Addendum

Date:	09-06-2022	Addendum #: 1
Project:	Interior Renovation of HB Booker School	
Owner:	Cleveland Metropolitan School District	
Architect:	ThenDesign Architecture 4230 River Street Willoughby, OH 44094 Architect's Project #:	

This Addendum becomes as fully a part of the previously issued Bid Package as if originally issued therewith or originally contained therein.

The Addendum embraces additions to, deductions from, changes and substitutions in, or clarifications and emphasis on parts or requirements of the drawings and specifications pertaining to all trades herewith mentioned.

Contractors for each trade or contract shall familiarize themselves with Addendum items for all trades and contracts, and they shall be held responsible or complete knowledge of same.

Description:

Specifications

- 1. Division 1 Section III Instructions to Bidders revisions indicated in red.
- 2. Division 1 Section V Supplementary Conditions revisions indicated in red.
- 3. Division 1 Section VI Description of Work revisions indicated in red.
- 4. Division 1 Section VII Form of Proposal revisions indicated in red.
- 5. Division 9 Section 095113 Acoustical Panel Ceilings revisions indicated in red.

<u>Drawings</u>

- 1. Cover Sheet revisions
- 2. Architectural revisions
 - a. A101, A101E, A101P, A102, A103, A104, A201, A202
- 3. Plumbing revisions
 - a. P1, P2, P3
- 4. Electrical revisions
 - a. E1, E2, E3

Attachments:

Same as above.

Issued By: Jeff Henderson, RA, NCARB

ThenDesign Architecture

cc: File



1. <u>DEFINITIONS</u>

- A. All definitions set forth in the Contract Documents are applicable to the Bidding Documents.
- B. Contract Documents and Bidding Documents are as defined in the General Conditions and as may be modified in the Supplementary General Conditions.
- C. A Bid is a complete and properly signed proposal submitted per the requirements of the Bidding Documents. Any proposal not meeting the requirements of the Bidding Documents in every respect, may be rejected by the Owner as an improperly executed Bid.
- D. Base Bid is the sum stated in the Bid for which the Bidder offers to perform the work described in the Bidding Documents and/or the Contract Documents as the Base Bid.
- E. Alternate Bid is the sum or adjustment to the Base Bid stated in the Bid for which the Bidder offers to perform Alternate Work described in the Bidding Documents and/on the Contract Documents as Alternate Bid (or Alternate).
- F. A unit price is the amount stated in the Bid for which the Bidder offers to accept for adjustments to the Contract amount for additions or deductions to the scope of the work.
- G. A Bidder is the person or entity who submits a Bid and a Sub-bidder is a person or entity who submits a Bid to the Bidder for any portion of the work.

2. <u>BIDDER'S REPRESENTATIONS</u>

- A. By submitting a Bid, the Bidder represents that he has:
 - 1. Familiarized himself with the Contract Documents and Bidding Documents.
 - 2. Familiarized himself with the site, and with local conditions that may affect the work.
 - 3. Only complete sets of Contract Documents have been used in preparation of the Bid.
 - 4. Based his Bid only on Standards required in the Contract Documents without exception.
 - 5. Has received and is familiar with all addenda.
 - 6. Is a registered contactor with the City of Cleveland, Cuyahoga County and any other local building authority or will become registered before the start of construction.

- 7. Understands and accepts costs associated with overtime, after hours and weekend work associated with this project.
- 8. Accepts that this work will be completed after normal working hours.

3. <u>BIDDING DOCUMENTS</u>

- A. Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Notice to Bidders and/or Legal Advertisement.
- B. Should any requirements in the Contract Documents or the Bidding Documents require clarification, the bidder shall request such clarification in writing, 5 business days prior to the time of submission of bids. If it is determined by the Architect, that a clarification is required, the clarification shall be issued in the form of Addenda. Note that on public project, an Addenda cannot be issued with less than 72 hours unless it is done in accordance with O.R.C. 153.12(A). Addenda is the only way in which a binding clarification, correction, or change can be made to the Contract Documents and Bidding Documents during the Bidding period.
- C. Should any of the requirements in the contract documents require clarification during construction that could have reasonably been identified during bidding, any and all costs associated with such clarifications shall be borne by the Contractor. The Architect shall determine which items should have been recognized and identified during the bidding process.
- 4. <u>SUBSTITUTIONS</u>
 - A. The name or make of any article, device, material, form of construction fixtures, etc., named in this project manual shall be known as a "Standard".
 All proposals shall be based on "Standards" specified unless the bidder obtains the written approval of the Architect as an "Approved Equal".
 - B. Where two or more "Standards" are named together, bidders may bid any of the "Standards" named.
 - C. Bidders desiring to submit products for consideration as an "Approved Equal" should, 5 business days prior to the time of submission of bids, submit complete specifications and description of the proposed brands requested to be approved as equal to the Architect for review. If approval is granted by the Architect, written approval will be stated by Addenda to all bidders.
 - D. If written approval has not been obtained prior to due date for submission of bids, then proposed brand may be bid as a substitute on Substitution Sheet only.
 - E. The low bidder will be determined on the basis of bids submitted in accordance with Paragraphs A, B, and C of this heading and other factors as set forth in the Bidding and Contract Documents. Low bidder will not be determined on the basis of substitution.
 - F. Bidders desiring consideration for the use of material, equipment, etc., not

named in the project manual may submit proposals for the substitution of same in lieu of "Standards" specified, using the "Substitution Sheet" attached to the Proposal Form and listing for each proposed change.

- 1. The "Standard" specified.
- 2. The Substitution.
- 3. The change in Bid Price (or "no change").
- G. Complete specifications and description of any proposed substitution being considered for acceptance shall be furnished to the Architect promptly, upon receipt.

5. <u>ADDENDA</u>

- A. When issued, Addenda will be mailed or delivered to the address on file in the Architect's office to all who are known by the Architect to have received a set of the Bidding Documents and the Contract Documents.
- B. Addenda will be made available for inspection wherever Contract Documents and Bidding Documents are on file for that purpose.

6. <u>REFERENCE STANDARDS</u>

A. Any documents, referenced specification, standard, etc., referred to in this project manual as forming a part herein, shall be secured by the respective Contractor, maintained in his records, and shall be available at all times for reference.

7. <u>BIDDING PROCEDURE</u>

- A. Bids will be accepted only on the Form of Proposal which is part of these Bidding Documents.
- B. Alternates to the Form of Proposal, exceptions to any portion of the Bidding Documents and/or Contract Documents, and Form of Proposals that are not filled out completely shall at the discretion of the Owner, disqualify the bidder.
- C. Bid amounts shall be stated both in writing and in figures.
- D. All blanks in the Form of Proposal shall be filled in. If a blank is nonapplicable to a bidder, it shall be so stated. The abbreviation NA is acceptable.
- E. All Form of Proposals shall be filled out in ink or typed. All signatures shall be in ink.
- F. Bids shall be signed with proper legal signatures with the names of each and every person interested therein; in the case of a corporation, the proper legal signature of one officer of the corporation authorized to sign for the corporation. All signatures shall have such names "typed in" adjacent thereto. The business address shall be given in all cases.
- G. Bids shall be enclosed in opaque inner and outer envelopes. The outer

envelope shall be sealed and shall be clearly marked, as follows, depending on the nature of the bid:

"INTERIOR RENOVATIONS TO H. B. BOOKER SCHOOL"

Bid Contract A

The properly identified bid shall be sealed, addressed and delivered to the location, and prior to the date and time as noted in the project description.

H. The Architect's opinion of probable cost of construction, for base bid is \$800,000.

I. Bids must include properly executed Bid Guaranty and Contract Bond per Section 153.571 of the Ohio Revised Code for all public work in Ohio, except for work for incorporated cities. For work for incorporated cities and for privately funded work, bids must include properly executed Bid Bond submitted on AIA document A310, latest edition, for the amount indicated on the Notice to Bidder and/or Legal Advertisement. Irrevocable Letters of Credit and/or Certified or Cashiers Checks may be substituted for the above mentioned Bonds only if such options are indicated on the Notice to Bidders and/or Legal Advertisement. All Bonds must have proper endorsement by the Surety or Sureties.

The Bond or when permitted, Certified Checks or Letters of Credit, received from the unsuccessful bidders will be returned as soon as the Contracts are awarded, signed and the bond obligations of successful bidders are fulfilled, or no more than 60 days after the closing date for receipt of bids. Bonds, Checks, and Letters of Credit are to be payable to the Owner, as identified in these documents.

- J. The Bid Guaranty (Division I) must be of a sufficient amount to cover the combined base bid and all additive alternates, or the sum of the individual bids and all additive alternates whichever amount is higher.
- K. Bids may be withdrawn only in accordance with ORC, 89.31 and other applicable Ohio law. Once a bid is submitted, it cannot be modified.
- L. Oral, telephonic, telegraphic bids or facsimile bids are invalid and will not receive consideration.
- M. No bids will be accepted later than the time and date, indicated on the Notice To Bidders and/or Legal Notice.
- N. Bids may be withdrawn after receipt of a bid if a letter identifying the bid error is received by the Architect within 48 hours of the bid due date. The Architect has the sole discretion of determining if a bid may be withdrawn.
- O. Subcontractors. Each successful bidder must submit the names of all of his subcontractors prior to commencing work. The architect and the owner reserve the right to reject any subcontractor they deemed not qualified to perform the work. The contractor shall replace such contractor with a qualified subcontractor as approved by the Architect and Owner at no additional cost.

8. <u>CONSIDERATION OF BIDS</u>

- A. the Owner reserves the right to reject any or all bids and to waive any formalities in bidding and may accept or reject any or all alternates.
- B. The Owner intends to award a contract to the lowest and best bid which may include work completion time schedule determined by the Contractor on the Form of Proposal. The lowest and best bid is the bid, in the Owners judgment, that is in the Owners best interest to accept.
 - The date of Substantial Completion of the Project is March 31, 2023.
 - There is an Alternate for Substantial Completion by December 30, 2022. Refer to Form of Proposal.
- C. After opening of Bids, the Architect will determine the apparent lowest Bidder for the Bid contract. The Contractor shall submit, with his bid, to the Architect his list of proposed subs, suppliers, and job superintendent. Upon receipt of this list, Architect and Owner shall review this list and advise contractor of any objections to names on such list. Upon determination of acceptable list, there shall be no change from the list. Failure to submit contractors list of subcontractors, suppliers, and project superintendent with his bid shall be considered grounds to disqualify the bid.
- D. The lowest bid is defined as the lowest cost or base bid and alternates as selected by the Owner.

9. <u>ALTERNATES, UNIT PRICES AND SUBSTITUTIONS</u>

- A. Each bidder shall submit on his bid, prices for all Alternates and Unit Prices, if any, as listed herein for inclusion.
- B. Any substitution the bidder wishes to have considered may be so indicated in the Form of Proposal including the change the substitution would make in the bid amount. Each substitution must be accompanied with the data to aid the Architect in evaluation of the substitute. Base Bids and Alternate Bids cannot be based on substitutes.
- 10. <u>ALLOWANCES N/A</u>
- 11. <u>CONTRACT</u>
 - A. The Form of Agreement shall be "The Standard Form of Agreement between Contractor and Owner for Construction of Buildings".
 A.I.A. Form A-101 issued by the American Institute of Architects, latest edition.
 - B. Bonds shall be required of bidders entering an Agreement with the Owner as follows:
 - 1. Bidders required to submit a Bid Guaranty and Contract Bond per Section 7-1 of these Instructions to Bidders, will not be required to furnish additional Performance and Labor and Material Payment Bonds.
 - 2. Bidders who submit a Bid Bond or (when permitted) submit a

Certified Check, Cashier's Check or Irrevocable Letter of Credit with their bid, shall be required to provide the Owner with 100% Performance Bond and Labor and Material Payment Bond, on the form required by ORC 153.57 or a Bid Guaranty and Contract Bond meeting the requirements required by ORC 153.57. The bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto, a certified and current copy of his power of attorney.

12. <u>QUALIFICATIONS OF BIDDERS</u>

- A. The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner, all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by or investigations of such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.
- Contracts will be awarded only to responsible Contractors, qualified by experience and in a financial position to do the work specified. Each bidder will be required to submit, at the request of the Architect the following data:
 - a. Experience record showing bidder's training and experience in similar work.
 - b. List and brief description of similar work satisfactorily completed, with location, date of contract, together with names and addresses of Owners.
 - c. List of facilities and equipment available to do this work.
- 2. The actual work shall be performed by qualified and experienced mechanics working under the Contractor's supervision or under the supervision of an experienced supervisor, who has also been doing this type of work.

13. DISCRIMINATION AND INTIMIDATION

- A. The prohibitions against discrimination and intimidation on account of race, creed, sex or color, and the provisions as to forfeitures to be applied in the event if violation of Contract Terms regarding same, as contained in Sections 153.59 and 153.60, and Sections 4112.01 through 4112.99 inclusive, of the Revised Code of Ohio, shall apply to all Contracts entered into in connection with the work.
- 14. <u>SALES TAX</u>
 - A. At Contractor's request, Sales Tax Exemption Certificates shall be issued to each successful bidder on all projects that are so permitted under State and Federal Laws.
- 15. FOREIGN CORPORATIONS

A. Foreign Corporations authorized under the laws of another State must comply with the licensing statutory requirements of the State of Ohio.

16. MANDATORY BACKGROUND CHECKS

A. Compliant with House Bill 190, all contractors that will be on-site during construction must complete the BCII and FBI background checks. The background checks shall be conducted by an approved provider and paid for by the contractor. Cost shall be verified by the contractor prior to bidding and included in the base bid.

17. <u>DECLARATION REGARDING MATERIAL ASSISTANCE/NON-ASSISTANCE TO A</u> <u>TERRORIST ORGANIZATION, (DMA.</u>

A. Compliant with Ohio Senate Bill 9, Ohio's Homeland Security and Anti-Terrorism Legislation the awarded Contractor shall be required to provide this documentation, prior to the commencement of work.

18. CERTIFICATE OF COMPLIANCE – STATE OF OHIO - EQUAL OPPORTUNITY

A. Compliant with Ohio Revised Code 9.47, the awarded Contractor shall be required to provide this documentation, prior to the commencement of work.

SECTION V - SUPPLEMENTARY CONDITIONS

The following supplements, modify, change, delete from or add to the "General Condition" of the Contract for Construction, AIA Document A201, latest edition as amended by the Owner, a copy, which is attached to Division I, Section IV. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause as they appear in the latest edition as amended by Owner (copy attached to Division I, Section IV), shall remain in effect.

- 1. CONTRACT DOCUMENTS:
 - A. In the event there is a conflict in the Contract Documents, the most stringent requirements, as determined by the Architect, shall determine the minimal acceptable requirement for the Work.
 - B. The following Contract Forms are required forms for this project. They are on file and may be reviewed at the Architect's Office.
 - 1. Standard Form of Agreement Between Owner and Contractor AIA Form A-101.
 - 2. Bid Guarantee and Contract Bond.
 - 3. Performance Bond and Labor and Material Payment Bond, AIA Form A-311.
 - 4. Certificate of Insurance.
 - 5. Subcontract Form.
 - 6. Architect's Field Order.
 - 7. Consent of Surety to Final Payment.
 - 8. Contractor's Affidavit of Release of Liens and Payments of Debt.
 - 9. Certificate of Substantial Completion.
 - 10. Payment Certificate.
 - C. The following sections of the AIA Document A201 shall be deleted for this project.
 - 1. 4.5 Arbitration

2. Sub-Categories: 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.4.1, 4.5.4.2, 4.5.5, 4.5.6, 4.5.7.

C. <u>DRAWINGS</u>

- 1. Drawings are diagrammatic and are intended to show the approximate locations. Dimensions given on the plans in figures shall take precedence over scaled dimensions; and all dimensions, whether figured or scaled, shall be verified in the field.
- 2. The exact location of buildings, drives, walkways, etc., shall be ascertained from the Architect or his representative in the field, and the work shall be laid out accordingly. Should the Contractor fail to ascertain such locations the work shall be changed at his own expense when so requested by the Architect. The Architect reserves the right to make minor changes in location up to the time of installing, without additional cost.
- 3. The drawings and project manual are intended to cover a complete project in every respect. Each and every item, system, etc., is to be complete unless otherwise definitely indicated.
- 4. The drawings and project manual are intended to supplement each other and any material or labor called for in one shall be furnished even though not specifically mentioned in both.
- 5. Demolition and/or removal of existing driveways, walks, etc. may necessitate the removal or relocation of existing piping, conduit, wiring services, etc. Such removal and relocation shall be considered part of the demolition work without additional cost, whether or not specifically shown on the drawings or listed in these specifications.
- 6. The contractor shall visit the project site prior to submitting his bid and shall have full knowledge of all existing conditions. Changes in work scope that could have been reasonably assumed with a site visit shall be the responsibility of the contractor.

D. <u>Industry Standards</u>

- 1. Federal Specifications, State Specifications, Architectural Woodwork Institute, American Concrete Institute, the Standards of the American Society for Testing Materials (ASTM Standards), the Standards of the American Standards Association, and other Standards referred to in this project manual shall apply to the work as hereinafter specified. In all cases, the latest revision of such Standards or Specifications shall be used.
- E. <u>Standards</u>

- 1. Reference to Standards Codes, Specifications, Recommendations and Regulations, throughout this project manual, shall make applicable portions of such standards, codes, specifications, recommendations, and regulations, that are not in conflict with the Contract Documents, a part of this project manual. In case of discrepancies between Standards, the more restrictive shall apply. In case of discrepancies between Standards and this project manual, the project manual shall govern. In general, meet the requirements and recommendations of the standards listed including the manufacturer's printed specifications, recommendations and instruction.
- 2. The specifications, recommendations and/or instructions published by an approved manufacturer of an approved material, are hereby incorporated into this project manual as Standards, and shall be considered as binding wherever they are more restrictive than other general standards so included.

2. ARCHITECT:

A. Article 2 as set forth in the attached General Conditions shall remain unchanged.

3. OWNER:

A. The Owner may secure the services of a surveyor to establish lot lines, restrictions, and benchmarks. Once established, it becomes the responsibility of the Contractor to maintain lines, restrictions and benchmarks.

B. <u>Cost of Utilities</u>

The Owner shall pay the following charges:

- 1. All electric current used from existing, temporary or permanent metering.
- 2. Cost of water used from existing facility or new metering.
- 3. Cost of all fuel and electricity used in permanent heating system. Electrician shall pay for all fuel for temporary heating devices that require a fuel source other than that provided as part of the permanent structure.

C. <u>Stoppage of Work</u>

1. The Owner reserves the right to stop work at any time, or refuse to allow work to be started, when in his opinion, such stoppage is necessary to insure the proper execution of work. The absence of such a stop order shall not relieve the Contractor of responsibility for any work that may be damaged.

4. CONTRACTOR:

Division I - Section V

A. <u>Shop Drawing Submittal</u>

Contractor shall review, stamp with his indication of approval, and submit in sets along with transmittal, shop drawings as follows:

1. Submit electronic shop drawings (PDF format) for approval, including manufacturer's brochures, cuts, etc. Provide submittal cover page with Contractor's name & contact information, project name, contractors review status, and place for A/E's review stamp.

	Reviewed	Revise and Resubmit
	Reviewed, as Noted	Rejected
\square	Submit Specified Items	

Submittal review is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for quantities, dimensions, which shall be confirmed and correlated at the job site. Dimensions shown on this drawing have been reviewed (and revised, if necessary) by the Architect solely as a convenience to the General Contractor. This in no way releases the General Contractor from his responsibility for providing correct dimensions on the shop drawings, in accordance with the construction documents, or from his responsibility to coordinate such dimensions with the work of other trades, and any field conditions which may affect the dimensions indicated here. The contractor is also responsible for fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work.

ThenDesign Architecture, Ltd. (TDA)

B. <u>Superintendents</u>



Each Contractor shall have a superintendent who shall be in attendance each and every full working day at the project, and until all work, including final punch list, has been completed. An amount of \$150.00 (one hundred fifty dolb cc) per working day shall be credited to the Owner, for each and every day (or portion thereof) that the Contractor's superintendent is not on the jobsite, unless written exception is granted by the Architect.

- 2. <u>Specific Requirements</u>
 - a. <u>General Trades</u> Working superintendent each and every day until all work, including final punch list is complete. Working superintendent shall have the responsibility to coordinate and schedule the work of all other trades on the project including work associated with Owner provided work such as phone installation, computer wiring, etc.

b. The General Trades Contractor shall be responsible for the overall schedule and coordination of the project. Upon award of contract, the General Trades Contractor shall submit a project schedule to include his work and the work of all other trades. Each trade shall review, approve and sign the final schedule submitted to the Owner and Architect.

C. <u>Utilities</u>

- 1. Notify all utility companies that will, in any way, be affected by the proposed work and see that all piping, wires, etc, that may be affected, are properly serviced.
- 2. Remove abandoned utilities and cap or plug ends.
- 3. Use maximum care to protect existing utilities and drains. Promptly correct and/or repair any damaged utilities or drains.
- 4. Report the encounter of active utilities and/or drains, not indicated by documents, to Architect for adjustment in Contract in accordance with Article 12. However, extra payment will not be authorized for work that could have been foreseen by a careful examination of the site.
- 5. Protect all active utilities pending instructions for disposition.
- D. Reference Points
 - 1. The General Contractor shall establish and maintain grades, lines, levels and benchmarks within the limits for construction. He shall be responsible for the accuracy of same to the extent that other contractor's work shall relate to them and the cost of additional work under the Contracts, resulting from deviations of grades, lines, levels and benchmarks as established on the drawing, shall be borne by him.
 - 2. Each Contractor Shall:
 - a. Verify and maintain location of horizontal and vertical reference points in at least two widely separated places and maintain all lines and grades.
 - b. Locate and layout of all work in accordance with the dimensions given on the drawings and shall be responsible for the accuracy of the layout. Immediately report any discrepancies or errors in the drawings or project manual perceived by the contractor. Adjustments to be made shall be made by the Architect.
 - c. Notify Architect when layout is substantially complete and secure his review before proceeding.

E. <u>Permits</u>

- 1. Each Contractor shall secure all permits and inspections and certificates of inspection, occupancy, and shall furnish Architect with copies of all such reports and certificates prior to final payment.
- 2. Each Contractor shall be licensed in the County of Geauga, South Russell, and any other local jurisdictions that are required.
- F. <u>Materials</u>
 - 1. When a single brand or make of material is called for in the project manual by name or figure number, no other make of material will be acceptable.
 - 2. When no specific make of material or apparatus is mentioned, any first class product of reputable manufacturer may be used, provided that it conforms to the requirements of this project manual and meets with the approval of the Architect.
 - 3. All materials, equipment, etc., to be used in construction shall be delivered to the job and maintained in original unopened containers and/or bundles, stored in a place protected from exposure to the elements and from damage by tampering until used and then used in strict accordance with the manufacturer's written instructions, specifications and recommendations.
- G. <u>Labor</u>
 - 1. All labor shall be performed in the best and most workmanlike manner by mechanics skilled in their respective trade. The standards of the work required throughout shall be of quality normal this trade and acceptable to the Architect. Mechanics whose work is unsatisfactory to the Owner, or are considered by the Owner to be unskilled or otherwise objectionable, shall be instantly dismissed from the work upon notice.
 - 2. There shall be no discrimination against the employment of organized or unorganized or open shop labor, and no interference, or hindrance by the labor of any one or more trades with the labor or work or material of another trade. Any such discrimination, interference, or hindrance any other all, shall be sufficient grounds for termination of the contract in the same manner provided in said agreement for terminating contracts in case of any other breach thereof.
- H. Observation
 - 1. If the Contractor, Subcontractor or Supplier performs work on a Saturday, Sunday, Holiday, or on any "overtime" basis, such overtime basis must be with the knowledge of the Architect, so that if he desires, the Architect may observe such work during its installation.

- 2. Work, where observation is to be effective, must be done at the time of installation; shall not proceed without the Architect's field administrator on the job observing the work; or in lieu of that, having given the Contractor approval to proceed without such review by the Architect.
- I. <u>Cutting and Patching of Work</u>
 - 1. New Construction
 - a. The Mechanical and Electrical Contractors will provide and place all pipe sleeves, etc., required for their work. General Trades Contractor shall provide all flashings and trim as required for all items.
 - b. Should the above noted Contractors fail to lay out the openings required and provide appropriate sleeves at the proper time, they will be required to pay the General Trades Contractor to cut and drill the openings and all necessary cutting and patching shall be done by the General Contractor at the Mechanical and Electrical Contractor's expense.
- J. <u>Project Record Documents</u> (Submit in Duplicate)(Electronic PDF is Preferred)
 - 1. Each contractor shall be required to provide record documents of all their work.
 - 2. <u>Records</u>
 - a. Mark up the most appropriate document to show:
 - 1. Changes made during the construction process.
 - 2. Detail not shown in the original Contract Documents.
 - b. The information given shall include, but shall not be limited to:
 - 1. The location of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. The location of internal utilities and appurtenances concealed in building structures, referenced to visible and accessible features of the structures.
 - 3. Final footing depth.

- c. Keep project record documents current. Do not permanently conceal any work until the required information has been recorded.
- Using colored pencil for graphic work and written comments, conform to the following color code: Blue for Architectural Work, White on Blueprint, Yellow for Structural Work, Green for Mechanical Work, and Red for Electrical Work.
- K. <u>Operating Maintenance and Service Manuals</u> (Submit in Duplicate)(Electronic PDF is Preferred)
 - 1. Each Contractor shall compile and deliver to the Architect, before request for final payment, all installation drawings, operating manuals, etc., pertaining to all equipment furnished and installed, together with descriptions and instruction for the operation of systems. Provide indexed loose ring notebook containing all information with identification by name, mark, number, etc., as used on drawings.

<u>Include:</u> Manufacturer's descriptive literature, shop drawings, performance data, curves, ratings, and diagrams; spare parts and replacement parts lists, manufacturer's maintenance and service manuals; name of service agency and installer.

<u>For:</u> Each item of equipment: Written description of their operation and actual setting of each instrument.

<u>Also:</u> Include step-by-step procedure for start-up and shut-down for each item of equipment.

- 2. Operating instructions must be in the possession of the Architect before final payment will be approved.
- L. Instruction of Owner's Personnel
 - 1. <u>Operation</u>
 - a. Each Contractor shall fully instruct the Owner's representative in the complete operation, adjustment and maintenance of the entire installation.
 - b. Cost of utilities for such operation shall be paid by the Owner. Said operation shall not be construed as acceptance of the Contractor's Work.
- M. Name, Identification, and Instruction Plates
 - 1. Identification, name, and instruction strips or plates on all

equipment shall be permanent, engraved or embossed strips or plates permanently attached. ("Dymo Tape" is not acceptable). No pen, pencil or crayon markings will be acceptable. Tape or plastic inserts, in mechanically applied retainers used for switch, breaker branch and for similar identification, where protected from dislodgment and defacement will be allowed. Identification shall include all major pieces of equipment, including those outside of the building.

- N. <u>Cleaning Piping and Equipment</u>
 - 1. Each Contractor shall thoroughly clean all work relating to their Contract.
 - 2. If any system should be stopped by foreign matter after being placed in operation, the system shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions, shall be repaired or replaced when the system is reconnected at no additional cost to the Owner.
- O. <u>Cleaning of Equipment</u>
 - 1. All materials installed shall be thoroughly cleaned, surfaces to be painted shall be wiped, scraped, or wire brushed as necessary, to furnish a clean, oil free painting surface. All fixture labels shall be removed.
- P. Provisions for Expansion and Contraction
 - 1. Each Contractor shall make adequate and proper provisions for expansion and contraction, in accordance with the best practice, and in accordance with respective manufacturer.
- Q. <u>Protection of Property</u>
 - 1. All doorways shall be provided with locks which shall be under the control of the General Trades Contractor, who shall lock doors at the close of each day's work.
- R. <u>Work Hours</u>
 - 1. Normal work hours for this project will be as follows:
 - a. Work Schedule: From 7:30 am to Dusk, Monday through Friday.
 - b. Weekend work shall be permitted for the duration of this project from 7:30 am to Dusk only with permission of the Owner.
 - c. Contractor to verify work time restrictions of the City of Cleveland and any other jurisdictions having control over this project.

DIVISION 1 - SECTION V

5. SUBCONTRACTORS:

- A. Article 5 as set forth in the attached General Conditions shall remain unchanged.
- 6. WORK BY OWNER OR BY SEPARATE CONTRACTS:
 - A. <u>This Section Shall Supersede</u> any conflicts noted elsewhere in the plans and/or project manual. This Section does not limit the Scope of Work required.

ALL CONTRACTORS SHALL:

- 1. Review dimensions, layouts, access, utility requirement, for existing Plumbing, Heating and Ventilating and Electrical systems and submit any discrepancies in writing to the Architect before proceeding with the work.
- 2. Each Contractor shall be responsible for proper scheduling of delivery, unloading, temporary protection, installation, cleanup, etc., as outlined in other Sections of the project manual. Contractor desiring to deliver materials, equipment, etc., which requires special protection, ie., from weather, theft, etc., shall obtain from the Architect, written approval, prior to making delivery. Each contractor shall schedule this work at the direction of the General Trades Contractor and date approved master schedule.
- 3. Contractor furnishing equipment shall:
 - a. Provide all conduit, wiring, controls etc., complete to load side of the starter or disconnect when a starter or disconnect is shown and/or specified.
 - b. Provide all conduit, wiring, controls, etc., complete to junction box on the exterior of the equipment when starter and/or disconnect is now shown and/or specified.
- B. <u>Division of Responsibility</u>
 - 1. <u>General Trades</u>
 - a. General Trades Contractor shall furnish and install rubber base on all cabinet items furnished by this or other Contractors.
 - b. General Trades Contractor shall be responsible for documentation of Weekly Job Meetings and Distribution of Meeting Minutes.
 - c. The General Trades Contractor shall be responsible for the overall coordination of this project.

DIVISION 1 - SECTION V

C. Foundations, Supports, Piers, Bases, Etc.

- 1. Contractors or suppliers furnishing equipment shall predetermine the size and location of such equipment foundations and shall inform the proper Contractor in order that he can provide the foundations required. Should any Contractor fail to provide such information at the proper time, they shall be required to compensate the proper Contractor for such installations with additional compensation.
 - a. All exterior pad, all foundations, piers, etc., shall be furnished and installed by the Contractor furnishing the equipment involved.
 - b. Construction of foundations, supports, pier bases, etc., shall be of same material and quality of finishes as adjacent material.
 - c. Pads shall be doweled into structural slabs, and concrete surface shall extend 6" each way beyond the general outline of the equipment.
 - d. Equipment shall be fastened to foundation by Contractor providing equipment as required by Contract Requirements and/or by Code Requirements.

D. <u>Cooperation</u>

1. All Contractors and Subcontractors shall coordinate their work with all adjacent work and shall cooperate with other trades so as to facilitate general progress of work. Each trade shall afford other trades every reasonable opportunity for installation of their work and for storage of their material. The General Trades Contractor shall be responsible for the overall schedule and overall coordination.

E. <u>Interference's</u>

- 1. Before installing any of his work, Contractor shall see that such work does not interfere with clearances required for the proper erection and finish of any other part of the work. If any work is so installed and it later develops that the original design cannot be followed because of such installation, the Contractor shall, at his own expense, make such changes in his work as necessary to permit completion of all work in accordance with the drawings and project manual.
- 2. It shall be the duty of each Contractor to report to the Architect any interference between his work and that of any other Contractor as soon such interference is discovered. The Architect will determine which equipment shall be relocated regardless of which was first installed and his decision shall be final.

F. Job Clean-Up

1. Owner requires clean up and/or haul away of the rubbish at any reasonable time during the construction period. If Contractor fails to do so, then Owner may have it done as outlined in 3.4.

7. MISCELLANEOUS PROVISIONS:

A. The Architect nor Owner assumes no responsibility for the accuracy of contours, and elevations shown on the plans even though this information is the result of field investigations. The contractor shall check all aspects of site and job and determine for himself all existing conditions and submit his bid based upon his check of site and/or job conditions. No change orders will be permitted for alleged omissions from the documents that could have been identified and recognized by an inspection by the Contractor.

8. TIME:

A. <u>Progress Schedule</u>

- 1. The General Trades Contractor shall be responsible to develop and maintain an overall project schedule including the work of all other contractors.
- 2. In general, the work shall be scheduled to be at least 25% complete at the expiration of one-third of the Contract Time, and at least 50% complete at the expiration of half of the contract time, and at least 75% complete at the expiration of two-thirds of the Contract.
- 3. Copies of graphic progress charts, upon which has been indicated the actual progress, shall be furnished to the Architect with each requisition for payment. Should the rate of progress fall materially behind the scheduled rate of progress, and unless the delay is authorized by the Owner, each offending Contractor shall furnish additional labor, work overtime, or take other necessary means required for completion of the work on the scheduled date. No additional compensation beyond the set Contract Price will be paid for action taken on overtime expense incurred in maintaining scheduled progress.
- 3. When the rate of progress exceeds original expectations so that the work could be completed ahead of Contract Time, each trade shall take all necessary steps, to keep pace with the earlier completion date.

9. PAYMENTS AND COMPLETION:

A. At various times during construction and particularly near the completion of the Work, the Architect may issue "Punch Lists".

- B. The Architect shall, at about the time of issuance of Certificates of Substantial Completion, list all known items needing corrections, completion, or other Work to conform with plans and project manual. The Architect shall place a dollar value for each item which shall be stated on this list. This list shall be prepared by the Architect. The Architect will present this list to the Owner, who shall have 3 days to review. The Owner and Architect by mutual agreement may adjust this Punch List during this time. At the completion of this ten day period, the Architect's punch list, (plus those items that both the Architect and Owner have mutually agreed upon), shall become the "Final Punch List". The Contractor shall have fifteen (15) days to complete punch list items. The value of any item not completed in this period, as determined by the Architect, shall be deducted from the Contract Price. The Contractor shall be paid, less credit to the Owner for unfinished punch list items. Guarantee items shall not be considered a punch list item.
- C. The completion of Work on the Punch List shall not relieve the Contractor from any provision of guarantee, warranty, etc.
- D. <u>Payment Application and Support Data</u>
 - 1. Three sets of Payment Application on AIA Form G702 and G703 shall be submitted to the Architect on date determined as follows:

The 26th day of the month.

a. Payment will be made up to 92% of value of work in place, or stored along with proper substantial data, up to a point when project is 50% complete; thereafter no additional retainage will be withheld.

10. PROTECTION OF PERSONS AND PROPERTY:

A. Article 10 as set forth in the attached General Conditions shall remain unchanged.

11. INSURANCE:

- A. All successful bidding contractors will be required to comply with the following insurance requirements.
- B. The Owner, Architect and their Sub-Consultants shall be named as additional insureds on the Contractors Policy.
- C. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's Consultants, and Agents and Employees of any of them 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, provided that such claim, damage, loss or expense

is attributable to bodily injury, sickness, disease or health, or to injury to or destruction of tangible property (other than the Work itself), including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, or 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 thereunder.

- D. All Insurance Certificates shall contain a written thirty (30) day cancellation notice clause to the other parties of the Contract.
- E. Certificates of Insurance shall show the <u>Owner Cleveland Metropolitan</u> <u>School District</u> as the certificate holder.

CONTRACTOR'S LIABILITY INSURANCE:

- a. Current State of Ohio Worker's Compensation Certificate shall be submitted to the Owner and the Architect.
- b. Unless otherwise directed by the Owner in writing, the Contractor shall assume all responsibility for the adequacy of the insurance carried by each of his subcontractors and shall, if requested, file copies of all subcontractors Insurance Certificates with the Owner and the Architect prior to the respective subcontractor's participation in the work.

Certificates to determine their adequacy in complying with the requirements of this Project Manual.

It is the Owner's responsibility to determine whether the information contained in the Certificates of Insurance are adequate and acceptable. The Architect shall not be responsible for the checking or approving of the Certificates of Insurance.

c. The Owner's Insurance Counsel shall check the Insurance For the duration of the Contract, the Contractor shall maintain statutory Workmen's Compensation and shall maintain Employer's Liability Insurance with minimum limits of not less than \$1,000,000.00 each accident and aggregate.

For the duration of the Contract, the Contractor shall maintain Comprehensive General Liability Insurance for Bodily Injury, including Personal Injury and Death, with limits of not less than \$5,000,000.00 per person and not less than \$5,000,000.00 each occurrence. The Contractor shall maintain Bodily Injury and Property Damage Liability Insurance with minimum limits of not less than \$5,000,000.00 per each occurrence and \$5,000,000.00 in aggregate. Insurance shall include the following:

- a. Owner's Protective Liability ("Stop Gap" coverage with the naming of the Owner and Architect and Consultants as an additional insured for all policies).
- b. Contractor's Protective Liability.
- c. Contractual Liability for the Hold Harmless Clause.
- d. Manufacturer's or Contractor's Protective Liability.
- e. Products Liability including Completed Operations.
- f. Coverage for XCU hazards.
- g. Liability due to occurrence as well as by accident.
- h. Coverage for Premises and Operations, Construction Elevators and Hoists, Independent Contractors, Subcontractors and Completed Operations.
- i. Comprehensive Automobile Liability.
- j. Builders Risk for all tools, equipment, and materials owned by Contractors.

F. OWNER'S LIABILITY INSURANCE:

a. Property Insurance

The Owner shall carry all property insurance as stated in the General Conditions for the building. However, it shall be the responsibility of the Contractors to carry insurance on their respective materials, tools, or other equipment owned by them or their employees including all material and work in place until the completion of the project.

12. CHANGES IN THE WORK:

- A. Delete Paragraphs .3 and .4 in Article 12.1.3 and substitute the following:
 - 1. The Architect shall determine quantities and cost for proposed changes and submit to Contractor for his review and concurrence. Cost of changes shall be determined as follows:
 - a. Credit for deleted Work by use of the actual costs noted noted in the current "Construction Pricing and Scheduling Manual", as published by the F. W. Dodge Corporation.

- b. Charges for extra work by use of the actual costs noted in the current "Construction Pricing and Scheduling Manual", referred to above, plus 15% (Overhead and Profit).
- c. Extra charges or credits due to changes in the Work shall be made on the basis of actual labor and material, etc., involved in the change plus 7-1/2%. Labor shall be direct labor by tradesmen. It shall not involve labor of Superintendents which is expected to be in the Base Bid of the Contract and part of each Contractor's normal overhead.

13. UNCOVERING AND CORRECTION OF WORK:

- A. Article 12 as set forth in the attached General Conditions shall remain unchanged.
- 14. TERMINATION OR SUSPENSION OF THE CONTACT:A. Article 14 as set forth in the attached General Conditions shall remain unchanged.

15. TEMPORARY PROVISIONS AND FACILITIES:

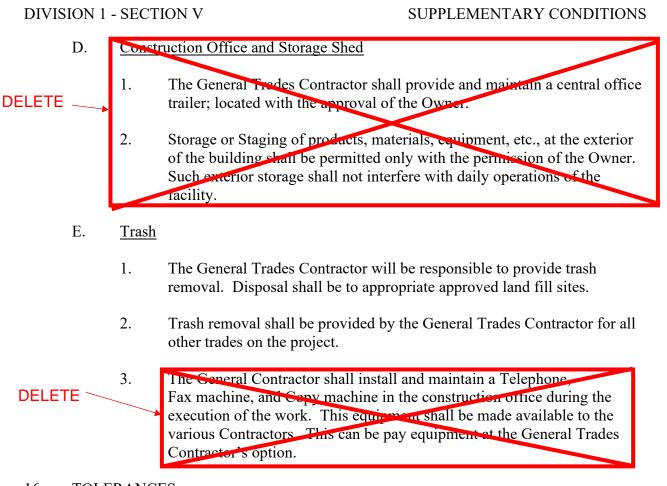
- A. <u>Temporary Protection and Heat</u>
 - 1. The HVAC Contractor shall maintain temporary heat from existing HVAC units. When existing HVAC Units are removed then the General Contractor shall furnish other forms of heat for all trades, and he shall take such other precautions as may be necessary to protect the

Work during the freezing weather. It shall be the responsibility of this Contractor to remove and rebuild any Work that has become damaged due to freezing weather.

2. The General Trades Contractor shall provide and maintain temporary, weather-tight enclosures where such are necessary to protect the Work from the elements or to maintain heat within the building. The Contractor shall hang tarpaulins in conjunction with the use of portable heaters.

B. Construction Water, Power and Heat

- 1. The Contractor shall provide temporary water supply, connected to the existing lines at a point or points as approved by the Architect.
- C. <u>Temporary Sanitary Facilities</u>
 - 1. The General Contractor shall provide and maintain a toilet as required for the use of Workmen during the execution of the Work under these Contracts.



16. TOLERANCES:

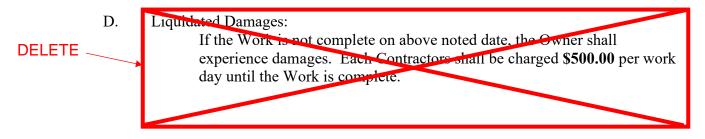
- A. All measurements and sizes given, unless noted as nominal, are actual measurements and sizes and shall be so interpreted. No deviation will be allowed unless prior acceptance of such deviation has been secured from the Architect.
 - 1. Concrete Work As set forth in "Reinforced Concrete, A Manual of Standard Practice", latest edition.
 - 2. Structural Steel as set forth in "Manual of Steel Construction", latest edition.
 - 3. Lumber as set forth in:
 - a. "National Design Specifications for Stress Grade Lumber and Its Fastenings", latest edition.
 - b. "Southern Pine Grade Use Guide", latest edition.
 - c. "Timber Construction Standards", latest edition.
 - 4. Plywoods as set forth in
 - a. Commercial Standard, latest edition.

DIVISION 1 - SECTION V

- 5. Millwork as set forth in
 - a. "Architectural Woodwork Quality Standards Illustrated", latest edition.
- 6. Acoustical Tile and Lay-In Panel Ceiling
 - a. Suspension: As set forth in specifications for such work as published by AMA, NACA, and SCMA, latest edition.
- 7. Tile as set forth in
 - a. Latest edition of Handbook for Ceramic Tile Installations by the Tile Council of America, latest edition.

17. COMPLETION DATE:

- A. Time is of the essence Each and every contractor, Subcontractor, and Supplier shall note that time is of the essence for completion of this Contract.
- B. Starting Date: Contractor shall start Work immediately as outlined in Division I, Section III, Instructions to Bidders and and per the date of the written authorization to proceed as issued by the Architect.
- C. Completion Date all Work: Including all Punch Lists, shall be completed at the end of the normal work day as outlined in Division I, Section III, Instructions to Bidders.



SECTION VI - DESCRIPTION OF THE WORK - BASE BID

1. <u>GENERAL INFORMATION</u>

- A. This Section includes special information pertaining to the Work to be performed under Base Bid.
- B. All Contact Documents are part of each contract and subcontract.

2. <u>DESCRIPTION OF THE CONTRACT</u>

- A. <u>GENERAL TRADES CONTRACT "A"</u>
 - 1. <u>Base Bid Includes:</u>
 - a. Unless otherwise noted, all Work indicated on the drawings and/or described in this project manual for Base Bid. This work includes, but is not limited to selective demolition, general trades, electrical, mechanical, plumbing, fire protection, and technology.
 - 2. <u>Base Bid shall include the following:</u>
 - a. Removal and disposal of all temporary plywood covering of exterior windows and doors.
 - b. Removal and disposal of all temporary security chain link fencing and posts around the building and site.

B. <u>ALTERNATE #1 – ACCELERATED COMPLETION DATE</u>

1. Alternate #1 shall include all costs associated with an accelerated completion date of December 30, 2022.

FORM OF PROPOSAL

Proposals due on or before1:00 PM, Eastern Daylight Savings Time, Monday the 12th of September, 2022.

CONTRACTOR TO CHECK SECTION BID UPON:

Contract 'A' ()

We,

(a corporation) (a partnership) (an individual) submit our proposal for the INTERIOR **RENOVATIONS TO H.B. BOOKER SCHOOL.**

The undersigned, having carefully examined the Notice to Bidders and Contract Documents dated 8-29-2022, including all addenda thereto, as prepared by ThenDesign Architecture, Ltd. 4230 River Street, Willoughby, OH. 44094, and on file in their Office hereby propose to furnish all labor, materials, and equipment to complete all work required, as shown on the drawings and as enumerated and described in the Contract Documents for Stipulated Sum as follows:

CONTRACT "A" – BASE BID

Base Bid shall consist of furnishing all materials, equipment, labor and services to perform all Work, as shown on the Contract Documents. Base bid shall include a 5% contingency allowance to address concealed conditions.

Materials:		
Labor:		
5% contingency allowance		
Total for the sum of		
	(\$).

ALTERNATE #1 – ACCELERATED COMPLETION DATE

Contractor shall include a detail estimate of premium charges necessary to complete this work by December 30, 2022.

Materials:		
Labor:		
Total for the sum of		
	(\$)
<u>SCHEDULE</u>		
Event	Date	
Begin Construction		

Substantial Completion

Schedule must be filled out, including events and dates.

SUBSTITUTIONS

Bidder is to list here any "Substitutions" for which consideration is desired, showing the addition or reduction in price to be made, for each, if the substitution is accepted, or stated "No Change in Price", if none is provided. Submission of proposed substitution for approval, whether for savings in cost or improvement in construction is encouraged.

Brand Or Make	*	Proposed Substitutions	*	Add	*	Deduct
Specified	*	-	*		*	
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Substitutions are for consideration of inclusion only. The Owner has the right to require all work to conform to the Contract Documents issued.

Signature of Bidder

This Proposal includes the following Addenda No.	a: Date

The undersigned agrees that this bid may be accepted any time within Sixty Days after bid due date, and will not be withdrawn prior to that date.

The Contractor acknowledges:

- 1. That he understands the plans and specifications.
- 2. That he has the equipment, technical ability, personnel and facilities to construct the project in accordance with the plans and specifications.
- 3. That the plans and specifications are, in his opinion, appropriate and adequate for the construction of a sound and suitable building project.
- 4. That he will conform to and abide by the decision of the Owner as to the selection of Contractor.

Official Address:

BY:

_____ TITLE:_____

Telephone No:_____

Fax No.

The following people have an interest in this Contract: (Name individuals who are partners or stockholders in the corporation).

UNIT PRICES

The Base Bid is a lump sum for furnishing the necessary labor, materials, equipment and performing all work required by the drawings and specifications. The Owner reserves the right to increase or diminish the work or to omit any one or more items as it may deem desirable. Unit prices indicated below will be utilized as a basis for progress payments and as a basis of adjusted remuneration for any authorized increase or decrease in the scope of work. These unit prices must be filled in and accompany the proposal and the total sum of all the amounts resulting from the quantities multiplied by their unit prices. The Contractor shall be responsible for all quantities and should make his own calculation.

ITEM DESCRIPTION	QUANTITIES	UNIT	UNIT COST	TOTAL
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SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site to be attended by the installer, the architect, and the construction manager to review the specifications, and detail the materials, the installation, the initial maintenance, and protection of the installed ceiling.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site 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.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

22021

- 1. Flame-Spread Index: Class A according to ASTM E1264.
- 2. Smoke-Developed Index: 450 or less.

2.3 ACOUSTICAL PANELS

- A. Suspended Acoustical Ceiling Tiles
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Armstrong World Industries, Inc.; Cirrus #574 (24 by 24 inch) and #533 (24 by 48 inch) Square Lay-in Item #1714.
 - b. CertainTeed Corp.; Celotex Brand Fine Fissured High NRC #HHF-497 DP.
 - c. USG Interiors, Inc.; Subsidiary of USG Corporation; Eclipse ClimaPlus, Square Lay-in Item #76575.
 - 2. Classification: Provide fire-resistance rated panels complying with ASTM E 1264 for type, form, and pattern as follows:
 - a. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - b. Pattern: CE (perforated, small holes and lightly textured).
 - 3. Color: White.
 - 4. LR: Not less than 0.85.
 - 5. NRC: Not less than 0.70.
 - 6. CAC: Not less than 35.
 - 7. Edge/Joint Detail: Square.
 - 8. Thickness: 3/4 inch.
 - 9. Modular Size:24 by 48 inches and 24 by 24 inches, as indicated in Drawings.
 - 10. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21 (basis of design: Armstrong, Humiguard Plus).

B. Surface Mounted Ceiling Tiles

- 1. Armstrong Ceilings "Impression" or equivalent.
 - a. White
 - b. 12" x 12"
 - c. Textured surface

2.4 METAL SUSPENSION SYSTEMS

- A. Suspension system for ACT-1.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc.; Prelude XL 15/16" Exposed Tee System.
 - b. CertainTeed Corporation.; 15/16" Classic System.
 - c. USG Interiors, Inc.; Donn DX Exposed 15/16" Face Suspension System
 - 2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized

according to ASTM A 653/A 653M, G30 (Z90) coating designation, with prefinished, 15/16-inch-(24-mm-) wide, aluminum caps on flanges.

- a. Structural Classification: Intermediate-duty system.
- b. End Condition of Cross Runners: Override stepped or butt-edge type.
- c. Face Design: Flat, flush.
- d. Face Finish: Painted white.

2.5 ACCESSORIES

- A. Wire Hangers, Braces, and Ties: Provide wires as follows:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 - 2. Stainless-Steel Wire: ASTM A580/A580M, Type 304, nonmagnetic.
 - 3. Nickel-Copper-Alloy Wire: ASTM B164, nickel-copper-alloy UNS No. N04400.
 - 4. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.
- B. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- C. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanizedsteel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.
- E. Hold-Down Clips: Manufacturer's standard hold-down.
- F. Impact Clips: Manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- G. Clean-Room Gasket System: Where indicated, provide manufacturer's standard system, including manufacturer's standard gasket and related adhesives, tapes, seals, and retention clips, designed to seal out foreign material from and maintain positive pressure in clean room.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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 unless otherwise indicated and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
- B. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-inplace or postinstalled anchors.
- C. 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. Miter corners accurately and connect securely.
 - 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. 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 precise fit.
 - 1. Arrange directionally patterned acoustical panels as follows:
 - a. Install panels with pattern running in one direction parallel to long axis of space or as indicated in drawings.
 - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
- F. Install surface-mounted ceiling tiles to the substrate with adhesives recommended by the manufacturer.

3.4 ERECTION TOLERANCES

- A. a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspensionsystem members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

RENOVATIONS TO H BARBARA BOOKER SCHOOL

2121 W 67th Street Cleveland, Ohio 44102

FUNDED THROUGH A PARTNERSHIP WITH:

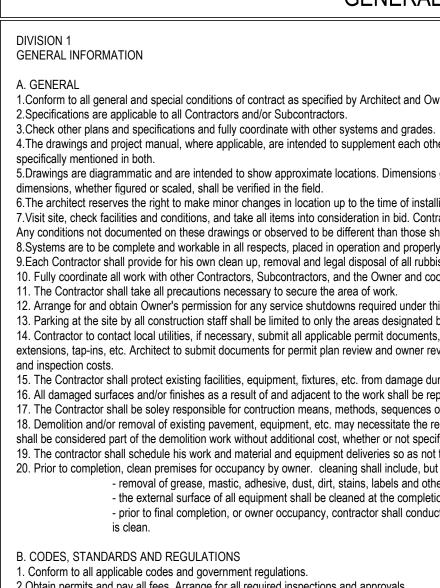


CLEVELAND METROPOLITAN SCHOOL DISTRICT

ERIC GORDON JUSTIN BIBB ANNE E BINGHAM

CHEIF EXECUTIVE OFFICER MAYOR OF CLEVELAND **BOARD OF EDUCATION CHAIR**

CODE: USE GROUP: E EDUCATION CONSTRUCTION TYPE: 1-B FLOOR AREA: 28,390 SF FIRST: SECOND: 22,753 SF



requirements prior to starting work.

D. WARRANTY



GENERAL NOTES

1. Conform to all general and special conditions of contract as specified by Architect and Owner 2. Specifications are applicable to all Contractors and/or Subcontractors.

4. The drawings and project manual, where applicable, are intended to supplement each other and any material or labor called for in one shall be furnished even though not 5. Drawings are diagrammatic and are intended to show approximate locations. Dimensions given on the plans in figures shall take precedence over scaled dimensions; and all

dimensions, whether figured or scaled, shall be verified in the field. 6. The architect reserves the right to make minor changes in location up to the time of installing without additional cost. 7. Visit site, check facilities and conditions, and take all items into consideration in bid. Contractor to review and become familiar with all existing conditions prior to commencing work. Any conditions not documented on these drawings or observed to be different than those shown on these drawings are to be reported to the architect, prior to beginning work.

8.Systems are to be complete and workable in all respects, placed in operation and properly adjusted. 9. Each Contractor shall provide for his own clean up, removal and legal disposal of all rubbish on a daily basis or as directed by Owner's representative. 10. Fully coordinate all work with other Contractors, Subcontractors, and the Owner and cooperate completely.

11. The Contractor shall take all precautions necessary to secure the area of work.

12. Arrange for and obtain Owner's permission for any service shutdowns required under this contract. 13. Parking at the site by all construction staff shall be limited to only the areas designated by the Owner.

14. Contractor to contact local utilities, if necessary, submit all applicable permit documents, qualifications, etc., and be responsible for all fees associated with permits, utility extensions, tap-ins, etc. Architect to submit documents for permit plan review and owner review; however, the contractor will be responsible for obtaining the permits and all permit

15. The Contractor shall protect existing facilities, equipment, fixtures, etc. from damage during the course of construction. 16. All damaged surfaces and/or finishes as a result of and adjacent to the work shall be repaired and finished to their original condition.

17. The Contractor shall be soley responsible for contruction means, methods, sequences of construction and the safety of workmen. 18. Demolition and/or removal of existing pavement, equipment, etc. may necessitate the removal or relocation of existing piping, conduit, services, etc. Such removal and relocation shall be considered part of the demolition work without additional cost, whether or not specifically shown on the drawings or listed in the specifications. 19. The contractor shall schedule his work and material and equipment deliveries so as not to interfere with the daily operations of the facility.

20. Prior to completion, clean premises for occupancy by owner. cleaning shall include, but not be limited to the following: - removal of grease, mastic, adhesive, dust, dirt, stains, labels and other foreign materials from exposed surfaces.

- the external surface of all equipment shall be cleaned at the completion of the work to remove all concrete, dust and dirt, welding and cutting splatter, etc. - prior to final completion, or owner occupancy, contractor shall conduct an inspection of sight-exposed surfaces, and all work areas, to verify that the entire work

2. Obtain permits and pay all fees. Arrange for all required inspections and approvals.

C. BASE EQUIPMENT AND MATERIALS AND SUBSTITUTIONS 1.All equipment and materials shall be new and free of defects.

2.Base equipment, manufacturer, model, and capacity of equipment are listed on the drawings or in this specification. Any other manufacturer is considered a substitution. 3. Substitutions are subject to the approval of the Owner. If a substitution is submitted, include complete performance data for evaluation. 4. If substitutions are approved, notify all other Contractors and Subcontractors of trades affected by the substitutions and fully coordinate. Any costs resulting from substitution, whether by Contractor or others, shall be the responsibility of and paid for by the substituting Contractor. 5.All equipment shall be installed in full accordance with the manufacturer's data and installation instructions. It is the Contractor's responsibility to check and conform to these

1. Fully warrant all materials, equipment, and workmanship for one (1) year from date of acceptance, unless noted otherwise. 2. Repair or replace without charge to the Owner all items found defective during the warranty period.

SYMBOL LEGEND

LINETYPE SYMBOLS

EXISTING COLUMN GRID

DENOTED WITH AN E/

PRFFIX

— — — — — — LINE

PROPERTY LINE

BREAK LINE

- COLUMN GRID

CENTER LINE / ELEVATION

- WORK ABOVE, BEYOND

OR TO BE REMOVED

	SYMBC
	ROOM NAME ROOM NUMBER SQUARE FOOTAGE USE GROUP OCCUPANCY LOAD
NORTH ARROW	
DOOR SYMBOL	
WINDOW SYMBOL WINDOW TY OR METAL F ON ELEVATION	
1 A101	TION INDICATION TION NUMBER
ELEVATION INDICAT	<u>ION</u> 1 101 1
1 EXTERIOR MULTIF	1 PLE INTERIOR
	<u>CABINET</u>

F.E.C DETAIL INDICATION

A101 SIM DETAIL NUMBER SHEET WHERE SHOWN

REVISION INDICATION

ALIGN WITH EXISTING

CONSTRUCTION

PARTITION TYPE SYMBOL

EQUIPMENT DESIGNATION (SEE EQUIPMENT MANUAL) (001) EQUIPMENT TYPE

CEILING HEIGHT ACT-1 10'-0"

<u>10' - 0"</u> CL1

FINISH SYMBOLS DENOTES CORNER GUARD LOCATION CG

<u>MATCHLINE</u> /- INDICATOR OF AREA AREA A A102 - SHEET NUMBER OF ADJACENT DRAWING

_____ KEYNOTE SYMBOL ? KEYNOTE INDICATOR

EXISTING DOOR DESIGNATION EXISTING DOOR

NEW DOOR DESIGNATION

NEW DOOR

INDICATOR

DOUBLE EGRESS DOOR DESIGNATION

GENERAL DIMENSIONING

NOTE: DIMENSIONS ARE TAKEN FROM/TO FINISH SURFACE, UNLESS

DIMENSION IF IT IS GREATER THAN 1")

TO EXISTING CONDITION NOTES")

OTHERWISE NOTED.

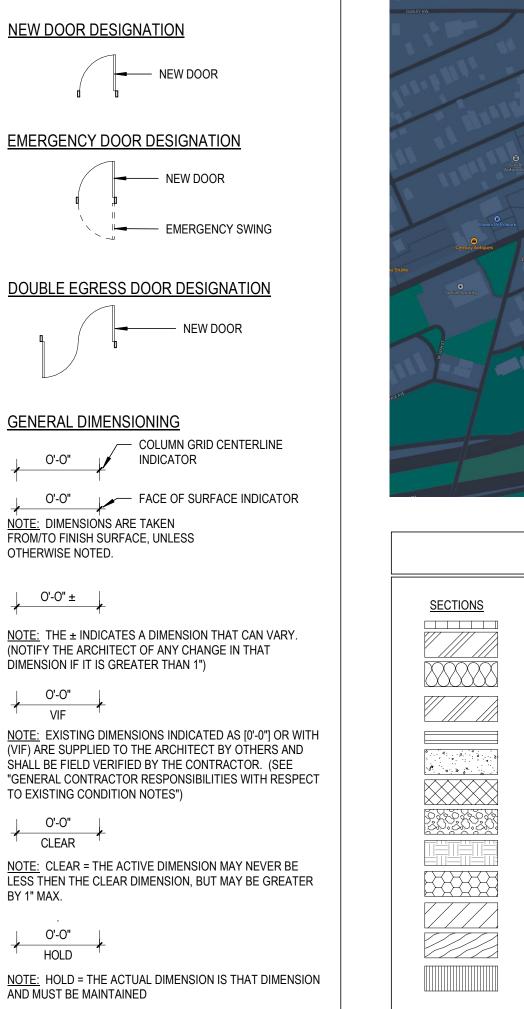
0'-0" ±

O'-O" VIF

O'-O" CLEAR

BY 1" MAX.

O'-O" HOLD	
NOTE: HOLD = THE ACTUAL DIMENSION IS THAT DIMENSI AND MUST BE MAINTAINED	IC

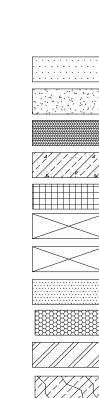


MATERIAL LEGEND



FINISHED WOOD (FOR LARGE SCALE DETAILS)

FIRE SAFING



MEDIUM DENSITY FIBERBOARD PLASTER, CEMENT, MORTAR OR G.W.B. PLYWOOD VENEER

PRE-CAST CONCRETE

RIGID INSULATION ROUGH WOOD (ALL BLOCKING AND

FRAMING LUMBER) SHIM

SPRAY-ON FIREPROOFING

SPRAY-APPLIED INSULATION

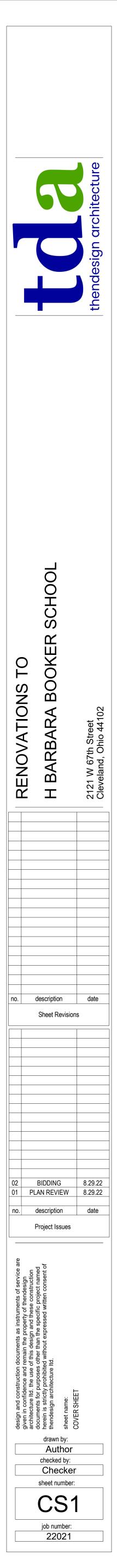
STEEL (3/4 SCALE OR LARGER) STONE: GRANITE OR MARBLE



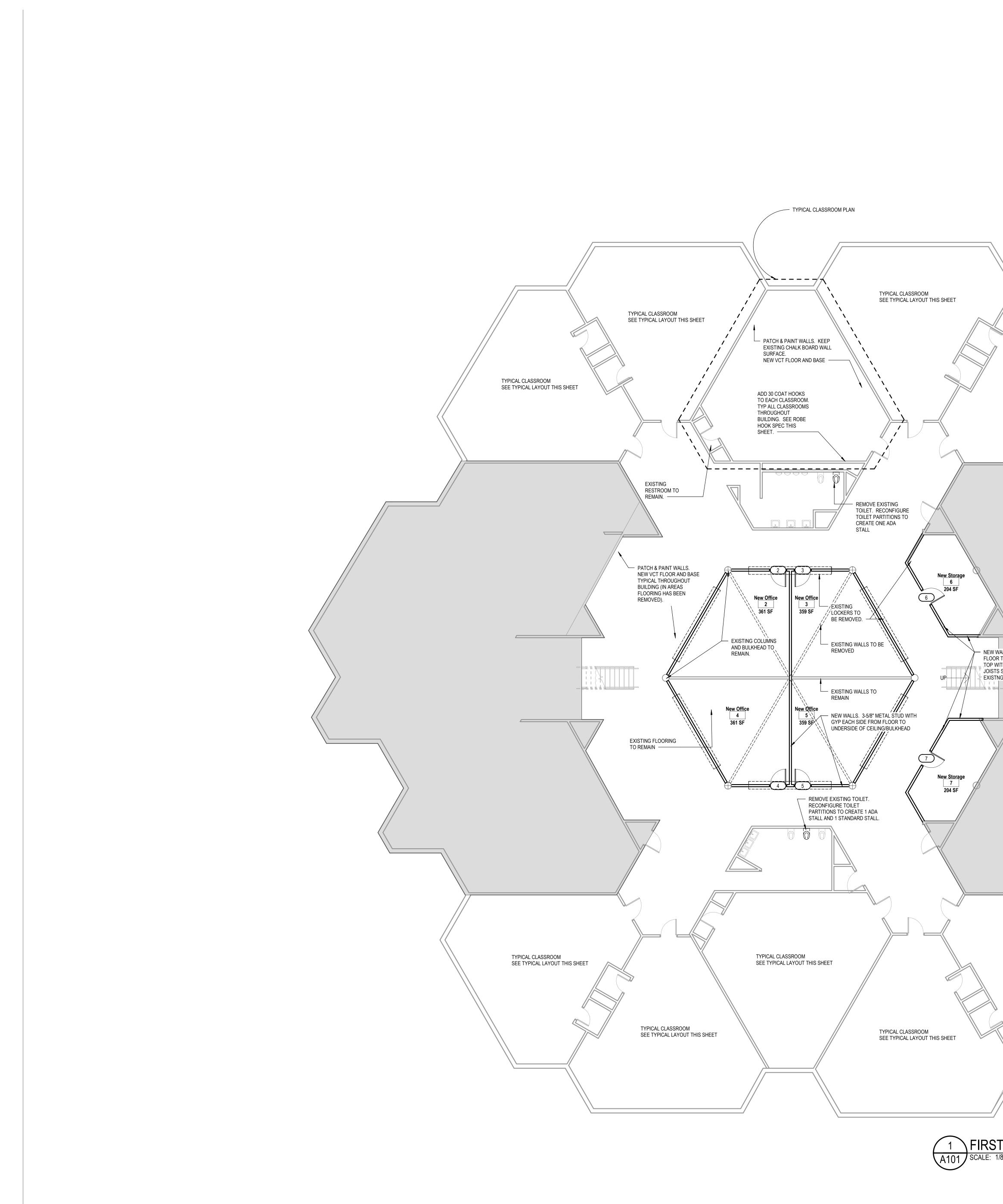
NOT TO SCALE

SITE MAP









- 1. ALL DIMENSIONS ARE DRAWN TO FINISH FACE OF WALL. 2. DO NOT SCALE DRAWINGS. DIMENSIONS LOCATED ON PLANS, ELEVATIONS, AND DETAILS SHALL GOVERN OVER SMALL SCALE DETAILS. IF DIMENSIONS ARE IN QUESTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE ARCHITECT BEFORE CONTINUING WITH CONSTRUCTION. 3. DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION AND INSTALLATION OF CASEWORK. REFER TO CASEWORK NOTES FOR
- ADDITIONAL INFORMATION.

SPEC ROBE HOOK (RHADA): 1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENT, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: A. AMERICAN SPECIALITIES, INC. B. BOBRICK WASHROOM EQUIPMENT, INC. C. BRADLEY CORPORATION D. GAMCO SPECIALTY ACCESSORIES; A DIVISION OF BOBRICK 2. DESCRIPTION" SINGLE PRONG UNIT 3. MATERIAL AND FINISH: STAINLESS STEEL, ASTM A480/A480M NO 4 FINISH

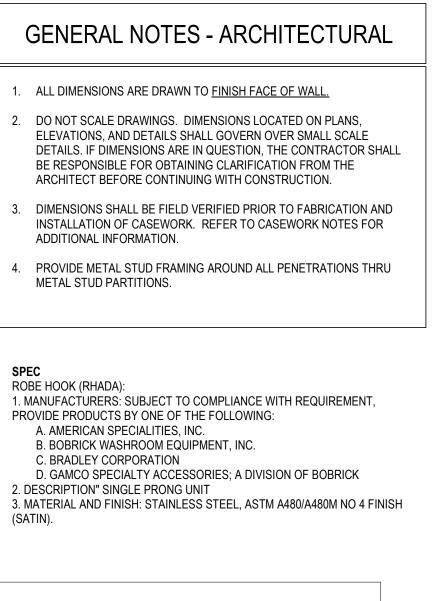
(SATIN).

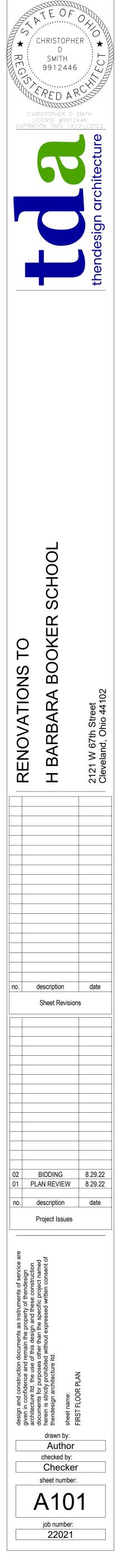
TYPICAL CLASSROOM SEE TYPICAL LAYOUT THIS SHEET - NEW WALLS FROM FIRST FLOOR TO SECOND FLOOR. TOP WITH PLYWOOD ON 2X8 JOISTS SECURED INTO EXISTNG WALL. TYPICAL CLASSROOM SEE TYPICAL LAYOUT THIS SHEET

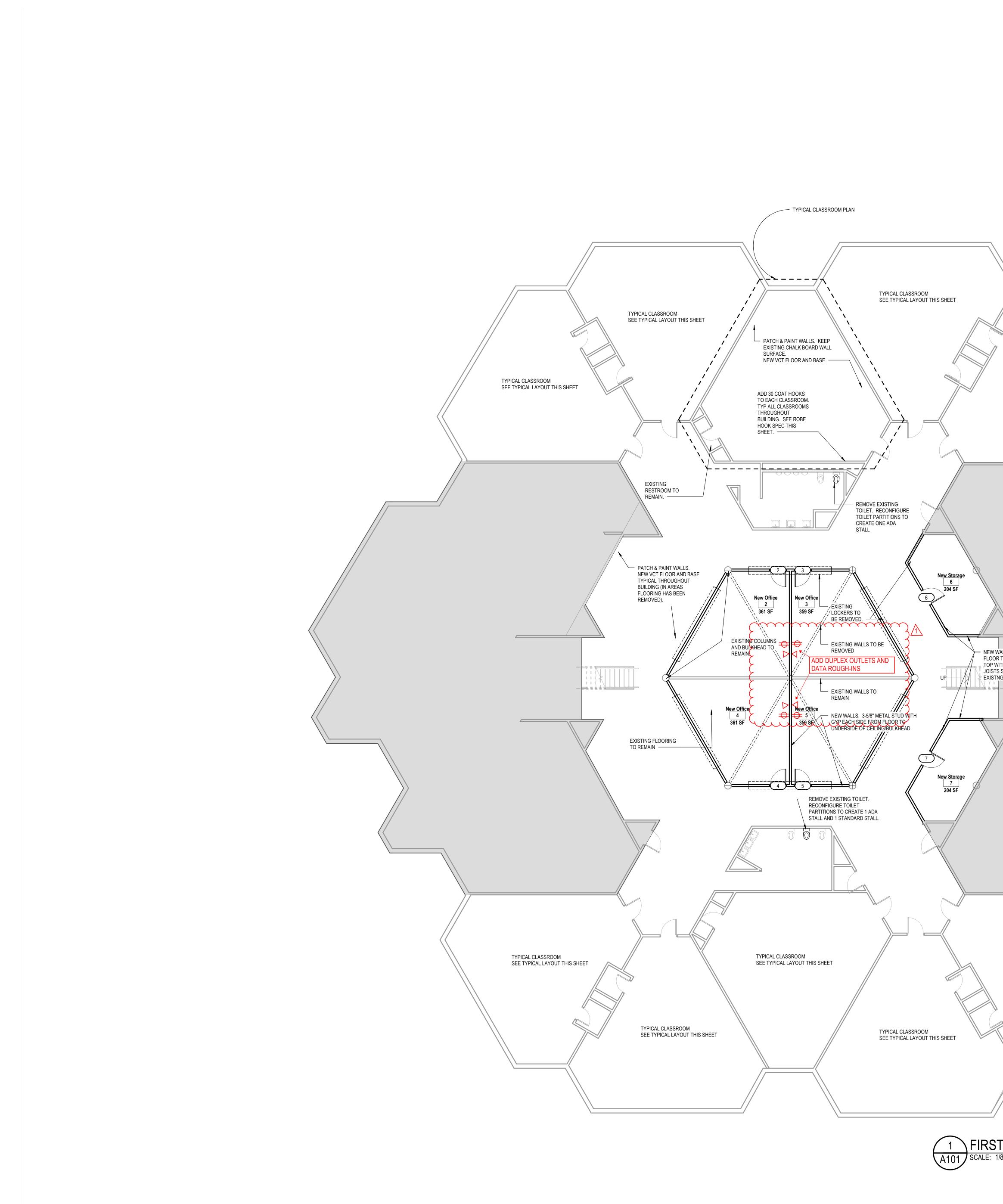
DOOR SCHEDULE

Door	Room		Panel		Doors		Frame				Fire	
lumber	Number	Room Name	Туре	Mat.	Width	Height	Mat.	Head Detail	Jamb Detail	Hardware Set No.	Rating	Remarks
IRST FLOOR												
	2	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING		
	3	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING		
	4	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING		
	5	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING		
j	6	New Storage	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING		
,	7	New Storage	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING.		

1 FIRST FLOOR EXISTING/DEMO/NEW A101 SCALE: 1/8" = 1'-0"







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- ADDITIONAL INFORMATION. PROVIDE METAL STUD FRAMING AROUND ALL PENETRATIONS THRU METAL STUD PARTITIONS.

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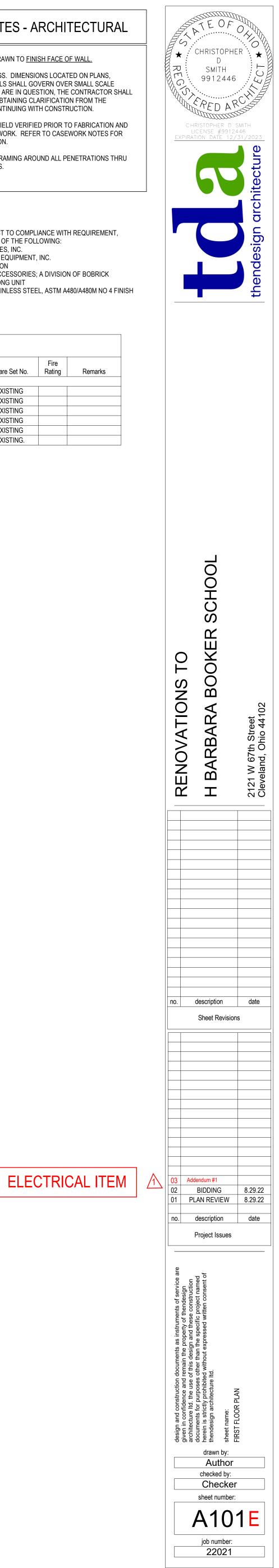
(SATIN).

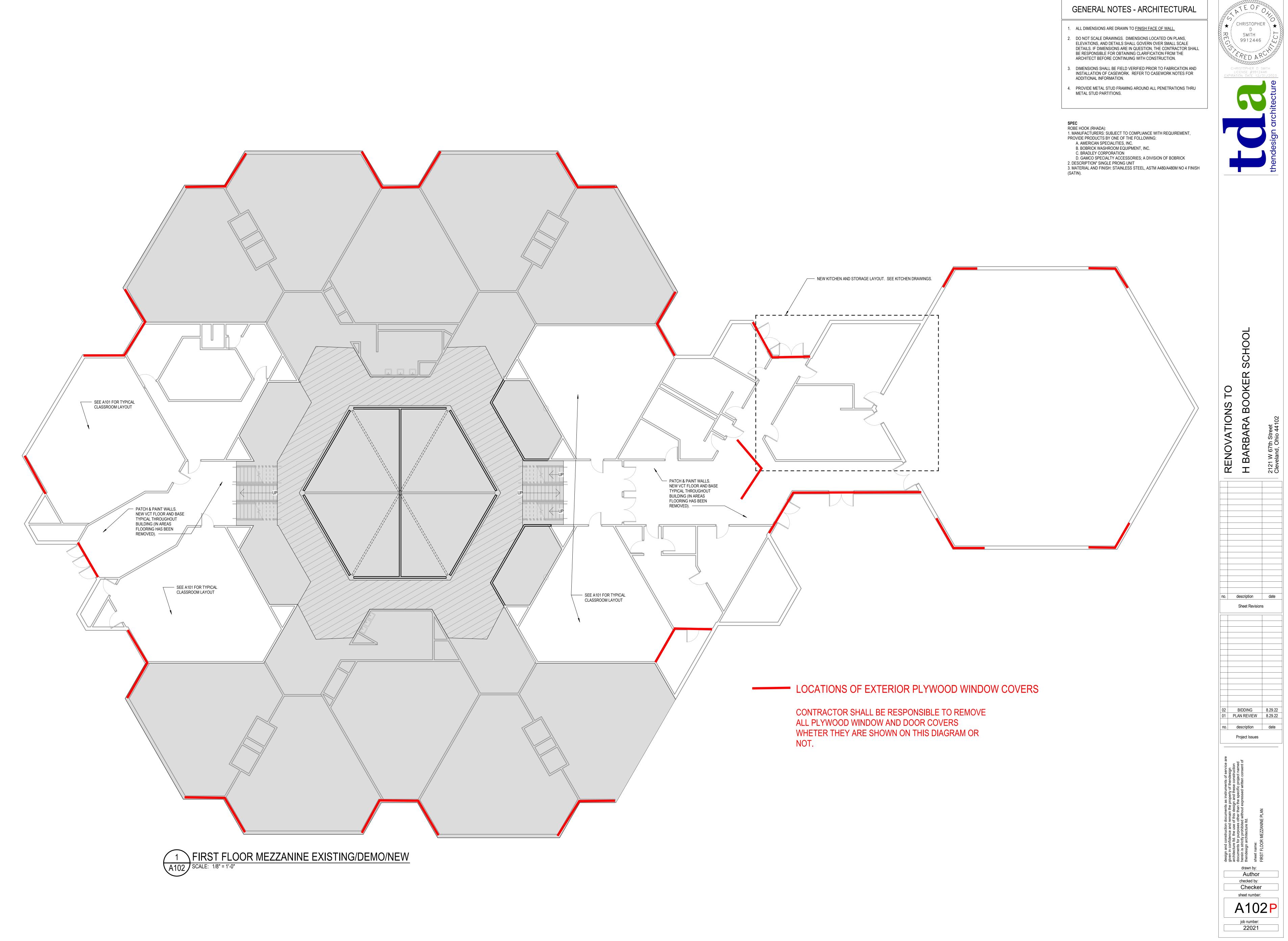
TYPICAL CLASSROOM SEE TYPICAL LAYOUT THIS SHEET - NEW WALLS FROM FIRST FLOOR TO SECOND FLOOR. TOP WITH PLYWOOD ON 2X8 JOISTS SECURED INTO EXISTNG WALL. TYPICAL CLASSROOM SEE TYPICAL LAYOUT THIS SHEET

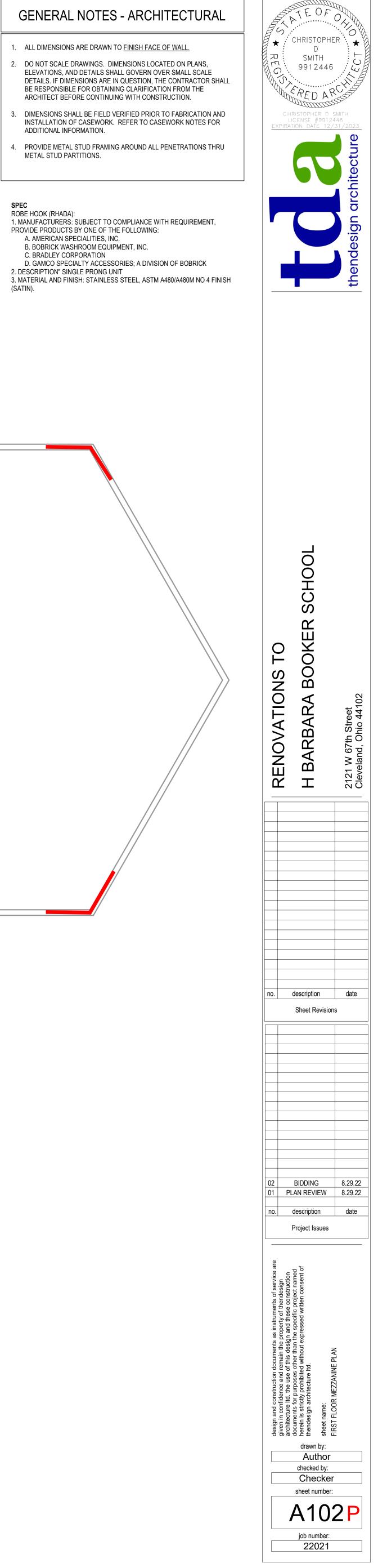
DOOR SCHEDULE

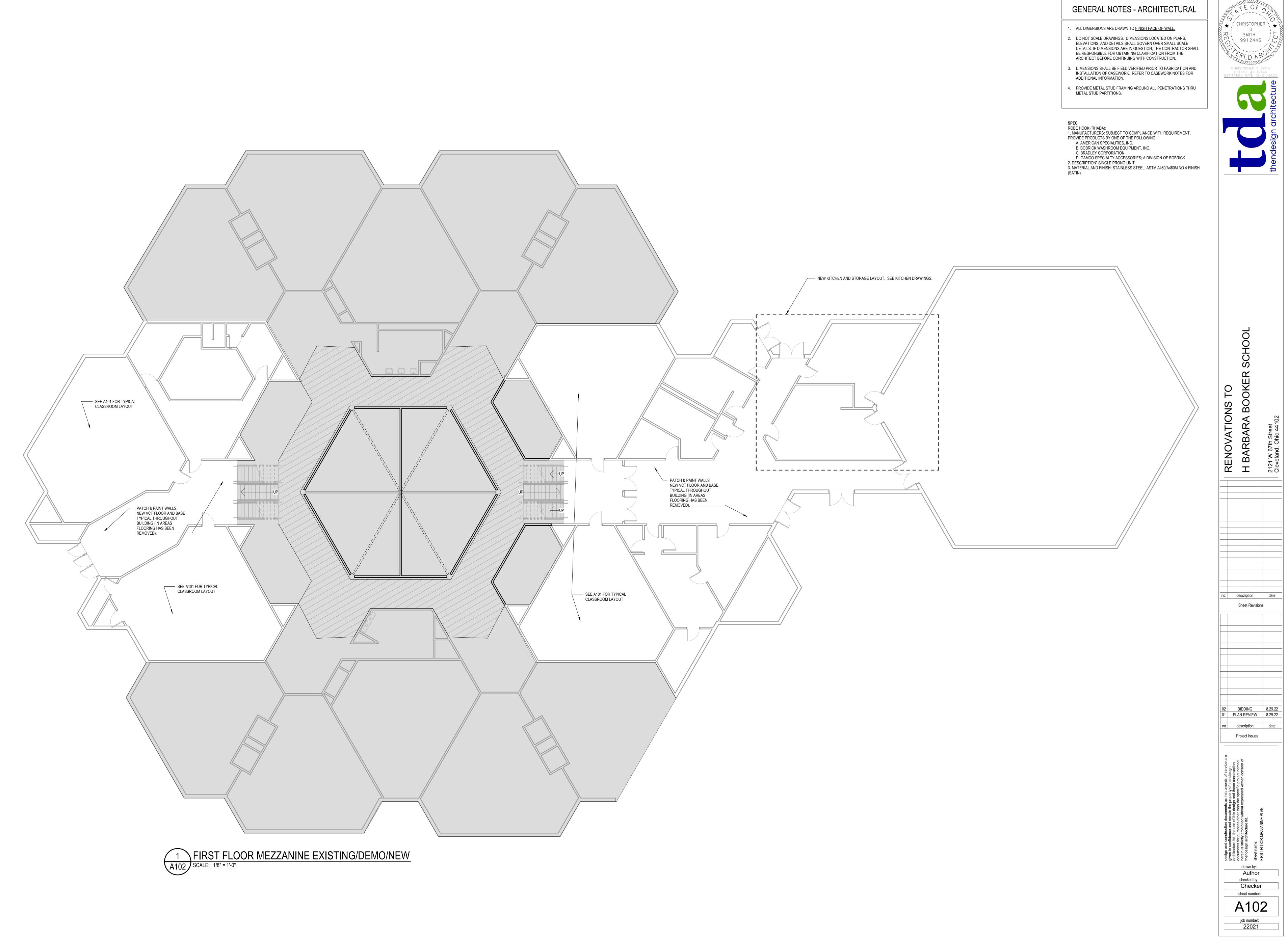
oor	Room		Panel		Doors		Frame				Fire
lumber	Number	Room Name	Туре	Mat.	Width	Height	Mat.	Head Detail	Jamb Detail	Hardware Set No.	Rating
IRST FLO	OR					·					
	2	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING	
	3	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING	
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	5	New Office	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING	
	6	New Storage	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING	
	7	New Storage	F	SCW	3' - 0"	7' - 0"	HM			MATCH EXISTING.	

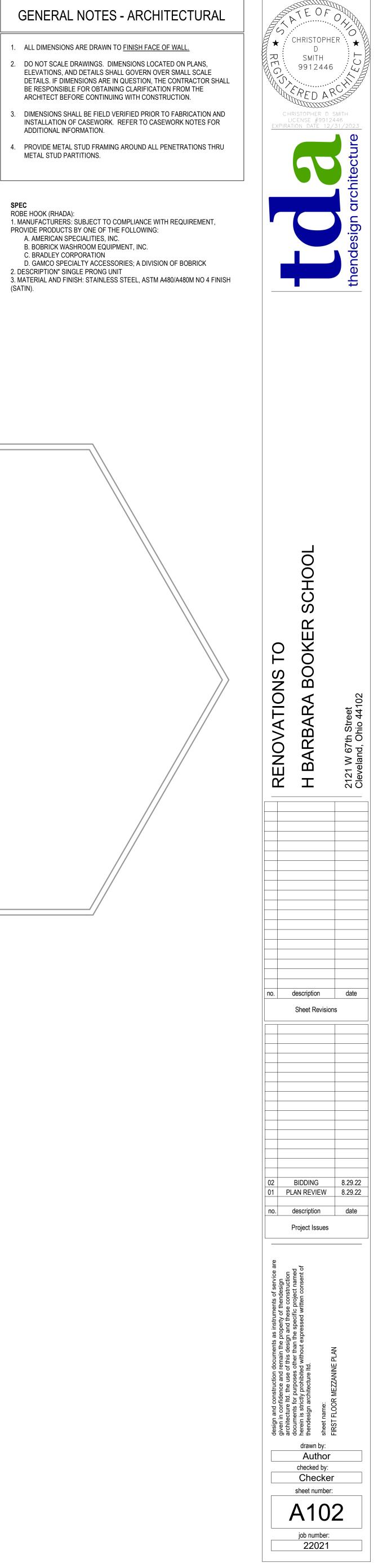
1 FIRST FLOOR EXISTING/DEMO/NEW A101 SCALE: 1/8" = 1'-0"

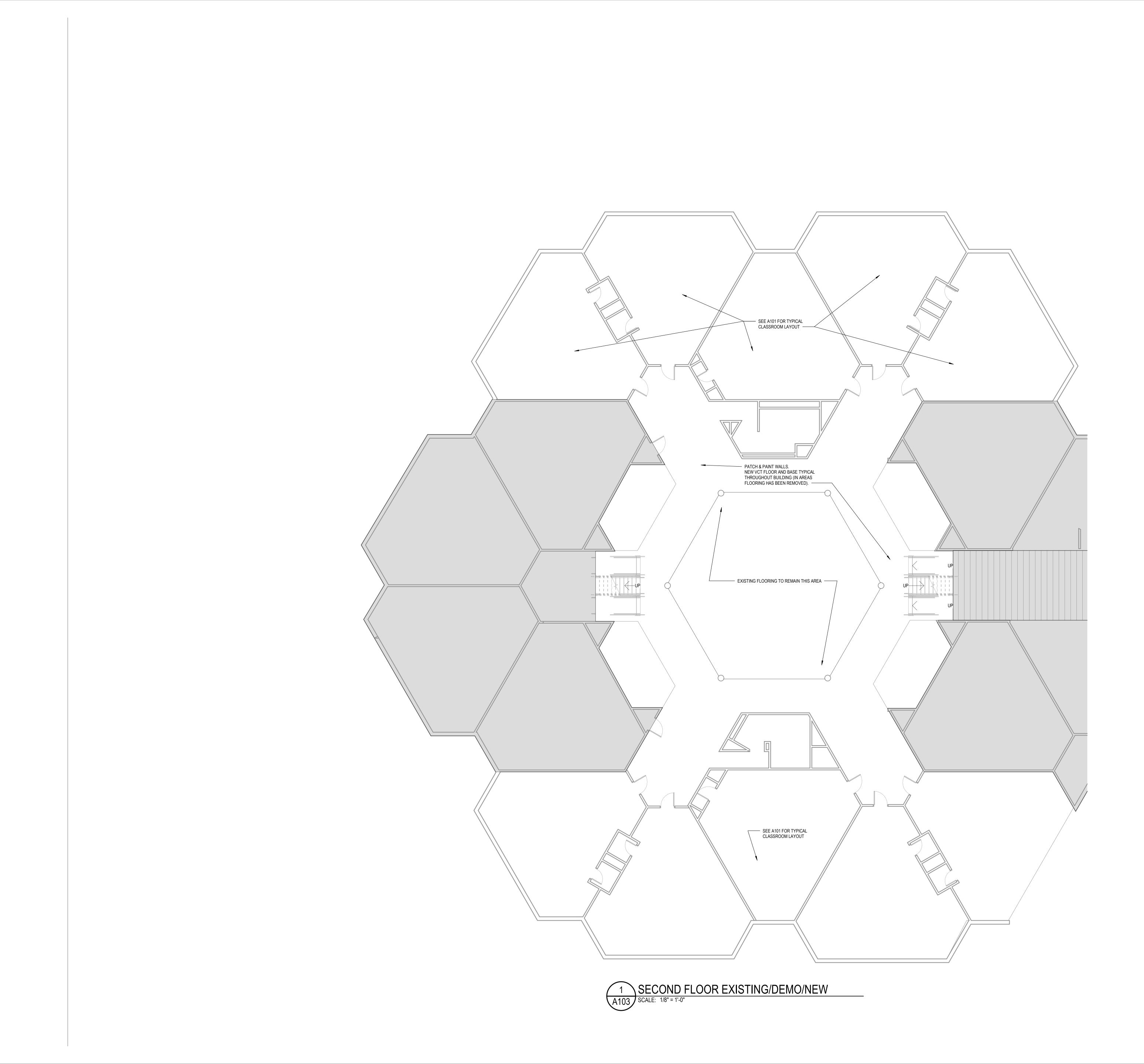




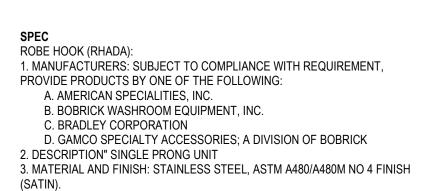


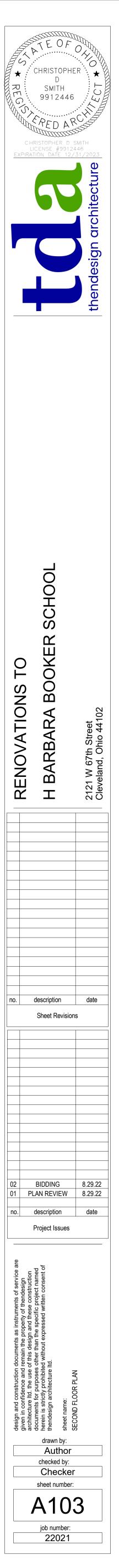


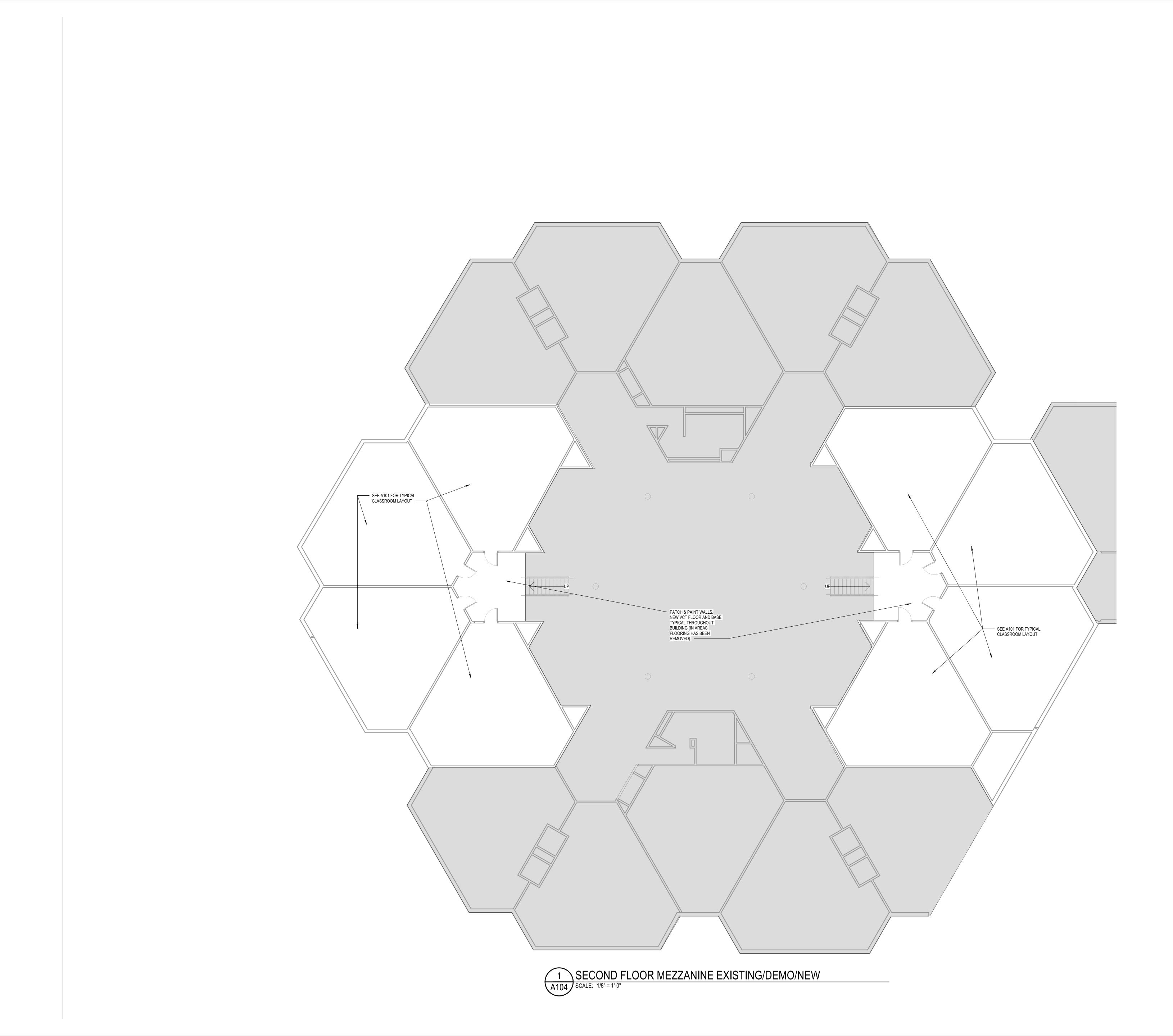




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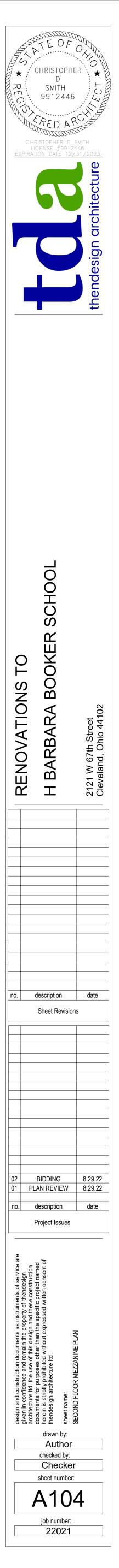


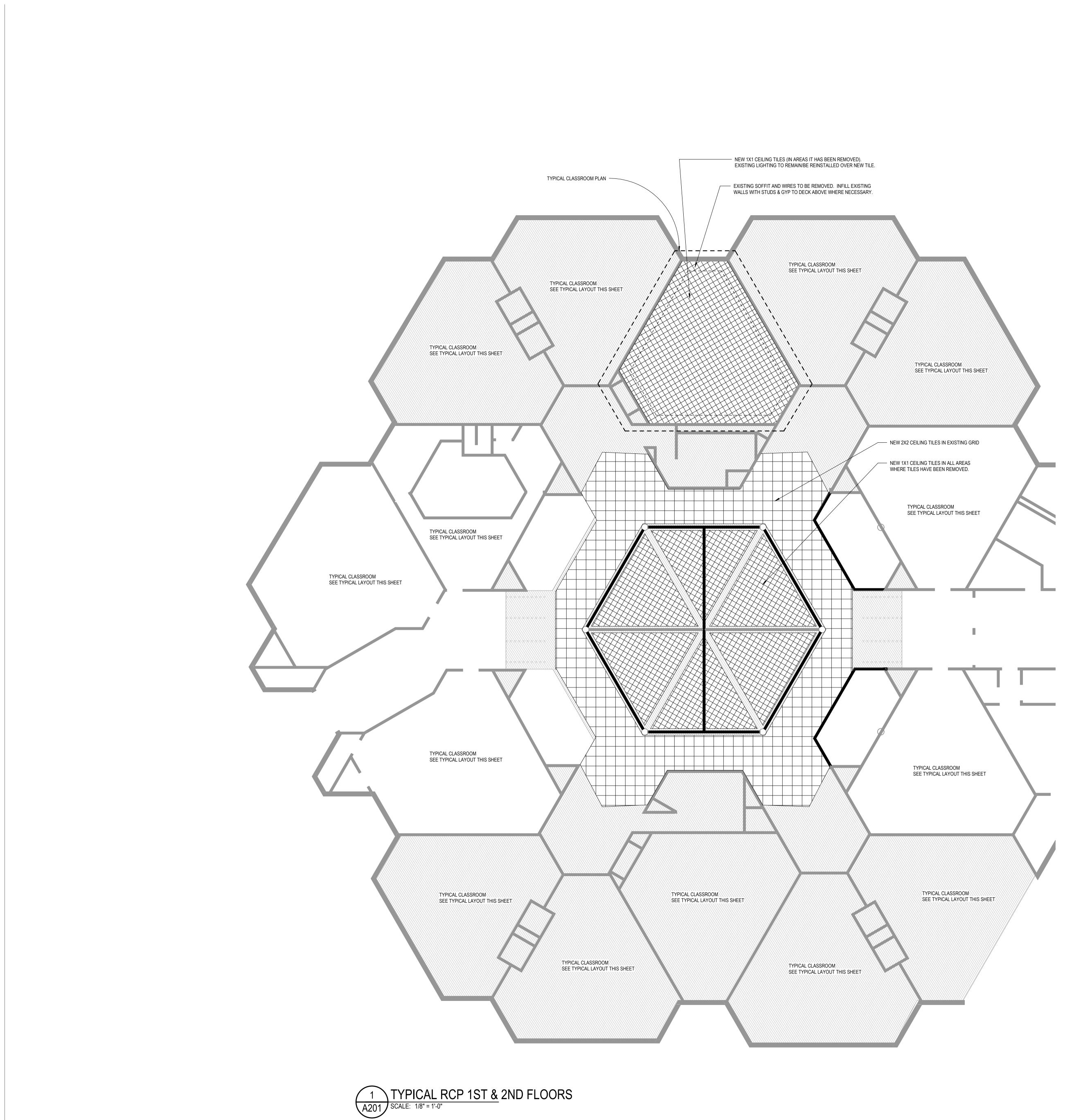


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GENERAL NOTES - CEILING
CEILING PLANS MAY NOT INDICATE ALL MECHANICAL, EL PLUMBING, AND TECHNOLOGY ITEMS, SEE MECHANICAL DRAWINGS FOR FURTHER REQUIREMENTS.
NEW SUSPENDED GRID CEILINGS SHALL BE ARRANGED IS SPACED EQUALLY FROM MOST REMOTE WALL IN EAC WITH NO TILE LESS THAN 6" UNLESS OTHERWISE INDICA
PROVIDE CONTROL JOINTS AS NOTED OR REQUIRED TO CRACKING.
WHERE SUPPORT WIRES FOR ACOUSTICAL CEILING GRI INSTALLED VERTICALLY, THE CONTRACTOR SHALL PROV UNISTRUT BENEATH THE OBSTRUCTION AS TO PERMIT VERTICALLY ATTACHED TO THE UNISTRUT.
PAINT ALL EXPOSED STRUCTURAL STEEL.
CONTRACTOR SHALL PROVIDE HOLD-DOWN CLIPS AT VE

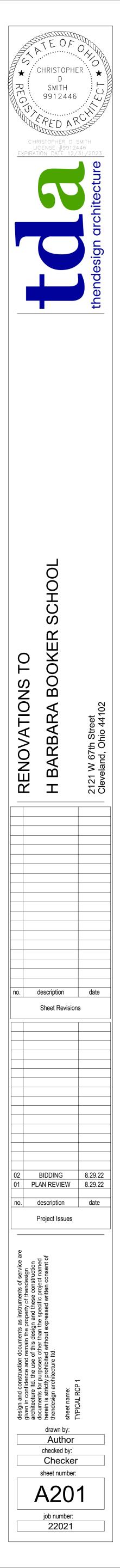
LING PLAN _____

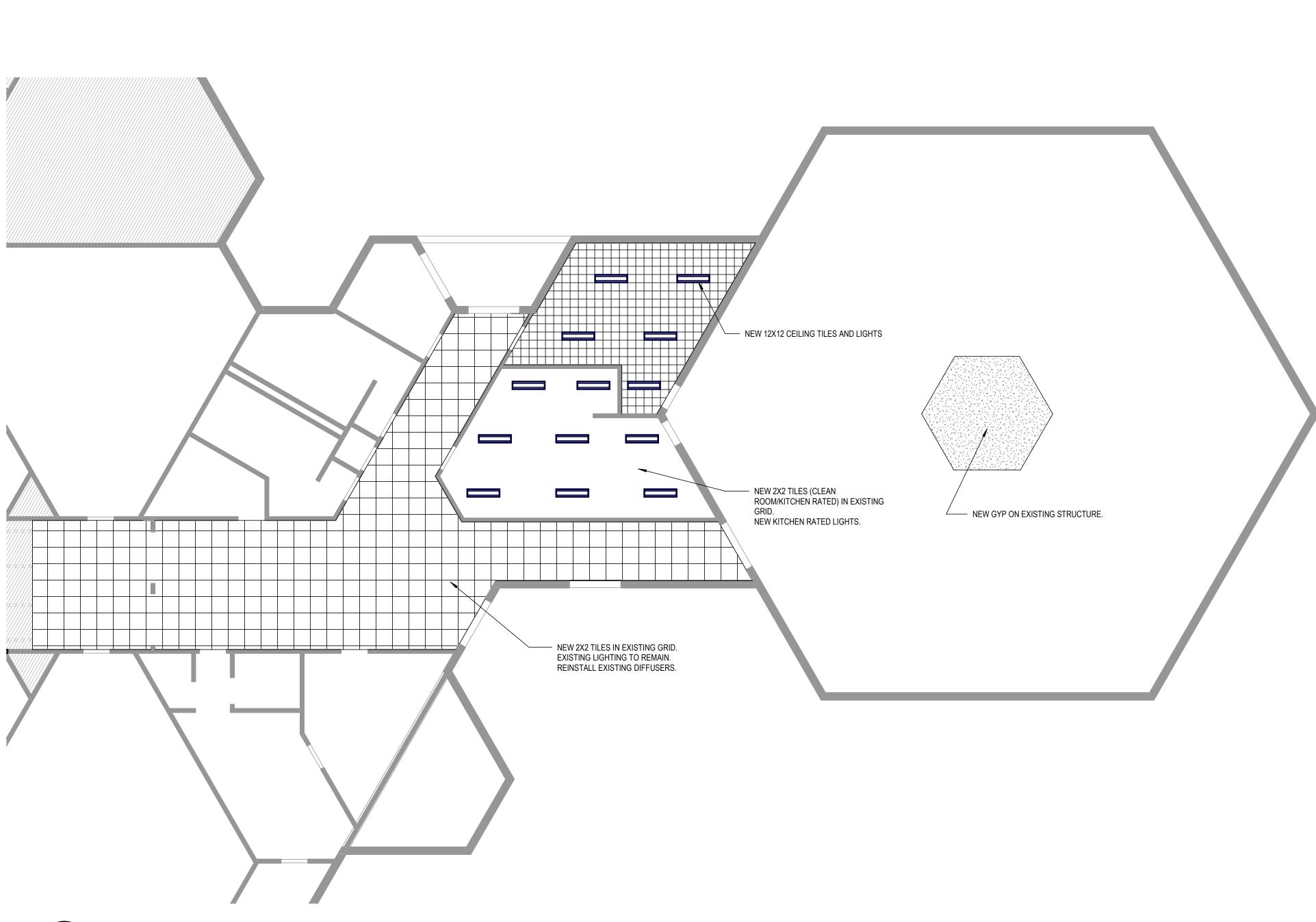
IANICAL, ELECTRICAL, ECHANICAL/ELECTRICAL

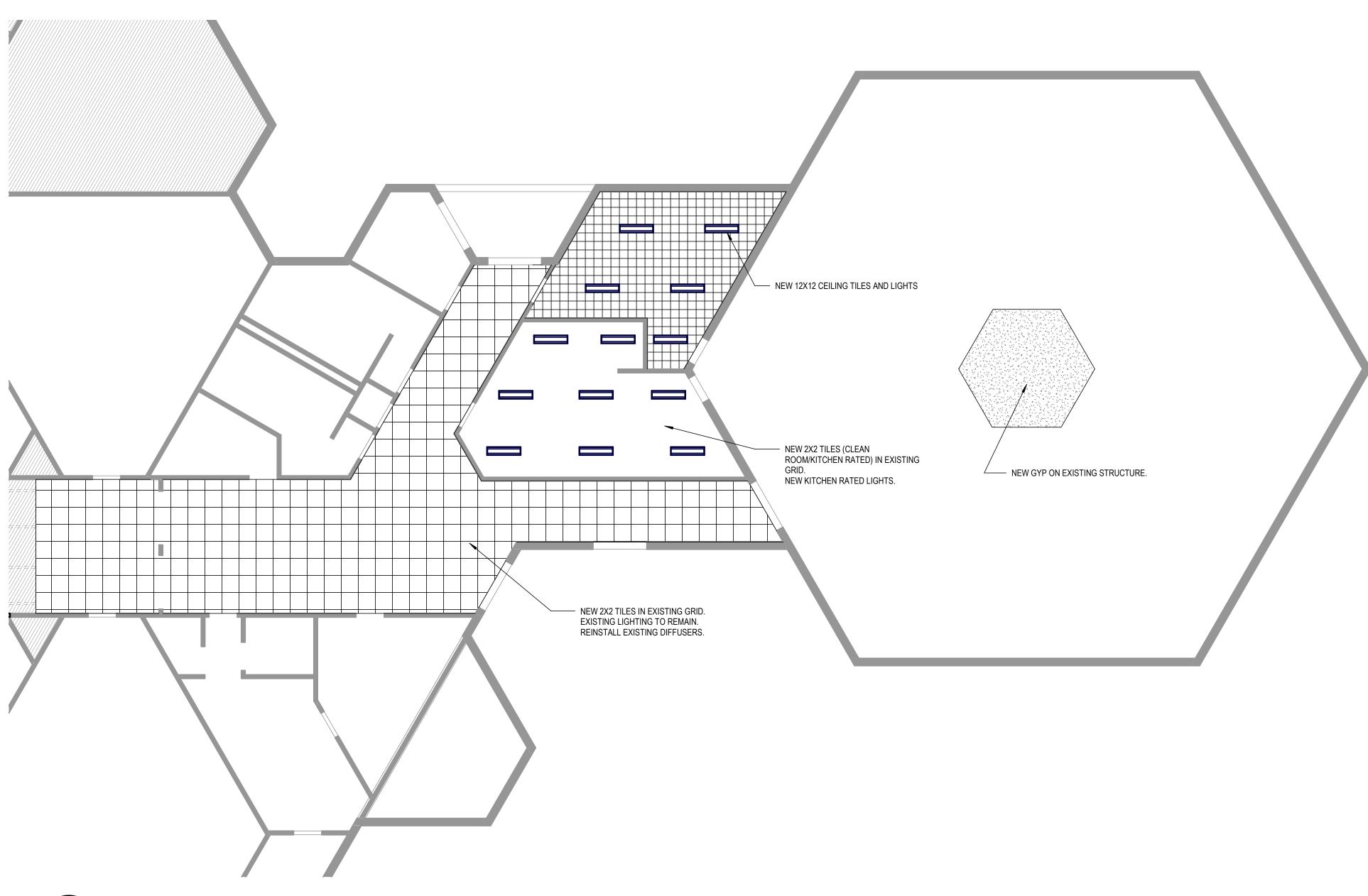
RRANGED SO THAT GRID ALL IN EACH DIRECTION, WISE INDICATED. QUIRED TO PREVENT

ILING GRID CANNOT BE SHALL PROVIDE A TO PERMIT WIRES TO BE

CLIPS AT VESTIBULE.

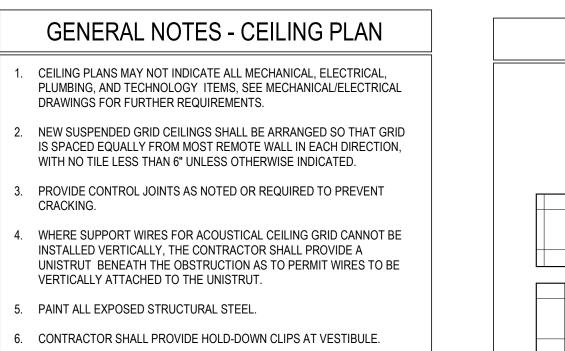


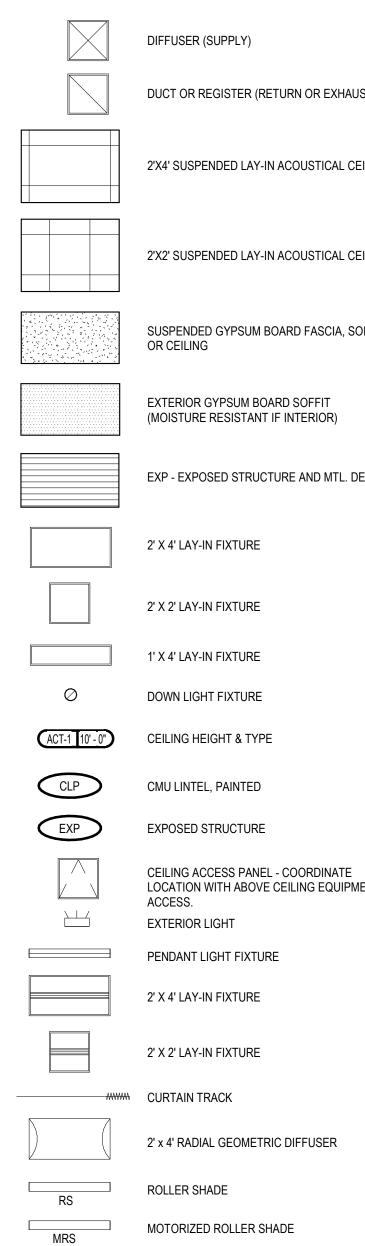






1 FIRST FLOOR MEZZANINE PARTIAL RCP A202 SCALE: 1/8" = 1'-0"





SEE ELECTRICAL DWG'S FOR FURTHER INFO ON LIGHT FIXTURES AND TYPES

CEILING SYMBOLS

DUCT OR REGISTER (RETURN OR EXHAUST)

2'X4' SUSPENDED LAY-IN ACOUSTICAL CEILING

2'X2' SUSPENDED LAY-IN ACOUSTICAL CEILING

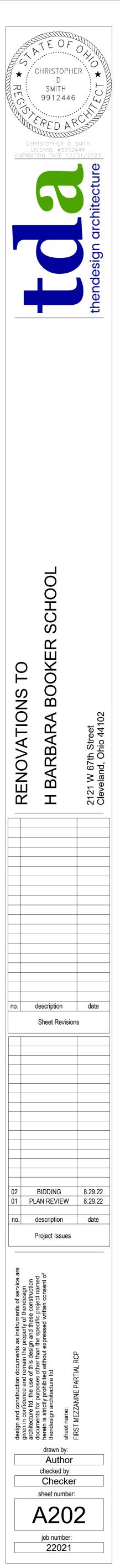
SUSPENDED GYPSUM BOARD FASCIA, SOFFIT

EXTERIOR GYPSUM BOARD SOFFIT

EXP - EXPOSED STRUCTURE AND MTL. DECK

LOCATION WITH ABOVE CEILING EQUIPMENT

2' x 4' RADIAL GEOMETRIC DIFFUSER

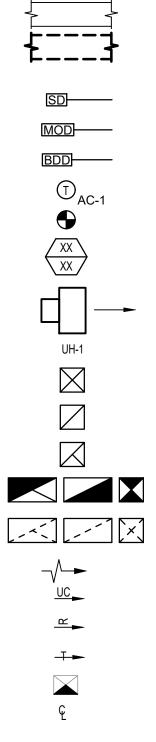


<u>GENERAL NOTES</u>		
DESIGN CRITERIA	Demolition	
Applicable Building Codes	 The architectural drawings are to be used only as a guideline for demolition. The contractor must visit the site prior to bidding to verify all work required for a complete job and include the cost of such work in his bid. 	
 A. Building: IBC 2015 OBC 2017 1) Construction classification type: TYPE II B 	2. The mechanical drawings are intended to show only the general existing building construction within the area	A COMPRESSED AIR PIPIN
 Primary use and occupancy classification: 	of demolition. The drawings do not show all systems, quantities, sizes, obstructions, etc., and are not intended to be used by the contractor to define the complete scope of demolition. The contractor must field verify the actual building and systems conditions to define all elements within the scope of demolition.	CONDENSATE DRAIN PI
a) Educational: Group E	 Examine areas and conditions under which demolition work must be performed. This contractor shall 	CPD CPD CONDENSATE PUMP DIS
B. Mechanical: IMC 2015 OMC 2017	coordinate his work with other trades performing demolition work and/or demolition work performed by the owner. In every instance of demolition and/or remodeling, the contractor shall figure a complete job as none	CW ————————————————————————————————————
C. Plumbing: IPC 2015 OPC 2017	other shall be accepted.	HW DOMESTIC HOT WATER
D. Electrical: NEC 2017E. Gas: IFGC 2017	 The extent of work shown or not shown shall include removal and legally dispose off site, all the items and systems being removed. 	
F. Local Building Code and Revisions.	5. This contractor shall retain on the premises in neatly stacked piles where instructed for selection by the owner, all material, wire, fixtures and/or equipment which are specified to be removed or replaced. All such	CW (E) DOMESTIC COLD WATEF
<u>GENERAL</u>	items, not selected for salvage by the owner, shall become the property of this contractor and shall be removed from the premises and legally disposed.	HW (E) DOMESTIC HOT WATER
The term General Contractor (G.C.) as used in these documents refers to the Contractor / Construction	 Conform to all applicable codes for demolition of items and systems, safety of adjacent systems, dust control, 	
Manager in responsible charge of the project in terms of coordination, scheduling, subcontractor coordination, etc. this term refers to, but is not limited to, General Contractor, Construction Manager, Design	legal run-off control, disposal and all items necessary to complete the work completely.	
Build Contractor, Prime Contractor, etc. The term is referencing the entity that coordinates the work of other trades.	 Demolition shall be done in a manner so as not to damage adjacent work and not affect the operation of systems to remain in use. Any item to remain that is damaged by the contractor shall be replaced and/or 	
These drawings are diagrammatic and indicate the general extent of the work. The contractor shall be responsible for the coordination and proper installation of all mechanical systems. The contractor shall	repaired at the contractor's expense.	GAS PIPING
provide all necessary offsets and fitting which may be required due to space constraints or other conditions.	 Demolition and cutting shall be done in a manner which does not deform or apply loads to the existing framing and equipment of the building to remain. 	GAS PIPING # PSIG
Existing building HVAC and Plumbing systems shown on these drawings which are to be removed or modified where taken from the original drawings dated April 1, 1939 and may not show current installations	All walls, ceilings, floors, etc., being disturbed by the work shall be returned to finished conditions to match existing by the contractor and contractor shall do his own cutting and patching as necessary under his	GREASE WASTE
or conditions. Each contractor shall field verify all existing systems.	contract.	GV GREASE WASTE VENT
It is the contractor's responsibility to enforce all applicable safety codes and regulations during all phases of construction.	10. The contractor shall maintain existing services to and in the existing area as required.	LOW PRESSURE CONDE
Construction loads shall not exceed structural design live loads. The contractor shall be responsible for all design required to support construction equipment used in constructing this project. Verify and coordinate	 The existing systems to remain are to be supported as required until the modified elements are installed and supported. 	LPS LOW PRESSURE STEAM
with structural drawings.	12. If necessary, the contractor shall provide temporary services in the existing areas.	LOW PRESSURE CONDE
The contractor shall perform all construction for the project in a manner and sequence that are based on accepted industry standards that recognize the interaction of the components that comprise the systems,	13. Existing slabs shall be saw-cut in a manner that does not cause the steel framing or the rebar supporting the slab to be cut. Contractor shall field verify slab thickness and rebar spacing.	LPR(E) LOW PRESSURE STEAM
without causing distress, unanticipated movements or irregular load paths as a result of the construction means and methods employed.	14. Existing slabs shall be core drilled at reentrant corners of new floor openings to prevent over cutting.	
The contractor shall provide all miscellaneous supporting steel, etc. for the proper installation of all	15. The demolished systems shall be reduced to pieces of a weight, and transported across the remaining	PUMP DISCHARGE PIPIN
mechanical systems.	structure in a manner, such that the remaining structure is not overstressed. 16. Equipment and devices shall be removed complete including	RC RAIN CONDUCTOR
Before fabrication and/or installing any work, contractor shall see that it does not interfere with clearance required for finish on beams, columns, pilasters, walls, or other structural or architectural members, as	hangers, supports, conduit, wire, pipes, etc. Wiring shall be disconnected at circuit breakers, removed and breakers marked "spare."	HG HG REFRIGERANT HOT GAS
shown on architectural drawings. If any work is so installed and it later develops that architectural design cannot be followed, contractor shall, at his own expense, make such changes in his work as architect may	17. All open ended piping that is to remain shall be capped and property secured.	
direct to permit completion of architectural work in accordance with plans and specifications. All piping shall be protected as required by the applicable Mechanical, Plumbing, and Building Codes: "	18. Any existing pipes, conduit, low voltage control, wiring and/or electrical and mechanical devices being	
General Regulations" and other Code Chapters.	disturbed by the work shall be reworked by this contractor as required to return to its former existing operating condition.	RV REFRIGERANT VENT
Pipes passing through or under walls shall be protected from breakage. Pipes passing through studs, joist, rafters or similar members less than 1 1/2" from the nearest edge of the members shall be protected by steel	19. Any pipes or tubing feeding through devices or equipment being relocated, reworked, or abandoned and serving other devices, and/or equipment shall be maintained in working condition.	SAN SAN - SANITARY SEWER PIPIN
shield plates.	serving other devices, and/or equipment shall be maintained in working condition. 20. All asbestos removal will be handled by the owner and is not a part of this work.	
Piping shall be installed to prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from the damage resulting from pipe expansion	21. Use of explosives shall not be permitted.	SOFT COLD WATER PIPI
and contraction and structural/soil settlement. Expansion joint fittings shall be used where necessary to provide for expansion and contraction of the pipes. Sleeved openings shall be sized appropriately to	22. Existing architectural, mechanical and electrical equipment and systems shall be protected from damage	
accommodate pipe movement and structural/soil settlement. Expansion joint fittings shall be of the typical material suitable for use with the type of piping in which fittings are installed. At a minimum install rubber	resulting from demolition. 23. Contractor shall submit a proposed deconstruction sequence to the owner and architect for review prior to	
mechanical joint couplings or CSA-certified expansion joints on all vertical piping at every other floor of the building and rigidly support the stack pipe on alternating floors to direct any movement into the appropriate	commencement of work.	
expansion compensator. Design of these expansion fittings shall be provided by the contractor. Any analysis which requires additional support or expansion detailing shall be shared with the mechanical design		
professional and any stresses or point loads created by the engineered system shall be shared with the structural designer for review.		
Install additional offsets on piping or ductwork where required to obtain maximum headroom or to avoid conflict with other work without additional cost to owner.		
Report any interferences between work under this division and that of any other contractors to architect as		
soon as they are discovered. Architect will determine which equipment shall be relocated, regardless of which was first installed, and his decision shall be final.		
The contractor shall coordinate floor, wall, and roof penetrations, louver sizes, etc. with general trades.		
All mechanical and electrical work: Ductwork, plumbing, piping, wiring, lighting, etc. and all architectural		
items that need to be removed during the modification of or reinforcing of, existing structure shall be replaced in kind by the respective contractor. The contractors shall keep all existing systems in operation during the		
construction phase of the project. All contractors are required to examine the drawings and specifications carefully, visit the site and fully inform		
themselves as to all existing conditions and limitations, prior to agreeing to perform the work. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the		
contractor from furnishing any materials or performing any work in accordance with drawings and specification without additional cost to the owner to have a complete and working system.		
Details labeled "Typical Details" or "Typical" on drawings apply to situations occurring on the whole project		
that are the same or similar to those specifically detailed. Such details apply whether or not details are referenced at each location on drawings. Notify engineer for clarifications regarding applicability of "Typical		
Details".		
Work and coordinate these drawings with architectural, food service, mechanical, plumbing, and electrical drawings.		
Do not scale drawings.		
Any discrepancies between mechanical and architectural drawings shall be brought to the attention of the architect and mechanical engineer.		
Should any of the general notes conflict with any details or instructions on plans, or in the specifications, the		
strictest provision shall govern.		
Cutting, Patching and Drilling		
A. All cutting and patching of the building construction required for this work shall be by this contractor unless shown on architectural drawings and confirmed as to size and location prior to new construction.		
Cutting shall be in a neat and workmanlike manner.B. Neatly saw cut all rectangular openings, set sleeve through opening, and finish patch or provide trim		
flange around opening.		
C. Neatly saw cut floors and patch floor to match existing, including floor covering.		
D. Contractor shall field verify slab-on-grade or supported floor construction type prior to cutting. Under no circumstances shall this contractor cut a floor thicker than 4 inches, a structural floor slab, whether on		
grade or supported, without prior written approval from the architect. If floor slab indicated to be cut on mechanical plans is found to be structural in nature, do not cut. Contact architect immediately for further		
directions.		
E. Core drill and sleeve all round openings.		
F. Do not cut any structural components without architect's written approval, including, but not limited to roof joists, columns, floor joists, beams, girders, structural floor slabs, rebar, etc.		
G. Patch, and finish to match adjacent areas that have been cut, damaged or modified as a result of the installation of the mechanical systems. Fire-stop all penetrations of fire rated construction in a code		
installation of the mechanical systems. Fire-stop all penetrations of fire rated construction in a code approved manner.		
H. All contractors shall confirm with owner, prior to bid, times available for noise producing work such as cutting and core drilling of floors, walls, etc. as well as times for work which requires access into		
adjoining tenant spaces. Include any premium time in bid.		
I. All openings required for this branch of work shall be accomplished in time to be incorporated in, and be compatible with the construction program; otherwise this contractor shall be responsible and pay for all		
changes made necessary for his failure to do so. Pipe holes in floors and walls shall be core drilled if not sleeved during construction.		
J. Existing slabs shall be core drilled at reentrant corners of new floor openings to prevent overcutting.		
Refer to mechanical, plumbing, and electrical plans for location of mechanical, plumbing, and electrical		
equipment. Coordinate location of disconnect switch associated with each piece of mechanical and plumbing equipment with electrical contractor.		
Installation requirements for plumbing systems shall be reviewed and coordinated with all other trades		
involved prior to rough-in. Give equipment shop drawings from installer/supplier/contractor equipment, as required, for review and coordination to all other trades involved. Contact architect/engineer with any discrepancies found between construction drawings and equipment being furnished prior to rough-in		
discrepancies found between construction drawings and equipment being furnished prior to rough-in. Firestopping		
A. The contractor shall review all architectural drawings for type of walls, fire rating, & firestopping details		
and shall provide all fire dampers and firestopping required for these walls whether shown or not on the mechanical plans.		
B. All penetrations through fire rated walls associated with the installation shall be sleeved and fire-stopped		
using a UL approved method. UL approved method shall meet or exceed fire rating of structure being penetrated. Reference architectural plans for fire rated structures. If shown, reference architectural,		
mechanical and electrical drawings for penetration details.		
C. All openings through fire rated walls, floors, and/or roofs for ductwork, piping, conduit, etc., shall be fire sealed with a calcium salicate, silicone "RTV" foam, "3M" fire rated sealants, Hilti Firestop Systems, or		
approved equal to maintain the intended fire rating and associated UL ratings as recommended by the architect and/or sealant manufacturer.		
D. All fire stopping sealants shall be thixotropic so as not so slump or sag and shall be trowelable. Fire stopping sealants shall be intumescent and shall be free of asbestos, halogens, and volatile solvents.		
stopping sealants shall be intumescent and shall be tree of asbestos, halogens, and volatile solvents.E. Fire stopping materials shall be classified in the Underwriters Laboratories (UL) fire resistance directory		
or listed in the Warnock Hersey International Directory.		
All equipment and devices for this project must be UL listed. Devices, equipment, systems shall be installed per National Electrical Code requirements and manufacturer's instructions.		
All conduit and cabling shall be properly supported as required by the National Electrical Code. For existing		
installations, the contractor shall be responsible to replace and/or rework existing conduit and/or cabling that is not in compliance with this requirement.		
Shop Areas and Material Storage		
A. The contractor shall make provisions for the delivery and safe storage of his materials and equipment in		
coordination with the work of others. Materials and equipment shall be delivered at such stages of the work as will expedite the work as a whole and shall be marked and stored in such a way as to be easily		
coordination with the work of others. Materials and equipment shall be delivered at such stages of the		
coordination with the work of others. Materials and equipment shall be delivered at such stages of the work as will expedite the work as a whole and shall be marked and stored in such a way as to be easily checked and inspected. The arrival and placing of large equipment items shall be scheduled early		
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♦ MECHANICAL LEGEND

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	SV
	— — — ST — — —
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VATER PIPING	
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VATER PIPING (EXIST.)	
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SOFT HOT WATER PIPING	DTS
STEAM VENT	
STORM PIPING	۲
TEMPERED WATER PIPING	F4
VENT PIPING	<u>SD</u>
PIPING ABOVE GRADE/FLOOR	MOD
PIPING BELOW GRADE/FLOOR	BDD
EXISTING PIPING TO BE REMOVED	① _{AC-1}
EXISTING PIPING TO REMAIN	
2-WAY MODULATING VALVE	$\langle XX \rangle$
3-WAY MODULATING VALVE	
AUTOMATIC CONTROL VALVE	
BALANCE VALVE	UH-1
CHECK VALVE	\square
MODULATING VALVE	
PRESSURE REGULATING / REDUCING VALVE	
	\square
SHUTOFF VALVE	
PRESSURE GAUGE W/COCK	
STEAM TRAP	
STRAINER	<u> </u>
THERMOMETER	- T - - -
PIPE UNION	
UTILITY METER	ب
DIRECTION OF DOWNWARD PITCH	



DUCT TEMPERATURE SENSOR EXISTING DUCTWORK EXISTING DUCTWORK TO BE REMOVED

SMOKE DAMPER

MOTOR OPERATED DAMPER BACKDRAFT DAMPER THERMOSTAT, MOUNT 48" AFF, UNLESS OTHERWISE NOTED POINT OF CONNECTION EQUIPMENT TAG

UNIT HEATER DESIGNATION UH-1 = SEE SCHEDULE

SUPPLY OR OUTDOOR AIR DUCT

RETURN OR RELIEF DUCT

EXHAUST DUCT

DUCT UP

DUCT DOWN

AIRFLOW DIRECTION

3/4" DOOR UNDERCUT DUCT RISE

CENTERLINE

TRANSFER AIR DIFFUSER WITH BLANK -OFF SECTION

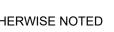
♦ ABBREVIATIONS

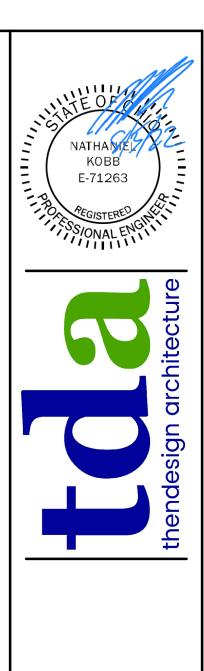
DIRECTION OF FLOW

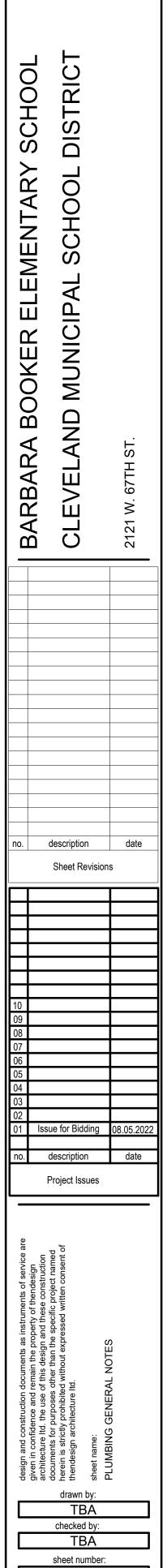
ADD'L AFC AFF AFG AP ARCH BLDG BOT	AMPS ADDITIONAL ABOVE FINISH COUNTER ABOVE FINISH FLOOR ABOVE FINISH GRADE ACCESS PANEL ARCHITECTURAL BUILDING BOTTOM CONDENSER
СВ	CATCH BASIN
CC	COOLING COIL
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CJ	CONTROL JOINT
CL (C)	CENTERLINE
CLG	CEILING
CO	CLEANOUT
COL	COLUMN
	CONSTRUCTION
CONT	CONTINUOUS
	CONTRACTOR
	CONNECT TO EXISTING
DCBP PREVEN	DOUBLE CHECK BACKFLOW ITER
DCDA ASSEME	DOUBLE CHECK DETECTOR BLY
DET	
DF	DRINKING FOUNTAIN
	DIAMETER
DN	
	DOWN SPOUT
	DISCONNECT SWITCH
	DRAWING
	DOMESTIC WATER HEATER
	ELECTRICAL CONTRACTOR
	EXHAUST FAN
	EXPANSION JOINT
	ELEVATION
	ELECTRICAL ELEVATOR
	EMERGENCY
	EQUIPMENT
	EXISTING TO REMAIN
	ELECTRIC WATER COOLER
	EXPANSION

FA	FIRE ALARM
FCO	FLOOR CLEAN-OUT
FD	FLOOR DRAIN / FIRE DAMPER
FFE	FINISH FLOOR ELEVATION
FPC	FIRE PROTECTION CONTRACTOR
FS	FLOW SWITCH
G	GRILLE (EXHAUST, RETURN, OR
~ .	TRANSFER)
GA	GAUGE
GALV	
GC	GENERAL CONTRACTOR
GCO	GRADE CLEANOUT
GE	GENERAL EXHAUST
GND	GROUND
GRE	GRAVITY ROOF EXHAUSTER
GWH	GAS WATER HEATER
HB	HOSE BIBB
HE	
HOA	HAND-OFF-AUTOMATIC
HORIZ	
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HX	HEAT EXCHANGER
JB	JUNCTION BOX
KEC	KITCHEN EQUIPMENT
	CONTRACTOR
KHE	KITCHEN HOOD EXHAUST
KVA	KILOVOLT AMPERE
KW	KILOWATT
L	LOUVER
LTG	LIGHTING
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MB	MOP BASIN
MBH	1,000 BTUH
MC	MECHANICAL CONTRACTOR
MECH	
MFR	MANUFACTURER
MIN	MINIMUM
MTD	MOUNTED
N	NEW
NEC	
NF	NON FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OC	ON CENTER
OD	OVERFLOW DRAIN

	Р	PUMP
	PC	PLUMBING CONTRACTOR
	PH (φ)1	PHASE
	PNL	PANEL
OR	PRE	POWER ROOF EXHAUSTER
	PRV	PRESSURE REDUCING VALVE
२	PSF	POUNDS/SQUARE FOOT
	PSI	POUNDS/SQUARE INCH
	PVC	POLYVINYL CHLORIDE
	RA	RETURN AIR
	RAD	RADIUS
	RD	ROOF DRAIN
	REQ'D	REQUIRED
		RETURN GRILLE
	RHC	REHEAT COIL
	RPBP	REDUCED PRESSURE BACKFLOW
		PREVENTER
	RPZ	REDUCED PRESSURE ZONE ASSEMBLY
	SA	SUPPLY AIR
	SECT	SECTION
	SG	SUPPLY GRILLE
	SF	SUPPLY FAN
	SK	SINK
	SQ	SQUARE
	SS	SERVICE SINK
	STL	STEEL
	STRUCT	STRUCTURAL
	SW	SAFE WASTE
	SYM	SYMMETRICAL
	ТА	TRANSFER AIR
	тс	TEMPERATURE CONTROL
	тсс	TEMPERATURE CONTROL CONTRACTOR
	TD	TRENCH DRAIN
	TG	TRANSFER GRILLE
	TPV	TRAP PRIMER VALVE
	TS	TAMPER SWITCH
	TYP OR	T/ TYPICAL
	UH	UNIT HEATER
	UL	UNDERWRITER'S LABORATORY
	UNO	UNLESS NOTED OTHERWISE
	UV	UNIT VENTILATOR
	V	VOLTS
	VD	VOLUME DAMPER
	VERT	VERTICAL
	VTR	VENT THRU ROOF
	W	WATTS
	W/	WITH
	WP	WEATHERPROOF
	X'FMR	TRANSFORMER



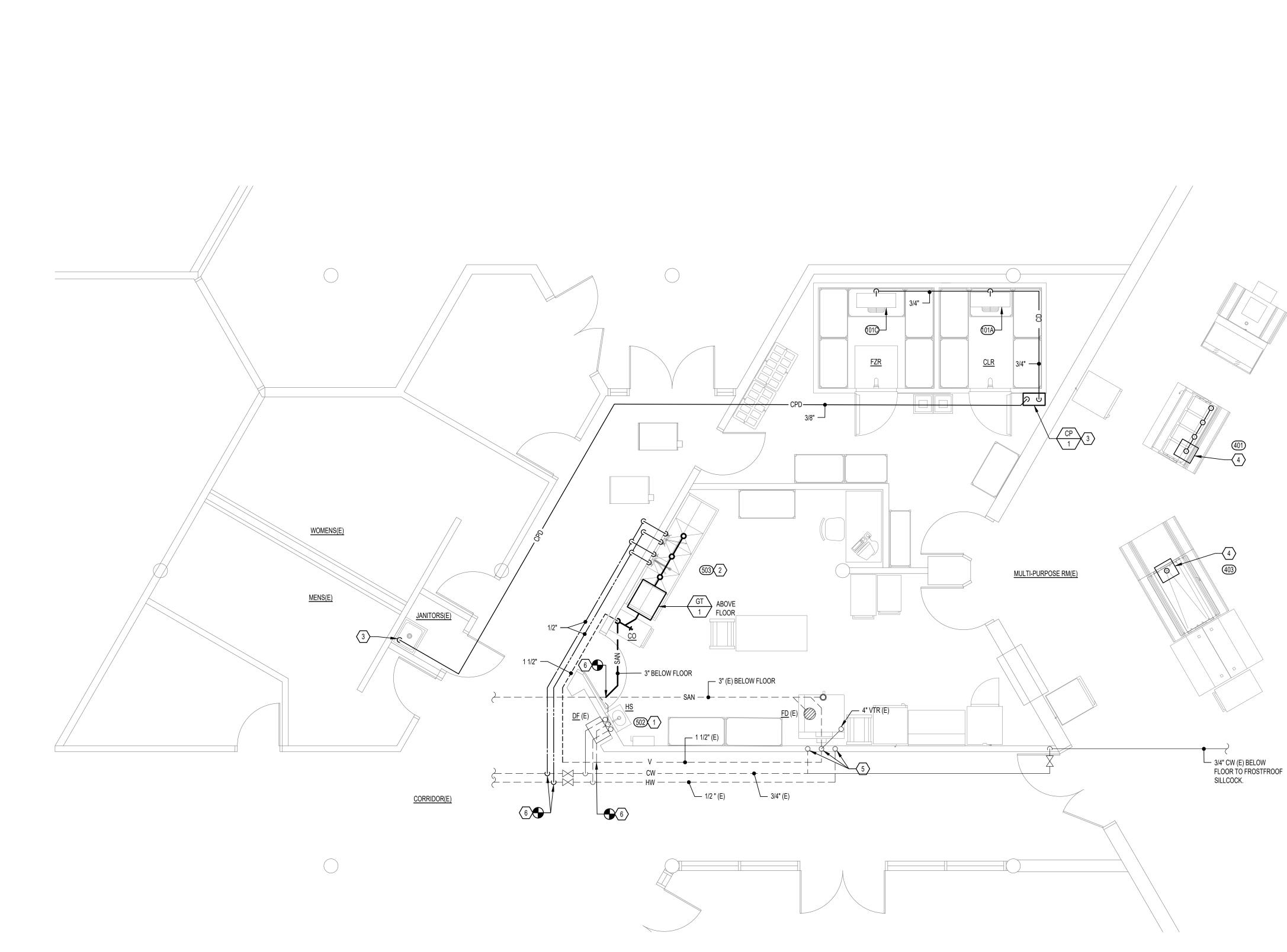




P-1

job number: 2022-0221





)

					EQUIPINE		DULE				
Item	EQUIPMENT DESCRIPTION	CW (in)	HW (in)	AFF (in)	DIRECT DRAIN (in)	AFF (in)	INDIRECT AIR GAP	GAS (in)	AFF (in)	MBTUH	REMARKS
101A	COOLER COIL						СР				FSEC PIPE COIL TO CONDENSATE PUMP
101C	FREEZER COIL						СР				FSEC PIPE COIL TO CONDENSATE PUMP
502	HAND SINK W/ FOOT PEDALS	0.5	0.5	18	1.5	16					SOAP & TOWEL DISPENSER - BY OWNER
503	POT SINK	0.5	0.5	16	2						TO GREASE TRAP

				Ρ	LUN	NBIN
MARK	FIXTURE	MANUFACTURER	MODEL	C.W.	H.W.	SAN
<u>GT-1</u>	GREASE TRAP	SCHIER	GB-2	-	-	3"

1. REFER TO SPECIFICATIONS FOR APPROVED EQUAL MANUFACTURERS.

		CONDENSATE PUMP SCHEDULE									
MARK MANUFACTURER MODEL TYPE	SERVICE	GPH	TOTAL HEAD (FT)	IMPELLER	HP	RPM		ELECTRIC	AL	OPERATING	REMARKS
WARK WANUFACTURER WODEL ITTE	SERVICE	GPfi		DIAMETER (")	ΠF	REIVI	VOLT.	PH.	FLA	WEIGHT (LBS)	REIVIARNO
CP-1 LITTLE GIANT VCL-45ULS SUB	COND.	380	15	-	<u>1</u> 5	1550	1/5	1	3.5	13	1,2

REMARKS: 1. ACCEPTABLE MANUFACTURERS: ARMSTRONG, AURORA, BELL AND GOSSETT, PACO, PATTERSON, PEERLESS, TACO, THRUSH, OR WEINMAN. 2. PROVIDED WITH ONE GALLON COLLECTION TANK, AUTOMATIC START AND STOP OPERATION, OVERFLOW DETECTION SWITCH, CHECK VALVE AND 6 FOOT, 3 CONDUCTOR CABLE WITH GROUNDED PLUG.



$\begin{array}{l} \hline \text{FIRST FLOOR PLUMBING PLAN} \\ \hline 1/4" = 1' - 0" \end{array}$

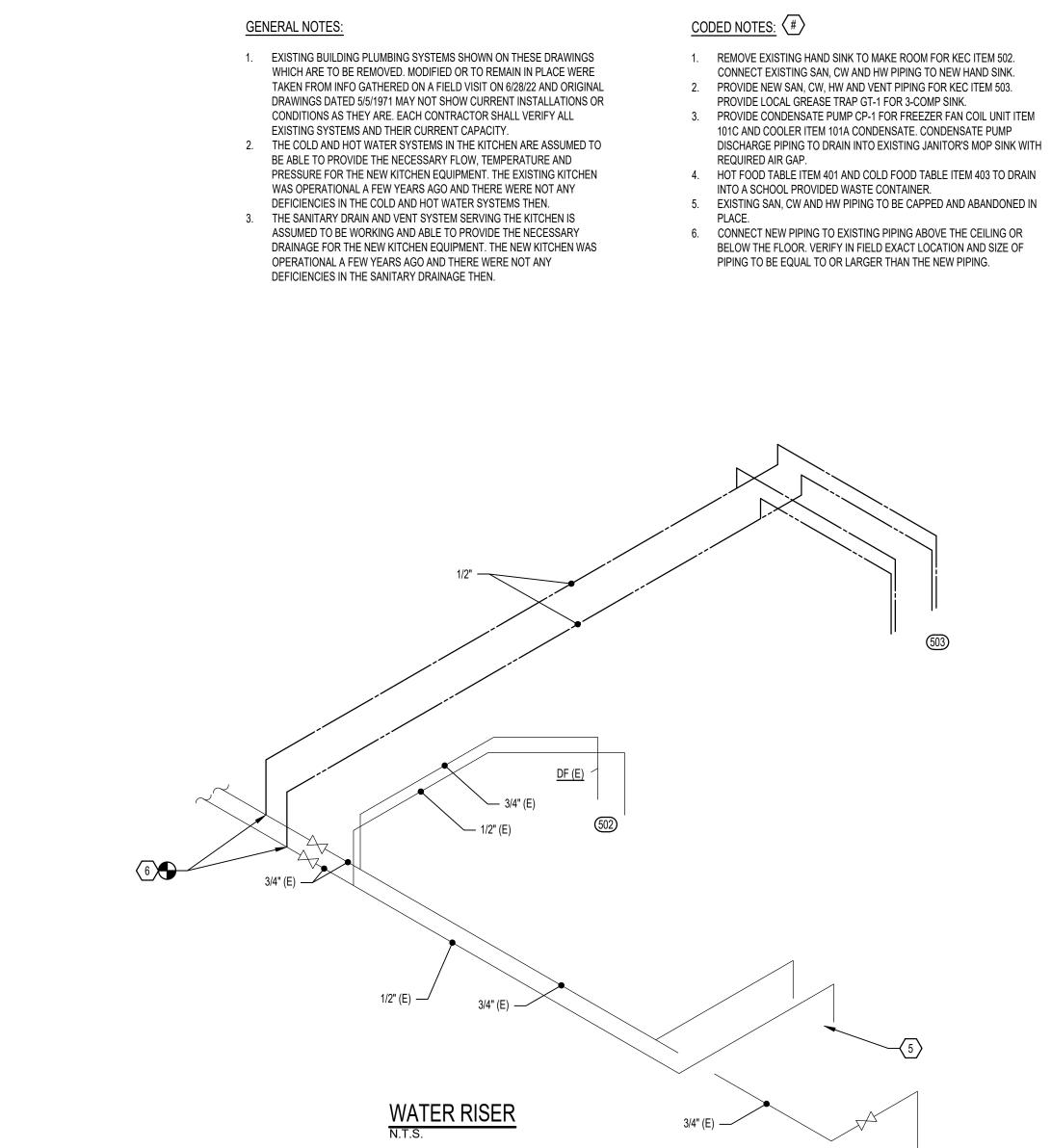
EQUIPMENT SCHEDULE

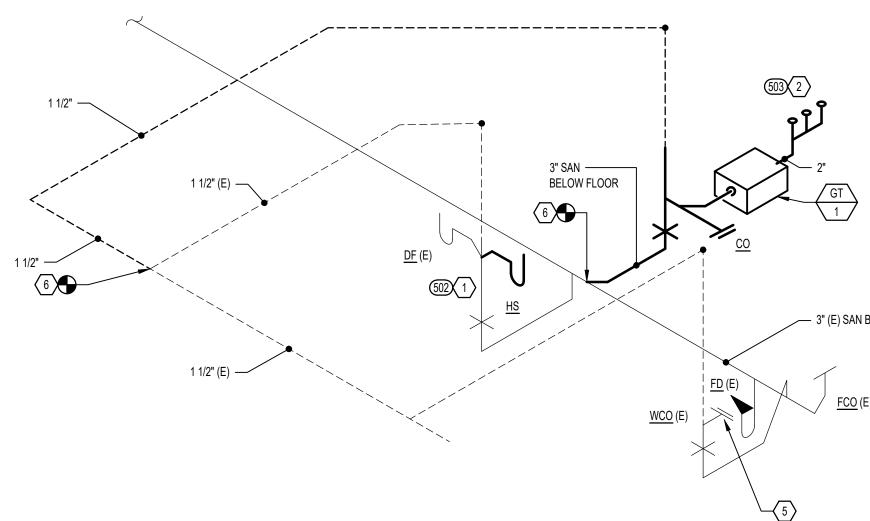
NG FIXTURE CONNECTION SCHEDULE

VENT DESCRIPTION 1 - 1/2" INDOOR, ABOVE FLOOR, GREASE TRAP FOR 50 GPM FLOW / 127 LBS. GREASE CAPACITY, 35" x 23" x 13.75" WITH 3" PIPE CONNECTIONS, BOLTED GAS / WATER TIGHT PE COVER, BUILT - IN FLOW CONTROL AND INTEGRAL AIR RELIEF / ANTI - SIPHON CONSTRUCTION.

GREASE TRAP CALCULATION

3-COMPARTMENT SCULLERY SINK KEC #503 21 x 26 x 13.5 BOWL x 3 = 22,932 CU IN. 22,932 CU IN. / 231 CU IN. PER GALLON = 99 GALLONS. 99 GALLONS x 75% FULL = 74 GALLONS. 74 GAL / 2 MINUTES = 37 GPM FLOW. PROVIDED 50 GPM CAPACITY GREASE TRAP.

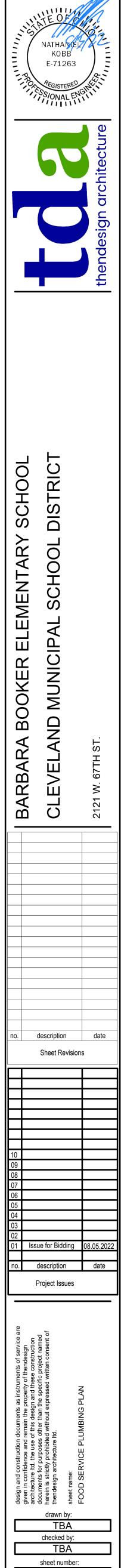




SANITARY ISOMETRIC

- 3" (E) SAN BELOW FLOOR





P-2

job number: 2022-0221

MECHANICAL SPECIFICATIONS

Section 200500 - General Requirements

A. General

- 1. Specifications are applicable to all contractors and/or subcontractors for all mechanical systems in Divisions 01, 20. 2. This contractor is also referred to the architectural, food service and electrical and all other drawings and specifications pertinent to this project and fully coordinate with all other trades, owner and architect requirements. All of the above mentioned drawings and specifications are considered a part
- of the contract documents 3. Conform to all Instructions to Bidders, general and special conditions of contract as specified by
- architect and/or owner. Refer to "Alternate Proposals" for possible changes affecting the extent of this section of work. 5. Before submitting a bid, each contractor is requested to visit the job site to familiarize themselves with construction condition, check facilities and conditions and make all necessary observations and measurements. Note conditions under which work is to be performed and take all items into
- consideration in bid. No consideration will be given for his failure to do so. 6. Systems are to be complete and workable in all respects, placed in operation and properly adjusted. 7. Each contractor shall provide for his own clean-up, removal and legal disposal of all rubbish daily.
- 8. Each contractor shall protect his work, his existing and adjacent property against weather. 9. Each contractor shall protect his work, materials, apparatus and fixtures from damage. Any work damaged by failure to provide protection required, shall be removed and replaced with new material at
- the contractor's expense. 10. Each contractor must confirm size, location and materials at point of tie in connections in the field prior
- to rough-in of new work. 11. Arrange for and obtain owner's and insurance representative's permission for any service shutdowns. 12. Each contractor shall be solely responsible for construction means, methods, and sequences of
- construction and the safety of workmen. 13. No piping, ductwork, wiring, etc., shall be installed or routed above or below electrical panels and equipment, through elevator equipment rooms or elevator shafts or stairways unless these items serve
- these areas only. 14. All contractors shall coordinate with the electrical contractor and obtain a written approval identifying the electrical characteristics of all mechanical equipment prior to ordering of equipment. No additional
- payment will be made for lack of contractor coordination of electrical characteristics. 15. Each contractor shall include modifying existing conditions to complete the project. During construction the contractors may uncover an existing condition that will have to be modified. Any such work which comes under the jurisdiction of this contractor shall be done by this contractor without extra cost to the
- owner and project 16. Work related to the existing building shall be coordinated to minimize interference or interruption of normal building use by the owner. Refer to architectural plans for phasing requirements.
- 17. Ceiling grid systems shall not be supported from ductwork, heating or plumbing lines or any other utility lines, and vice versa. Each utility and the ceiling grid system shall be a separate installation and each shall be independently supported from the building structure - concrete, steel or masonry. Where interferences occur, in order to support ductwork, piping, ceiling grid systems, etc., trapeze type hangers or supports shall be employed which shall be located so as not to interfere with access to such mechanical equipment as valves, regulators, mixing boxes, fire dampers, etc.
- B. Work Coordination and Scope
- Each contractor under this division shall familiarize himself with the work to be done under other divisions of this specification and their related drawings and shall so coordinate and schedule his work as not to cause delays or interference with the work of others. Such coordination and scheduling shall accomplish the installation of mechanical and plumbing equipment and piping with a minimum of cutting through masonry and other adjustments
- 2. Work included under this division shall consist of furnishing all materials, supplies, equipment, tools, transportation and facilities and performing all labor and services necessary for the complete installation of the plumbing systems.
- 3. The contractor under this division shall report discrepancies in the work of others which affect his work. Any changes made necessary by failure or neglect to report such discrepancies shall be made by and at the expense of the contractor of this division. Obtain written instructions for changes necessary to accommodate work of others
- 4. The contractor under this division shall be responsible for proper size and location of anchors, chases, recesses, opening, etc., required for the proper installation of his work. 5. The division of responsibility under separate plumbing contract for tie-in points shall be as follows:
- a. The plumbing contractor shall provide domestic water to within five feet (5'-0") of equipment connection furnished by the food service contractor, final connection by food service contractor. On the water lines, the plumbing contractor shall provide the shut-off valve, check valve, backflow preventer and pressure regulator b. Plumbing contractor shall provide sleeves to the general contractor for placement in floors, walls,
- etc. and coordinate such location. c. The plumbing contractor shall rough-in and connect all other fixtures and equipment where shown on the drawings but not previously mentioned. Provide with shut-off valves and p-traps with
- clean-out plug. C. Codes, Permits, Standards and Regulations
- 1. Contractors shall install work in full accordance with rules and regulations of all applicable codes (local, city, county, state, national codes, NFPA, OSHA, etc.), government regulations, utility company requirements, and applicable standards having jurisdiction over premises. This shall include safety requirements of the state department. Do not construe this as relieving contractor from compliance with any requirements of specifications which are in excess of code requirements and not in conflict therewith
- 2. Contractors shall secure and pay for all fees, permits, and certificates of inspection incidental to this work required by foregoing authorities. Arrange for all required inspections and approvals.
- 3. Contractor shall be responsible for payments to all public utilities for work performed by them in
- connection with provision of service connections required under this division of specifications. 4. Deliver all permits and certificates to architect in duplicate.
- D. Design Drawings
- 1. The design drawings, as submitted, are diagrammatic and are not intended to show exact location of equipment, piping unless dimensions are given. Piping is to be installed along the general plans shown on the drawings while conforming to actual building conditions. Each contractor shall confirm all dimensions by field measurement.
- Before entering into a contract, the successful bidder may be required to submit satisfactory evidence to show that the manufacturer of all parts of the equipment offered have been regularly engaged in the manufacture of such equipment for three (3) years and have not less than three (3) installations of a similar type which have been in successful operation under conditions similar to those specified for not less than two (2) years
- 3. All equipment, piping and material specified herein after as shown on the drawings shall be furnished and installed by the contractor, unless specifically indicated to the contrary. Installation shall comply with all required "Building Codes" and "Reference Standards."
- 4. If this contractor proposes to install equipment requiring space conditions other than those as specified and/or shown on the design drawings, or to rearrange the equipment, he shall assume full responsibility and submit drawings for the rearrangement of the space and shall obtain the full approval of the architect prior to start of any work.
- 5. The exact locations for fixtures, equipment and piping which is not covered by drawings shall be obtained from the architect or his representative in the field and the work shall be laid out accordingly. 6. Drawings and specifications are intended to supplement one another. Any materials or labor called for in one but not the other shall be furnished as if both were mentioned in the specifications and shown
- on the drawings.
- E. Base Bid Equipment, Materials and Substitutions 1. All equipment and materials shall be new, free of defects and UL labeled.
- 2. Base bid manufacturers are included in the specification or listed in schedules on the drawings. All other manufacturers are considered substitution.
- 3. The name or make of any article, device, material, form of construction, fixture, etc., stated in this specification, whether or not the words "or approved equal" are used, shall be known as a "standard". 4. All cost shall be based on "standards" specified.
- 5. The equipment schedules on the drawings indicate manufacturer and their equipment model numbers that this design has been based on. Each contractor is required to bid upon the basis of design and furnish the makes specified.
- 6. Where more than one make or name is mentioned as being acceptable, it shall be understood that only the name or make referring to the manufacturers model numbers or sizes shall be considered the "Specified Standards." It shall be further understood that other makes and names, even though mentioned, have not been checked for detail and that their size and arrangement are the contractor's responsibility the same as a proposed substitute item. The use of other manufacturer's equipment that is listed as acceptable alternates that entails general trades, structural, mechanical, electrical, etc., revisions is this contractor's responsibility to provide revisions. Any additional cost of such changes shall be paid by the contractor submitting the acceptable alternates which necessitates changes in installing such submitted alternate equipment, even though such costs may be part of another division of work.
- 7. Bids concerning the use of substitute products must be accompanied by complete specifications and performance characteristic covering these products. Contractor shall provide all available test data and experience records which may be helpful to the architect in evaluating the quality and/or suitability of alternate products.
- 8. Contractor is also invited to bid on any other similar products the contractor desires to propose as substitutions, stating any difference in cost (add or deduct from base bid cost) for each proposed substitution on the substitution sheet. If the architect decides to accept any of the proposed substitutions, proper notations thereof shall be made in the written contract. Where several makes are mentioned in the specifications and the contractor fails to state that he prefers a particular make in his bid, the owner shall have the right to choose any of the makes mentioned without change in price. No consideration will be given to proposals for alternative products unless submitted with the original bids. 9. Substitutions are subject to the approval of the owner. If a substitution is submitted, it is the
- contractor's responsibility to evaluate it and certify that the substitution is equivalent in all respects to the base specifications. 10. If substitutions are approved, notify all other contractors, subcontractors, etc., affected by the
- substitution and fully coordinate with them. Any costs resulting from substitution, whether by this contractor or others, shall be the responsibility of and paid for by the substituting contractor. Approved shop drawings do not absolve this contractor from this responsibility. 11. All equipment shall be installed in full accordance with the manufacturer's data and installation
- instructions and service clearances. It is this contractor's responsibility to check and confirm these requirements prior to starting of any work.

H. Supervision

F. Warranty

A. General

- items identified in this section. in this specification and requirements indicated on the mechanical drawings.
- B. Interferences
- avoid conflict with other work without additional cost to owner.
- C. Protection of Work and Property

- replaced. D. Supports and Hangers
- 4. Isolate all copper lines form ferrous hangers or supports by using foil filler or vinyl tape.
- E. Pipe Sleeves, Floor and Ceiling Plates
- Escutcheons
- G. Pipe Identification and Tags (New Piping Only) 1. Identify each pipe, valve and controls in equipment rooms, above accessible ceilings and in accessible
- long runs at not over 20'-0" intervals.
- lettering for such strips shall be not less than 1/2" high.

- diagram
- device it services H. Access Panels
- prior to any work
- isolated as follows:

- I. Expansion Joints

- for attachment to structure.

1. Fully warrant all materials, equipment and workmanship and the successful operation of all equipment and apparatus installed by this contractor for one (1) year from date of final acceptance. 2. Extend all manufacturers' warranties to owner; including five (5) year compressor and ten (10) year heat exchanger extended warranty on HVAC equipment to include material and labor.

3. Repair or replace without material and labor charge to the owner all items found defective during the warranty periods. In the case of replacement or repair due to failure within the warranty period, the warranty on that portion of the work shall be extended for a minimum period of one (1) year from the date of such replacement or repair. G. Shop Drawing Submittals 1. Submittals will be reviewed only for general compliance with the contract documents and not for

dimensions or quantities. The architect and engineer will make every effort to detect and correct errors, omissions, and inaccuracies in such drawings, but the failure to detect errors, omissions, and inaccuracies shall not relieve the contractor of responsibility for the proper and complete installation in accordance with the intent of the contract documents. The submittal review shall not relieve the contractor of responsibility for purchase of any item in full compliance with the contract documents or its complete and proper installation 2. Where submittals vary from the contract requirements, the contractor shall clearly indicate on submittal

or accompanying documents the nature and reason for the variations. 3. Each manufacturer or his representative must check the application of his equipment and certify at time of shop drawing submittal that the equipment specified has been properly applied and can be installed, serviced and maintained where indicated on the drawings. Advise engineer in writing with submittal drawings of any potential problems. The manufacturer shall be responsible for any changes

that might be necessary because of physical characteristics of equipment that have not been called to the engineer's attention at the time of submittal. 4. Submit a minimum of one (1) print and an electronic "pdf" of shop drawings to the architect. The architect and engineer shall review and return a pdf. The contractor shall distribute copies as required to properly conduct the work, including requirements of the operating manual.

1. The contractor shall have in charge of work at all times during construction a competent foreman or superintendent whose experience and background shall qualify him for the work to be performed under this division. Once assigned, the foreman or superintendent shall be retained until completion of the project and any consideration as to his removal on grounds of incompetence shall either be initiated by or referred to the architect for decision.

Section 200510 - Basic Material and Methods

1. Provide all materials, labor, equipment, and accessories required to furnish and install the mechanical 2. This section includes basic mechanical materials and methods to complement other division sections

1. Before installing any work, contractor shall see that it does not interfere with clearance required for finish on beams, columns, pilasters, walls, or other structural or architectural members, as shown on architectural drawings. If any work is so installed and it later develops that architectural design cannot be followed, contractor shall, at his own expense, make such changes in his work as architect may direct to permit completion of architectural work in accordance with plans and specifications. 2. Install additional offsets on piping or ductwork where required to obtain maximum headroom or to

3. Report any interferences between work under this division and that of any other contractors to architect as soon as they are discovered. Architect will determine which equipment shall be relocated, regardless of which was first installed, and his decision shall be final.

1. The contractor shall be responsible for safeguarding work, property, and facilities against damage, both his own as well as others with which he may come into contact in the performance of his work. 2. Stored materials shall be protected against damage from weather. Pipe, and duct openings shall be closed with caps or plugs during installation. All fixtures and equipment shall be covered and protected against damage. Any materials or equipment damaged at any stage in the construction shall be replaced or repaired. Final completion, all work shall be in a clean and unblemished condition. 3. During construction, all return air ductwork and transfer air openings serving new and existing air handling equipment and/or adjacent tenant spaces shall be protected. Openings which need to remain active shall be covered and protected with MERV 8 filtration media; openings which can remain inactive during construction shall be covered with plastic sheathing and sealed air tight. Filter media shall be replaced regularly as required during construction in order to ensure adequate airflow through all required active openings. In addition, at the end of each phase of construction, and at the end of the construction project, all filtration media within each piece of equipment serving the space shall be

1. Hangers and supports are to be provided to properly support, secure and align piping and to meet field conditions and as manufactured by Grinnell, Michigan Hanger or Caddy. 2. All hangers, brackets, clamps, etc., shall be of standard weight steel. Perforated strap hangers shall not be used in any work. When two or more pipes are run parallel, they may be supported on

unistrut-type trapeze hangers. Other hangers for pipe 3" in size and smaller shall be clevis. For pipe transporting medium above 150 degrees F and 4" in size and above, use pipe roll. Each hanger is to be sized to include pipe insulation saddle for protection. 3. All vertical piping passing through floors shall be supported at the floor by a riser clamp.

5. Spacing to comply with ASHRAE standards and code requirements.

1. All pipes passing through floors or masonry walls shall be provided with machine-cut schedule 40 pipe steel sleeves. The sleeves shall be so sized to allow at least 1/4" clearance between the inside sleeve wall and the pipe or insulation surface. Sheet metal sleeves shall not be used in this work. Pipe sleeves are to extend 2" above finished floor and sealed. Pipe sleeves are to be full wall thickness and

2. Unused sleeves shall be plugged and finished to match adjoining surface.

1. Fit all pipe passing through walls, floors or ceilings in finished rooms with steel or brass escutcheons. Where surface is to receive a paint finish, make escutcheons prime painted; otherwise, make escutcheons nickel or chrome plated. Where piping is insulated, fit escutcheons outside insulation.

2. Color code identification bands or marker backgrounds to identify contents of pipe with initials and direction of flow located near each valve and fitting, on both sides of pipe passing through walls and on

3. At place where pipe is to have marking, covered pipe shall be properly primed with clear lacquer. After marking is applied, coat with lacquer. Apply marking adjacent to valves and equipment at major changes in directions, where pipes pass through walls or floors.

4. Each piece of equipment shall be identified by a number, together with a brief description of its purpose, e.g. "Air Handling Unit - East Lobby." Identification shall be embossed or engraved plastic or stamped brass strips firmly attached to the equipment or adjacent wall at the obvious location. The

5. All valves shall be provided with brass numbered tags attached to handle with a brass chain or ring. Wiring of tags will not be acceptable. At the completion of the work, a reproducible valve schedule shall be provided. Three (3) copies of this shall be mounted in metal, glass covered frames where requested by the architect. The schedule shall give a description of the line or equipment controlled; the normal position, emergency and/or shutdown position and location given either by description or

6. All controls, starters, switches, etc, shall be identified by embossed stencil or engraved plate as to purpose and/or equipment controlled. Control wiring shall be identified with program number and

1. Each contractor shall be responsible for providing all required access panels necessary for his work. This includes any access panels required for Plumbing. Each contractor shall also provide access panels for any existing conditions as required.

Refer to architectural drawings and specifications for type of access panel and coordinate locations 3. Piping and ductwork shall be supported independently of the mechanical equipment and shall be

a. All suspended piping in the mechanical equipment and air handling rooms shall be supported from the overhead structure by threaded rods incorporating resilient hangers. The resilient hangers shall contain steel springs and precompressed molded fiberglass inserts, designed for static deflections of between 1" and 1-3/4" under operating conditions.

b. Suspended piping entering or leaving mechanical or air handling equipment outside the equipment rooms shall be supported for the first three hangers away from the equipment by threaded rods incorporating resilient hangers from the overhead structure. The resilient hangers shall contain steel springs and precompressed molded fiberglass inserts, designed for static deflections between 1" and 1-3/4" under operating conditions.

c. Flexible connections shall be used between air handling equipment and ductwork

d. All ductwork within the mechanical equipment and air handling rooms shall be suspended with rod and rubber-in-shear hangers.

1. Expansion joints in piping for heating and domestic water system 2-1/2" and below shall be Flexicraft ML loop stainless steel for steel and copper pipe or Flexonics model H, stainless steel bellows, internal guides, anti-torque device for steel pipe and model HB, bronze bellows, internal guides, anti-torque device for copper pipe; end connections to match corresponding pipe construction.

2. Expansion joints in heating and domestic water systems 3" pipe size and above shall be flexonics corrugated bellows type with mated neck rings and control rings; allowable working pressure to be 300 PSIG at 850 degrees F. End connections to be flanged. 3. Pipe alignment guide to be steel spider (copper clad for copper pipe) housed in a steel sleeve with feet

4. Expansion loops shall be provided on all pipe runs over 100 ft in length. Size loop per manufacturer's recommendations or as scheduled.

Section 200500 (cont.)

J. Thermometers and Gauges

- 1. Pressure gauges shall be provided in pipe lines and at inlets and outlets to equipment as called for or specified. These shall be installed to indicate pressure changes across equipment only. This means that they must have connections installed as close as possible to equipment flanges. These shall be bourdon tube type with 3" minimum dial 1/4 male NPT connection, steel cages with pressure ranges suitable for indicating the normal operating pressure at the two-third point of the scale range. Ashcroft, 3M or Taylor. Connections shall be made with shut-off cock and surge snubber.
- Thermometers shall be a red mercury in glass-type with adjustable angle feature, 7" minimum scale length with range and bulb length suitable for the application and insertion well. These shall be located where they sense a true temperature and where they can be easily read and be installed with heat transfer grease.
- K. Miscellaneous Steel
- Furnish and install all miscellaneous steel required for supports, hangers, anchors, guides, etc., required for installation of equipment and materials furnished and installed under this division.
- Painting 1. This contractor shall perform all painting incidental to this work.
- 2. All painting shall be done with a brush or roller. Spray painting will be prohibited.
- 3. All finishing materials, thinners, etc., shall be the best quality, first line materials as manufactured by: a. E.I. Dupont De Nemours and Company
- b. Pratt and Lambert, Inc. c. The Glidden Company
- d. The Sherwin-Williams Company
- e. The Pittsburgh Plate Glass Company
- 4. All paint materials shall be delivered to the job in the manufacturer's original unopened and labeled containers, and they shall be used strictly in accordance with the manufacturer's directions.
- 5. This contractor shall submit a list of materials to the architect. The list shall state the branch names of the materials that the contractor intends to use. This list shall be secured from the paint manufacturer
- and shall be on his stationery. 6. The architect's approval must be secured before any painting work is started.

M. Clean-Up

- 1. Insofar as this contract is concerned, at all times keep premises and building in a neat and orderly condition: Follow explicitly any instructions of architect in regard to storing of materials, protective measures, cleaning-up of debris, etc.
- 2. Upon completion of work, this contractor shall thoroughly clean all apparatus furnished by him, pack all valves and thoroughly clean piping, fixtures and equipment removing all dirt, grease and oil.

N. Operating and Maintenance

1. This contractor shall furnish competent personal instruction to the owner's operating personnel for a period of two (2) days in the proper operation of the heating and air conditioning equipment. He shall

- also supply the owner with copies of an operation manual containing the following: a. Step-by-step procedures for start-up and shut-down for each system and piece of equipment. b. Performance data, curves, ratings.
- c. Wiring diagrams.
- d. Manufacturer's descriptive literature.
- e. Automatic controls with diagrams and written description of operation. f. Manufacturer's maintenance and service manuals.
- g. Plumbing fixtures.
- h. Spare parts and replacement parts list for each piece of equipment.
- i. Name of service agency and installer. j. Final approved shop drawings.

<u>Section 200523 - Piping</u> and Valves

- A. General 1. Furnish all material, labor, equipment, and accessories as required to install complete plumbing piping systems as indicated on drawings and in these specifications.
- 2. Install in full accordance with local code requirements, see other specification section for additional requirements and install in accordance to manufacturer's recommendations and requirements.
- B. Connections to Equipment Furnished by Others Provide valved water connection for equipment furnished by other contractors or owner.

Include accessories required by code, drawings and manufacturer's installation instructions. 3. Fully coordinate with kitchen equipment suppliers and confirm all rough-in requirements prior to starting work.

C. Installation

- All piping shall be installed parallel with or perpendicular to the building walls. All vertical risers shall be installed plumb and straight. All piping above accessible ceilings shall be installed as high as possible and at height to allow sufficient space for ceiling panel removal. All piping shall be installed with pitch in the direction of flow of not less than 1" in forty feet, except as
- otherwise shown. It must be possible to drain every portion of the piping system. 3. Run lines as direct as possible and avoid unnecessary offsets. However, if offsets are required in order to obtain maximum headroom or to avoid conflict with other work, they shall be made as required or as requested by the architect without addition cost to the owner. The architect reserves the right to
- make minor changes in the location of piping and equipment during the roughing-in, without additional cost to the owner. All changes proposed by others shall be approved by the architect. 1. Lines shall be cut accurately to measurement at the site and worked into place without springing or forcing. Sufficient offsets, pipe loops or expansion joints between anchor points shall be provided as needed, whether or not shown, to limit stresses and control movement of lines subject to the thermal
- expansion Before any piping is installed, it shall be up-ended and pounded to remove any foreign matter present, and shall be swabbed, if necessary, for thorough cleaning. After installation and before final connections made, all piping system shall be flushed with a material that is not injurious to either pipe
- or equipment. (See also "Tests and Adjustments.") 6. Pipe to be threaded shall be cut square and full threaded with clean-cut tapered threads and shall be reamed after threading. Threaded connections shall be made with pipe thread compound applied to
- the wall threads only Unions or companion flanges shall be installed in all connections to equipment, automatic valves, etc., as necessary to permit removal of equipment and specialties for servicing, repairing or cleaning. It shall be possible to remove any piece of equipment by removing only one or two sections of piping.
- Valves shall be provided in suitable locations at each item of equipment, branch circuit, riser, or section of piping as indicated or required for proper and safe operation of the system and to facilitate maintenance and/or removal of all equipment and apparatus. On horizontal pipe runs, install all valve stems vertically up where possible and in no case shall the stems be turned more than 90 degrees from the vertically up position.
- 9. Drain valves shall be provided at all low points, trapped section, and on the equipment side of all branch valves to permit draining of all parts of all liquid piping systems. Drain valves shall have threaded hose ends with cap and chain. Drain piping shall be provided from pump glands, relief valves, etc., to spill at the floor over floor drains or other acceptable discharge points. The drain line shall terminate with plain, unthreaded end with a minimum 2" air gap at floor drain.
- 10. Connections between copper piping and screwed ferrous equipment connections or screwed ferrous piping systems shall be made as follows: a. For stationary non-rotating, non-vibrating equipment connections: dielectric unions.
- b. For rotating or vibrating equipment connection: cast brass adapter and bronze flanges with dielectric separation of flanges and bolts.
- c. Connections between copper piping and ferrous equipment flanges or flanged ferrous piping systems shall be made using bronze companion flange with dielectric separation of flanges and
- d. Brass or bronze valves in ferrous piping will not require dielectric separation. e. Nipples between copper piping and equipment or fixture connection fittings shall be brass, not
- galvanized steel. 11. All pressure piping systems shall be installed to conform to the requirements of the local AHJ or state's
- pressure piping system code.
- 12. All excavations for installation of pipe shall be open trench work and shall be kept open until piping has been inspected, tested, and accepted.
- 13. Any piping resting on or coming in contact with building structure shall be insulated at that point to
- prevent telegraphing of sound. 14. Threaded joints shall conform to American Taper Pipe Thread ASA-B2.1-1960. All burrs shall be removed, pipe ends shall be reamed or filed to size of bore and all chips removed. Pipe cement shall be used only on male threads.
- 15. Unions shall have metal seats for drainage systems and metal to metal ground seats on water system. 16. Furnish and install valve in branches to fixture groups. Plumbing fixtures shall have wheel or
- screwdriver stops as specified. 17. All piping shall be rigidly supported and shall not be loose or shaky.
- D. Sanitary, Waste and Vent Sewers
- Install sewers, stacks, vents, drains, etc., as indicated on the drawings. 2. All drainage and vent piping shall be constructed and run as direct as possible, located so as to be accessible for inspection. The actual runs and locations of drains, soil waste, and leader piping shall be installed as to meet with the various conditions at the building and any work necessary to conceal pipes or clear pipes of other trades shall be done as directed by the architect.
- 3. Sewers to be pitched a minimum of 1/4" per foot for 3" sizes and under and 1/8" per foot for 4" sizes and larger or to slope as indicated on drawings. Kitchen sanitary waste shall be sloped 1/4" per foot for all pipe sizes. 4. All piping shall be correctly aligned before joints are made. All changes of direction in drainage and
- vent piping shall be made by means of "Y" branches and 1/6, 1/8 or 1/16 bends. No lines shall be run with unnecessary bends or offsets and where changes in direction are unavoidable; they shall be made by use of proper fittings. Single and double sanitary tees, 1/4 bends and 1/8 bends may be used in vertical sections when direction of flow is from horizontal to vertical. Changes in direction and branch connections shall be made with approved drainage fittings compatible with the piping system material in which it is installed.

Section 200523 (cont.)

- Install cleanouts at base of each vertical waste stack, each change in a direction of piping greater than 45 degrees as shown on drawings. Provide cleanouts not over 50'- 0" on center along straight runs. Cleanouts shall be size of pipe to which it is installed up to 6" in diameter. Pipe over 6" in
- diameter shall have a 6" cleanout. All fixtures and sanitary drains shall be vented as indicated on drawings and in accordance with Code. Vent pipes, where not vertical shall have continuous slope up to vent through roof.
- 7. Openings in pipes shall be properly plugged when work is not in progress.
- 8. Drain piping exposed to 140 degree temperature water shall be cast iron type piping and fittings for a minimum of 10'-0" from fixture.
- 9. Pipe Schedule:
- a. Above grade and vent material shall be as follows:
- 1) No-hub cast iron pipe and fittings CISPI 1-301-78.
- 2) PVC-DWV SCH. 40 solid core pipe, ASTM D-1785 with ASTM D-2665 DWV solvent weld socket fittings.
- b. Expansion Joints 1) Ductile-Iron, flexible expansion joints; AWWA C110 or AWWA C153 with two gasketed ball-joint sections and one or more gasketed sleeve sections rated for 250 psig minimum. 2) Ductile-Iron expansion joints; three-piece assembly of telescoping sleeve with gaskets and restrained-type, ball-and-spigot end sections; AWWA C110 or AWWA C153; rated for 250
- psig minimum. 10. PVC piping shall not be installed unless permitted by Code and shall not be installed in return air plenums.
- E. Domestic Water Piping
- 1. Install domestic water piping as indicated on drawings. Include all fittings, valves, hangers, and other accessories. Extend domestic water piping to all fixtures and equipment required for complete installation.
- Include unions, or other disconnect means, stops or valves for isolation of fixtures and equipment. Valves to be fully compatible with piping for service intended as manufactured by Nibco, Crane or Milwaukee. Include hose or drain valves at low points where fixtures cannot be used for drainage.
- 3. Install shock absorbers at each quick closing fixture and where required to prevent water hammer as manufactured by J.R. Smith, Sioux Chief or Zurn. Absorbers shall be installed in vertical upright position.
- 4. Hangers on insulated pipe to be outside of insulation, sized accordingly with a sufficient saddle to protect insulation as manufactured by Grinnell or Michigan.
- 5. Pipe Schedule: a. Above grade (2" and less)
- 1) Type "L" hard copper ASTM B 88-832 with wrought copper fittings ASTM B 16.22 1980 and non-lead or antimony solder joints, or copper tube, pressure-seal-joint with EPDM o-ring seal in each end
- 6. Flush, vent and sanitize all water piping with chlorine as required per AWWA, local building department and health department codes.
- 7. Allow 1-1/4" per 100 feet of length for expansion in domestic hot water lines.
- F. Condensate Drain Piping
- 1. Trap shall be installed near equipment if not integral with equipment. Install piping at a uniform slope of 1" in forty feet downward indirection to drain.
- 2. Pipe Schedule: a. Piping of all sizes shall be type L hard copper pipe with brass or copper fittings and soldered joint.
- J. General Domestic Valves and Strainers 1. Ball valves 2" and smaller shall be 600# WOG, 150# SWP, two-piece, full port cast bronze or forged
- brass body, chrome plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, vinvl-covered steel handle and have threaded ends. Valves shall be Hammond 8901, Milwaukee BA-125, Stockham S-207, Nibco T-585, or Apollo 77-100.
- 2. Gate valves 2" and smaller shall be 150# W.S.P., bronze, screwed pattern with rising stem, union bonnet, solid wedge disc. Valves shall conform to MSS SP-80. Valves shall be Crane 431-UB, Hammond IB-629, Lunkenheimer 3151, Jenkins 47-U, Stockham B-120, Milwaukee 1151, or Nibco T-135.
- 3. Globe valves 2" and smaller shall be 150# W.S.P., bronze, screwed pattern with rising stem, and union bonnet, and ANSI 420-S stainless steel tapered plug and seat. Valves shall conform to MSS SP-80. Valves shall be crane 14-1/2P, Hammond B-433, Jenkins 546-P, Stockham B-29, Milwaukee 591 A, or Nibco T-235
- 4. Check valves 2" and smaller shall be 150# W.S.P. bronze, swing check, bronze seat, screwed pattern. Valves shall conform to MSS SP 80, type 4. Valves shall be Crane 141, Hammond IB-946,
- Milwaukee 510, Nibco T-43, Stockham B-331B, Lunkenheimer 230, or Jenkins 352. Balance vales 2" and smaller shall be 125#, bronze body screwed pattern ball type circuit setter valves with memory stop, straight pattern with Schrader valve connection for differential pressure gauge.
- Valves to be Taco or Bell & Gossett 6. Strainers 2" and smaller shall be 250#, cast iron body, screwed pattern with 20 mesh stainless steel or Monel screens, strainers to be Muessco No. 11, Armstrong, Crane, Sarco, or Hayward.
- 7. Air vents and drains for main water lines shall be bronze, screwed pattern, ball valves with a 3/4" male hose thread adaptor Air vents for main water lines shall be 200#, bronze, screwed pattern, non-rising stem angle valves
- with union bonnet and 3/4" Chicago standard hose thread valves to be Crane 117, Walworth 24, or Jenkins 112.
- 9. Air vent PET cocks (located inside unitary equipment) shall be 125# bronze "try-cock" similar to Crane 730.

Section 200593 - Testing, Adjusting, and Balancing

General

- After installation, check all equipment and perform start up in accordance with the manufacturer's instructions. 2. All piping shall be tested and free of leaks as required by the local authority having jurisdiction.
- 3. Work that is scheduled to be concealed or insulated shall remain uncovered until required tests have been completed. If the construction schedule requires, arrange for tests on sections of the system at a
- 4. Instruct owner in operation of systems and submit operating and maintenance manual for all
- equipment and systems. Work under this division of the specifications shall not be considered complete until the contractor has obtained required inspection, performance tests, made necessary adjustments and has submitted satisfactory evidence of the architect or his representative will make spot checks to determine the accuracy and completeness of final adjustments. Should spot checks indicate more than a reasonable deviation from design requirements, the contractor shall repeat tests and adjustments to the satisfaction of the engineer
- Test results shall be submitted to the architect/engineer.
- B. Balancing, Start Up and Instructions
- 1. Start up and place all systems in operation and tag all switches and controls with permanent labels. 2. Train and instruct owner on proper operation and preventative maintenance of system
- C. Piping: Testing to be done by the contractor. 1. All piping shall be given the following pressure test without appreciable pressure drop: Contractor shall use recording line charts to record all pressure testing outcomes.

SERVICE	TEST MEDIUM	MIN. PRESSURE	TIME (HOURS)
Cold Water	Water	125 psi	24
Hot Water	Water	125 psi	24
Re-circulated Hot Water	Water	125 psi	24
Sanitary Sewer	As per State Plu	Imbing Code or Loc	al Authority

- *A minimum notice of 48 hours shall be given the architect prior to purging of any gas lines. Purging shall be to the outside of building at a safe location.
- 2. During the testing period, this contractor shall maintain on the job a competent individual thoroughly familiar with all phases of plumbing for as long as may be required to thoroughly adjust all of the systems and to demonstrate to the architect that they are functioning properly.
- 3. All hydrostatic and/or air tests shall be made before piping is concealed or covered. This contractor shall be responsible for completely draining the systems after hydrostatic tests are performed. Any damage from freezing prior to acceptance of the completed installation shall be repaired at the sole expense of this contractor.
- 4. All materials and installations under the plumbing system shall be inspected by the inspector to ensure compliance with requirements of the Plumbing Code.
- This contractor shall notify the plumbing inspector whenever work is ready for test and inspection. 6. When work for the plumbing permit is issued and completed, this contractor shall request final inspection. Such request shall be made before the building is occupied or used but not more than 30 days after completion of the work.
- Before approving the plumbing system, the plumbing inspector may require that the system in whole or part be tested to prove sufficiency. All equipment, material, power and labor necessary for inspections and test shall be supplied by the plumbing contractor.

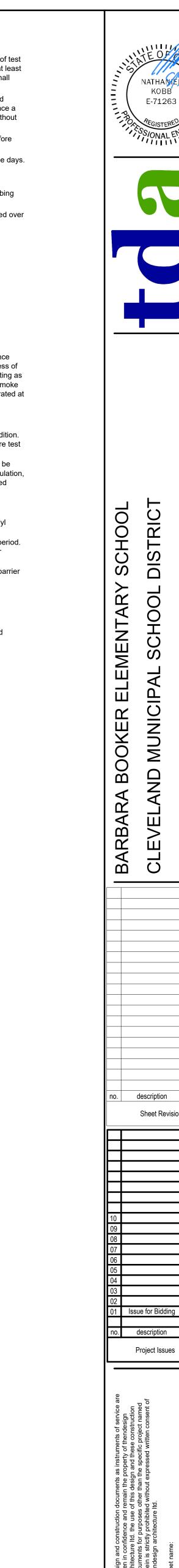
Section 200523 (cont.)

- 8. All piping of plumbing system shall be tested with water or air per testing schedule
- a. Drainage system water test: provide fitting at property line or termination point for purpose of test plug. Water test shall be applied to entire system or by section. When tested in sections, at least the lower 20 feet of the next section above shall be retested so that every section tested shall have at least a 20-foot head test. Hold without pressure loss for 15 minutes.
- b. Drainage system air test attach air apparatus to suitable opening, close all other inlets and outlets, and then force air into the system until there is uniform pressure, sufficient to balance a column of mercury 10" in height or 5 pounds gauge pressure on the entire system. Hold without pressure loss for 15 minutes.
- No part of system shall be covered before inspection is made and approved. If covered before test, contractor shall pay for cost of uncovering so test can be made and accepted.
- d. Defective work or materials shall be replaced and inspection and tests repeated within three days. 11. Certificates of approval of satisfactory completion and final inspection shall be obtained by the
- plumbing contractor. One copy of each approval shall be given to the architect. 12. Damages which result from breakage or faulty installation shall be the responsibility of the plumbing
- contractor. 13. After the system has been in service for a two-week period and again before the system is turned over
- to the owner, all dirt pockets, traps, and strainers shall be cleaned, removed, and reinstalled.

Section 200700 - Insulation

- A. General 1. Furnish all material, labor and equipment as required to install complete plumbing insulation as indicated on plumbing drawings and in these specifications. Install in full accordance with manufacturer's recommendations.
- B. Scope: This contractor shall furnish and install all insulation necessary to the project and in accordance with the following requirements. All insulation and accessories used in an air plenum space, regardless of physical location, shall have a composite (insulation, jacket, and adhesive) fire and smoke hazard rating as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding a flame spread 25 and smoke developed 50. All other areas shall have insulating materials and accessories on pipes and vessels rated at a flame spread 25 and smoke developed 150 as tested by the same procedure.
- Workmanship:
- 1. All insulation shall be installed over clean, dry surfaces. Insulation must be dry and in good condition. Wet or damaged insulation will not be acceptable. No insulation shall be applied prior to pressure test completion of the respective piping and/or duct system. 2. All pipe insulation shall be installed with joints butted firmly together. All valves and fittings shall be
- insulated using mitered sections of insulation equal in density and thickness to the adjoining insulation, or with an insulation cement equal in thickness to the adjoining insulation or pre-molded insulated fittings. The insulation applied to the valves and fittings shall be covered with the same type of covering as used on the pipe insulation. No staples. 3. All insulation ends shall be tapered and sealed regardless of services.
- 4. All insulated, exposed piping 8'-0" and below to the finished floor shall include a 0.020" thick vinyl
- jacket. This jacket is in addition to the normal finish for the respective service. 5. Repair all damaged sections of the existing piping insulation damaged during this construction period. Use insulation of same thickness as existing insulation. Install new jacket lapping and seal over
- 6. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- D. Plumbing Insulation (as manufactured by Owens Corning, Knauf or Schuller) Insulate all above-grade hot water, hot water return and cold water piping with 1" thick molded
- fiberglass having an all service jacket. 2. Insulate all above-grade, horizontal condensate floor drains and waste lines with 1" thick molded fiberglass having an all service jacket.
- 3. Include insulation of fittings and valves. Keep vapor barriers intact. Apply per manufacturer's recommendations.

8. All piping in return air ceiling plenums or walls shall be plenum rated materials.





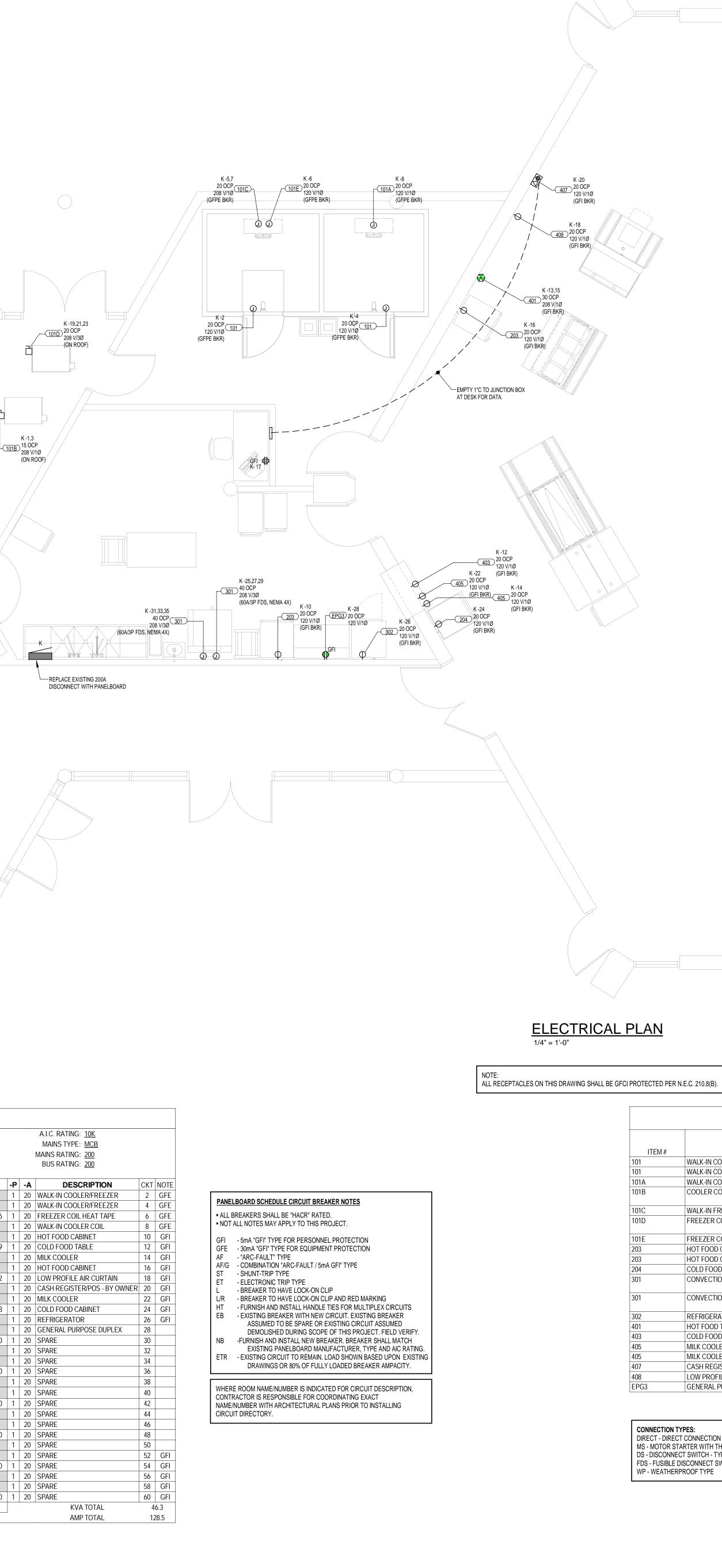
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SP	ECIAL	Location: Supply From: Mounting: Requirements:				V PH	ON: OLTS: ASES: VIRES:	<u>120/2</u> <u>3</u>	<u>:08 Wy</u>	<u>e</u>	
NOTE	СКТ	DESCRIPTION	-A	-P		4	F	3	(C	-P
NOTE	1	COOLER COMPRESSOR	20	2	0.6	1.0	-	_			1
	3						0.6	1.0			1
	5	WALK-IN FREEZER COIL	20	2					1.0	0.6	1
	7				1.0	0.6					1
	9	SPARE	30	2			0.0	1.4			1
	11								0.0	0.9	1
GFI	13	HOT FOOD TABLE	30	2	1.8	0.4					1
	15						1.8	1.4			1
	17	REC - OFFICE	20	1					0.4	1.2	1
	19	FREEZER COMPRESSOR	30	3	1.4	1.2					1
	21						1.4	0.4			1
	23								1.4	1.8	1
	25	CONVECTION OVEN	60	3	3.7	0.6					1
	27						3.7	0.2			1
	29								3.7	0.0	1
	31	CONVECTION OVEN	60	3	3.7	0.0					1
	33						3.7	0.0			1
	35								3.7	0.0	1
	37	SPARE	20	1	0.0	0.0					1
	39	SPARE	20	1			0.0	0.0			1
	41	SPARE	20	1					0.0	0.0	1
	43	SPARE	20	1	0.0	0.0					1
	45	SPARE	20	1			0.0	0.0			1
	47	SPARE	20	1					0.0	0.0	1
	49	SPARE	20	1	0.0	0.0					1
GFI	51	SPARE	20	1			0.0	0.0			1
GFI	53	SPARE	20	1					0.0	0.0	1
GFI	55	SPARE	20	1	0.0	0.0					1
GFI	57	SPARE	20	1			0.0	0.0			1
GFI	59	SPARE	20	1					0.0	0.0	1
-		KVA S	UB TOT	ALS	15	5.9	15	5.6	14	1.8	
		AMPS S	UB TOT	ALS	13	3.7	13	0.8	12	3.3	

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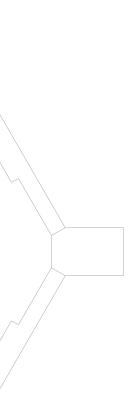


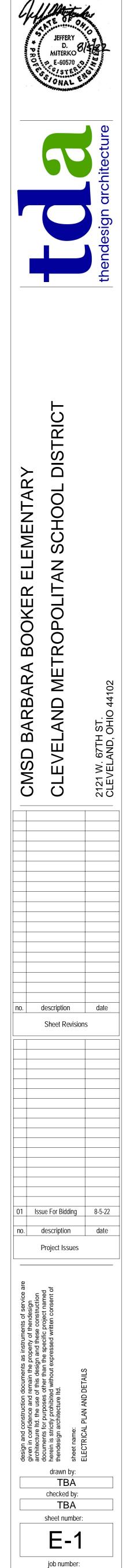
KITCHEN EQUIPMENT SCHEDULE - KITCHEN

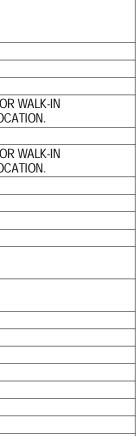
							KITCHLI					
DESCRIPTION	VOLTAGE	PHASE	LOAD (kW)	НР	AMPS (A)	OCP	CIRCUIT	FFFDFR	CONNECTION	ADDITIONAL INFORMATION/ REQUIREMENTS	MOUNTING HEIGHT	REMARKS
N COOLER/FREEZER	120 V	1	1.0 kW		8.0 A	20 A	K-4	(2) #12 & (1) #12 GND 3/4"C.	DIRECT	GFPE BKR	48"	WIRE TO JB FOR LIGHTS, DOOR HEATER
N COOLER/FREEZER	120 V	1	1.0 kW		8.0 A	20 A	K-2	(2) #12 & (1) #12 GND 3/4"C.	DIRECT	GFPE BKR	48"	WIRE TO JB FOR LIGHTS, DOOR HEATER
N COOLER COIL	120 V	1	0.6 kW		5.0 A	20 A	K-8	(2) #12 & (1) #12 GND 3/4"C.	DIRECT	GFPE BKR	96"	WIRING FROM COIL TO TIME CLOCK
RCOMPRESSOR	208 V	1	1.2 kW		5.7 A	15 A	K-1,3	(2) #12 & (1) #12 GND 3/4"C.	30A/3P, WP, FDS	ON ROOF	48"	REMOTE, ROOF MOUNTED COMPRESSOR UNIT FOR W COOLER/FREEZER. TRADES TO VERIFY EXACT LOCATI
N FREEZER COIL	208 V	1	2.0 kW		9.8 A	20 A	K-5,7	(2) #12 & (1) #12 GND 3/4"C.	DIRECT	GFPE BKR	96"	WIRING FROM COIL TO TIME CLOCK
ER COMPRESSOR	208 V	3	4.2 kW		11.6 A	20 A	K-19,21,23	(3) #10 & (1) #10 GND 3/4"C.	30A/3P, WP, FDS	ON ROOF	48"	REMOTE, ROOF MOUNTED COMPRESSOR UNIT FOR W COOLER/FREEZER. TRADES TO VERIFY EXACT LOCATI
ER COIL HEAT TAPE	120 V	1	0.6 kW		5.0 A	20 A	K-6	(2) #12 & (1) #12 GND 3/4"C.	DIRECT	GFPE BKR	96"	
DOD CABINET	120 V	1	1.4 kW		12.0 A	20 A	K-10	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	72"	
DOD CABINET	120 V	1	1.4 kW		12.0 A	20 A	K-16	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	72"	
FOOD CABINET	120 V	1	1.8 kW		15.0 A	20 A	K-24	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	72"	
ECTION OVEN - DOUBLE DECK	208 V	3	11.2 kW		31.0 A	40 A	K-25,27,29	(3) #6 & (1) #10 GND 1"C.	DIRECT	60A/3P FDS, NEMA 4X	24"	
ECTION OVEN - DOUBLE DECK	208 V	3	11.2 kW		31.0 A	40 A	K-31,33,35	(3) #6 & (1) #10 GND 1"C.	DIRECT	60A/3P FDS, NEMA 4X	24"	
GERATOR	120 V	1	0.6 kW		4.9 A	20 A	K-26	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	90"	
DOD TABLE	208 V	1	3.5 kW		17.0 A	30 A	K-13,15	(2) #10 & (1) #10 GND 3/4"C.	6-30P	GFI BKR	16"	
FOOD TABLE	120 V	1	0.9 kW		7.8 A	20 A	K-12	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	16"	
OOLER	120 V	1	0.4 kW		3.0 A	20 A	K-22	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	16"	
OOLER	120 V	1	0.4 kW		3.0 A	20 A	K-14	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	16"	
REGISTER/POS - BY OWNER	120 V	1	1.2 kW		10.0 A	20 A	K-20	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR		INTERWIRE TO OFFICE/CPU - VIF
ROFILE AIR CURTAIN	120 V	1	1.2 kW		10.4 A	20 A	K-18	(2) #12 & (1) #12 GND 3/4"C.	C&P	GFI BKR	16"	
RAL PURPOSE DUPLEX	120 V	1	0.2 kW		1.5 A	20 A	K-28	(2) #12 & (1) #12 GND 3/4"C.	C&P		48"	

DIRECT - DIRECT CONNECTION TO UNIT DISCONNECT SWITCH MS - MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION - TYPE AND RATING PER EQUIPMENT BEING SERVED. DS - DISCONNECT SWITCH - TYPE AND RATING PER EQUIPMENT BEING SERVED. FDS - FUSIBLE DISCONNECT SWITCH - TYPE, RATING, AND FUSES PER EQUIPMENT BEING SERVED.

NOTE: FOR ALL DIRECT CONNECTED EQUIPMENT, E.C. TO FURNISH WIRING WHIPS LONG ENOUGH TO PERMIT EQUIPMENT TO BE MOVED OUT FOR SERVICE/CLEANING WITHOUT REQUIRING EQUIPMENT TO BE DISCONNECTED.

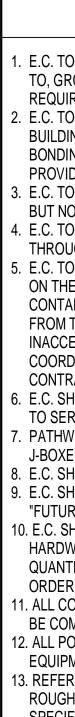








Project Number



TECHNOLOGY ROUGH-IN/ COORDINATION NOTES

. E.C. TO PROVIDE TECHNOLOGY GROUNDING SYSTEM INCLUDING, BUT NOT LIMITED TO, GROUND CONDUCTORS, COPPER BUS BARS AND ALL ASSOCIATED HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM.

2. E.C. TO PROVIDE BONDING OF ENTIRE CABLE TRAY & LADDER RACK SYSTEMS TO THE BUILDING ELECTRICAL GROUNDING SYSTEM, INCLUDING BUT NOT LIMITED TO, BONDING JUMPERS BETWEEN CABLE TRAY & LADDER RACKSECTIONS NECESSARY TO PROVIDE ELECTRICAL CONTINUITY. 3. E.C. TO PROVIDE BONDING OF ALL TECHNOLOGY RACKS & EQUIPMENT INCLUDING,

BUT NOT LIMITED TO, BONDING JUMPERS AND ASSOCIATED HARDWARE. 4. E.C. TO FURNISH AND INSTALL CABLE TRAY, LADDER RACK AND J-HOOK SYSTEM THROUGH-OUT PROJECT AREA FOR TECHNOLOGY SYSTEMS.

. E.C. TO PROVIDE SLEEVES AND CONDUIT PATHWAYS. WHETHER OR NOT INDICATED ON THE DOCUMENTS. CONDUIT SLEEVES MUST BE PROVIDED FOR EACH ROOM CONTAINING TECHNOLOGY DEVICES OR OUTLETS. THE SLEEVES SHALL EXTEND FROM THE ROOM SERVED TO THE CABLE TRAY, SLEEVES CROSSING HARD INACCESSIBLE CEILINGS OR ABOVE THE CORRIDOR ACCESSIBLE CEILING SPACE. COORDINATE SLEEVE REQUIREMENT AND LOCATIONS WITH TECHNOLOGY CONTRACTOR(S) PRIOR TO ROUGH-IN.

6. E.C. SHALL PROVIDE COMPLETE CONDUIT PATHWAY SYSTEM FROM BUILDING DMARK TO SERVER ROOM, AND FLOOR TO FLOOR PATHWAYS.

7. PATHWAY SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, CONDUIT, PULL BOXES, J-BOXES, OUTLET BOXES, PLASTER RINGS, BUSHINGS, PULL WIRES, ETC. 8. E.C. SHALL PROVIDE FIRE-RATED PLYWOOD BACKBOARDS FOR TECHNOLOGY USE. 9. E.C. SHALL PROVIDE BLANK FACEPLATES FOR TECHNOLOGY OUTLETS IDENTIFIED AS "FUTURE USE". "ROUGH-IN ONLY". OR SIMILAR NOTATION.

10. E.C. SHALL PROVIDE FLOOR BOXES AND ASSOCIATED FLOOR BOX MOUNTING HARDWARE FOR TECHNOLOGY DEVICES. COORDINATE TECHNOLOGY DEVICE QUANTITIES AND CONFIGURATIONS WITH TECHNOLOGY CONTRACTORS PRIOR TO ORDERING MATERIALS.

1. ALL CORING FOR INSTALLATION OF TECHNOLOGY PATHWAYS AND FLOOR BOXES TO BE COMPLETED BY E.C.

12. ALL POWER DEVICES. AND ASSOCIATED BRANCH CIRCUITS SERVING TECHNOLOGY EQUIPMENT SHALL BE PROVIDED BY E.C.

3. REFERENCE TECHNOLOGY DRAWINGS AND SPECIFICATIONS FOR INSTALLATION AND ROUGH-IN REQUIREMENTS OF SYSTEMS. THE TECHNOLOGY DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED PART OF THE ELECTRICAL CONSTRUCTION DOCUMENTS.

1.	ALL COVERPLATES AND DISCONNECT SWITCHES IN KITCHEN AREA SHALL BE STAINLESS STEEL.	SYMBO
2.	ALL ELECTRICAL WORK FOR FOOD SERVICE EQUIPMENT SHALL BE	
	COMPLETELY INTERWIRED BY ELECTRICAL CONTRACTOR. FINAL	
	CONNECTIONS TO EQUIPMENT JUNCTION BOX OR PULL BOX, AND ALL	
	ELECTRICAL WORK FROM PANEL BOARDS, TO BE BY THE ELECTRICAL	
~	CONTRACTOR.	
3.	THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN AND FINAL CONNECTION TO THE FOOD SERVICE EQUIPMENT. ALL WORK TO BE IN	
	COMPLIANCE WITH ALL NATIONAL, STATE AND LOCAL CODES APPLICABLE.	
4	VERIFY OUTLET RATING AND CONFIGURATION WITH EQUIPMENT	
	SUPPLIER PRIOR TO ROUGH-IN.	\leq
5.	VERIFY EXACT LOCATION AND MOUNTING HEIGHTS OF ALL OUTLETS WITH	
	EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.	
6.	ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL PLUGS AND	
	CORDS REQUIRED. ALL CORDS SHALL BE NEMA RATED AND UL	
7	APPROVED FOR MANUFACTURER AND EQUIPMENT. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL JUNCTION	
1.	BOXES, PVC OR METAL CONDUIT, CONVENIENCE OUTLETS WITH COVERS,	\square
	SWITCHES CONNECTORS, CONTROLS, AND OTHER ACCESSORIES THAT	
	ARE NOT AN INTEGRAL PART OF THE FOOD SERVICE EQUIPMENT AS	
	REQUIRED TO MAKE FINAL CONNECTIONS TO THE FOOD SERVICE	
	EQUIPMENT FOR A COMPLETE AND FUNCTIONAL OPERATION MEETING	
_	ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND ORDINANCES.	
8.	ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL DISCONNECTS	
	OR CIRCUIT BREAKERS AS REQUIRED BY CODES FOR EACH CONNECTION. COORDINATE LOCATION WITH THE KITCHEN EQUIPMENT CONTRACTOR.	
۵	ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL WALL SWITCH FOR	/ / / / / - / + ~
5.	FACTORY INSTALLED LIGHTING FIXTURES IN EXHAUST VENTILATOR	
	HOODS PER APPLICABLE STATE AND LOCAL CODES APPLICABLE.	
	ELECTRICAL CONTRACTOR SHALL PROVIDE WIRE AND CONNECTION TO	Μ
	EACH LIGHT FIXTURE. THE ELECTRICAL CONTRACTOR SHALL FULLY	Ψ
	CONCEAL ALL WIRING BETWEEN POWER SOURCE, WALL SWITCH, AND	
	JUNCTION BOX ON HOOD. THE ELECTRICAL CONTRACTOR SHALL BE	Φ
	RESPONSIBLE FOR PROVIDING ANY INNER WIRING OF LIGHT FIXTURES BETWEEN VENTILATOR HOOD SECTIONS AS REQUIRED. ALL WIRING	n
	WITHIN HOOD AND POWER SOURCE TO BE IN STRICT ACCORDANCE WITH	ц
	MANUFACTURER'S RECOMMENDATIONS, NFPA #96 AND ALL OTHER	●
	APPLICABLE CODES.	
10.	IN ACCORDANCE WITH NFPA #96 AND MANUFACTURER'S	•
	RECOMMENDATIONS, THE ELECTRICAL CONTRACTOR SHALL FURNISH	P
	AND INSTALL A PUSH BUTTON STATION WITH PILOT LIGHT FOR	
	VENTILATOR FAN MOTOR(S). THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR, AND TO PROVIDE ALL REQUIRED WIRING FROM	
	POWER SUPPLY THROUGH FAN SWITCH TO FAN MOTOR(S) AND PROVIDE	
	MAGNETIC STARTERS AND FULLY INTERWIRE SYSTEM WITH ALL POWER	_
	INTERRUPTION DEVICE(S) BUILT INTO HOOD AND FIRE PROTECTION	
	SYSTEM AS REQUIRED BY NFPA #96, NATIONAL, STATE AND/OR LOCAL	
	CODES APPLICABLE. ELECTRICAL CONTRACTOR TO PROVIDE LOCK-OUT	
	DEVICES ON CONTROL BOXES FOR EXHAUST HOOD FANS, SYSTEM AND FIRE PROTECTION SYSTEM.	
11	ELECTRICAL CONTRACTOR TO PROVIDE, INSTALL AND FULLY WIRE	
	SHUNT-TRIP BREAKERS FOR SHUT DOWN OF FUEL AND POWER TO	
	COOKING EQUIPMENT AS REQUIRED BY NFPA #96 AND ALL OTHER	
	NATIONAL, STATE, OR LOCAL CODES APPLICABLE. THE HOLDING COILS	
	FOR SHUNT-TRIP BREAKERS SHALL BE WIRED TO A 120 VOLT/SINGLE	
	PHASE CONTROL CIRCUIT BY THE ELECTRICAL CONTRACTOR AND	
	EXTENDED THROUGH A CONTACTOR AND MAINTAINED BY A PRESSURE SWITCH LOCATED AT THE MOUNTING BRACKET OF THE CHEMICAL	
	CYLINDER FOR HOOD PROTECTION. THE ELECTRICAL CONTRACTOR	
	SHALL ALSO PROVIDE, INSTALL, AND FULLY INTERWIRE WITH POWER	J
	SHUTDOWN RELAY SWITCH, AND ADDITIONAL RELAY OR SWITCHES	
	REQUIRED TO INTERFACE FIRE PROTECTION SYSTEM WITH FAN	
	VENTILATOR MOTORS AND BUILDING ALARM SYSTEMS AS REQUIRED BY	
	NFPA #96, NATIONAL, STATE, AND LOCAL CODES APPLICABLE.	
	COORDINATE WITH FIRE SUPPRESSION CONTRACTOR FOR LOCATION OF FIRE SUPPRESSION SYSTEM, AND GAS SHUT-OFF VALVE AS PART OF THE	:
	COMPLETE SYSTEM AS APPLICABLE.	
12.	AT THE REMOTE FIRE CABLE PULL. ELECTRICAL TRADES TO PROVIDE	
	EMPTY JUNCTION BOX AT 54" AFF AND CONDUIT CONCEALED IN WALL TO	
	6" ABOVE FINISHED CEILING. COORDINATE EXACT REQUIREMENTS WITH	Φ
	FOOD SERVICE EQUIPMENT TRADE AND FIRE SUPPRESSION	
	CONTRACTOR	

KITCHEN ELECTRICAL NOTES

- CONTRACTOR. 3. ELECTRICAL CONTRACTOR SHALL INTERWIRE DISPOSER CONTROL SWITCH AND TO TIME DELAY/RELAY, MAGNETIC STARTER, DISPOSER MOTOR, AND SOLENOID VALVE WITH WATER TIGHT CONDUIT AS REQUIRED PER LOCAL CODES. 4. ELECTRICAL CONTRACTOR SHALL INTERWIRE THROUGH TIME CLOCK FOR LOW TEMPERATURE COMPRESSOR AND WALK-IN COMPARTMENT BLOWER COIL FAN MOTORS AND DEFROST ELEMENT POWER SOURCE AS
- PART OF MAIN POWER SOURCE. PROVIDE ALL WIRING AND CONDUIT WITH DISCONNECT (VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER). 5. ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL CONNECTION TO A JUNCTION BOX MOUNTED ON TOP OF A PREFABRICATED REFRIGERATOR AND/OR FREEZER WALL AT APPROXIMATELY 8'-6" AFF. INTERWIRE THE LIGHT ADJACENT TO THE DOOR WITH THE FACTORY MOUNTED LIGHT SWITCH. ALL CONDUIT SHALL BE RUN EXPOSED ON TOP OF WALK-IN, NO EXPOSED CONDUIT WILL BE ALLOWED ON INSIDE OF WALK-IN. ELECTRICAL SERVICE REQUIRED FOR WALK-IN SHALL BE AS SHOWN FOR LIGHTS, DOOR AND DOOR FRAME HEATER, THRESHOLD PLATE HEATERS (WHERE SPECIFIED), HEATED PRESSURE RELIEF PORT (ON FREEZERS) AND ALARM SYSTEMS. WHERE SPECIFIED (VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER). 6. ELECTRICAL CONTRACTOR TO PROVIDE THE REQUIRED POWER SUPPLY AND FINAL CONNECTIONS TO THE TERMINAL BLOCK AT THE CONDENSING UNIT AND TO FULLY INTERWIRE TO ANY ADDITIONAL COMPONENTS.
- INCLUDE THE PROPER SIZE DISCONNECTS OR CIRCUIT BREAKERS. ALL WIRING FOR LOW AND MEDIUM TEMPERATURE CONDENSING UNIT TO BE ROUTED THROUGH DEFROST TIME CLOCK AND THEN WIRED TO EVAPORATOR COIL FOR PROPER POWER SUPPLY WITH THE REQUIRED QUANTITY OF WIRES. THE EVAPORATOR COIL DEFROST HEATER AND FAN MOTOR VOLTAGES AND LOADS ARE AS NOTED ON PLAN. VERIFY LOCATION OF COMPRESSORS AND COORDINATE WITH REFRIGERATION CONTRACTOR FOR FINAL CONNECTIONS (VERIFY REQUIREMENTS WITH
- 7. ALL RECEPTACLES IN KITCHEN AREAS SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL INSTALLED IN READILY ACCESSIBLE LOCATION PER N.E.C. 210-8.

EQUIPMENT SUPPLIER).

	ELECTRICAL SYMBOL LEGEND
SYMBOL	DESCRIPTION
	SWITCHBOARD FLOOR MOUNTED ON 4" HIGH CONCRETE HOUSING KEEPING PAD. SEE SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
	DISTRIBUTION PANEL MOUNTED 6'-6" TO TOP. SEE SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
	PANELBOARD RECESSED MOUNTED 6'-6" TO TOP. SEE PANEL SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
4	PANELBOARD SURFACE MOUNTED 6'-6" TO TOP. SEE SPECIFICATIONS, PANEL SCHEDULES / ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
	DRY TYPE TRANSFORMER. SEE SPECIFICATIONS AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
	CONDUIT WITH WIRING RUN CONCEALED IN OR ABOVE CEILING OR WALL, OR RUN EXPOSED IN UNFINISHED AREAS. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINIMUM). PROVIDE A CODE-SIZED GROUND WIRE IN ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN.
	CONDUIT WITH WIRING RUN CONCEALED BELOW FLOOR. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINUMUM). PROVIDE A CODE-SIZED GROUND WIRE II ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN.
Φ	20A - 125V GROUNDING TYPE SIMPLEX RECEPTACLE MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
Ф	20A - 125V GROUNDING TYPE DUPLEX RECEPTACLE MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
\	20A - 125V GROUNDING TYPE QUADRAPLEX RECEPTACLE MOUNTED 18" AFF TO TOP OF BO> UNLESS NOTED OTHERWISE
Ŷ	20A - 125V GROUNDING TYPE DUPLEX RECEPTACLE MOUNTED 6" ABOVE TOP OF COUNTER/BACKSPLASH TO TOP OF BOX, UNLESS NOTED OTHERWISE. COORDINATE LOCATION WITH INTERIOR ELEVATIONS INDICATED ON ARCHITECTURAL PLANS.
	SPECIAL PURPOSE RECEPTACLE - RATING AND NEMA CONFIGURATION AS REQUIRED FOR EQUIPMENT BEING PROVIDED. MOUNT 18" AFF, UNLESS OTHERWISE NOTED.
	RECEPTACLE TYPE DESIGNATIONS: C -RECESSED MOUNTED FLUSH IN FINISHED CEILING, RECEPTACLE AND FACEPLATE FINISH TO MATCH FINISH OF CEILING GFI -GROUND FAULT INTERRUPTING TYPE EM -POWERED FROM EMERGENCY/ STAND-BY DISTRIBUTION SYSTEM. DEVICE FINISH SHALL BE RED, UNLESS NOTED OTHERWISE H -MOUNTED HORIZONTAL T -TAMPER RESISTANT LISTED WP -WEATHER RESISTANT LISTED WITH DIE-CAST ALUMINUM "WHILE IN-USE COVER" WR -WEATHER RESISTANT LISTED USB -WITH (2) USB CHARGING PORTS
Ū	J-BOX - TYPE AND SIZE AS REQUIRED BY NEC
	DISCONNECT SWITCH - TYPE AND RATING AS INDICATED ON PLANS
•	START/STOP SWITCH ASSEMBLY MOUNTED AT 48" AFF TO TOP OF BOX. TYPE AND RATINGS PER LOAD BEING SERVED. MAKE CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
(FURNISH AND INSTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: SINGLE GANG, CAST IRON, FULLY ADJUSTABLE FLOOR BOX RECESSED IN CONCRETE FLOOR SLAB WITH (1) 20A DUPLEX RECEPTACLE, FLUSH ALUMINU FINISHED CARPET FLANGE AND COVER. FOR TILE FLOOR INSTALLATION, PROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLUSH WITH TILE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. FLOOR BOX IS CAPABLE OF ACCEPTING (4) 1" CONDUITS. FURNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. WIREMOLD #880CS1-1, #818TCAL, #828R-TCAL
₩ \	FURNISH AND INSTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: 3-GANG, CAST IRON, FULLY ADJUSTABLE MULTI-SERVICE FLOO BOX RECESSED IN CONCRETE FLOOR SLAB WITH (2) 20A DUPLEX RECEPTACLE, (1) 6-PORT TELE/DATA MOUNTING BEZEL, FLUSH ALUMINUM FINISHED CARPET FLANGE AND COVERS, A VOLTAGE DIVIDER. THE FURNISHED FLOOR BOX SHALL BE SIZED TO ACCEPT THE QUANTITY AND SIZE OF CONDUITS REQUIRED FOR THE TELE/DATA CABLING. FOR TILE FLOOR INSTALLATION, PROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLU WITH TILE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. COORDINATE BRACKET AND TELE/DATA DEVICE REQUIREMENTS WITH TECHNOLOGY INSTALLER PRIOR TO ORDERING MATERIALS. FLOOR BOX IS CAPABLE OF ACCEPTING (6) 1"CONDUITS. FURNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. WIREMOLD #880CS2-1, #828TCAL, #828R-TCAL, #828COMTCAL
Ð	20A - 125V FEDERAL SPECIFICATION GRADE GROUND FAULT INTERRUPTING TYPE DEAD FRONT/BLANK FACE FEED THRU DEVICE WITH LED INDICATOR. DEVICE TO PROVIDE GFCI PROTECTION FOR DOWNSTREAM DEVICES. DEVICE SHALL BE IN READILY ACCESSIBLE LOCATION AND PERMANENTLY LABELED FOR EQUIPMENT SERVED. COORDINATE LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
\bigtriangledown	BACKBOX FOR DATA DEVICE(S) MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE, PROVIDE 1"C WITH PULLWIRE FROM J-BOX WITH SINGLE GANG PLASTER RING TO ACCESSIBLE CEILING SPACE. FURNISH AND INSTALL CONDUIT BUSHINGS. IF MOUNTED NEXT TO A RECEPTACLE, SWITCH, ETC MOUNT BOTH DEVICES AT THE SAME HEIGHT.
NOT ALL SYMBC	L DL LEGEND NOTES: DLS SHOWN IN THIS LEGEND MAY APPEAR ON THE DRAWINGS.
WHERE CEILING TO BOTTOM OF INCLUDING PULI MATCH AREA FII WHERE HARD IN PULL-BOXES, AN SLEEVES TRAVE	IS DO NOT EXIST TO STUB CONDUITS ABOVE FOR LOW VOLTAGE, CONDUITS SHALL BE STUBBED / ABOVE STRUCTURE ABOVE. IN FINISHED AREAS, PROVIDE COMPLETE CONDUIT PATHWAYS, L-BOXES, UNLESS OTHERWISE DIRECTED. CONDUIT, J-BOXES AND THE LIKE SHALL BE PAINTED NISHES. ALL CONDUIT SHALL BE ROUTED IN STRAIGHT RUNS WITH 90 DEGREE BENDS. VACCESSIBLE CEILINGS EXIST, PROVIDE COMPLETE CONTINUOUS CONDUIT PATHWAYS, INCLUDI ND ACCESS PANELS, FOR LOW VOLTAGE UNLESS OTHERWISE DIRECTED. PROVIDE CONDUIT ERSING OVER INACCESSIBLE CEILINGS BETWEEN AREAS WITH ACCESSIBLE CEILINGS, AS IFY J-BOXES ABOVE INACCESSIBLE CEILINGS ARE WITHIN REACH OF THE ACCESS PANEL AND C.

ELECTRICAL SYMBOL LEGEND							
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DISTRIBUTION PANEL MOUNTED 6'-6" TO TOP. SEE SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.							
PANELBOARD RECESSED MOUNTED 6'-6" TO TOP. SEE PANEL SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.							
PANELBOARD SURFACE MOUNTED 6'-6" TO TOP. SEE SPECIFICATIONS, PANEL SCHEDULES AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.							
DRY TYPE TRANSFORMER. SEE SPECIFICATIONS AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.							
CONDUIT WITH WIRING RUN CONCEALED IN OR ABOVE CEILING OR WALL, OR RUN EXPOSED IN UNFINISHED AREAS. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINIMUM). PROVIDE A CODE-SIZED GROUND WIRE IN ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN.							
CONDUIT WITH WIRING RUN CONCEALED BELOW FLOOR. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINUMUM). PROVIDE A CODE-SIZED GROUND WIRE IN ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN.							
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SPECIAL PURPOSE RECEPTACLE - RATING AND NEMA CONFIGURATION AS REQUIRED FOR EQUIPMENT BEING PROVIDED. MOUNT 18" AFF, UNLESS OTHERWISE NOTED.							
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 EM -POWERED FROM EMERGENCY/ STAND-BY DISTRIBUTION SYSTEM. DEVICE FINISH SHALL BE RED, UNLESS NOTED OTHERWISE H -MOUNTED HORIZONTAL T -TAMPER RESISTANT LISTED 							
WP-WEATHER RESISTANT LISTED WITH DIE-CAST ALUMINUM "WHILE IN-USE COVER"WR-WEATHER RESISTANT LISTEDUSB-WITH (2) USB CHARGING PORTS							
J-BOX - TYPE AND SIZE AS REQUIRED BY NEC							
DISCONNECT SWITCH - TYPE AND RATING AS INDICATED ON PLANS							
START/STOP SWITCH ASSEMBLY MOUNTED AT 48" AFF TO TOP OF BOX. TYPE AND RATINGS PER LOAD BEING SERVED. MAKE CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.							
FURNISH AND INSTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: SINGLE GANG, CAST IRON, FULLY ADJUSTABLE FLOOR BOX RECESSED IN CONCRETE FLOOR SLAB WITH (1) 20A DUPLEX RECEPTACLE, FLUSH ALUMINUM FINISHED CARPET FLANGE AND COVER. FOR TILE FLOOR INSTALLATION, PROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLUSH WITH TILE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. FLOOR BOX IS CAPABLE OF ACCEPTING (4) 1" CONDUITS. FURNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. WIREMOLD #880CS1-1, #818TCAL, #828R-TCAL							

ISTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES. BUT IS NOT FOLLOWING: 3-GANG, CAST IRON, FULLY ADJUSTABLE MULTI-SERVICE FLOOR IN CONCRETE FLOOR SLAB WITH (2) 20A DUPLEX RECEPTACLE. (1) 6-PORT NTING BEZEL, FLUSH ALUMINUM FINISHED CARPET FLANGE AND COVERS, AND R. THE FURNISHED FLOOR BOX SHALL BE SIZED TO ACCEPT THE QUANTITY NDUITS REQUIRED FOR THE TELE/DATA CABLING. FOR TILE FLOOR ROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLUSH RDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. RACKET AND TELE/DATA DEVICE REQUIREMENTS WITH TECHNOLOGY TO ORDERING MATERIALS. FLOOR BOX IS CAPABLE OF ACCEPTING (6) RNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. 0CS2-1, #828TCAL, #828R-TCAL, #828COMTCAL

EGEND MAY APPEAR ON THE DRAWINGS. STUB CONDUITS ABOVE FOR LOW VOLTAGE, CONDUITS SHALL BE STUBBED UP

INCLUDING PULL-BOXES, UNLESS OTHERWISE DIRECTED. CONDUIT, J-BOXES AND THE LIKE SHALL BE PAINTED TO
MATCH AREA FINISHES. ALL CONDUIT SHALL BE ROUTED IN STRAIGHT RUNS WITH 90 DEGREE BENDS.
WHERE HARD INACCESSIBLE CEILINGS EXIST, PROVIDE COMPLETE CONTINUOUS CONDUIT PATHWAYS, INCLUDING
PULL-BOXES, AND ACCESS PANELS, FOR LOW VOLTAGE UNLESS OTHERWISE DIRECTED. PROVIDE CONDUIT
SLEEVES TRAVERSING OVER INACCESSIBLE CEILINGS BETWEEN AREAS WITH ACCESSIBLE CEILINGS, AS
REQUIRED. VERIFY J-BOXES ABOVE INACCESSIBLE CEILINGS ARE WITHIN REACH OF THE ACCESS PANEL AND CAN
BE ACCESSIBLE PER N.E.C. AND LOCAL CODE.

GENERAL NOTES

- FINAL CONNECTIONS TO LIGHT FIXTURES SHALL BE MADE WITH GREENFIELD FLEXIBLE CONDUIT. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL BE 6'-0". REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT
- FIXTURES. CONTRACTORS TO COORDINATE LOCATIONS OF LIGHTING, SPEAKERS, AIR DIFFUSERS, GRILLES, SPRINKLER HEADS, ETC., WITH REFLECTED CEILING LAY-OUTS AS REQUIRED & DIRECTED BY THE ARCHITECT.
- ALL DEVICES, EQUIPMENT, FIXTURES, ETC., MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC
- RACEWAY SYSTEM SHALL ALSO BE MAINTAINED. REFER TO MECHANICAL, PLUMBING, AND FIRE PROTECTION PLANS FOR EXACT LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT. COORDINATE LOCATION OF DISCONNECT SWITCH ASSOCIATED WITH EACH PIECE OF EQUIPMENT WITH RESPECTIVE CONTRACTOR AND INSTALL IN ACCORDANCE WITH THE NEC.
- REFER TO DIVISION 15 (21, 22 & 23) SPECIFICATIONS, HVAC, PLUMBING & FIRE PROTECTION PLANS FOR ADDITIONAL ELECTRICAL WORK REQUIREMENTS & COORDINATION. ALL RECEPTACLES SHOWN BACK-TO-BACK IN WALLS SHALL BE SEPARATED HORIZONTALLY
- BY 8" MINIMUM. WHERE OPEN WIRING METHODS FOR LOW VOLTAGE SYSTEMS ARE PERMITTED BY THE CONTRACT DOCUMENTS, OWNER AND LOCAL AUTHORITY, THE CABLE/CONDUCTOR INSULATION SHALL BE RATED PER NEC FOR ENVIRONMENT (I.E. PLENUM RATED, ETC.) BEING INSTALLED. BRANCH CIRCUIT CONDUCTOR SIZES (& CONDUITS) SHALL BE INCREASED FROM THOSE
- INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL & THE LOADS DO NOT EXCEED A LIMIT OF 3%. REGARDLESS OF THE TEMPERATURE RATING OF THE CONDUCTOR INSULATION, ALL CONDUCTOR AMPACITY RATINGS FOR THIS PROJECT SHALL BE DETERMINED FROM THE 75°C
- CONDUCTOR TEMPERATURE RATINGS INDICATED IN THE NEC TABLES. WHERE EQUIPMENT OR DEVICES ARE PROVIDED WITH TERMINALS/LUGS RATED FOR 60°C, THE AMPACITY RATING OF THE 75°C CONDUCTOR SHALL BE LIMITED TO ITS ASSOCIATED 60°C RATING AS INDICATED IN THE NEC TABLES. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO INCREASE THE CONDUCTORS AND CONDUIT SIZE AS REQUIRED. 0. ALL 120V AND 277V BRANCH CIRCUITS SHALL BE PROVIDED WITH SEPARATE NEUTRAL
- CONDUCTORS. SHARED NEUTRALS WILL NOT BE PERMITTED FOR MULTI-CIRCUIT INSTALLATIONS. WHERE MULTIPLE CIRCUITS ARE RUN IN A COMMON RACEWAY, THE AMPACITY OF THE CONDUCTORS SHALL BE PROPERLY DERATED & CONDUIT SHALL BE SIZED PER CODE, UNDER NO CIRCUMSTANCES SHALL MORE THAN SIX (6) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT. REFERENCE NEC ARTICLE AND TABLE 310.15(B) (3)(a).
- . ALL CONDUITS SHALL CONTAIN A GROUND CONDUCTOR SIZED PER NEC TABLE #250.122. IN ADDITION, WHERE AN ISOLATED, INSULATED GROUND IS REQUIRED, A SEPARATE GROUND CONDUCTOR WITH GREEN INSULATION SHALL BE RUN FROM THE PANEL GROUND BUS TO THE ISOLATED GROUND CONNECTION OF THE DEVICE. IN NO CASE SHALL THE SYSTEM GROUND (CONDUCTOR & ASSOCIATED OUTLET BOXES, CONDUIT & BUILDING STEEL) BE ALLOWED TO CONTACT THE ISOLATED GROUND (CONDUCTOR & DEVICE). WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE FOR ANY REASON (I.E. VOLTAGE DROP, DERATING,
- ETC.), THE GROUND CONDUCTOR SIZE SHALL BE INCREASED PROPORTIONATELY (ACCORDING TO CIRCULAR MIL AREA) FROM THE SIZE REQUIRED BY NEC TABLE #250.122. 2. ELECTRICAL INSTALLATION REQUIREMENTS FOR ALL HVAC, PLUMBING, FIRE PROTECTION, SPECIAL SYSTEMS AND OWNER EQUIPMENT BEING FURNISHED BY OTHERS SHALL BE REVIEWED AND COORDINATED WITH OTHER TRADES PRIOR TO ROUGH-IN. OBTAIN EQUIPMENT SHOP DRAWINGS FROM INSTALLER/SUPPLIER/CONTRACTOR/OWNER FURNISHING EQUIPMENT, AS REQUIRED, FOR REVIEW AND COORDINATION. CONTACT ARCHITECT/ENGINEER WITH ANY DISCREPANCIES FOUND BETWEEN CONSTRUCTION
- DRAWINGS AND EQUIPMENT BEING FURNISHED PRIOR TO ROUGH-IN. . THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL ACCESS PANELS, AS REQUIRED FOR SERVICING AND TESTING, FOR EQUIPMENT AND/OR DEVICES FURNISHED UNDER HIS CONTRACT. THE GENERAL CONTRACTOR SHALL INSTALL ACCESS PANELS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE SIZE AND LOCATION OF EACH ACCESS PANEL WITH

THE ARCHITECT AND GENERAL CONTRACTOR PRIOR TO ROUGH-IN.

- 14. ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID ALL CUTTING, TRENCHING AND PATCHING ASSOCIATED WITH THE ELECTRICAL INSTALLATION. 15. ALL PENETRATIONS IN OR THROUGH FIRE RATED ASSEMBLIES ASSOCIATED WITH THE ELECTRICAL INSTALLATION SHALL BE FIRE-STOPPED USING A UL APPROVED METHOD. FURNISH AND INSTALL UL LISTED FIRE RATED MATERIALS AND EQUIPMENT SUCH AS BOXES, PUDDY PADS, ENDOTHERMIC MAT, LIGHT FIXTURES WITH RATED ENCLOSURES, ETC... TO COMPLY WITH CODE FOR PROJECT CONDITIONS. FURNISH AND INSTALL SLEEVES, WHERE REQUIRED. UL APPROVED METHOD FOR FIRE STOPPING SHALL MEET OR EXCEED FIRE RATING OF STRUCTURE BEING PENETRATED. REFERENCE ARCHITECTURAL PLANS FOR FIRE
- RATED STRUCTURES. 6. NO CONDUIT, BOXES, WIRING, OR CABLES SHALL BE INSTALLED WITHIN 1 1/2" OF THE LOWEST POINT OF THE UNDERSIDE OF THE ROOF DECKING, NOR SHALL THEY BE INSTALLED CONCEALED WITHIN METAL-CORRUGATED ROOF DECKING. FOR EXISTING INSTALLATIONS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE AND/OR REWORK EXISTING CONDUIT. BOXES, WIRING, AND CABLING THAT IS NOT IN COMPLIANCE WITH THIS REQUIREMENT.
- 7. ALL ELECTRICAL EQUIPMENT AND DEVICES FOR THIS PROJECT MUST BE UL LISTED. DEVICES, EQUIPMENT, SYSTEMS SHALL BE INSTALLED PER N.E.C. REQUIREMENTS AND MANUFACTURER'S INSTRUCTIONS.
- 3. THE DESIGN INTENT IS ALL DEVICES SHALL BE RECESSED MOUNTED, UNLESS OTHERWISE NOTED. THE DEVICE BACK-BOX AND RACEWAY BEING FURNISHED SHALL BE RATED TO COMPLY WITH NEC PER THE APPLICATION. WHERE MOUNTED WITHIN A FIRE RATED WALL OR STRUCTURE, FURNISH AND INSTALL UL APPROVED FIRE STOPPING ASSEMBLIES AND MATERIALS TO MAINTAIN RATING OF WALL OR STRUCTURE. WHEN THERE IS NO AVAILABLE OPTION BUT TO INSTALL A SURFACE MOUNTED DEVICE, CONSULT ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- 9. THE DESIGN INTENT IS ALL CONDUIT, CABLES, RACEWAYS AND PATHWAYS SHALL BE CONCEALED FROM SIGHT WITHIN THE BUILDING CONSTRUCTION, UNLESS OTHERWISE NOTED. THE CONDUIT. CABLES. RACEWAYS AND PATHWAYS BEING FURNISHED SHALL BE RATED TO COMPLY WITH NEC PER THE APPLICATION. WHEN THERE IS NO AVAILABLE OPTION BUT TO INSTALL A VISIBLE CONDUIT, CABLE, RACEWAY OR PATHWAY, CONSULT ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- 20. ALL CONDUIT AND CABLING SHALL BE PROPERLY SUPPORTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. FOR EXISTING INSTALLATIONS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE AND/OR REWORK EXISTING CONDUIT AND/OR CABLING THAT IS NOT IN COMPLIANCE WITH THIS REQUIREMENT. I. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL
- FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING. 22. IN OTHER THAN DWELLING UNITS, ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50
- AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND , 100 AMPERES OR LESS, INSTALLED IN LOCATIONS IDENTIFIED IN 210-8(B) SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL. WHERE DEVICE IS READILY ACCESSIBLE, THE DEVICE SHALL BE PROVIDED WITH INTEGRAL GROUND FAULT PROTECTION. WHERE DEVICE IS NOT READILY ACCESSIBLE AND/OR NOT AVAILABLE WITH INTEGRAL GROUND FAULT PROTECTION, THE BRANCH CIRCUIT BREAKER SERVING THE DEVICE(S) SHALL BE GROUND FAULT TYPE.

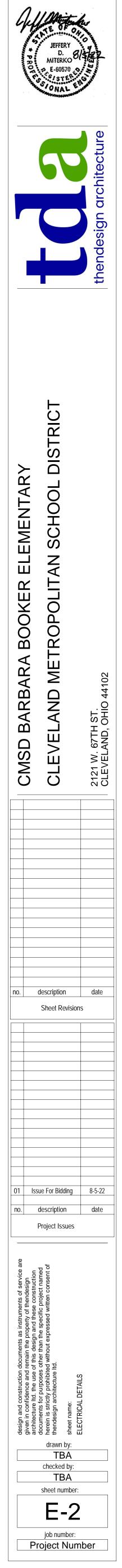
DEMOLITION NOTES

- IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING. THE ELECTRICAL CONTRACTOR SHALL FIGURE A COMPLETE JOB AS NONE OTHER SHALL BE ACCEPTED. THE DRAWINGS ARE TO BE USED ONLY AS A GUIDELINE FOR DEMOLITION. THE ELECTRICAL CONTRACTOR MUST VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL
- WORK REQUIRED FOR A COMPLETE JOB & INCLUDE THE COST OF SUCH WORK IN HIS THE ELECTRICAL CONTRACTOR SHALL MAINTAIN EXISTING SERVICES TO & IN THE
- EXISTING AREA AS REQUIRED. IF NECESSARY, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES IN THE EXISTING AREAS.
- THE ELECTRICAL CONTRACTOR SHALL DISCONNECT & REMOVE ELECTRIC SERVICE TO ALL MECHANICAL EQUIPMENT BEING REMOVED AS A RESULT OF THE REMODELING.
- . ELECTRICAL EQUIPMENT & DEVICES SHALL BE REMOVED COMPLETE INCLUDING CONDUIT & WIRE. FLUSH MOUNTED OUTLETS SHALL BE BLANKED-OFF WITH A COVERPLATE.
- COVERPLATE COLOR SHALL BE SELECTED BY ARCHITECT. ANY EXISTING CONDUIT, WIRING AND/OR ELECTRICAL & MECHANICAL DEVICES BEING DISTURBED BY THE WORK SHALL BE REWORKED BY THIS CONTRACTOR AS REQUIRED TO RETURN TO ITS FORMER EXISTING OPERATING CONDITION.
- ANY CIRCUITS FEEDING THROUGH DEVICES OR EQUIPMENT BEING RELOCATED. REWORKED, OR ABANDONED & SERVING OTHER ELECTRICAL DEVICES, AND/OR EQUIPMENT SHALL BE MAINTAINED BY PROVIDING J-BOXES OR OTHER ACCEPTABLE
- METHOD AS REQUIRED. 10. ALL WALLS, CEILINGS, FLOORS, ETC., BEING DISTURBED BY THE WORK SHALL BE RETURNED TO FINISHED CONDITIONS TO MATCH EXISTING BY THE ELECTRICAL
- CONTRACTOR & HE SHALL DO HIS OWN CUTTING & PATCHING AS NECESSARY UNDER HIS CONTRACT . EXISTING MATERIALS SHALL BE TURNED OVER TO THE OWNER. IF NOT REQUIRED BY
- OWNER, THE ELECTRICAL CONTRACTOR SHALL REMOVE THESE MATERIALS FROM THE PREMISES 2. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE

CUTTING

PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW

LECT	RICAL ABBREVIATIONS
	AMPS AIR CONDITIONING UNIT
AFC	ABOVE FINISH COUNTER ABOVE FINISH FLOOR
-	ABOVE FINISH GRADE AIR HANDLING UNIT
AIC	ASYMMETRICAL INTERRUPTING CURRENT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER BUILDING
С	CONDUIT
СВ	CABLE TELEVISION CIRCUIT BREAKER
CH	CLOSED CIRCUIT TELEVISION CHILLER
	CONTRACTOR COOLING TOWER
	COPPER CABINET UNIT HEATER
DE	DUAL ELEMENT DOWN
DS	DISCONNECT SWITCH
E) or EXIST	EXISTING
E.C	ELECTRIC BASEBOARD ELECTRICAL CONTRACTOR
EH	EXHAUST FAN ELECTRIC HEATER
EM	ELECTRICAL EMERGENCY
	ELECTRICAL METALLIC TUBING ENGINEER OF RECORD
EQ	EQUAL EQUIPMENT
ETR	EXISTING TO REMAIN ELECTRIC UNIT HEATER
EWC	ELECTRIC UNIT HEATER ELECTRIC WATER COOLER ELECTRIC WATER HEATER
F	FUSE
FACP	FIRE ALARM FIRE ALARM CONTROL PANEL
FLUOR	FAN COIL UNIT FLUORESCENT
	FAN POWER BOX (VAV) FIRE PROTECTION CONTRACTOR
	FLOW SWITCH FOOT/FEET
G.C	GENERAL CONTRACTOR GROUND FAULT INTERRUPTING PROTECTION
GND	GROUND HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HPS	HORSEPOWER HIGH PRESSURE SODIUM
IG	HEATING, VENTILATION, AIR CONDITIONING ISOLATED GROUND
IB or J-BOX	INCANDESCENT JUNCTION BOX
	ONE THOUSAND CIRCULAR MILS KITCHEN EQUIPMENT CONTRACTOR
	KILOVOLT AMPERE KILOWATT
	LIGHTING MASTER ANTENNA TV
IAU or MUA	Make-up air unit Maximum
MCB	MAIN CIRCUIT BREAKER MOTOR CONTROL CENTER
M.C	MECHANICAL CONTRACTOR
MFR	MANUFACTURER
MIN	METAL HALIDE MINIMUM
MOD	MAIN LUGS ONLY MOTOR OPERATED DAMPER
MTD	MAIN SWITCHBOARD MOUNTED
NF	NATIONAL ELECTRIC CODE NON FUSED
	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT
NL	NIGHTLIGHT NATIONALLY RECOGNIZED TESTING LABORITORY
N.T.S	NOT TO SCALE ON CENTER
Ø or PH	PHASE POLE
PB	PULL BOX PULL BOX PLUMBING CONTRACTOR
PNL	PANEL
PVC	POWER ROOF EXHAUSTER
RTU	RECEPTACLE ROOF TOP UNIT
	SPEAKER SINGLE POLE SINGLE THROW
TIE	MULTIPLE OUTLETS WIRED ON SAME BRANCH CIRCUIT
TS	TAMPER SWITCH TELEPHONE TERMINAL BOARD
TV	TELEPHONE TERMINAL BOARD TELEVISION TYPICAL
UH	GAS FIRED UNIT HEATER
UNO	UNDERWRITER'S LABORATORY UNLESS NOTED OTHERWISE
UV	UNIVERSAL SERIAL BUS UNIT VENTILATOR
W	VOLTS WATTS
WG	WIREGUARD WEATHERPROOF TYPE DEVICE (NEMA 3R RATED)
	TRANSFORMER





<u>Section 16010 - General Provisions</u> A. General	Section 16050 - Basic Electrical Materials and Methods A. Nameplates
 Requirements specified in Division 1, instructions to bidders, supplemental general conditions, special conditions, addenda, alternates, contract and proposal, along with Division 16 and all its sections, comprise the contract documents for the electrical contract, along with these specifications as though they were one, and anything implied by the specifications shall be interpreted as also implied by the drawings and vice versa. Provide necessary items for a complete installation of all electrically operated equipment listed in the specifications or shown on the contract drawings. The architectural, structural, mechanical, plumbing and equipment drawings and specifications are incorporated into, and become a part of this division. This contractor shall examine all such drawings and specifications and become thoroughly familiar with the provisions contained therein. The submission of his bid shall indicate such knowledge. Electrical drawings are diagrammatic. They are intended to show the approximate locations of equipment and conduit. Dimensions given on the plans, in figures, shall take precedence over scaled dimensions and shall be verified in the field. The electrical contractor shall layout all equipment rooms to make sure the equipment, as purchased, fits in the room or space shown. Exact location of all equipment shall be verified in the field and routing of conduits shall suit field conditions. 	 A. Nameplates General: furnish and mount on each panelboard, switchboard (including branch switches), large junction box, safety switch, starter, remote control, push button station, and all similar controls, a nameplate descriptive of the equipment or equipment controlled Provide black and white nameplates constructed from laminated phenolic with a white center core. Letters shall be engraved in the phenolic to form white letters 3/8" high. Fasten the nameplates with an adhesive type fastener. B. Mounting Accessories This contractor shall furnish and install all angle iron, channel iron, rods, supports, hangers, concrete or plywood required to install, mount and support any electrical equipment or device called for on the plans. Supporting material shall be complete with hangers, connectors, bolts, clamps and necessary accessories to make a complete installation. Supporting material shall be galvanized, painted or otherwise suitably finished. Products by Binkley, Steel City, or Raco will be acceptable. All surface-mounted equipment on block walls shall be mounted on 3/4" plywood backboard. All floormounted equipment shall be installed on a 4" high concrete housekeeping pad.
 Until the time of installation, the architect reserves the right to make minor changes in the location of conduit and equipment without additional cost to the contract. The electrical drawings and specifications are intended to supplement each other. Material and labor necessary to the project shall be furnished and installed even though not specifically mentioned in both. Labor and/or materials neither shown nor specified, but obviously necessary for the completion and proper functioning of the system, shall be furnished and installed by the electrical contractor. Arrange all equipment substantially as shown on the drawings. Make deviations only where necessary to avoid interference. Check all equipment sizes against available space prior to shipment to avoid interference. Examine the work of other trades insofar as their work comes in contact with or is covered by this work in no case attach to, or finish against any defective work or install work in a manner which will prevent proper installation of the work of other trades all electrical characteristics of equipment requiring electrical connections, contractor shall verify voltage, phase and horsepower and shall notify engineer of any discrepancies prior to start of work. Electrical contractor shall provide disconnecting means and overload protection for all equipment, unless furnished integral with equipment package. It is the intent of these drawings that this be a complete electrical job, any errors or omissions shall be brought to the attention of the engineer prior to bidding the job. 	 C. Execution The electrical work for construction proposed shall conform to all federal (OSHA), state, all specific safety requirements and the requirements of the current edition of the NEC. Check the HVAC and plumbing specifications for electrical requirements and include the same in the contract cost. Equipment connections, starters, disconnect switches, control transformers and pushbutton stations for the equipment furnished by the owner or under a separate contract shall be installed and connected under this division, as indicated on the contract drawings. All cutting, patching, excavating, backfilling and concrete work related to this contract will be the responsibility of the electrical contractor. This contractor shall assume the responsibility of providing the sleeves, chases and openings necessary for the electrical installation and for their repair in an acceptable manner, as determined by the architect. All holes shall be core-drilled. Provide fire stop in all openings created through fire-rated walls, floors or ceilings. Contractor shall field verify slab on grade floor construction type prior to cutting. Under no circumstances shall the contract cut a structural floor slab thicker than four (4") inches without prior written approval from Engineer of Record. Notify Engineer of Record of any slab thickness greater than four (4") inches prior to proceeding with any saw cutting. This contractor shall be responsible for providing all required access panels necessary for his work, coordinate with architect prior to installation.
 B. Visit to the Site This contractor shall visit the site of the work and familiarize himself with all conditions affecting his work. The submission of his proposal shall indicate such knowledge. No additional payment shall be made on claims that arise from a lack of knowledge of the existing conditions. C. Code and Permits Installation shall be in full accordance with all codes, rules and regulations of municipal, city, county, state and public utilities and all other authorities having jurisdiction over the premises. Comply with any specification requirements that are in excess but not in conflict with code requirements. The contractor shall secure and pay for all permits, plan reviews and certificates of inspection in connection with his work, required by the foregoing authorities. Before final payment of the contract is allowed, all certificates shall be delivered to the architect in duplicate. Electrical material and equipment shall bear the UL label except where UL does not label such types of material and equipment. 	 D. Materials and Workmanship 1. All work shall be installed in a practical and workmanlike manner, by mechanics skilled in the several trades necessary. 2. All materials shall be new and free from defects and shall be the best of their several kinds unless specified or indicated on the drawings to the contrary. 3. During each phase and at the completion of the construction, this contractor shall remove all debris and excess materials caused by his work. He shall leave the area of operation broom clean. 4. All electrical equipment shall bear the underwriters laboratories label or ETL label. 5. This contractor shall guarantee his workmanship and material (lamps excepted) for a period of one year from the date of building opening and leave his work in perfect order at the completion. Should defects develop within the guarantee period, the contractor shall, upon notice of the same, remedy the defects and have all damages to other work or furnishings caused by the repairs corrected at his expense to the condition before such damage.
 D. Shop Drawings Submittals The electrical contractor shall submit five (5) sets of shop drawings, the shop drawings of the following equipment using the indicated numbering system and titles, shall be submitted through the architect to the engineer and then resubmitted for final approval if necessary. Shop drawings shall be submitted for the following items: Wiring devices Panelboards, transformers and safety switches including fault current study based on equipment being supplied. 	 E. Scope of Work The electrical contractor shall provide all labor, material, storage, unpacking and placement; to include but not be limited to, the following items: Emergency lighting and power. Complete power and lighting distribution system including all panels, transformers and feeders. Complete branch circuit wiring system. Complete power wiring for all air conditioning equipment, plumbing system, heating equipment, ventilating and exhaust equipment. Complete lighting fixture installation, including all incandescent, fluorescent and HID lamps. Complete telephone and communication conduit and wiring system including boxes, plates, jacks,
 drawings) shall have the general contractor's or subcontractor's "stamp of approval" indicating that the item submitted is as called for on the plans and specifications, is approved by the general contractor or subcontractor, the date of approval and initialed by the person approving the submittal and the name of the company submitting said equipment for approval. 2. Submit bound brochures complete with a table of contents. Loose or stapled together sheets are not acceptable. Any submittals not in brochure form or not as specified shall be returned at the contractor's expense for resubmittal. 3. All descriptive literature shall be submitted in a three (3) hole brochure with a cover identifying the following: a. Name of the job b. Location of the job, address, city and state. c. Name and address of the company submitting the brochures. d. Date of the submittal. 4. Every effort shall be made, in checking the shop drawings, to detect and correct all errors, omissions and inaccuracies. Failure to do this will not relieve the electrical contractor of the responsibility for the proper and complete installation in accordance with the contract documents. 	 etc., as specified, shown on the drawings and required by the local telephone company and/or owner. g. Temporary electrical power and lighting as required for construction. h. Testing of all cables and circuit wiring after installation. i. Wiring devices and floor boxes. j. Grounding of the electrical system. A. Temporary Service The electrical contractor shall furnish, install and remove as required all temporary power and temporary lighting in all areas and individual rooms when needed by the individual trades in the performance of their work. This contractor shall provide a minimum of twenty (20) footcandles of illumination for temporary lighting. Any additional lighting required by individual trades shall be provided by the individual trades including power for the lighting. The electrical work for construction purposes shall conform to all federal (OSHA), state, specific safety requirements, as well as the requirements of the national electric code and national electrical safety code. The electrical contractor shall be included in the contractor's price.
 As-built Drawings Submit to the architect one set of reproducible (mylars) electrical drawings showing the as-built conditions. 	 New light fixtures shall not be used for temporary lighting. B. Electric Service Provide trenching and backfill to the power company specifications.
 B. Standards and Substitutions Wherever the words "approved by", "approved equal", "as directed" or similar phrases are used in the following specifications, they shall be understood to refer to the owner as the approving agency. The name or make of any equipment or materials named in this specifications (whether or not the words "or approved equal" are used) shall be known as the "standard". These specifications establish quality standard of materials and equipment to be provided. Specific items are identified by manufacturer, trade name or catalog designation. This contractor shall submit his base bid price based upon standard specified equipment described herein and as detailed on drawings and associated contract documents. These specifications are not to be considered proprietary. The contractor may submit information on materials and manufacturers (other than those listed) for review by the architect and engineer no later than ten (10) days before bids are submitted. Manufacturers of products accepted by the architect and engineer will be listed in an addendum to the specifications as an acceptable substitution equipment accepted as detailed below and shall be shown as a separate add or deduct price to be factored into the base bid price by the architect and owner if accepted. Should the contractor propose to furnish materials and equipment other than those specified or approved by addendum, submit a written request for substitutions to the architect at the bid opening. The request 	 Provide conduit for primary service where required by the power company. Concrete encase conduits where required by the power company and where indicated on the plans. Provide metering to power company specifications. Make provisions for the pad-mount transformer as required by the power company including the transformer pad and grounding. Pay the cost of all power company charges connected with permanent electric service to the building. Coordinate all work with the power company and perform any work necessary to assure a complete, working installation. The entire service installation shall be in complete conformance with the power company's requirements. Verify the exact routing of the primary and secondary services, and all service requirements, with the power company prior to bidding.
 shall be an alternate to the original bid; be accompanied with complete descriptive (manufacturer, brand name, catalog number, etc.) and technical data for all items. Failure by this contractor to submit the requisite documentation detailed above shall be understood by the architect and engineer to indicate that substitute equipment will not be presented by the contractor for consideration. Such substitutions will not be considered after the bid opening date and delay of project will not be permitted for further inspection and evaluation after this date. 4. Where such substitutions alter the design or space requirements indicated on the drawings, include all items of cost for the revised design and construction including cost of all allied trades involved. 5. Acceptance or rejection of the proposed substitutions shall be subject to approval of the architect and engineer. If requested, the contractor shall submit (at his cost) inspection samples of both the specified and proposed substitutions are permitted, the contractor shall bear any extra cost of evaluating the 	
 quality of the material and equipment to be provided. C. Testing and Placing in Service Any material or equipment failing a test shall be repaired or replace at the contractor's expense. Tests shall include the following: Measure the load on each phase of the main service and each phase of every feeder under full load conditions. Measure the no-load and full-load voltages (phase to phase, phase to neutral and phase to ground for each phase of each service, of each separately derived system, and at each panelboard or transformer). Measure the ground resistance of the main service grounding electrode and the ground resistance of each separately derived. 	

- c. Measure the ground resistance of the main service grounding electrode and the ground resistance of
- each separately derived system's grounding electrode. d. Make insulation resistance tests on all dry type transformers and motors.
- D. Interferences
- 1. Before the installation of any item begins, the electrical contractor shall carefully ascertain that it does not interfere with clearances for the erection of finish beams, columns, pilasters, walls or other structural or architectural members as shown on the architectural drawings. If any work is installed and the architectural design cannot be followed, this contractor shall, at his own expense, make changes in his work as directed by the architect to permit the completion of the architectural work in accordance with drawings and specifications.
- 2. It shall be the duty of this contractor to report any interferences between his work and that of any of the other contractors as soon as they are discovered. The architect shall determine which equipment will be relocated, regardless of which was installed first. His decision will be final.
- E. Quality Assurance 1. All products shall be new and of the type and quality specified. Where materials, equipment, apparatus or other products are specified by manufacturer, brand name, type of catalog number, such designation shall establish the standards of the desired quality and style. It is the intent of these specifications to establish a standard of quality of materials and equipment installed.

c Electrical Materials and Methods

orkmanship

ching and backfill to the power company specifications. duit for primary service where required by the power company.

Section 16120 - Wiring and Cable

A. Color code conductors (except control and instrumentation conductors) as follows:

208/120 System

Black

Red

Blue

White

Green

Phase A Phase B Phase C Neutral Ground

- a. #12 and #10 conductors shall have continuous insulation color, as listed above. b. Color code conductors larger than above, which do not have continuous insulation color by application of at least two laps of colored tape on each conductor at all points of access including junction boxes. Color
- tape shall be the equal of 3M products Scotch #35. c. Conductors shall be soft annealed copper insulated for 600 volts unless specifically indicated otherwise. Aluminum conductors are not allowed on this project.
- B. Insulation type shall be type THWN for wire sizes #8 AWG and larger and THHN or THWN for #10 AWG and
- smaller. THHN shall not be used in wet or damp locations. C. Flexible cord shall be heavy duty type so with an equipment ground conductor in addition to the current
- carrying conductors.
- D. Provide #12 conductors, unless otherwise indicated. 1. Control conductors shall be #14 minimum for NEC class I and #16 for NEC class II.
- E. Conductors #8 AWG and larger shall be stranded.
- F. Conductors #10 AWG and smaller shall be solid.
- G. Install wiring in conduit.
- H. Connect #10 and smaller wires with constant pressure expandable spring type connectors, "Scotchlok" by 3M or B-Cap by Buchanan.
- I. Connect #8 and larger wires with compression connectors or splices as manufactured by Burndy or T&B. J. Insulate splicing connectors to at least 200% of the wire insulation. Use pre-stretched tubing connector
- insulators, 3M PST for #2 and larger conductors. K. Pull conductors using recognized methods and equipment leaving at least 6" wire at all junction boxes for
- 1. Clean out each conduit system before pulling wire.
- L. Form and tie all wiring in panelboards.
- M. There shall be no wirenut joints or splices made inside switchboards/panelboards.
- N. Branch circuit wire sizes (and conduits) shall be increased from those indicated on the plans to prevent excessive voltage drop. Branch circuits shall be installed with wires of sufficient size so that voltage drop between the panel and the loads does not exceed limit of 3%.
- O. Regardless of the temperature rating of the conductor insulation, all conductor ampacity rating for this project shall be determined from the 75°C conductor temperature ratings indicated in the NEC tables. Where equipment or devices are provided with terminals/lugs rated for 60°C, the ampacity rating of the 75°C conductor shall be limited to its associated 60°C rating as indicated in the NEC tables. The electrical contractor shall be responsible to increase the conductors and conduit size as required.
- P. Circuits may be multi-plexed in conduit provided wire is properly derated and conduit sized per code. Under no circumstances shall more than six (6) current carrying conductors be run in a single conduit.

Section 16130 - Raceways and Boxes

- A. Raceways 1. All wire shall be run in accordance with code in corrosion resistant, rigid, threaded, metal conduit or electrical metallic tubing (E.M.T.) unless otherwise specifically stated herein. a. Conduit in exterior walls, below floor slab, or underground shall be rigid, threaded, galvanized, heavy
 - wall type b. Carlon PVC type 40 heavy wall conduit with ground wire may be used below floor slab or underground in lieu of rigid, threaded, galvanized conduit. PVC 40 conduit shall not be run in or above floor slab. PVC conduit shall terminate below floor slab with rigid, threaded metal conduit adapter. Conduit above slab shall be metal.
- c. Conduit run exposed to the weather shall be heavy wall, metal threaded type. 2. Conduit size shall be 3/4" minimum.
- 3. Conduit shall be securely fastened in place. 4. All conduit shall be concealed in walls, floor and ceilings wherever possible. Exposed conduit in finished areas will not be permitted. Exposed conduit will be permitted in the unfinished areas with the specific
- approval of the architect. 5. Use flexible conduit for the connection to recessed or semi-recessed lighting fixtures (6' length maximum). Use liquid tight metal conduit for all connections to motors and other equipment subject to vibration and in areas subject to moisture.
- 6. Use watertight joints with buried and concrete encased conduit. All buried conduits outside of buildings shall have a minimum of 24" of cover. Metal conduits buried in earth shall be painted (two coats) with heavy asphaltum paint. Support runs of conduit as detailed in the appropriate table of the national electrical code (NEC).
- 8. Installed exposed runs of conduit and conduit above lay-in ceilings parallel or perpendicular to the walls, structural members of intersections of vertical planes and ceilings. Provide right angle turns using fittings or symmetrical bends. Support conduits within 1" of all changes in direction. 9. If a conduit is suspended, it shall be supported on trapeze hangers which use "all-thread" rods from the
- structural steel. The use of ceiling support wire or similar material will not be accepted. 10. Install empty conduit for future use as indicated on the drawings. Conduit shall be complete with jetline or pull rope, junction/outlet boxes, tile rings and appropriate cover plates. 11. Provide pitchpockets where conduits penetrate the roof.
- 12. Thread lubrication/sealant is required on outdoor and underground threaded metal joints. 13. Install fire seal fittings where conduits penetrate concrete floor slabs or masonry walls required to be fire 14. Horizontal portion of conduit exposed on the roof and feeding equipment shall not be more than 5'-0"
- unless the written approval from architect or engineer is obtained. B. Pull and Junction Boxes
- Install pull and junction boxes where shown on the drawings, and where required for changes in direction, at junction points, and to facilitate wire pulling. Furnish box sizes in accordance with NEC unless larger boxes are indicated. 2. Provide steel boxes and removable covers of code gauge, hot rolled sheet steel, hot dipped galvanized
- inside and outside, for above ground work. Furnish weatherproof boxes when installed above ground outside 3. Provide cast iron boxes, hot dipped galvanized inside and outside where shown on the drawings. Furnish removable covers with gaskets and stainless steel, brass or bronze screws.
- 4. Provide concrete boxes for underground work unless otherwise indicated on the drawings. Furnish steel frames and covers with the cover attached to the frame with hexagon head, brass or bronze cap screws, 3/8" in diameter. Provide a rubber gasket for sealing between the cover and the frame. Paint the cover with two coats of heavy asphaltum.

C. Outlet Boxes Use sheet steel boxes, zinc coated or cadmium plated, for concealed interior work.

- . Use cast boxes, zinc-cadmium finish malleable iron, for exposed interior work, and for exposed or concealed work in wet, damp or exterior locations. Cast boxes shall be series FD by Crouse Hinds or 3. Wall box sizes (minimum) shall be 4" square X 2-1/2" deep where wall construction permits. Where wall construction dictates, the depth may be reduced to 2-1/8" or 1-1/2" under special conditions.
- 4. Fixture outlets in ceilings (minimum) shall be 4" octagonal X 1-1/2" deep (4-11/16" octagonal X 2-1/2" deep where required to accommodate larger conduit or larger number of wires). Ganged boxes shall be one piece (minimum), 2-1/8" deep. Provide cast iron, concrete-tite floor boxes with adjustable covers set flush and level with the finished
- floor, with outlets as indicated on the drawings. Provide Hubbell #B-2400, 4200, or 4300 series boxes with leveling screws. Flush type covers and openings to serve outlets used. Furnish flush caps for closing off box when not in use.
- 7. Flush mount boxes in all finished walls, install the plaster rings in drywalled plastered walls and raised covers as required in walls with other finishes so that the cover plates fit tightly against boxes or rings, 3/16" maximum gaps are allowed for noncombustible walls. 8. Adjust location of outlets in masonry or tile construction to occur in the nearest joint to the height
- specified. Heights shall meet A.D.A. requirements. 9. Support all boxes to maintain proper alignment and rigidity.
- 10. Clean boxes of all foreign matter prior to the installation or wiring of devices. 11. Mounting heights on the drawings are to the centerline of the box unless otherwise noted.

Section 16140 - Wiring Devices

A. Wiring device color shall be selected by architect, unless otherwise indicated.

- B. Provide totally enclosed, 20 ampere, 120/277 volt, quiet A/C general use snap switches.
- C. Switches shall be specification grade as manufactured by Hubbel, P&S, or Leviton.
- D. Provide NEMA configuration 5-20R Duplex 125 volt grounding type receptacles rated for 20 amperes unless otherwise indicated on the drawings.
- E. Receptacles shall be specification grade as manufactured by Hubbell, P&S or Leviton.
- F. Receptacles requiring amperages, voltages or configurations different from the duplex convenience receptacles above shall be as indicated on the drawings.
- G. Provide other receptacles of a quality, material and workmanship equal to that specified for duplex convenience receptacles.
- H. Provide cover or device plates for outlet boxes as follows unless otherwise noted:
- 1. Finished areas: Stainless steel. . Unfinished areas: zinc coated sheet metal, aluminum, or cast metal as appropriate for the type of box.
- 3. Exterior areas: copper free aluminum with gray, powder epoxy finish, gasket, weatherproof, Crouse-Hinds "WLRD" for duplex receptacles and WLRS for single receptacles or equal.
- 4. Telephone, communication, and signal outlet plates, shall match those used for receptacles and switches. All outlet and/or junction boxes shall be complete with a cover plate by this contractor. 5. Where devices are ganged, they shall be installed under a common coverplate.
- I. Locate the switches approximately 4'-0" above the finished floor elevation or nearest block course (within
- A.D.A. requirements), unless otherwise indicated. The long dimension of the switches shall be vertical. J. Locate receptacles approximately 1'-6" above the finished floor elevation or nearest block course (within A.D.A. requirements), unless noted otherwise. The long dimension of receptacles shall be vertical.
- Section 16410 Safety Switches
- A. Safety switches shall be the enclosed heavy-duty type (type HD) with quick-make, quick-break mechanism and external pad lockable operating handle.
- B. Safety switches shall be rated for 240 or 600 volts as applicable. They shall be horsepower rated when used in motor circuits.
- C. Safety switches shall be fusible or non-fusible 2, 3, or 4 pole as indicated on the drawings.
- D. Safety switches shall be single throw unless otherwise indicated on the drawings.
- E. Enclosures shall be NEMA 1 indoors and NEMA 3R outdoors unless otherwise indicated on the drawings.
- F. Manufacturer shall be Square D, Siemens, G.E., or Cutler-Hammer. All safety switches shall be by one manufacturer.
- G. Mount the safety switches securely between 3' X 6' levels above the floor unless otherwise indicated on the drawings
- H. Switches on block walls shall be mounted on a 3/4" plywood backboard, where located indoors.

Section 16420 - Motor Starters

- A. Provide motor starters (magnetic or fused combination) and control equipment where shown. Starters shall be provided with 120 volt coils, 3 overloads, control transformer with fused 120 volt secondary control circuit, (2) N.O. and (2) N.C. auxiliary contacts, hand-off-auto selector switch and running pilot light, unless otherwise noted. Wire thru control devices furnished by other trades. Since motor driven equipment is furnished by other trades, the control indicated on the drawings shall be considered as for bidding purposes only. Wire to conform to the actual equipment supplied and installed by the other trades. All fuses shall be dual element type. Provide "blownfuse" indicator lamps in cover.
- B. Starters shall be Square D, G.E., Cutler-Hammer, or Siemens.
- C. The exact number of normally open and normally close auxiliary contacts in each starter shall be determined by the temperature control contractor.
- D. Coordinate all equipment indicated on the electrical drawings with mechanical equipment schedules and specifications and provide motor starters for all equipment indicated as being interlocked or started from a remote location.
- E. Starters supplied as an integral part of equipment shall be furnished under the division providing the equipment. Wiring and disconnect shall be by this contractor. All other starters and auxiliary control equipment shall be supplied and wired by this contractor unless otherwise noted.

Section 16442 - Panelboards

- A. Panelboards 1. Panelboards shall be enclosed dead front safety type with features and ratings as scheduled on the
- 2. Panels known as "load centers" are unacceptable. 3. Molded case circuit breakers shall be as scheduled on the drawings and specified in this division. 4. All bus bar shall be rectangular solid copper.
- 5. Space, where shown in panel schedules, designates space for future protective devices and shall include bus and support. 6. Install cabinets so that center of the top breaker does not exceed 6'-6" above the finished floor.
- 7. Entries on directory cards shall be typed, complete and accurate. 8. All bolted connections shall be torqued in accordance with manufacturer's standards.
- 9. Electrical contractor shall arrange circuits as near as possible to circuit numbers on the drawings. At completion of job, electrical contractor shall take current reading checks of respective phases. A minimum of circuit connections shall be rearranged to balance, as closely as possible, the load in the 10. All breakers shall be bolt-on type.
- 11. Provide (3) spare 1" conduits into accessible ceiling space where panels are flush-mounted. 12. Manufacturer shall be Square D, Siemens, or Eaton.

Section 16461 - Dry Type Transformers

rodent proof.

- A. Transformers shall be continuously rated isolating type for 60 hertz service unless otherwise indicated.
- B. Insulation systems shall be 220 degrees C (150 degrees C rise).
- C. Enclosures for transformers shall be metallic, suitable for indoor and outdoor installation as applicable and
- D. Manufacturer shall be Eaton, Square "D", Siemens. Fractional KVA transformers shall be manufactured by Edwards or the special equipment manufacturer in which the transformers are used.
- E. Four approved variation dampeners per transformer shall be employed as necessary to avoid transmitting any vibration to the building structure. Sizes of the mountings shall be selected on the basis of the weight of
- the transformer, using: 1. A minimum 1" thick rubber-cork-rubber sandwich type for floor mounting. A spring type for suspension mounting. 3. Two (2) spring type at the top (with two (2) steel brackets) and two (2) rubber-in compression type at the
- bottom (stand-off) for wall mounting. F. No conduits shall be attached directly to the transformer. At each attachment, provide a vibration dampening
- assembly consisting of: 1. AT&B #5721, 2, 3 etc., or equivalent female hub type liquid-tight connector by Steel City, Efcor or approved equal.
- 2. T&B #5331, 2, 3 etc., or equivalent male hub type liquid-tight connector with an insulated throat by Steel City, Efcor or approved equal.
- 3. Shor length (24" plus or minus) of liquid-tight flexible conduit. 4. A bonding jumper of NEC size outside of the assembly.
- G. Floor mounting: all floor mounted transformers shall be installed on a 4" high concrete pad. This contractor shall furnish and install concrete pad.

Section 16491 - Fuses

- A. The contractor shall furnish a complete set of fuses for all switches, plus fusible equipment furnished by other trades. Unless indicated otherwise on plans, the fuses shall be of the following types: 1. Fuses 601 to 6000 amps shall be UL class. Trade type shall be KRP-C as manufactured by Bussmann
- Company 2. Fuses 1/10 to 600 amps shall be UL class RK1. Trade type shall be low peak LPS-RK (600V) and LPN-RK (250V) as manufactured by Bussmann Company. 3. All other fuses shall be dual-element current-limiting type with 200,000 amperes symmetrical interrupting
- capacity
- B. Fuses shall be manufactured by Bussman, Gould-Shawmutt, or Reliance.
- C. Spare fuses amounting to a duplicate set of each size installed shall be turned over to the owner upon completion of the project. Provide and place in a spare fuse cabinet similar to Bussman # SFC.
- D. This contractor shall replace all fuses blown during construction.

Section 16060 - Grounding and Bonding

- A. Ground all equipment per N.E.C.
- B. Ground all dry type transformers as per drawings and NEC #450-10.
- C. All conduits shall contain a code-sized ground wire size per N.E.C. in addition to the conductors shown on the plans. Where circuit conductors are increased in size for any reason (i.e. voltage drop, derating, etc.), the ground wire size shall be increased proportionately (according to circular mil area).

