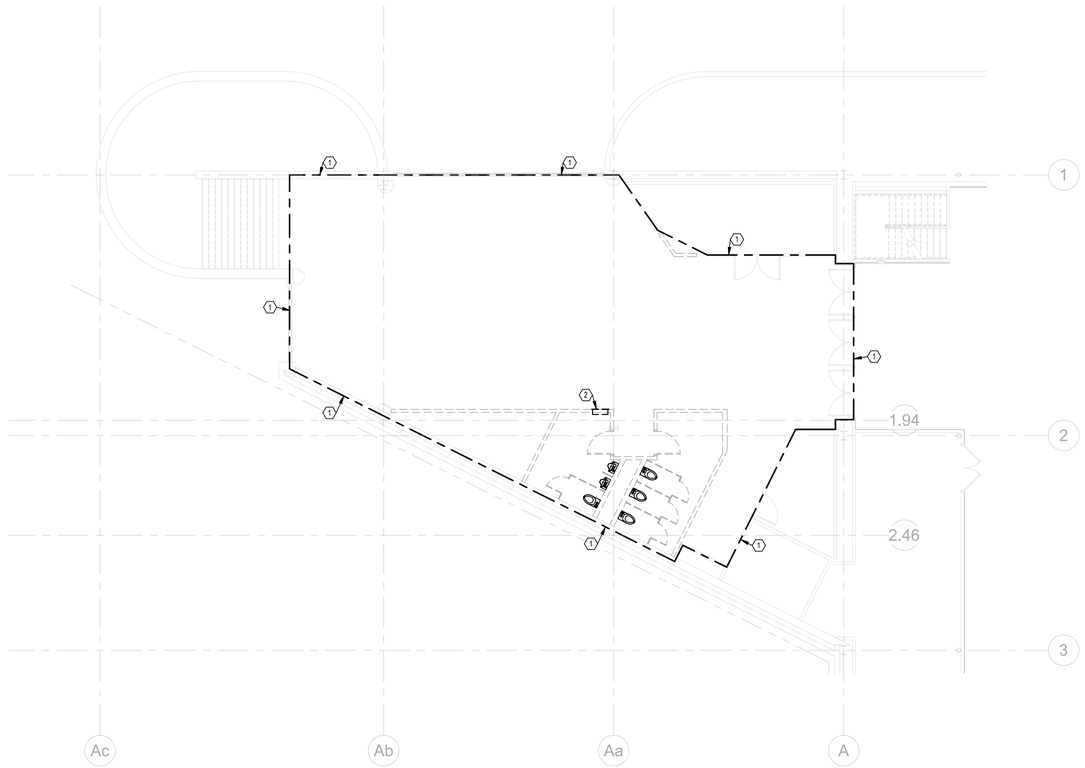
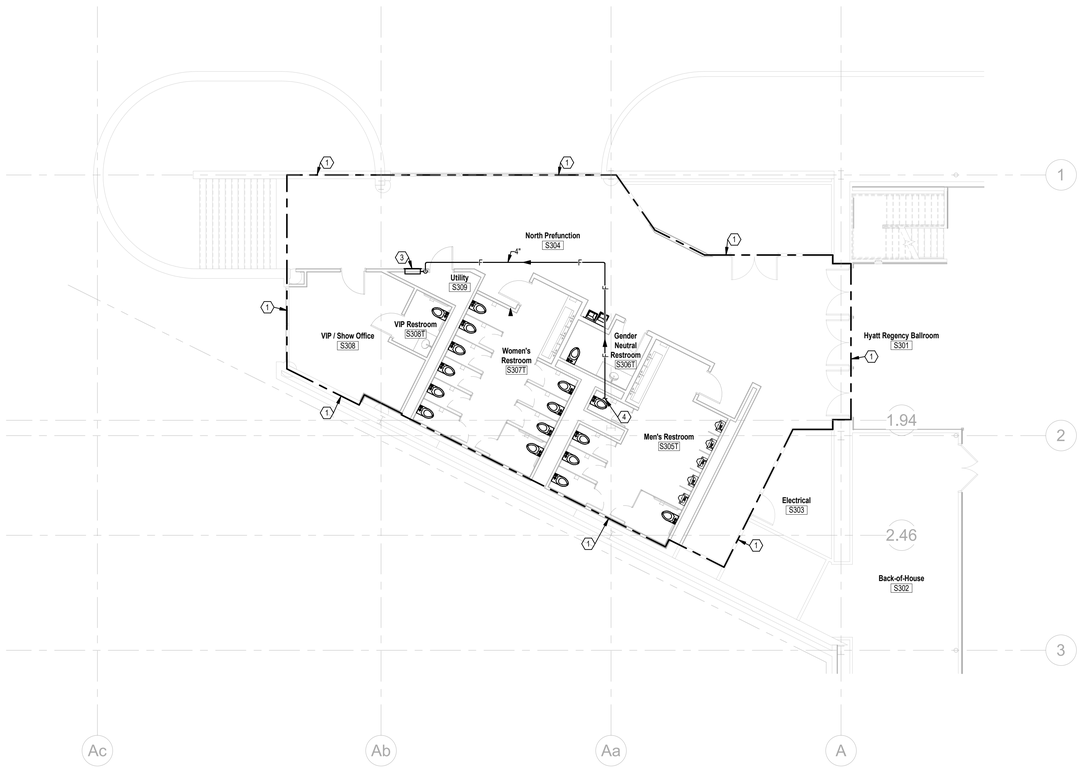


1 FIRE SUPPRESSION DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



2 FIRE SUPPRESSION NEW WORK PLAN

SCALE: 1/8" = 1'-0"

NOTES

1. MODIFY EXISTING SPRINKLER SYSTEM IN THIS AREA AS REQUIRED FOR NEW LAYOUT.
2. REMOVE FIRE DEPARTMENT VALVE CABINET. PIPING SERVING FIRE DEPARTMENT VALVE TO BE EXTENDED TO NEW FIRE DEPARTMENT VALVE.
3. PROVIDE 2.5" FIRE DEPARTMENT VALVE AND FIRE EXTINGUISHER CABINET.
4. EXTEND TO PIPING SERVING PREVIOUSLY REMOVED FIRE DEPARTMENT VALVE.

HEAPY

PROJECT NO. 2025-07170

SCHOOLEY CALDWELL

ARCHITECTURE. INSPIRED.

300 Marconi Boulevard T 614-628-0300
Columbus OH 43215 F 614-628-0311
schooleycaldwell.com

Consultants:

Structural
Paul J. Ford
250 E Broad St, Suite 600
Columbus, OH 43215

Plumbing, Mechanical, Electrical
Heapy Engineering
1400 Dorothy Lane
Dayton, OH 45409

Lighting Design
TecStudio Inc.
7510 Slate Ridge Blvd
Columbus, OH 43068

Revision Schedule

#	Description	Date

Hyatt Regency
Restroom
Renovation

400 North High Street,
Columbus Ohio 43215

STATE OF OHIO
TIMOTHY M. KRZYWICKI
E-73990
10/8/25
REGISTERED
PROFESSIONAL ENGINEER

FIRE
SUPPRESSION
PLANS

Fire Suppression

F101

2025.10.08

25300

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COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code:	90.1 (2019) Standard
Project Title:	(#2025-07170) Hyatt Restrms
Project Type:	Alteration

Construction Site:
400 North High Street
Columbus, Ohio 43215

Owner/Agent:
Hyatt Regency Bathroom Renovation

Designer/Contractor:
Heapy Engineering
1400 Dorothy Lane
Dayton, Ohio 45409

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-S308 (Common Space Types:Office - Enclosed <=250 sq ft)	233	0.74	172
2-Women's S307T & Men's S305T (Common Space Types:Restrooms)	855	0.63	539
3-VIP Restroom S308T (Common Space Types:Restrooms)	42	0.63	26
4-Gender Neutral Restroom S306T (Common Space Types:Restrooms)	80	0.63	50
5-North Prefunction S304 (Common Space Types:Lobby - General)	2020	0.84	1697
6-Utility S309 (Common Space Types:Storage <50 sq.ft.)	28	0.51	14
		Total Allowed Watts =	2499

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
S308 (Common Space Types: Office - Enclosed <=250 sq ft, 233 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	7	21	144
Women's S307T & Men's S305T (Common Space Types: Restrooms, 855 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	8	21	165
LED: G: Backlit vanity mirror: Other:	1	2	107	214
VIP Restroom S308T (Common Space Types: Restrooms, 42 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	1	21	21
Gender Neutral Restroom S306T (Common Space Types: Restrooms, 80 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	2	21	41
North Prefunction S304 (Common Space Types: Lobby - General, 2020 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	29	21	597
LED: B2 / B2E: 4" WASHER: Other:	1	2	15	30
Utility S309 (Common Space Types: Storage <50 sq.ft., 28 sq.ft.)				
LED: A2 / A2E: 4" DOWNLIGHT: Other:	1	1	21	21
			Total Proposed Watts =	1233

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2019) Standard requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title	Signature	Date

Inspection Checklist

Energy Code: 90.1 (2019) Standard

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 9.4.3, 9.7 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
8.4.3 [EL11][2]	New buildings have electrical energy use measurement devices installed. Where tenant spaces exist, each tenant is monitored separately. In buildings with a digital control system the energy use is transmitted to to control system and displayed graphically.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1 [EL1][2]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.1 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.1f [EL13][1]	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.3 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.6.2 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
8.7.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.2.2.3 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
9.4.4 [FI20][1]	At least 75% of all permanently installed lighting fixtures in dwelling units have >= 55 lm/W efficacy or a >= 45 lm/W total luminaire efficacy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

Select Prevailing Wage Rates

Prevailing Wage Rate
Skilled Crafts

Name of Union: Electrical Local 683 Inside

Type of Rate: Commercial

Change #: LCN02-2025ib

Craft: Electrical

Effective Date: 8/13/2025

Effective Date: 8/13/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	$43.00		$12.15	$8.81	$1.16	$0.00	$4.25	$0.00	$0.00	$0.00	$69.37	$90.87
Welding	$44.00		$12.15	$8.84	$1.16	$0.00	$4.25	$0.00	$0.00	$0.00	$70.40	$92.40
Medium Voltage Splicing	$44.00		$12.15	$8.84	$1.16	$0.00	$4.25	$0.00	$0.00	$0.00	$70.40	$92.40
Over 100 feet	$64.50		$12.15	$9.46	$1.16	$0.00	$4.25	$0.00	$0.00	$0.00	$91.52	$123.7
Level 1 CW 0 to 2000 hours	$15.29		$6.83	$0.46	$0.92	$0.00	$0.46	$0.10	$0.00	$0.00	$24.06	$31.71
Level 2 CW 2001 to 4000 hours	$16.25		$6.83	$0.49	$0.92	$0.00	$0.49	$0.10	$0.00	$0.00	$25.08	$33.21
Level 3 CW 4001 to 6000 hours	$17.20		$6.83	$0.52	$0.92	$0.00	$0.52	$0.10	$0.00	$0.00	$26.09	$34.69
Level 4 CW 6001 to 8000 hours	$19.12		$6.83	$0.57	$0.92	$0.00	$0.57	$0.10	$0.00	$0.00	$28.11	$37.67
Level 1 CE 8001 to 10000 hours	$21.03		$6.83	$0.63	$0.92	$0.00	$0.63	$0.10	$0.00	$0.00	$30.14	$40.66
Level 2 CE 10,001 to 12,000 hours	$22.94		$6.83	$0.69	$0.92	$0.00	$0.69	$0.10	$0.00	$0.00	$32.17	$43.64
Level 3 CE 12,001 to14,000 hours	$28.67		$6.83	$0.86	$0.92	$0.00	$0.86	$0.10	$0.00	$0.00	$38.24	$52.58
Apprentice	BHR	Percent										
0-1000 hrs 1st Period	$21.50	$50.00	$12.15	$4.41	$1.16	$0.00	$0.00	$0.00	$0.00	$0.00	$39.22	$49.97
1001-2000 hrs 2nd Period	$23.65	$55.00	$12.15	$4.85	$1.16	$0.00	$0.00	$0.00	$0.00	$0.00	$41.81	$53.63
2001-3500 hrs 3rd Period	$25.80	$60.00	$12.15	$5.28	$1.16	$0.00	$2.55	$0.00	$0.00	$0.00	$46.94	$59.84
3501-5000 hrs 4th Period	$27.95	$65.00	$12.15	$5.73	$1.16	$0.00	$2.76	$0.00	$0.00	$0.00	$49.75	$63.73
5001-6500 hrs 5th Period	$30.10	$70.00	$12.15	$6.16	$1.16	$0.00	$2.98	$0.00	$0.00	$0.00	$52.55	$67.60

6501-8000 hrs 6th Period	$34.40	$80.00	$12.15	$7.05	$1.16	$0.00	$3.40	$0.00	$0.00	$0.00	$58.16	$75.36

(*)Special Calculation Note :

Other for CW/CE: Education Fund

Ratio :

1 to 3 Journeymen to 2 Apprentices
4 to 6 Journeymen to 4 Apprentices

Construction Wireman and Construction Electrician Ratio:
1 Journeymen to 4 (CW/CE) Employees
An Inside Journeyman Wireman is required on the project at the 5th worker or when apprentices are used.

Jurisdiction (* denotes special jurisdictional note) :

Champaign, Clark, Delaware, Fairfield, Franklin, Madison, Pickaway*, Union

Special Jurisdictional Note :

In Pickaway County the following townships: Circleville, Darby, Harrison, Jackson, Madison, Monroe, Muhlenberg, Scioto, Walnut, Washington.

Details :

Prevailing Wage Rate
Skilled Crafts

Name of Union: Labor Local 423

Type of Rate: Commercial

Change #:	**Craft:**	**Effective Date:**	**Effective Date:**
LCN01-2025ib	Laborer	6/1/2025	6/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Laborer Group 1	$32.98		$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$47.53	$64.02
Group 2	$33.29		$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$47.84	$64.49
Group 3	$33.60		$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$48.15	$64.95
Group 4	$33.91		$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$48.46	$65.42
Apprentice	BHR	Percent										
0-1000 hrs	$23.09	$70.00	$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$37.64	$49.18
1001-2000 hrs	$26.38	$80.00	$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$40.93	$54.13
2001-3000 hrs	$29.68	$90.00	$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$44.23	$59.07
3001-4000 hrs	$31.33	$95.00	$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$45.88	$61.55
More than 4000 hrs	$32.98	$100.00	$8.60	$4.45	$0.40	$0.00	$1.00	$0.00	$0.10	$0.00	$47.53	$64.02

(*)Special Calculation Note :

Ratio :

1 Journeymen to 1 Apprentice 4 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Fairfield, Fayette, Franklin, Hocking, Licking, Madison, Pickaway, Union

Special Jurisdictional Note :

Details :

Group 1: General Laborers, Carpenter Tender, Cathodic Protection, Cleaning Debris, Cleaning of all Material, General Clean-up including Vacuum Cleaning, Scraping and Cleaning of Walls and Floors, Landscape, Installation and Removal of Fencing, Sod Layers, All Portable Heaters, Flagman, Loading and Unloading of all Trucks, Handling and conveying all Materials, Washing of all Windows, Conveyer Belt, All Water Pumps up to and including three (3) inch intake, Watchman, Water Boy and Tool Room Attendant. Group 1- Swimming Pools, Pool Decks, Surrounding Sidewalk and Parking Garages. Group 2: Skid Steer, Concrete Specialists, Brick Tender, Stone Mason Tender, Plaster Tender, Mortar Mixer and Operator, Cement Mason Tender, Construction Specialist, All Scaffold Builders (Swinging Scaffolds), Lagging, Bush Hammering,Jack Hammer Operator, Air or Electric Pneumatic Tool Operator, Power Driven Tools, Power Buggy Operators, Pouring and Placement of all concrete, Fork Lift Operators, Power Wheelbarrow Operators, Asphalt and Blacktop Rakers, Wrecker/Demolition, Sand Blasting and Chipping, Welders on Demolition, Grade Checkers, a person on a bucket pouring concrete, Gunite Nozzle man, Wagon and Churn Drill Operator, Concrete Saw Operator, Brush Feeders on pulverizers, Pipe Layers, Bottom Man, Laser Gun, Burners, Sand Blasting of concrete, Vibrator Man, Steward, Signal Man, Caisson, Caisson Bottom Man, Piledrivers, Asbestos and Lead Abatement Laborers. Hazardous Waste (Level B): Any work requiring the following protective equipment must be paid at Group 2 rate, A protective suit and an Air Purifying Respirator (APR) with the appropriate filter canisters. The ensemble is used when contaminants are reliably known not to be hazardous to the skin and not IDLH (Immediately Dangerous To Life or Health) and correct filter protection is available. This ensemble offers adequate protection for many jobs. Heat stress may be a problem due to inherent restrictions to breathing in an APR. Also, normal job related injury risk will be nearly as high as for Level C Equipment. Group 3 Hazardous (Level C:) Any work requiring the following protective equipment must be paid at Group 3 rate, A chemically resistant splash suit and a (SCBA) or Airline Respirator. This ensemble is required when the situation is very hazardous, such as oxygen deficient atmospheres, IDLH atmospheres, or confined space entries, but the risk of skin exposure is not as great as in Level D situations. Then Level C ensemble gives the second highest level of protection, but also puts physical stress on the worker; primarily heat stress, reduced vision,dexterity and mobility directly attributable to wearing of the protective equipment. Therefore, in addition to the hazardous material, the hazard of the normal job related injuries is greatly increased. Group 4 Hazardous Waste (Level D) requiring the following protective equipment must be paid at Group 4 rate, Protective equipment is required when the area has been known to contain extremely toxic contaminants or contaminants unknown but may be expected to be extremely toxic and /or Immediately Dangerous to Life and Health (IDLH). This ensemble includes fully encapsulated chemical suit (moon suit), Self Contained Breathing Apparatus (SCBA), or Airline Fed Respirator, and various types and numbers of boots and gloves, cool vests and voice activated radios are optional equipment sometimes worn. Level D ensembles provide the highest level of protection from contaminants but places the greatest physical and mental stress on the worker. The claustrophobic environment of the moon suit causes anxiety in most people, which greatly increases the already inherent heat stress problems. Also, this ensemble reduces vision, mobility, dexterity, and communication capacity, all of which increases the risk of normal job related injuries, ie., slips ,falls, caught between, etc . Hazardous Pay of $0.25 per hour shall be paid in addition to classifications shown above Swing Scaffolds (suspended by rope or pulley), and swing scaffolds for grain storage tank or grain elevators, when the work is performed at a height of fifty (50) feet or more above the foundations or grade level, whichever is higher. Caisson work and tunnel work (depth being 15 feet or deeper) Hazardous Waste Removal & Lead Abatement Workers: Exclusive or "Hot" area with toxic or hazardous materials, when one of the following personal protective equipment ensembles will be required for necessary protection against toxic contaminants. All of the ensembles increase the risks of certain types of worker-related injuries. When Laborers complement another craft receiving premium rate of pay Laborers will also receive premium pay for this "HOT" type of work.

Prevailing Wage Rate
Skilled Crafts

Name of Union: Painter Local 1275

Type of Rate: Commercial

Change #:	**Craft:**	**Effective Date:**	**Effective Date:**
LCN01-2024ib	Painter	5/8/2024	5/8/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Brush Roll	$29.20		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$44.46	$59.06
Wall Washer	$29.20		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$44.46	$59.06
Spray	$29.70		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$44.96	$59.81
Structural Steel Swing Stage	$29.50		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$44.76	$59.51
Sandblast, Steam Clean, Water Blasting (3500 PSI and Over) and Hazardous	$29.90		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$45.16	$60.11
Vinyl Hanging	$29.70		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$44.96	$59.81
Apprentice	BHR	Percent										
0-1500 hrs	$23.36	$80.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$31.08	$42.76
1501-3000 hrs	$24.82	$85.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$32.54	$44.95
3001-4500 hrs	$26.28	$90.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$34.00	$47.14
4501-6000 hrs	$27.74	$95.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$35.46	$49.33

(*)Special Calculation Note :

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note :

Details :

Heavy Highway Class 1 are qualified painters,blasters,riggers. Class 2 Equipment Tenders /or containment Builders are hired to tend employers equipment also engage in the building & moving of containment systems. Class 3 support personnel will perform Quality control duties,clean abrasive blast materials, load and unload trucks, handle all materials, man safety boats, & handle traffic control. All Tanks 50,000 gallon capacity or more will be at the tank stated rate.

Prevailing Wage Rate
Skilled Crafts

Name of Union: Painter Local 1275 Drywall

Type of Rate: Commercial

Change #:	**Craft:**	**Effective Date:**	**Effective Date:**
LCN01-2024ib	Painter	5/8/2024	5/8/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Drywall Finisher	$30.85		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$46.11	$61.54
Drywall Taper	$30.85		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$46.11	$61.54
Drywall Sanders	$30.20		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$45.46	$60.56
Drywall, Use of Mechanical or Pneumatic Tools	$31.60		$6.50	$8.31	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$46.86	$62.66
Apprentice	BHR	Percent										
1st 0-1500 hrs	$24.68	$80.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$32.40	$44.74
2nd 1501-3000 hrs	$26.22	$85.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$33.94	$47.05
3rd 3001-4500 hrs	$27.77	$90.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$35.49	$49.37
4th 4501-6000 hrs	$29.31	$95.00	$6.50	$0.77	$0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$37.03	$51.68

(*)Special Calculation Note :

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note :

Details :

Prevailing Wage Rate
Skilled Crafts

Name of Union: Plumber Pipefitter Local 189

Type of Rate: Commercial

Change #:	**Craft:**	**Effective Date:**	**Effective Date:**
LCN01-2024ib	Plumber Pipefitter	8/21/2024	8/21/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Plumber Pipefitter	$49.00		$10.39	$7.49	$1.45	$0.00	$8.26	$0.00	$0.00	$0.00	$76.59	$101.0
Heating Piping Refrigeration, Temperature Control, Air Conditioning Welder	$49.00		$10.39	$7.49	$1.45	$0.00	$8.26	$0.00	$0.00	$0.00	$76.59	$101.09
Apprentice	BHR	Percent										
1st Year	$22.05	$45.00	$5.00	$0.00	$1.45	$0.00	$0.00	$0.10	$0.00	$0.00	$28.60	$39.63
2nd Year	$24.50	$50.00	$10.39	$5.60	$1.45	$0.00	$0.00	$0.10	$0.00	$0.00	$42.04	$54.29
3rd Year	$26.95	$55.00	$10.39	$5.60	$1.45	$0.00	$0.00	$0.10	$0.00	$0.00	$44.49	$57.97
4th Year	$31.85	$65.00	$10.39	$5.60	$1.45	$0.00	$6.26	$0.10	$0.00	$0.00	$55.65	$71.58
5th Year	$39.20	$80.00	$10.39	$5.60	$1.45	$0.00	$8.26	$0.10	$0.00	$0.00	$65.00	$84.60

(*)Special Calculation Note :

*Other is International Training

Ratio :

Employees-------Journeyman to Apprentice per Job 1) 1-0 2) 1-1 3) 2-1 4) 2-2 5) 3-2 6) 4-2 7) 4-3 8) 5-3 9) 6-3 10) 6-4 11) 7-4 12) 8-4 13) 8-5 14) 9-5 15) 10-5 16) 10-6 17) 11-6 18) 12-6 19) 12-7 20) 13-7 21) 14-7 22) 14-8 23) 15-8 24) 16-8 25) 16-9 Heating Piping refrigeration,Temperature Control,Air Conditioning Ratio (1) Additional Apprentice to (3) Journeymen thereafter Employees Journeyman to Apprentice per Job 1) Employee 1-0 2) Employees 1-1 3) Employees 2-1 4) Employees 2-2 5)Employees 3-2 6) Employees 4-2 7) Employees 5-2 8) Employees 5-3 9) Employees 6-3 10)Employees 7-3 11)Employees 8-3 12)Employees 8-4 13)Employees 9-4 14)Employees 10-4 15)Employees 11-4 16) Employees 11-5 17) Employees 12-5 18) Employees 13-5 19) Employees 14-5 20)Employees 14-6 21)Employees 15-6 22)Employees 17-5 23)Employees 18-5 24)Employees 18-6 25)Employees 19-6 26)Employees 20-6 28)Employees 22-6 29)Employees 22-7 30) Employees 23-7 31)Employees 23-7 32) Employees 25-7 33)Employees 26-7 34)Employees 26-8

Jurisdiction (* denotes special jurisdictional note) :

Delaware, Fairfield, Franklin, Hocking, Licking, Madison, Marion, Perry, Pickaway, Ross, Union

Special Jurisdictional Note :

Details :

Sample A105-2017 Agreement

AIA® Document A105® – 2017

Standard Short Form of Agreement Between Owner and Contractor

AGREEMENT made as of the day of November in the year 2025
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Franklin County Convention Facilities Authority
400 N. High Street, 4th Floor
Columbus, Ohio 43215
kpaul@fccfa.org

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Regency Ballroom Restroom Renovation
400 N. High Street
Columbus, Ohio 43215

The Architect:
(Name, legal status, address and other information)

Schooley Caldwell
300 Marconi Blvd
Columbus, Ohio 43215
srosenthal@schooleycaldwell.com

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contractor shall complete the Work described in the Contract Documents for the Project. The Contract Documents consist of

.1 this Agreement signed by the Owner and Contractor;

.2 the drawings and specifications prepared by the Architect, dated September 10, 2025, and enumerated as follows:

Drawings:

Number	Title	Date

Specifications:

Section	Title	Pages

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.3 addenda prepared by the Architect as follows:

Number	Date	Pages

.4 written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement; and

.5 other documents, if any, identified as follows:

The Owner's Request for Bids issued on October 23, 2025

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

§ 2.2 Date of Commencement:

Unless otherwise set forth below, the date of commencement shall be the date of this Agreement.
(Insert the date of commencement if other than the date of this Agreement.)

The Contractor shall not commence any Work until after receipt of the Notice to Proceed

§ 2.3 Substantial Completion:

Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion, as defined in Section 12.5, of the entire Work:
(Check the appropriate box and complete the necessary information.)

[ ] Not later than ( ) calendar days from the date of commencement.

[X] By the following date: May 31, 2026

ARTICLE 3 CONTRACT SUM

§ 3.1 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is:

(—$—)

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:
(Itemize the Contract Sum among the major portions of the Work.)

Portion of the Work	Value

§ 3.3 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner:
(Identify the accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.4 Allowances, if any, included in the Contract Sum are as follows:
(Identify each allowance.)

Item	Price

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§ 3.5 Unit prices, if any, are as follows:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

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ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:
(Insert below timing for payments and provisions for withholding retainage, if any.)

Provided that an Application for Payment is received by the Architect not later than the 1st day of a month, the Owner shall make payment of the approved amount to the Contractor not later than the 15th day of the following month. If an Application for Payment is received by the Owner after the date fixed above, payment shall be made by the Owner not later than forty-five days after the Owner receives the Application for Payment.

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Retainage shall be withheld from each payment in the amount of 4% of the Application for Payment until the Work is Substantially Complete. Retained amounts shall be paid within 30 days of the date of Substantial Completion.

§ 4.2 Payments due and unpaid (except disputed amounts) under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.
(Insert rate of interest agreed upon, if any.)

4 % per annum

ARTICLE 5 INSURANCE

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5.1:

§ 5.1.1 Commercial General Liability insurance for the Project, written on an occurrence form, with policy limits of not less than ($ 1,000,000) each occurrence, ($ 2,000,000) general aggregate, and ($ 1,000,000) aggregate for products-completed operations hazard.

§ 5.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than ($ 1,000,000) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles along with any other statutorily required automobile coverage.

§ 5.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 5.1.1 and 5.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 5.1.4 Workers' Compensation at statutory limits.

§ 5.1.5 Employers' Liability with policy limits not less than ($ 1,000,000) each accident, ($ 1,000,000) each employee, and ($ 1,000,000) policy limit.

~~**§ 5.1.6** The Contractor shall provide builder's risk insurance to cover the total value of the entire Project on a replacement cost basis.~~

§ 5.1.7 Other Insurance Provided by the Contractor
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

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Coverage **Limits**

§ 5.2 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property. The Contractor may be~~is~~ entitled to receive an increase in the Contract Sum equal to the insurance proceeds related to a loss for damage to the Work covered by the Owner's property insurance.

§ 5.3 The Contractor shall obtain an endorsement to its Commercial General Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12.

§ 5.4 Prior to commencement of the Work, each party shall provide certificates of insurance showing their respective coverages.

§ 5.5 Unless specifically precluded by the Owner's property insurance policy, the Owner and Contractor waive all rights against (1) each other and any of their subcontractors, suppliers, agents, and employees, each of the other; and (2) the Architect, Architect's consultants, and any of their agents and employees, for damages caused by fire or other causes of loss to the extent payment is received for such damage or loss from ~~those losses are covered by~~ property insurance or other insurance applicable to the Project, except such rights as they have to the proceeds of such insurance.

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 The Contract

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

§ 6.2 The Work

The term "Work" means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the Contractor's obligations.

§ 6.3 Intent

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. If inconsistencies exist within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, or ordinances, the Contractor shall, in accordance with the Architect's interpretation, either (1) provide the better quality or greater quantity of Work, or (ii) comply with the more stringent requirement.

§ 6.4 Ownership and Use of Architect's Drawings, Specifications and Other Documents

Documents prepared by the Architect are instruments of the Architect's service for use solely with respect to this Project. The Architect shall retain all common law, statutory, and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Architect.

§ 6.5 Electronic Notice

Written notice under this Agreement may be given by one party to the other by email as set forth below.
(Insert requirements for delivering written notice by email such as name, title, and email address of the recipient, and whether and how the system will be required to generate a read receipt for the transmission.)

Notices shall be sent to the email addresses provided for each party in this Agreement.

ARTICLE 7 OWNER

§ 7.1 Information and Services Required of the Owner

§ 7.1.1 If requested in writing by the Contractor, the Owner shall furnish all necessary surveys and a legal description of the site.

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§ 7.1.2 Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

§ 7.1.3 ~~Prior to commencement of the Work, at the written request of the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence.~~The Owner shall prepare and provide to the Contractor a Notice of Commencement pursuant to Ohio Revised Code Section 1311.252.

§ 7.2 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work until the correction is made. If the Owner's exercise of its rights pursuant to this Section 7.2 is determined by a court or arbiter to have been unjustified, such exercise shall be deemed to have been a suspension of the Work pursuant to Section 16.4.

§ 7.3 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven~~-~~ day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the ~~Architect~~ Owner may withhold or nullify ~~a Certificate for Payment~~payment approval in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, ~~provided the actions of the Owner and amounts charged to the Contractor were approved by the Architect.~~as well as charges of engineers, attorneys, and other professionals.

§ 7.4 Owner's Right to Perform Construction and to Award Separate Contracts

§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

ARTICLE 8 CONTRACTOR

§ 8.1 Review of Contract Documents and Field Conditions by Contractor

§ 8.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. Before executing the Agreement, the Contractor and each Subcontractor and Sub-subcontractor have evaluated and satisfied themselves as to the conditions and limitations under which the Work is to be performed, including, without limitation, (i) the location, condition, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, (iv) availability and cost of materials, tools, and equipment, and (v) other similar issues. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site.

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Owner~~ Architect~~.

§ 8.2 Contractor's Construction Schedule

§ 8.2 .1 The Contractor, promptly after being awarded the Contract~~, shall prepare and submit~~ and throughout the Work, shall prepare, and keep current, and submit each time it is updated for the Owner's and Architect's information a Contractor's construction schedule for the Work.

§ 8.2.2 The Contractor shall coordinate its Work with the work of other contractors and consultants working on the Project. Contractor, Architect and other contractors shall keep schedules up to date and promptly notify each other and Owner in writing if such schedules are impacted. Contractor shall use its best efforts to accommodate the schedules of other contractors and consultants.

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§ 8.2.3 In developing the construction schedule for the Work, Contractor shall take into consideration the schedule of events and daily operations of the Greater Columbus Convention Center and Hyatt Regency Ballroom. Contractor shall schedule work at the site so as to minimize the impact of the Work on the daily operations of the Greater Columbus Convention Center and Hyatt Regency Ballroom.

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§ 8.3 Supervision and Construction Procedures

§ 8.3.1 The Contractor shall supervise and direct the Work, consistent with the standard of care exercised by other professional contractors in the Contractor's trade in the region where the Project is located, and using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Architect, the names of subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

§ 8.4 Labor and Materials

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

§ 8.4.3 Except in the case of minor changes in the Work authorized by the Owner or Architect, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

§ 8.4.4 This Project is a public improvement and, therefore, is subject to "prevailing wage" requirements. The Contractor shall pay the required prevailing wages applicable to the Project and shall comply with all restrictions, requirements, and agreements with respect to the laborers and mechanics employed by it for the performance of the Work. The Contractor shall require all of its Subcontractors to (1) pay prevailing wages, (2) comply with all restrictions, requirements, and agreements with respect to their laborers and mechanics employed for the performance of their work, and (3) include in any sub-subcontract the same requirements set forth in this Section 8.4.4.

§ 8.4.5 DISCRIMINATION AND INTIMIDATION

§ 8.4.5.1 In the hiring of employees for the performance of the Work, including without limitation Work to be performed by a Subcontractor, no Contractor or Subcontractor, and no person acting on behalf of a Contractor or Subcontractor, shall discriminate against or intimidate any person by reason of race, color, creed, religion, national origin, ancestry, sex, disability, sexual orientation, military status, or any other basis prohibited by law.

§ 8.4.5.2 Neither the Contractor nor any of its Subcontractors, nor any person acting on behalf of the Contractor or any of its Subcontractors, shall, in any manner, discriminate against or intimidate any employee hired for the performance of the Work on account of race, color, creed, religion, national origin, ancestry, sex, disability, sexual orientation, military status, or any other basis prohibited by law.

§ 8.4.5.3 The Contractor and its Subcontractors shall, throughout the Project, comply with Ohio Revised Code Sections 153.59 and 153.591, and with the Owner's Non-Discrimination Policy. For any violation of this Section 8.4.5 or Ohio law, the Contractor shall suffer such penalties as provided for in Ohio Revised Code Section 153.60 and the Owner's Non-Discrimination Policy. In addition to any remedies the Owner has under Ohio law for a violation of this Section 8.4.5, the Owner may also exercise any of the remedies set forth in the Contract Documents.

§ 8.4.5.4 The Contractor and its Subcontractors shall fully cooperate with any official or agency of the Owner, the city, state, or federal government seeking to eliminate unlawful employment discrimination, and with all other Owner, city, state, and federal efforts to assure equal employment practices under this Contract.

§ 8.4.5.5 The Contractor shall comply with the State of Ohio's Equal Employment Opportunity in the Construction Industry rules set forth in Ohio Administrative Code Chapters 123:2-3 through 123:2-9. The Contractor also shall provide monthly

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reporting of its workforce by the tenth Day of each month for the preceding month to the Equal Opportunity Division of the Department of Administrative Services, using Input Form 29 (available at http://das.ohio.gov/Divisions/EqualOpportunity/InputForm29.aspx).

§ 8.4.6 MINORITY, FEMALE, AND DISADVANTAGED BUSINESS PARTICIPATION

§ 8.4.6.1 The Owner intends to have minority, female, and disadvantaged businesses used throughout the Project. To this end, the Contractor is encouraged to include participation in the Project by certified minority, female, and disadvantaged business enterprise Subcontractors that have received appropriate certification from the federal or Ohio government.

§ 8.5 Warranty

The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

§ 8.6 Taxes

§ 8.6.1 The Contractor shall pay sales, consumer, use, and similar taxes that are legally required when the Contract is executed.

§ 8.6.2 Materials purchased for use or consumption in connection with the Work may be exempt from the State of Ohio Sales Tax as provided in Ohio Revised Code Section 5739.02, and from the State of Ohio Use Tax as provided in Ohio Revised Code Section 5741.01. Purchases by the Contractor of expendable items such as form lumber, tools, oils, greases, fuel, and equipment rentals are subject to the application of the Ohio Sales or Use Tax.

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§ 8.7 Permits, Fees and Notices

§ 8.7.1 The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work.

§ 8.7.2 The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect and Owner in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

§ 8.8 Submittals

The Contractor shall promptly review, approve in writing, and submit to the Architect shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents, but the Work shall be in accordance with approved submittals.

§ 8.9 Use of Site

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner. The Contractor shall use best efforts to minimize any interference with the occupancy or beneficial use of (i) any areas and buildings adjacent to the site of the Work and (ii) the building on which the Work is being performed. Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, entrances, and parking areas other than those designated by the Owner.

§ 8.10 Cutting and Patching

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

§ 8.11 Cleaning Up

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials.

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§ 8.12 Indemnification

§ 8.12.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, officers, trustee, and agents and employees of any of them, from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent, intentional ,or other wrongful acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

§ 8.12.2 If the Project is located in close proximity of other buildings and property, then the Contractor must use all care and diligence to avoid damage to any such buildings and property. As a result and consistent with that obligation, in addition to the indemnification required by Section 8.12.1, the Contractor shall indemnify and hold harmless the Owner and Owner's agents and employees from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work that impacts, injures or destroys any building or property beyond the Project physical limits.

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ARTICLE 9 ARCHITECT

§ 9.1 The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 9.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

§ 9.5 The Architect and Owner each have~~has~~ authority to reject Work that does not conform to the Contract Documents. If the Architect does not reject non-conforming Work that it has discovered, the Architect may demand in writing that the Contractor bring the non-conforming Work into compliance with the Contract Documents.

§ 9.6 The Architect will promptly review and approve or take appropriate action upon Contractor's submittals, ~~but only~~ for the ~~limited~~ purpose of checking for conformance with ~~information given and the design concept expressed in~~ the Contract Documents. Review of such submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences, or procedures.

§ 9.7 On written request from either the Owner or Contractor, the Architect will promptly interpret ~~and decide~~ matters concerning performance under, and requirements of, the Contract Documents. The Architect's response to such requests shall be made in writing and delivered to both the Owner and Contractor within any time limits agreed upon or otherwise with reasonable promptness.

§ 9.8 ~~Interpretations and~~Such interpretations ~~decisions~~ of the Architect shall~~will~~ be consistent with the requirements indicated in~~intent of~~, or~~and~~ reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. ~~When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.~~

§ 9.9 The Architect's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

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ARTICLE 10 CHANGES IN THE WORK

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum or~~and~~ Contract Time, or both, shall be adjusted accordingly, in writing. If the Owner and Contractor cannot agree to a change in the Contract Sum, the Owner shall pay the Contractor its actual costs plus reasonable overhead and profit. The Contractor shall not be entitled to an increase in the Contract Sum or to an extension of the Contract Time, or both, on account of any change in the Work that is not the subject of a Change Order prior to the commencement of such Work.

§ 10.2 Subject to the approval of the Owner, the~~The~~ Architect may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

§ 10.3 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time ~~shall be subject to equitable adjustment~~may be equitably adjusted.

ARTICLE 11 TIME

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment. The Contractor, however, will not be entitled to an extension of the Contract Time to the extent that such delay occurs concurrently with a delay or delays attributable to the Contractor.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.

ARTICLE 12 PAYMENTS AND COMPLETION

§ 12.1 Contract Sum

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 12.2 Applications for Payment

§ 12.2.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in this Agreement. The Application shall be supported by data substantiating the Contractor's right to payment as the Owner or Architect may reasonably require, such as evidence of payments made to, and waivers of liens from, subcontractors and suppliers. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.

§ 12.2.2 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or other encumbrances adverse to the Owner's interests.

§ 12.2.3 As a condition precedent to the Contractor's entitlement to payment on account of an Application for Payment, the Contractor shall submit with each Application for Payment:

.1 a partial conditional lien waiver from the Contractor for the total payment requested in the Application for Payment;

.2 a partial conditional lien waiver from all Subcontractors and Sub-subcontractors on whose account the Contractor is seeking payment in the Application for Payment for the total amount of such payment requested;

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.3 a partial unconditional lien waiver from the Contractor for the sum of all previously paid progress payments (not applicable to the Contractor's first Application for Payment) and not applicable to retainage;

.4 unless previously provided, a partial or final unconditional lien waiver from each Subcontractor and Sub-subcontractor on whose account the Contractor previously sought and received payment for the sum of all such previously paid payments;

.5 a notarized statement from the Contractor certifying that: (1) the Application for Payment is correct; (2) the Contractor is entitled to payment of the amounts requested; and (3) all due and payable bills with respect to the Work have been paid in full or will be paid in full from the proceeds of the Application for Payment;

.6 an application for payment on AIA Document G702/G703 to the Contractor from every Subcontractor on whose account the Contractor is seeking payment in the Application for Payment;

.7 any other information required by the Contract Documents to be submitted with an Application for Payment; and

.8 such other information substantiating the Contractor's right to payment as the Owner or Architect may reasonably require.

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§ 12.3 Certificates for Payment

The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in part; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole. If certification or notification is not made within such seven-day period, the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time and the Contract Sum shall be equitably adjusted due to the delay.

§ 12.4 Progress Payments

§ 12.4.1 After the Architect has issued a Certificate for Payment, but subject to the Owner's decision to approve payment in whole or in part, or if the Owner approves payment in the absence of a Certificate for Payment, the Owner shall make payment in the manner ~~provided in the Contract Documents~~and within the time provided in the Contract Documents, and shall so notify the Architect. The Owner may decline to approve payment in whole or in part to such extent as may be necessary in the Owner's opinion to protect the Owner from loss for which the Contractor is or may be responsible, including loss resulting from acts and omissions of the Contractor's employees or Subcontractors or their respective agents, because of, among other things:

.1 defective Work not remedied;

.2 liens or third-party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

.7 repeated failure to carry out the Work in accordance with the Contract Documents; or

.8 representations made by the Contractor that are not true.

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§ 12.4.2 The Contractor shall promptly pay each subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

§ 12.4.3 Neither the Owner nor the Architect shall have responsibility for payments to a subcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.4.5 Notwithstanding any other provision of the Contract Documents to the contrary, if any claim or lien for which the Contractor is responsible is filed or asserted or there is any reason to believe that such a claim or lien may be filed or asserted at any time during the performance of the Work or the duration of the Contract, the Owner may withhold from any payment

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otherwise due to the Contractor a sum sufficient, in the Owner's reasonable opinion or as required by law, to pay all obligations and expenses necessary to satisfy such claim or lien until the Contractor furnishes such evidence satisfactory to the Owner that the indebtedness and the claim or lien in respect thereof, if any, has been satisfied, discharged, and released of record if and as provided by law pending the resolution of any such dispute between the Contractor and the entity asserting the claim or lien. The Owner may withhold final payment from the Contractor until the Work and the site are free and clear of any and all claims, liens, or rights thereto arising out of Work performed or materials furnished in furtherance of the Work. In the event that the unpaid balance of the Contract Sum is insufficient to cover such losses, costs, damages, and fees, or if the lien claim arises from the Contractor's failure to properly pass through any payment received from the Owner, the Contractor shall immediately pay the difference to the Owner. The Contractor shall have no responsibility under this Section for any lien or claim caused by Owner's failure to make payment to Contractor when due.

§ 12.5 Substantial Completion

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents and when all government inspections have been successfully completed and all required permits and authorizations have been issued (unless inability to obtain any such permits is due to causes not the fault of the Contractor) so the Owner can occupy or utilize the Work for its intended use.

§ 12.5.2 When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the Architect and the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete, the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 12.6 Final Completion and Final Payment

§ 12.6.1 Upon receipt of a final Application for Payment, the Architect and Owner will inspect the Work. When the Architect and Owner finds the Work acceptable and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment.

§ 12.6.2 Final payment shall not become due until the Contractor submits to the Architect and Owner releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests, or encumbrances arising out of the Contract.

§ 12.6.3 Acceptance of final payment by the Contractor, a subcontractor or supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 12.6.4 Notwithstanding any other provision of the Contract Documents to the contrary, the date of final completion of the Work is the date determined by the Owner when all Work is complete, accessible, operable, and usable by the Owner and all parts and systems are 100% complete and cleaned for the Owner's full use and all drawings, certificates, bonds, guarantees, and documents required by the Contract Documents have been provided to the Owner by the Contractor.

§ 12.6.5 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect and Owner (1) an affidavit in form and substance reasonably acceptable to the Owner that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied and that all Work is complete in accordance with the requirements of the Contract Documents, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5) a final lien waiver from the Contractor and each Subcontractor; (6) all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, record documents, as-built copies of the Contract Documents, and other documents required by the Contract Documents; and (7) all of the documents and information required under Article 12 to be included with Applications for Payment. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor shall furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall immediately refund to the

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Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

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ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Architect or Owner as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of one year after Substantial Completion, correct work not conforming to the requirements of the Contract Documents. The Contractor will work together with the Architect and the Owner to see that the corrective work is completed.

§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 Assignment of Contract

Neither party to the Contract shall assign the Contract as a whole without written consent of the other.

§ 15.2 Tests and Inspections

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear costs of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Architect or Owner requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after the Contract is executed. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 15.3 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules.

ARTICLE 16 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 16.1 Termination by the Contractor

If the Work is stopped under Section 12.3 for a period of 14 days through no fault of the Contractor, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit~~, and costs incurred by reason of such termination.~~.

§ 16.2 Termination by the Owner for Cause

§ 16.2.1 The Owner may terminate the Contract if the Contractor

- **.1** ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the subcontractors;
- **.3** ~~repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a

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public authority; or

.4 ~~is otherwise guilty of substantial breach of~~otherwise fails to perform any of its duties or obligations under a provision of the Contract Documents.

§ 16.2.2 When any of the above reasons exist, the Owner, after consultation with the Architect, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may:

.1 take possession of the site and of all materials thereon owned by the Contractor, and

.2 finish the Work by whatever reasonable method the Owner may deem expedient.

§ 16.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 16.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract.

§ 16.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed. However, if the Owner terminates the Contract pursuant to this Section 16.3, but the Contractor is in default, the Contractor will be entitled to receive only such sums as it would be entitled to receive following the occurrence of an event of default as provided in Section 16.2.

§ 16.4 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 16.4.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine. The Contract Sum or Contract Time, or both, may be adjusted for increases in the cost and time caused by suspension, delay, or interruption, but no such adjustment will be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

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ARTICLE 17 OTHER TERMS AND CONDITIONS

(Insert any other terms or conditions below.)

§ 17.1 CLAIMS

§ 17.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 17.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the Architect with a copy to the other party. Claims by either party must be initiated within 10 days after occurrence of the event giving rise to such Claim or within 10 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. The Contractor's failure to initiate and substantiate a Claim shall constitute an irrevocable waiver of the Claim.

§ 17.1.2.1 Unless otherwise agreed in writing by the Owner, within 45 days after the initiation of a Claim, the Contractor shall submit in writing to the Owner and Architect all information that the Contractor believes substantiates the Claim and all information and statements required to substantiate a Claim as provided in this Section 17.1. The failure to comply with the requirements of this Section 17.1.2.1 shall constitute an irrevocable waiver of any related Claim.

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§ 17.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 17.1.4 CLAIMS FOR ADDITIONAL COST

§ 17.1.4.1 Except in the event of a Claim relating to an emergency endangering life or property, the Contractor shall obtain the Owner's specific written authorization prior to proceeding with any change in the Work that may entitle the Contractor to an increase in the Contract Sum. The Contractor's failure to obtain such prior written authorization shall constitute an irrevocable waiver of any related Claim. If the Contractor wishes to make a Claim for an increase in the Contract Sum for any reason other than a change in the Work ordered by the Owner, written notice as provided in this Article shall be given before proceeding to execute the affected Work.

§ 17.1.4.2 The Contractor shall substantiate each Claim for an increase in the Contract Sum with (1) written documentation of the actual additional direct costs to the Contractor due to the event giving rise to the Claim; and (2) a written statement from the Contractor that the increase requested is the entire increase in the Contract Sum associated with the Claim.

§ 17.1.5 CLAIMS FOR ADDITIONAL TIME

§ 17.1.5.1 Except in the event of a Claim relating to an emergency endangering life or property, the Contractor shall obtain the Owner's specific written authorization prior to proceeding with any change in the Work that may entitle the Contractor to an increase in the Contract Time. The Contractor's failure to obtain such prior written authorization shall constitute an irrevocable waiver of any related Claim. If the Contractor wishes to make a Claim for an increase in the Contract Time for any reason other than a change in the Work ordered by the Owner, written notice as provided in this Article shall be given before proceeding to execute the affected Work.

§ 17.1.5.2 The Contractor shall substantiate each Claim for an extension of the Contract Time with (1) a written description of the effect of the delay on the progress of the Work; (2) a detailed schedule which identifies the critical portions of the Work impacted by the delaying event and the dates of such impact; (3) a detailed written proposal for an increase in the Contract Sum which would fully compensate the Contractor for all costs of acceleration of the Work needed to completely overcome the associated delay together with a statement consistent with Section 17.1.4.2; and (4) a written statement from the Contractor that the extension requested is the entire extension of the Contract Time associated with the Claim.

.1 In the case of a continuing delay occurring on consecutive days, only one Claim is necessary. However, within ten days after the cessation of the cause of the continuing delay, the Contractor shall notify the Owner and Architect in writing that the cause of the delay has ceased. The failure to give timely notice of the cessation of the cause of the continuing delay will constitute an irrevocable waiver of any Claim based on the continuing delay.

§ 17.1.5.3 In addition to the requirements of Section 17.1.5.1, if adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on a critical element of the scheduled construction. Notwithstanding any other provision of the Contract Documents to the contrary, the Contract Time will not be adjusted on account of the impact of any normal adverse weather on any of the Work or on account of the impact of any abnormal adverse weather on non-critical elements of the Work. The support for and evaluation of all adverse-weather Claims shall be based upon average weather conditions during the 10 years immediately preceding the dates at issue in the Claim as such weather conditions were recorded at the government-controlled weather-recording facility nearest to the site.

§ 17.1.5.4 Notwithstanding any other provision of the Contract Documents to the contrary, an extension of the Contract Time will be the Contractor's exclusive remedy in the event of any delay not the proximate result of the act or failure to act of the Owner or anyone for whom the Owner is directly responsible. The Contractor specifically waives any right it may otherwise have to an increase in the Contract Sum or to any type of damages because of such delay or disruption to all or any part of the Work, whether such delay was foreseen or unforeseen and whether caused by the active interference of any party for whom the Owner is not directly responsible.

.1 Notwithstanding the provisions of Section 17.1.5.3 to the contrary, the Contractor will not be entitled to an extension of the Contract Time to the extent that such delay occurs concurrently with a delay attributable to the Contractor.

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§ 17.1.5.5 Notwithstanding any other provision of the Contract Documents to the contrary, in no event shall the Contractor be entitled to an increase in the Contract Time on account of any delaying impact on a non-critical element of the Work.

§ 17.1.6 INITIAL DECISION

§ 17.1.6.1 Except for those waived as provided for in Sections 12.6., 17.1.2, 17.1.4, and 17.1.5, Claims shall be referred to the Architect for initial decision, which shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered. Unless the Architect and all affected parties agree, the Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 17.1.6.2 The Architect will review Claims and within ten days of the receipt of the Claim's substantiating documentation, if any, take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

§ 17.1.6.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

§ 17.1.6.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect when the response or supporting data will be furnished or (3) advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

§ 17.1.6.5 The Architect will render an initial decision approving or rejecting the Claim, or indicating that the Architect is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 17.1.6.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 17.1.6.6.1.

§ 17.1.6.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 17.1.6.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 17.1.6.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 17.1.6.9 Notwithstanding any other provision of the Contract Documents to the contrary, either party, without first submitting a Claim to the Architect, may seek judicial relief in the state or federal court where the Project is located, but only if the sole relief sought is a temporary restraining order or a preliminary or permanent injunction.

§ 17.1.6.10 Upon receipt of a written request, the Contractor shall make available to the Owner and its representatives all books, records, and other documents in the Contractor's possession or under its control that relate to any Claim or dispute, and the Contractor shall require its Subcontractors and Sub-subcontractors to do likewise.

§ 17.1.7 MEDIATION

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§ 17.1.7.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 12.6., 17.1.2, 17.1.4, and 17.1.5 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 17.1.7.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 17.1.7, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 17.1.7.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 17.1.8 LITIGATION

§ 17.1.8.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for elsewhere in the Contract Documents, shall, after decision by the Architect or 75 days after initiation of the Claim, be subject to litigation. The filing of a lawsuit under this Section does not relieve the parties of their obligation to mediate their disputes pursuant to Section 17.1.7.

§ 17.1.8.2 All litigation arising or allegedly arising out of or resulting from the Project shall be held and brought only in the state or federal court where the Project is located. The parties consent to the exclusive jurisdiction of and venue in that court.

This Agreement entered into as of the day and year first written above.
(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
(Printed name and title)	*(Printed name and title)* LICENSE NO.: JURISDICTION:

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