REQUEST

FOR

BIDS

MCC LAB RENOVATIONS

at

MANCHESTER COMMUNITY COLLEGE

1066 Front Street, Manchester, NH

A COMPONENT OF THE

Community College System of New Hampshire

26 College Drive, Concord, NH

Project# MCC19-01

May 14, 2019

DOCUMENT 00015

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END OF SECTION

SECTION 00010 - INVITATION TO BID – CCSNH

Electronic Bids will be accepted by email to Matthew Moore, Director of Capital Planning and Development at memoore@ccsnh.edu until **Tuesday June 4, 2019 at 3:00pm** for the following project:

MCC19-01 MCC Lab Renovations

at Manchester Community College, 1066 Front Street, Manchester, NH
a Component of the Community College System of New Hampshire
26 College Drive, Concord, NH

Project # MCC19-01

Description: This project consists of a renovation of an existing 8,220 SF construction lab area and a new 435 SF Mechanical mezzanine.

The Project will include but not be limited to the Disciplines of: Concrete work, wood construction, steel construction, mechanical work, and electrical work.

Plans and specifications will be available from the Community College System of New Hampshire, **May 14, 2019 on the CCSNH website** www.ccsnh.edu/open-bids

Plans and specifications will also be available at the following printers:

- Signature Press and Blueprinting, Inc., 45 Londonderry Turnpike, Rte. 28 Bypass, Hooksett, NH 03106;
- Construction Summary of NH: Inc., 734 Chestnut Street, Manchester, NH 03104;
- Infinite Imaging: 933 Islington Street, Portsmouth, NH 03801
- Minuteman Press: 109 Gosling Road, Newington, NH 03801;
- Works in Progress, 20 Farrell Street, Suite 103, South Burlington, VT 05403
- The Blue Book, http://www.thebluebook.com/
- Community College System of New Hampshire website www.ccsnh.edu/open-bids

BIDDERS SHOULD ACT PROMPTLY AND SUBMIT ALL QUESTIONS IN WRITING TO: MATTHEW MOORE, DIRECTOR OF CAPITAL PLANNING AND DEVELOPMENT, E-MAIL memoore@ccsnh.edu .

A MANDITORY SITE VISIT WILL NOT BE HELD.
To schedule a non-mandatory visit contact Joshua Murphy at jmurphy@ccsnh.edu (603) 206-8091.

Project substantial completion date is **September 12, 2019.**

Proposals must be completed in both words and figures on forms furnished by the College, or on previously-approved, substantially-identical forms generated by computer software, which shall be submitted electronically in an e-mail titled: **"Bid for: MCC19-01 MCC Lab Renovations"** received by MATTHEW MOORE at **memoore@ccsnh.edu** as specified no later than **3:00 PM**, **Tuesday, June 4, 2019.**

Companies, corporations or trade names, except sole proprietorships must be registered with the Secretary of

State (Corporate Division, Telephone No. 603/271-3244) in order to do business with the State of New Hampshire.

Bidders must show three recent years' experience with installations of a similar complexity and cost and prior experience with installations of the materials within 50 miles of the project site.

The successful bidder will be required to comply with State of New Hampshire RSA#21-1:81-a. The successful bidder will be required to furnish a 100% payment and 100% performance bond prior to execution of contract.

The award will be based on the proposal that best meets the needs of the college. Factors included will be the cost, completeness of the proposal, quality of the technology provided, and experience of the contractor and installation team. The college reserves the right to waive any informality in or to reject any or all proposals.

All contract documents can be found on the CCSNH website at www.ccsnh.edu/open-bids
Before your submission, always check for any addenda or other materials that may have been issued which would affect the invitation to bid by checking the CCSNH website at www.ccsnh.edu/open-bids

CCSNH reserves the right to waive any and all informalities in its best interest or to reject any or all proposals.

Matthew E. Moore

Matthew Moore, PE,
Director of Capital Planning & Development
Community College System of New Hampshire

END OF DOCUMENT

DOCUMENT 001153 - REQUEST FOR QUALIFICATIONS

1.1 PURPOSE, LAWS, AND REGULATIONS

A. The purpose of the Prequalification Procedure described in this Document is to provide Owner with a mechanism to evaluate and determine whether Prospective Bidders are qualified to participate in the construction of Project. Evaluation will be limited to that office of the Prospective Bidder that is proposed to perform the Work.

1.2 DEFINITIONS

A. Prospective Bidder: A Prospective Bidder is a person or entity who submits a Submittal of Qualifications to Owner.

1.3 QUALIFICATION PROCEDURES

A. Prospective Bidders shall complete all required forms and attachments described in the Prequalification Documents, entering "Not Applicable" where information does not apply. These forms MUST be included with the Bid Proposal Form. Absence of any of the forms included in the Prequalification Documents will be reason for possible disqualification.

B. Status of Prospective Bidders:

1. Proprietors submitting bids shall indicate their status as proprietors.
2. Prospective Bidders submitting qualifications for partnerships shall indicate their status as partners and shall submit a certified copy of the power of attorney authorizing the executor of the submittal to bind the partnership.
3. Prospective Bidders submitting qualifications for corporations shall indicate their status as corporations and shall submit a certified copy of the board of directors' authorization for the Prospective Bidder to bind the corporation and shall affix the corporate seal on the submittal.
4. Prospective Bidders shall provide the following:

    a. Names and addresses of proprietors, of all members of a partnership, or of the corporation's officers.
    b. Name of jurisdiction where the partnership is registered or where the corporation is incorporated. Corporations must be licensed to do business in Project state at the time of executing the Contract.

1.4 WITHDRAWAL

A. A Qualification Statement may be withdrawn on personal request received from the Prospective Bidder.

1.5 QUALIFICATION STATEMENT

A. The undersigned submits answers to the following questions to enable the Community College System of New Hampshire to judge experience and ability in the work proposed to be done.

1. The work, if awarded to you, will have the resident personal supervision of whom? State his/her name, title, and their special qualifications.

_____
_____
_____
_____

2. (a) Provide a brief history of your firm. (b) Demonstrate that your firm has provided satisfactory work on similar projects.

a)_____
_____
_____
_____

b)_____
_____
_____
_____

3. How many years has your organization been in business as a contractor under the name in which you propose to execute this contract?

_____

4. Has your present organization ever failed to complete any work awarded to it? If so, state when, where and why:

_____

5. Provide three (3) Examples of Experience with full responsibility for work of a similar size to this project and within 50 miles of the project site.

Qualifications to perform the work: List Three
Experience with full responsibility for work of a similar size and within 50 miles of the project site.
Bidders are to provide evidence of qualifications with the bid.

NAME OF REFERENCE PROJECT _____ _____

Location of Project _____ _____

Date work performed _____ _____

Name of Owner
Contact Name & Phone Number _____ _____

Description of Project _____ _____

Approx. Contract value _____ _____

NAME OF REFERENCE PROJECT _____ _____

Location of Project _____ _____

Date work performed _____ _____

Name of Owner
Contact Name & Phone Number _____ _____

Description of Project _____ _____

Approx. Contract value _____ _____

NAME OF REFERENCE PROJECT _____

Location of Project _____ _____

Date work performed _____ _____

Name of Owner
Contact Name & Phone Number _____ _____

Description of Project _____ _____

Approx. Contract value _____ _____

DOCUMENT 00204

INSTRUCTIONS TO BIDDERS – Community College System of New Hampshire (CCSNH)
Issued 2-05-2004; Revised as noted

Revised 4/17/18

PART	ITEM
1	DEFINITIONS
2	PREPARATION AND SUBMISSION OF BIDS
3	RECEIPT AND OPENING OF BIDS
4	WITHDRAWAL OF BIDS
5	PROPOSAL GUARANTY (intentionally omitted)
6	CONDITIONS AT SITE OR BUILDING
7	EXPLANATION TO BIDDERS
8	REJECTION OF BIDS
9	CONTRACT BOND
10	CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE
11	BIDDING DOCUMENTS
12	SUBSTITUTIONS
13	AWARD OF CONTRACT
14	PERMITS AND FEES

PART 1 DEFINITIONS

1.1 Refer to Document 00708: General Conditions – CCSNH:

PART 2 PREPARATION AND SUBMISSION OF BIDS

2.1 The Bidder is required to bid on all items called for in the Proposal. If Alternates are included, the Bidder shall set forth in the space provided the amount to be added to or deducted from the Lump Sum Base Bid or the Lump Sum Grand Total. If an Alternate called for does not involve a change in price, the Bidder shall so indicate in the space provided.

2.2 Bids shall be submitted upon the Proposal Form furnished and shall be signed in ink. The Bidder shall specify a unit price, both in words and figures, for each item called for in the Lump Sum Grand Total Proposal. All of the words and figures shall be in ink or typed. If a unit price or a Lump Sum Grand Total already entered by the Bidder on the Proposal Form is to be altered, it should be crossed out with ink, the new unit price and the Lump Sum Grand Total bid entered above or below it and initialed by the Bidder; also in ink. In case of discrepancy between the prices written in words and those written in figures, the prices written in words shall govern. Bids containing any conditions, omissions, unexplained erasures or alterations, or items not called for in the Proposal or irregularities of any kind may be rejected by the Chancellor as being incomplete non-conforming, or non-responsive.

2.3 Each bid must contain the full business address of the Bidder and be signed by him/her with his/her usual signature.

A. Bids by a partnership of any form must furnish the full names of all partners, and must be signed in the partnership name by one of the members of the partnership or by an authorized representative, followed by the designation of the person signing. All Contracts with partnerships must include a certificate of authorization demonstrating that the partner(s) or authorized individuals have been authorized by the partnership to enter into the Contract on behalf of the partnership.

B. Bids by a corporation of any form must be signed with the legal name of the corporation, followed by the name of the State of incorporation and by the signature and designation of the president, secretary or other person authorized to bind it in the matter. The name of each person signing shall also be typed or printed below the signature. [*A bid by a person who affixes to his/her signature, the word "President," "Secretary," "Agent" or other designation, without disclosing whom he/she is representing if other than the contracting entity noted above, may be held to the bid of the individual signing.*]

C. Bids by proprietorships (individuals), or by individuals with a registered trade name, or doing business under an assumed name (aka d/b/a), shall be executed by the individual in their name, with reference to the trade name or assumed name.

2.4 Bids to be scanned and transmitted by electronic mail to memoore@ccsnh.edu no later than the bid deadline.

PART 3 RECEIPT AND OPENING OF BIDS

3.1 The bid opening officer will decide when the specified time has arrived, and no bid received or presented thereafter will be considered. No responsibility or liability will be attached to any officer for the premature opening of a bid not properly addressed and identified.

PART 4 WITHDRAWAL OF BIDS

4.1 A bid may be withdrawn upon written request received from the bidder at the Director of Capital Planning and Development office at 26 College Drive, Concord, NH 03301-7407, with reasonable time prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

PART 5 PROPOSAL GUARANTY (intentionally omitted)

PART 6 CONDITIONS AT SITE OR BUILDING

6.1 Bidders shall visit the site and be responsible for having ascertained pertinent local conditions; such as location, accessibility and general character of the site or building, the character and extent of existing work within or adjacent to the site, and any other work being performed thereon at the time of submitting the bid.

PART 7 EXPLANATION TO BIDDERS

7.1 No oral explanation in regard to the meaning of the Bidding Documents will be made and no oral instructions will be given before the award of the Contract. Discrepancies, omissions or doubts as to the meanings of Bidding Documents shall be communicated in writing to the Director of Capital Planning and Development for interpretation no later than five (5) working days before the hour and date set for the bid opening. Any interpretations will be in the form of an Addendum to the Bidding Documents that will be forwarded to all Bidders of record and sent to all other locations identified in the Invitation to Bid where documents are made available.

PART 8 REJECTION OF BIDS

8.1 The Chancellor reserves the right to reject any or all bids, to waive technicalities or to advertise for new bids, if in his/her judgment, the best interests of the State will be promoted thereby. The Chancellor reserves the right to reject the bid of a Bidder who is not in a position to perform the Contract.

8.2 The Chancellor reserves the right to waive any informality in bids received, if in the best interest of the CCSNH.

8.3 The Chancellor reserves the right to reject any Bidders not meeting all stated requirements.

PART 9 CONTRACT BOND

9.1 The successful Bidder, at the time of the execution of the Contract, must deposit with the Chancellor, Surety in the sum equal to one hundred percent (100%) of the amount of the Contract as required by RSA 447:16. The form of Bond shall be that provided for by the CCSNH and the Surety shall be acceptable to the Chancellor. The Contract Bond must be written by a Company licensed to do business in New Hampshire at the time the policy is issued. In addition, the Company issuing the bond shall be listed on the current list of "Surety Companies Acceptable on Federal Bonds" as published by the U.S. Department of the Treasury, Financial Management Services, Circular Number 570. see http://www.fms.treas.gov/c570/index.html

PART 10 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

10.1 The Contractor shall deliver to the Chancellor at the time of submitting a signed Contract, certificates of all insurance required hereunder. The certificates of insurance shall contain a description of the project, including the project name and number, and shall state that the companies issuing insurance will mail to the Chancellor thirty (30) days' notice of cancellation, alteration of material change of any listed policies or ten (10) days in cases of non-payment of premium. The Contractor shall keep in force the insurance required herein for the period of the Contract, through the Warranty period. and Owners and Contractors Protective (OCP) Liability coverage shall be kept in force through the date of Substantial Completion, or longer at the Director of Capital Planning and Development's direction. The Contractor shall have a continuing duty to provide new certificates of insurance as policies are amended or renewed. At the request of the Chancellor, the Contractor shall promptly make available a copy of any and all listed insurance policies. The required insurance must be written by a Company licensed to do business in the State of New Hampshire at the time the policy is issued. In addition, the company must have a rating of no less than A- based on the current A.M. Best with a size of VIII and satisfying and the terms and conditions described below or the minimum limits required of the Prime Contractor under the Contract Documents.

10.2 Prior to the start of the Contractor's Work, the Contractor and any subcontractors, consultants or third parties approved to perform Services pursuant to this contract, will carry, in full force and effect during the entire term of this Agreement, insurance with a carrier rated at minimum "A-" by A.M. Best with a size of VIII and satisfying and the terms and conditions described below or the minimum limits required of Prime Contractor under the Contract Documents.

A. Commercial General Liability (CGL) with limits of Insurance of not less than $1,000,000 each occurrence and $2,000,000 Annual Aggregate.

.1) If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project.

.2) CGL coverage shall be written on ISO Occurrence form CG 00 01 (10/93) or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, products- completed operations, and personal and advertising injury.

.3) Owner and all other parties required of the Contractor, shall be included as insured's on the CGL, using ISO Additional Insured Endorsement CG 20 10 (11/85) or CG 2010 (10/93) **AND** CG 20 37 (10/01) or CG2033(10/01) **AND** CG2037 (10/01) or an endorsement providing equivalent coverage to the additional insured's. This insurance for the additional insured's shall be as broad as the coverage provided for the named insured Contractor. It shall apply as Primary and non-contributing Insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured.

.4) Contractor shall maintain CGL coverage for itself and all additional insured's for the duration of the project and maintain Completed Operations coverage for itself and each additional insured for at least 7 years after completion of the Work.

.5) If Contractor is performing snow removal the policy must include the addition of CG 22 92 12 07 for Snow Removal Operations Coverage or equivalent

10.3 Commercial Automobile Liability

.1) Business Auto Liability with limits of at least $1,000,000 for each accident.

.2) Business Auto coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.

.3) Owner and all other parties required of the Contractor, shall be included as additional insured's on the auto policy.

10.4 Commercial Umbrella

.1) Umbrella limits must be at least $2,000,000.

.2) Umbrella coverage must include as insured's all entities that are additional insured's on the CGL and coverage shall be as broad as provided on the underlying coverages.

10.5 Workers Compensation and Employers Liability

.1) Employers Liability Insurance limits of at least $500,000 each accident for bodily injury by accident and $500,000 each employee for injury by disease.

.2) Where applicable, U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy.

.3) Where applicable, the Maritime Coverage Endorsement shall be attached to the Policy.

.4) All employees, including the Owner, partners and officers, shall provide proof of workers' compensation coverage prior to working on the job site.

10.6 Waiver of Subrogation

.1) To the fullest extent permitted by law, Contractor waives all rights against Owner and Architect and their agents, officers, directors and employees for recovery of damages to the extent these damages are covered by commercial general liability, commercial umbrella liability, business auto liability or workers compensation and employers liability insurance where acceptable by law.

10.7 Pollution Liability Insurance

.1) Pollution Limits with at least $1,000,000 each occurrence, claim or wrongful act with an aggregate of $1,000,000 for bodily injury, property damage, pollution or environmental harm arising out of the work, asbestos, lead, or silica related claims, claims arising out of microbial matter or bacteria, testing, monitoring, measuring operations or laboratory analyses, or liability arising out of treatment facility. If a motor vehicle is used in connection with the work,

the business automobile policy will include coverage at least as broad as ISO CA 99 48 and be endorsed to include Motor Carrier Act Endorsement MCS 90.

.2) The policy must meet all other insurance requirements applicable to general liability, including, but not limited to additional insured, waiver of subrogation and cancellation notification.

.3) If there is a retroactive date, claims made will apply back to the first date of services provided to the Owner.

.4) The coverage shall be effective for 5 years following completion of the engagement.

.5) Proof of Pollution Liability Insurance shall be provided on a certificate acceptable to the Owner.

10.8 Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Contractor's Commercial General Liability Policy. These certificates and the insurance policies required shall contain a provision that coverage afforded under the policies will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner. Any subcontractors, consultants or third parties performing services for Contractor as contemplated herein, shall also maintain insurance as required above. Notwithstanding the foregoing, the Owner, in its sole and absolute discretion and taking into account the scope and character of the Services to be provided by Contractor, may reduce the required liability insurance minimums. Such reduction in the required liability insurance minimum of Contractor

shall be evidence by a written instrument specifically referencing this Exhibit I and signed by the Owner.

10.9 The Contractor shall require each Subcontractor employed on the Project to maintain the coverage listed above unless the Contractor's insurance covers activities of the Subcontractor on the Project.

10.10 No operations under this Contract shall commence until certificates of insurance attesting to the above listed requirements have been filed with the Chancellor and a Notice to Proceed is issued.

A. If blasting and/or demolition is required by the Contract, the Contractor or subcontractor shall obtain the respective coverage for those activities, and shall furnish to the Chancellor a Certificate of Insurance evidencing the required coverages prior to commencement of any operations involving blasting or demolition or both.

B. Owner's and Contractor's Protective Liability (OCP) coverage for the benefit of the Community College System of New Hampshire.

1. Limits of Liability:
   a. $2,000,000 Each Occurrence
   b. $3,000,000 Aggregate

****** [OR] ******

   c. $2,000,000 Bodily Injury & Property

C. Property and Builder's Risk Insurance (Fire and Extended Coverage):

1. The Community College System of New Hampshire shall insure the work included in the Contract, including extras and change orders, on an "All Risk" basis, on one hundred percent (100%) completed value basis of the Contract, as modified. Builder's Risk coverage shall include materials located at the Contractor's premises, on-site, in-transit, and at any temporary site. The policy by its own terms or by endorsement shall specifically permit partial or beneficiary occupancy prior to completion or acceptance of the entire work. The policies shall be in the names of the Community College System of New Hampshire and the Contractor. The policies shall provide for the inclusion of the names of all other Contractors, Subcontractors, and others employed on the premises as insureds. The policies shall stipulate that the insurance companies shall have no right of subrogation against any Contractors, Subcontractors or other parties employed on the premises.
2. CCSNH is not responsible to insure Contractor's owned or leased equipment/property.

D. General Insurance Conditions

1. Failure to secure and maintain, or add by endorsement, Owner and all subsidiaries, agents, and employees as required shall not act as a defense to the enforcement of the terms of this Contract. Any such insurance policy shall apply separately to each insured against whom claim is made or suit is brought and shall contain no provision which excludes coverage of a claim made by one insured under the policy against another insured under the policy.
2. Each policy shall contain a clause prohibiting cancellation or modifications of the policy earlier than thirty (30) days or ten (10) days in cases of non-payment of premium after written notice thereof has been received by CCSNH.

E. Indemnification:

1. To the fullest extent of the law the Contractor shall indemnify, defend, and hold harmless the Community College System of New Hampshire, its Officers, and its agents and employees from and against any and all claims, liabilities, suits or penalties arising out of (or which may be claimed to arise out of) acts or omissions of the Contractor or subcontractors in the performance of work covered by the Contract. This covenant shall survive the termination of the Contract. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the Community College System of New Hampshire, which immunity is hereby reserved by the Community College System of New Hampshire. The covenant in paragraph I shall survive the termination of this Agreement.

F. Additional Insurance for Design/Build Contracts:

1. In addition to the insurance requirements listed in the above paragraphs, the Designer/Builder Team shall provide the following coverage.

a. The Designer/Builder Team, or the Designer shall purchase and maintain professional liability coverage for this project. The coverage shall provide the CCSNH with protection against design errors and omissions and shall have an annual aggregate limit of no less than $2,000,000. The coverage shall be maintained through the legal stature of repose period, currently stipulated to be three (3) years from the date of Substantial Completion. If the professional liability coverage is maintained by other than the firm holding the prime contract with the CCSNH for this project, the prime contractor shall provide evidence of indemnifications, approved by the CCSNH, that indicate that this insurance coverage is in place and available for the protection of the CCSNH. The indemnification may not create a re-assignment of contractual responsibilities between the CCSNH and the prime contractor.

PART 11 BIDDING DOCUMENTS

11.1 Bidders shall use only complete sets of Bidding Documents in preparation of bids; the CCSNH assumes no responsibility for mistakes due to the use of incomplete sets of Bidding Documents.

PART 12 SUBSTITUTIONS

12.1 Where Bidding Documents stipulate particular Products, substitution requests will ONLY be considered before receipt of Bids. Refer to specification section 01600 – Product Requirements.

PART 13 AWARD OF CONTRACT

13.1 The Contract will be Awarded as soon as possible to the Responsible Bidder on the basis of the Highest Score, see Score Sheet in Section 00300.

A. The CCSNH may request a Negotiated Price from the Highest Score Responsible Bidder.

13.2 The signed Contract, together with the Contract Bond, and certificate of insurance shall be returned to the CCSNH within 10 days after the date of notice that the Proposal has been accepted.

A. If the successful bidder fails to execute the Contract and submit acceptable bond and required attachments within 20 days after the date of notice of acceptance of the Proposal, the CCSNH may cancel the notice of award. Contract award may then be made to the next lowest responsible bidder or the Work may be re-advertised.

13.3 Prior to the issuance of Notice to Proceed, each Bidder shall be prepared, if so requested by the Chancellor, to present evidence of his/her experience, qualifications, and financial ability to carry out the terms of the Contract.

13.4 A Contract that has been Awarded with required attachments is not executed until submitted and approved by the CCSNH Board of Trustees, if required, and issuance of the Notice to Proceed by the CCSNH.

PART 14 PERMITS AND FEES

14.1 CCSNH shall secure and pay for all Permits and Fees required by the Work of this Contract.

END OF DOCUMENT 002004

SECTION 00300 – BID PROPOSAL FORM – CCSNH

PROPOSAL – STIPULATED BASE LUMP SUM GRAND TOTAL BID – GENERAL CONSTRUCTION

PROPOSAL TO: **Received no later than 3:00 PM, Tuesday, June 4th , 2019.**
Matthew Moore, PE
memoore@ccsnh.edu
Director of Capital Planning & Development
Community College System of New Hampshire
26 College Drive
Concord, New Hampshire 03301

SUBJECT: Project # MCC 19-01
MCC Lab Renovations

1. CERTIFICATION: The undersigned Prime Contractor

   Name of Firm: _____

   Signature:_____

   Name and Title:_____
   (Contractor's Name Printed Here)

   certifies that they have examined and fully comprehend the requirements and intent of the Bidding and Contract Documents for this Project, including any and all Addenda issued, and also certifies that they have visited the location of the Project work and examined all conditions at the site which will affect the work.

2. BASE BID (STIPULATED LUMP SUM GRAND TOTAL)

   The undersigned Contractor proposes to furnish all labor, materials, equipment, services and related items necessary for, or incidental to, the proper execution and completion of the Work in strict conformance with the Bidding and Contract Documents, on or before the time of completion specified, for the Stipulated Sum for Materials plus Labor of:

   LUMP SUM GRAND TOTAL BID AMOUNT:

   _____
   (Words)

   _____DOLLARS ($_____)
   (Figures)

3. ADDENDUM RECEIPT

The undersigned Contractor acknowledges the receipt of the following Addenda to the Bidding and Contract Documents, but he agrees that he is bound by all Addenda, whether or not listed herein:

Addendum No._____Dated:_____

Addendum No._____Dated:_____

Addendum No._____Dated:_____

STATEMENT OF NON-COLLUSION

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief: (1) The prices in this bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor; (2) Unless required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any other competitor, and (3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

SIGNATURE:_____

NAME:_____

TITLE:_____

DATE:_____

PHONE:_____

EMAIL:_____

Corporate Seal:

DOCUMENT 00708

GENERAL CONDITIONS – COMMUNITY COLLEGE SYSTEM OF NEW HAMPSHIRE (CCSNH)

PART	ITEM
1	DEFINITIONS
2	CONTRACT DOCUMENTS
3	NOTICE
4	ACCESS TO THE WORK
5	ACCIDENT PROTECTION
6	HAZARDOUS MATERIALS
7	SUBCONTRACTS
8	RESPONSIBILITY OF CONTRACTOR TO ACT IN EMERGENCY
9	MUTUAL RESPONSIBILITY OF CONTRACTORS
10	PAYMENTS TO CONTRACTOR
11	CONTRACTOR'S TITLE TO MATERIALS
12	CHANGES IN WORK
13	ASSIGNMENTS
14	SUPERINTENDENCE BY CONTRACTOR
15	FAILURE TO COMPLETE WORK ON TIME
16	SUBSTANTIAL COMPLETION AND FINAL INSPECTION
17	DEFAULT AND TERMINATION OF CONTRACT
18	TERMINATION OF CONTRACT WITHOUT FAULT
19	ASSIGNMENT PROVISION

PART 1 DEFINITIONS

A. **Addendum.** Written and/or graphic information issued before opening *Proposals* that modifies or interprets the *Bidding Documents* by additions, deletions, clarifications or corrections.

B. **Advertisement.** A public announcement in the form of an *Invitation to Bid*, inviting *Bids* for *Work* to be performed and/or *Materials* to be furnished.

C. **Alteration Order.** A written agreement between the *Contractor* and the *Community College System of New Hampshire* that amends the *Contract* and identifies *Work* that affects either the *Contract Sum*, *Completion Date*, *Credit*, or any combination thereof.

D. **Alternate.** A proposed change in the *Work* described in the *Contract Documents* providing the *Community College System of New Hampshire* with an option to select between alternative materials, products or systems, or to add or delete portions of *Work*.

E. **Architect.** As defined in RSA 310-A:28, a person who, by reason of having acquired through professional education and practical experience an advanced training in building construction and architectural design and an extensive knowledge of building standards created to safeguard the public from hazards such as fire, panic, structural failure, and unsanitary conditions, is technically and legally qualified to practice architecture and who is licensed by the State of New Hampshire Board of Licensure for Architects to engage in the practice of architecture. The Architect has no contractual agreement with the *Contractor* and therefore shall not directly interact with the *Contractor*.

F. **Award.** The acceptance of a *Bid* prior to execution of *Contract*.

G. **Bid.** A complete and properly signed *Proposal*, submitted in accordance with the *Bidding Requirements*, to perform the *Work* for the amount or amounts stipulated therein.

H. **Bid Bond.** One form of a *Proposal Guaranty* executed by the *Bidder* and a *Surety* to guarantee that the *Bidder* will enter into a *Contract* within a specified time.

I. **Bid Opening Officer.** An authorized representative of the Community College System of New Hampshire, who is responsible for opening and reading of *Bids*.

J. **Bidder.** A *Corporation*, *Partnership*, or *Proprietorship* submitting a *Proposal*, subsequent to meeting the Community College System of New Hampshire's *Bidding Requirements*.

K. **Bidding Documents.** Collectively, the *Invitation to Bid*, *Bidding Requirements*, *Specifications*, *Drawings*, and *Addendum*.

L. **Bidding Requirements.** The documents that contain information regarding bidding procedures with which a *Bidder* must conform and a *Proposal* that a *Bidder* shall use to submit a *Bid*.

M. **Builders Risk Insurance.** A specialized form of property insurance that provides coverage for loss or damage during the course of construction.

N. **Calendar Day.** A day shown on the calendar.

O. **Certificate of Occupancy.** A document issued by the Office of the State Fire Marshal or its authorized representative certifying that all of, or a designated portion of a building, is approved for its designated use.

P. **Certificate of Full or Partial Substantial Completion.** A document prepared by the *Community College System of New Hampshire* when the *Project* reaches *Substantial Completion and only* issued after review and acceptance of the *Contractor's Request for Certificate of Full or Partial Substantial Completion*.

Q. **Chancellor.** The Chancellor of the Community College System of New Hampshire.

R. **Change Order.** A written agreement between the *Contractor* and the *Community College System of New Hampshire* that identifies *Work* to be completed as part of an Allowance Item. Any change that affects either the *Contract Sum*, Contract Time or *Credit* shall be processed as an *Change Order*.

S. **Clerk of the Works.** An authorized representative identified by the *Community College System of New Hampshire*, responsible for observing construction on the *Community College System of New Hampshire*'s behalf for conformance with the *Contract Documents*.

T. **College.** The college who is responsible for the facility and/or will occupy the facility after and/or during the Work. The College(s) has/have no contractual agreement with the *Contractor* and therefore shall not direct the *Contractor* in any way.

U. **Commercial General Liability Insurance.** A broad form of liability insurance covering claims for bodily injury and property damage which combines under one policy coverage for business liability exposures, except those specifically excluded.

V. **Completion Date.** The last day of the time allotted or the specific date established as identified in the *Contract Documents* for *Substantial Completion* of the *Work*, including any authorized extensions.

W. **Consultant.** The *Architect*, *Engineer*, and/or professional engaged to develop/provide *Drawings*, *Specifications* and/or other services for the *Project*. The Consultant has no contractual agreement with the *Contractor* and therefore all interaction between any Consultant and the *Contractor* shall be done thru the *Contract Representative*.

X. **Contract.** The written agreement between the *Community College System of New Hampshire* and the *Contractor* setting forth the obligations of the parties as outlined in the *Contract Documents*.

Y. **Contract *Representative*.** The *Community College System of New Hampshire's* appointed representative is the CCSNH Director of Capital Planning and Development having specific authority to act on the *Community College System of New Hampshire's* behalf and shall be responsible for general supervision, control, and direction over all matters pertaining to design, construction, maintenance standards, preservation, and administration of the *Contract*. The Architect does not have such authority.

Z. **Contract Bond.** The approved form of security to the Community College System of New Hampshire (political subdivision) in compliance with RSA 447:16 executed by the *Contractor* and their *Surety* or Sureties, guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto including the payment of all legal debts pertaining to the construction of the *Project*.

AA. **Contract Documents.** Collectively, the *Invitation To Bid*, *Bidding Requirements*, *Contract Bond*, *Specifications*, *Drawings*, *Addendum*, and other documents included in the *Contract*, and modifications, clarifications, authorized *Alteration Orders* and *Change Orders* issued after the execution of the *Contract*, to complete the *Project*. All documents shall be written in English.

BB. **Contract Sum.** The amount stated in the *Contract*. This sum shall be derived from the *Lump Sum Base Bid*, *Lump Sum Grand Total*, or *Negotiated Price*; modified to reflect the acceptance of any *Alternates*. The *Notice to Proceed* shall state the amount that the *Community College System of New Hampshire* is obligated to pay the *Contractor*.

CC. **Contractor.** The *Corporation*, *Partnership*, or *Proprietorship*, or any combination thereof, contracting with the Community College System of New Hampshire for performance of prescribed work.

DD. **Contractor's Request for Certificate of Full or Partial Substantial Completion.** A document prepared by the *Contractor* when the *Project* reaches *Substantial Completion*.

EE. **Contractual Liability.** Liability assumed by the *Contractor* under a *Contract*.

FF. **Corporation.** A legal entity organized under the laws of a particular jurisdiction who is legally authorized to do business in the State.

GG. **Credit.** Any Change that results in a reduction in the *Contract Sum* or *Lump Sum Grand Total* Items. All credits shall be processed by an *Alteration Order* and may include modifications to *Lump Sum Grand Total* Items.

HH. **Day.** Unless designated as a *Working Day*, or unless otherwise indicated, this term will mean a *Calendar Day*.

II. **Drawings (Plans).** The graphic and pictorial documents or reproductions thereof, which show the location, character, dimensions, and details of the prescribed work.

JJ. **Final Completion.** Term denoting that the *Work* has been completed in accordance with the terms and conditions of the *Contract Documents* and all *Punch List* items have been completed.

KK. **Final Payment.** Payment made by the *Community College System of New Hampshire* to the *Contractor*, upon *Final Completion*.

LL. **General Conditions.** The part of the *Contract Documents* establishing the rights, responsibilities and relationships of the parties.

MM. **Hazardous Material.** Shall include any material regulated by federal or state law and shall include but not limited to asbestos, toxic or hazardous waste, PCBs, combustible gases and materials, petroleum or radioactive material, or any other substances under any conditions and in such quantities as would pose a substantial danger to persons or property exposed to such substances.

NN. **Indemnification.** A contractual obligation by which one person or entity agrees to reimburse others for loss or damage arising from specified liabilities.

OO. **Invitation to Bid.** A portion of the *Bidding Documents*; the *Advertisement* for *Proposals* for *Work* or *Materials* on which *Bids* are requested. The *Advertisement* will indicate the time and place of the opening of *Proposals*, the type and location of *Work* to be performed, the character and quantity of the *Material* to be furnished and provide information on how to obtain *Drawings, Specifications* and *Proposal.*

PP. **Liability Insurance.** A contract under which an insurance company agrees to protect a person or entity against claims arising from a real or alleged failure to fulfill an obligation or duty to a third party who is a named or an incidental beneficiary.

QQ. **Lump Sum Base Bid.** One type of *Proposal* where the *Bid* is established by a single item price to perform all *Work* excluding any *Alternates* that may or may not become part of the *Contract*.

RR. **Lump Sum Grand Total.** One type of *Proposal* where the *Bid* is established as a total of various items to perform all *Work* excluding any *Alternates* that may or may not become part of the *Contract*.

SS. **Low Bid.** The *Bid* stating the lowest price proposed for performance of the *Work*, conforming to the *Bidding Documents*.

TT. **Lowest Responsible Bidder.** The *Bidder* who submits the lowest bona fide *Bid* and is considered by the Community College System of New Hampshire to be fully responsible and qualified to perform the *Work* for which the *Bid* is submitted.

UU. **Material(s).** Any substance and/or product specified for use in the construction of the *Project* and its appurtenances.

VV. **Negotiated Price.** A *Proposal* modified by the *Lowest Responsible Bidder* thru communication with the Community College System of New Hampshire in which changes are made to the *Proposal* and/or *Completion Date* as required to meet budget, funding or scheduling requirements.

WW. **Notice to Proceed.** A written notice to the *Contractor* to proceed with a portion of or all of the Contract Work; including the beginning of *Contract* time when applicable. The Notice to Proceed shall act as the final step in awarding the *Contract* or portion thereof.

XX. **Occurrence Policy.** An insurance policy that covers acts or omissions occurring during the policy term, regardless of when a claim against the insured is first asserted, even if the policy is no longer in existence.

YY. **Owner's Protective Liability Coverage.** Third-party legal liability insurance coverage protecting the *Community College System of New Hampshire* from claims arising from the construction process.

ZZ. **Partnership.** An association of two or more persons or entities to conduct a business that shares profits and losses at a certain proportion.

AAA. **Professional Engineer.** Referred to as Engineer. As defined in RSA 310-A:2, a person who by reason of advanced knowledge of mathematics and the physical sciences, acquired by professional education and practical experience, is technically and legally qualified to practice engineering, and who is licensed by or otherwise authorized by State of New Hampshire Professional Engineers Board to engage in the practice of engineering. The Engineer has no contractual agreement with the *Contractor* and therefore shall not directly interact with the *Contractor*.

BBB. **Project.** The total construction of the *Work* to be performed.

CCC. **Proposal.** A *Bidder's* offer, on *Community College System of New Hampshire* prescribed forms, to perform stated work at the quoted price(s).

DDD. **Proposal Guaranty.** The security furnished with a *Proposal*, which shall be a *Bid Bond*, certified check or cashier's check and which provide that the *Bidder* if awarded the *Contract* will execute such *Contract* in accordance with the requirements of the *Bidding Documents*.

EEE. **Proprietorship (Individual).** A form of business organization that is owned entirely by one person.

FFF. **Provide.** To furnish and install a product, materials, systems, and/or equipment, complete in place, fully tested and approved.

GGG. **Punch List.** A written document attached to the *Certificate of Substantial Completion* listing items to be completed or corrected prior to the *Community College System of New Hampshire* approval of *Final Payment.*

HHH. **Specifications.** The volume that is part of the *Contract Documents* which contain the *General Conditions*, *Supplementary General Conditions*, *Invitation to Bid*, and individual sections that consist of written requirements for material, equipment, construction systems, standards and workmanship, and other documents or reports as applicable.

III. **State.** The State of New Hampshire.

JJJ. **Subcontractor.** A *Corporation*, *Partnership*, *Proprietorship*, Joint Venture or any combination thereof, to whom the *Contractor* sublets any part of the *Contract*.

KKK. **Substantial Completion.** As determined by an inspection by the *Contract Representative* that the work or portion thereof is substantially complete, in accordance with the *Contract Documents*, such that the *Community College System of New Hampshire* may occupy or utilize the *Work* for its intended use without disruption or interference by the *Contractor* in completing or correcting any remaining unfinished or unacceptable *Work*.

LLL. **Substitution.** A *Material*, product or item of equipment in place of that specified.

MMM. **Superintendent.** The *Contractor's* authorized representative responsible for field supervision, coordination, and completion of the *Work*.

NNN. **Supplementary General Conditions.** A part of the *Contract Documents* which supplements and may also modify, change, add to or delete from provisions of the *General Conditions*.

OOO. **Surety.** A *Corporation*, *Partnership*, or *Proprietorship* other than the *Contractor*, executing a bond furnished by the *Contractor*.

PPP. **Umbrella Liability Insurance.** Insurance providing coverage in an amount above existing liability policies.

QQQ. **Unit Price.** An amount stated in a *Lump Sum Grand Total Bid* as a price per unit for an item or portion of the contract or for specific materials and/or services described in the *Contract Documents*.

RRR. **Work.** The construction and services required by the *Contract Documents* to furnish all labor, materials, equipment, and incidentals necessary to complete the duties, obligations, and requirements imposed by the *Contract*.

SSS. **Workers' Compensation Insurance.** Insurance covering the liability of an employer to employees for compensation and other benefits required by workers' compensation laws with respect to injury, sickness, disease or death arising from their employment.

TTT. **Working Day.** Any calendar day, except Saturdays, Sundays, and Contract designated legal holidays.

PART 2 CONTRACT DOCUMENTS

2.1 The Contract Documents consist of the Invitation to Bid, Contract Agreement, General Conditions, Supplementary General Conditions, Drawings and Specifications, including all Addenda issued prior to execution of the Contract, wage scales where applicable, Bonds where required, insurance certificates, other documents listed in the Agreement and Modifications issued after the execution of the Contract, Change Orders and Alteration Orders issued in accordance with Part 12 of the General Conditions.

A. Hierarchy of the Contract Documents shall be interpreted according to the following classes:
   1. Community College System of New Hampshire approved modifications to the Contract Documents after execution of the Contract.
   2. Addenda.
   3. Supplemental General Conditions.
   4. General Conditions.
   5. Division 1 – General Requirements.
   6. Remaining Specifications.
   7. Larger Scale Drawings & Details.
   8. Remaining Drawings.

2.2 A fully executed Contract shall not be in effect until the contract is approved and an issuance of the Notice to Proceed by the Community College System of New Hampshire.

2.3 This Contract is executed in a number of counterparts, each of which is an original and constitutes the entire agreement between the parties. This Contract shall be construed according to the laws of the State. No portion of this Contract shall be understood to waive the sovereign immunity of the *Community College System of New Hampshire*. This Contract shall not be amended, except as specified in Parts 13 and 20.

2.4 The Contract Documents are complementary and anything called for by one of the Contract Documents and not called for by the others shall be of like effect as if required by all.

2.5 Should the Contract Documents contain inconsistencies within a class identified in Item 2.1A, the Contractor shall provide the better quality or greater quantity of work and/or materials. The Contractor shall identify any perceived discrepancies to the Contract Representative prior to proceeding.

2.6 The Contractors and all Subcontractors shall refer to all of the Contract Documents, including those not specifically showing the work of their specialized trades, and shall perform all work reasonably inferable from them as being necessary to produce the intended results in compliance with applicable Federal, State, and Local codes.

2.7 All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the work, except where a contrary result is clearly indicated by the Contract Documents.

2.8 Where codes, standards, requirements, and publications of public and private bodies are referred to in the Contract Documents, such references shall be understood to be to the latest final and complete

revision at the time of receiving Bids unless specifically identified, except where otherwise indicated.

2.9 Where no explicit quality or standards for materials or workmanship is established for work, such work is to be consistent with the best quality workmanship standards of the applicable trade.

2.10 All manufactured articles, materials, and equipment shall be applied, assembled, installed, connected, erected, tested, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions, unless specifically indicated otherwise in the Contract Documents.

2.11 The Drawings are made to scale as identified therein, but all working dimensions shall be taken from the figured dimensions and by actual measurements at the job; in no case by scaling. The Contractor shall study and compare all of the Drawings and verify all figures before laying out or constructing work. The Contractor shall be responsible for errors in his/her work that might have been avoided thereby. Whether or not an error is believed to exist, deviation from the Drawings and the dimensions given thereon shall be made only after approval in writing from the Contract Representative.

2.12 All Drawings and Specifications and copies thereof are the property of the Community College System of New Hampshire and shall not be used by the Contractor or Subcontractor on other Projects.

PART 3 NOTICE

3.1 Any written notice by either party to the Contract shall be sufficiently given if delivered to or at the last known business address of the person, partnership or corporation constituting the other party to the Contract, or to his/her, their, or its duly authorized agent, representative, or officer, or when sent by registered mail to such last known business address. The last known business address shall be that location which is last provided in writing.

3.2 The parties shall provide their physical location/address, mailing address, telephone number, fax number, and, where available, pager number(s), email address(es), and other methods of contact for all persons associated with the Contract.

PART 4 ACCESS TO THE WORK

4.1 The Contractor shall provide for access to the work, at all times, for observation and/or inspection by the Community College System of New Hampshire, Architect, Consultant, Engineer and government officials having jurisdiction. The Contractor shall provide proper facilities for such access and inspection.

PART 5 ACCIDENT PROTECTION

5.1 It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to the Contract, that the Contractor, any Subcontractors, or Independent Contractors shall not require any laborer or mechanic employed in the performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to the laborer's health or safety as determined by construction safety and health standards of the Occupational Safety and Health Administration, United States Department of Labor, which standards include, by reference, the established Federal Safety and Health Regulations for Construction. These standards and regulations comprise Part 1910 and Part 1926 respectively of Title 29 of the Code of Federal Regulations, as may be revised from time to time. In the event any revisions in the Code of Federal Regulations are published, such revisions will be deemed to supersede the appropriate Part 1910 and Part 1926, and be effective as of the date set forth in the revised regulation.

PART 6 HAZARDOUS MATERIALS

6.1 The Contractor shall also be aware of laws and regulations relating to hazardous materials that may be encountered during construction operations, either within project limits or at material sites off the project. The health and safety of employees, the general public, and the potential of damage to the overall environment is possible if hazardous materials are not recognized, reported, and the appropriate action taken to dispose of, remove from the site, or otherwise contain the possible contaminants.

6.2 If any abnormal condition is encountered or exposed that indicates the presence of a hazardous material or toxic waste, construction operations shall be immediately suspended in the area and the Contract Representative notified. No further work shall be conducted in the area of the contaminated material until the site has been investigated and the Community College System of New Hampshire has given approval to continue the work in the area. The Contractor shall fully cooperate with the Community College System of New Hampshire and perform any remedial work as directed. Work shall continue in other areas of the Project unless otherwise directed.

6.3 Exposure to hazardous materials may result from contact with, but not necessarily limited to, such items as drums, barrels, and other containers, waste such as cars, batteries, and building construction debris. Containers leaking unknown chemicals or liquids, abandoned cars leaking petroleum products, batteries leaking acid, construction debris which may include asbestos, or any other source of suspected hazardous material found within excavation areas or stockpiled on land within construction limits shall be referred to the Department of Environmental Services and Contract Representative so that a proper identification of the materials may be made and disposal procedures initiated as required.

6.4 Disposition of the hazardous material or toxic waste shall be made under the requirements and regulations of the Department of Environmental Services. Work required to dispose of these materials and any remedial work shall be performed under a Supplemental Agreement or Contract item, if included in the Contract.

PART 7 SUBCONTRACTS

7.1 Nothing contained in the Specifications or Drawings shall be construed as creating any contractual relationship between any Subcontractor and the Community College System of New Hampshire. The Sections of the Specifications are not intended to control the Contractor in dividing the work among Subcontractors or to limit the work performed by any trade.

7.2 The Contractor shall be as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as he/she is for the acts and omissions of persons directly employed by him/her.

7.3 The Contractor shall, without additional expense to the Community College System of New Hampshire, utilize the services of specialty Subcontractors, as required to complete the work.

7.4 The Contract Representative will not undertake efforts to settle or resolve any differences between the Contractor and Subcontractors or between Subcontractors.

7.5 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents insofar as applicable to the work of Subcontractors and to give the Contractor the same power to terminate any subcontract that the Contract Representative may exercise over the Contractor under any provisions of the Contract Documents.

PART 8 RESPONSIBILITY OF CONTRACTOR TO ACT IN EMERGENCY

8.1 In case of any emergency that threatens loss or injury of property, and/or safety of life, the Contractor shall act as the situation may warrant. He/she shall notify the Contract Representative thereof immediately thereafter. Any compensation claimed by the Contractor together with substantiating documents in regard to expense, shall be submitted to the Contract Representative and the amount of compensation shall be determined by agreement.

8.2 In the event the Community College System of New Hampshire learns of an emergency that threatens loss or injury of property, and/or safety of life, the Community College System of New Hampshire shall notify the Contractor using the contact information provided pursuant to PART 3 herein. The Community College System of New Hampshire may, but shall have no duty to take reasonable steps to mitigate the damage or loss to the Contractor. In either event, the Community College System of New Hampshire shall have no duty to undertake any specific acts and shall have no liability for actions or inactions taken absent gross negligence.

PART 9 MUTUAL RESPONSIBILITY OF CONTRACTORS

9.1 If the Contractor or any of his/her Subcontractors or employees causes loss or damage to any separate Contractor or Subcontractor on the work, the Contractor or Subcontractor agrees to settle with such separate Contractor or Subcontractor by agreement, if he/she will so settle. If such separate Contractor or Subcontractor sues the Community College System of New Hampshire because of any loss so sustained, the Contract Representative shall notify the Contractor and/or their Subcontractors, who shall indemnify and hold harmless the Community College System of New Hampshire against any expenses or judgment arising therefrom.

PART 10 PAYMENTS TO CONTRACTOR

10.1 The Community College System of New Hampshire will process payments to the Contractor each month on the basis of duly certified and approved estimates of the work performed during the preceding period. In preparing estimates, the material delivered on the site and any preparatory work done may be taken into consideration. Payments will only be approved in an amount no greater than the percentage of project completion, as determined by the Contract Representative.

10.2 At least ten (10) days before the end of the billing period, the Contractor shall submit to the Contract Representative, an itemized Requisition for Payment, supported by such data substantiating the Contractor's right to payment as the Contract Representative may require. If payment is to be made for materials or equipment not incorporated in the work, but delivered and suitably stored at the site, or at some other location agreed upon in writing, such payment shall be conditional upon inspection and/or observation by the Community College System of New Hampshire and submission by the Contractor of bills of sale or such other procedure satisfactory to the Contract Representative to establish the Community College System of New Hampshire's title to such materials or equipment or otherwise protect the Community College System of New Hampshire's interest including applicable insurance and transportation to the site.

10.3 Immediately upon receipt of the Monthly Requisition for Payment, Contractor shall post same at the Contractor’s Field Office or project site in a location where Subcontractors have clear access.

10.4 Retainage:

A. Contract Payment Withheld: A 5% retainage shall be withheld from each Progress Payment until issuance of a Certificate of Substantial Completion. The balance remaining after the specified percentage has been retained, less all previous payments, will be certified for payment on each partial estimate.

****** [OR] ******

B. Irrevocable Letter of Credit: In lieu of retainage for Projects amounting to Five Hundred Thousand ($500,000.00) or more, the Contractor, with the approval of the Community College System of New Hampshire, may provide the Community College System of New Hampshire with a Letter of Credit in an amount equal to five percent (5%) of the total adjusted Contract amount at the time of such request. Any such Letter of Credit must be irrevocable (that is, it may be modified or revoked only with the consent of the Community College System of New Hampshire). It shall have a termination date at least one hundred twenty (120) days after the completion date specified in the underlying Contract, or as may be altered in accordance with the Contract Documents, whichever is later. The Letter of Credit shall authorize the Community College System of New Hampshire to require the issuing financial institution to deposit with the Community College System of New Hampshire an amount equal to the retainage that would have been deducted from payment to the Contractor, as specified in 10.4.A.1. The Community College System of New Hampshire may utilize the amount so deposited in the same manner as retainage.

10.5 Retainage will be released at Final Payment.

A. After the Certificate of Substantial Completion has been issued, upon written application by the Contractor and with the approval of the Surety, the Contract Representative may release a portion of the retained amount.

10.6 Payment for Material On Hand:

A. Partial payments are made for materials to be incorporated in the Work, provided the materials meet the requirements of the Contract and are delivered on, or in the vicinity of, the Project site and stored in acceptable places. Partial payments will not exceed 90 percent of the Contract unit price for the item or the amount supported by copies of paid invoices, freight bills, or other supporting documents required by the Community College System of New Hampshire. The quantity paid will not exceed the corresponding quantity estimate in the Contract. No partial payment will be made on living or perishable materials until incorporated in the Work.

B. When material payments exceed $100,000 or 10 percent (10%) of the total contract amount, whichever is less, notarized copies of paid invoices or copies of canceled checks for all such materials must be submitted to the Contract Representative within 45 days of the end date of the estimate on which the material allowance was paid. Failure to provide such documentation will result in the deduction of such material allowance from future estimates until documentation is provided.

C. All material and work covered by partial payments made shall thereupon become the sole property of the Community College System of New Hampshire, but this provision shall not be construed as relieving the Contractor of the sole responsibility of all materials and work upon which payments have been made or the restoration of any damaged work or as a waiver of the right of the Community College System of New Hampshire to require the fulfillment of all the terms of the Contract.

10.7 Payment for Material Not on Hand:

A. Upon receipt of a written request by the Contractor, partial payment may be made for acceptable, fully-fabricated, nonperishable materials not delivered that are unique to the Project provided the materials meet the requirements of the Contract and are stored in excess of 30 days at locations approved by the Community College System of New Hampshire, and provided all required certificates of compliance, mill test reports, shop inspector's acceptance and any other required materials certification have been furnished. Materials shall be identifiable and accessible for inspection. Storage areas shall provide adequate protection so that such materials will meet the Contract requirements upon delivery to the site.

B. Partial payment will be based on the actual cost to the Contractor as indicated on invoices furnished to the Contract Representative. When material payments exceed $100,000 or 10 percent of the total contract amount, whichever is less, notarized copies of paid invoices or copies of canceled checks for all such materials must be submitted to the Contract Representative within 45 days of the end date of the estimate on which the material allowance was paid. Failure to provide such documentation will result in the deduction of such material allowance from future estimates until documentation is provided. Payment shall not exceed 90 percent of the bid price. NO payment will be made on materials for any item in the contract whose total dollar value is less than $5,000. Approval of partial payment will not constitute final acceptance of the materials for use in completing items of work.

10.8 Release of Claims:

A. Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver a complete release of all claims arising under and by virtue of this Contract, including claims for all Subcontractors and suppliers of either materials or labor, plus a release of the Contract Bond and a statement that all Subcontractors and suppliers have been paid. The Commissioner, may pay any and all such claims, in whole or in part, and deduct the amount or amounts so paid from any partial or final payment.

10.9 Final Payment:

A. Application for Final Payment received from the Contractor will be processed for payment not less than 90 days after project acceptance and final completion unless accompanied by a release of the Contract Bond. This payment shall be the amount of the Contract, amended by approved alteration orders, less previous payments minus liquidated damages, additional penalties or holdbacks. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

10.10 Acceptance of Final Payment Constitutes Release:

A. The acceptance of the Final Payment by the Contractor shall be and shall operate as a release to the Contractor of all claims and of all liability to the Community College System of New Hampshire for all things done or furnished in connection with this work. No payment, however, final or otherwise, shall operate to release the Contractor and its Sureties from any obligations under this Contract or the Contract Bond. Acceptance of Final Payment shall not impact any warrantees provided by the Contractor with respect to this project.

PART 11 CONTRACTOR'S TITLE TO MATERIALS

11.1 No materials or supplies for the work shall be purchased by the Contractor or any Subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that good title has been obtained for all materials and supplies for which partial payment has been accepted. If any claim is made with respect to materials provided by the Contractor, Subcontractors, or Independent Contractors, the Contractor shall defend any such claim and shall pay any judgment or settlement thereon.

PART 12 CHANGES IN WORK

12.1 No charge for any extra work or material will be allowed without a fully executed Alteration Order. (Refer to Specification Section 01200-Price and Payment Procedures)

12.2 The Commissioner may at any time, by a written order, and without notice to the Sureties, make changes in the Drawings and Specifications and Completion Date of the Contract and within the general scope thereof.

12.3 If any part of the work as installed be at variance with the Contract requirements, the Contract Representative may allow all or any part of such work to remain in place, if found to be in the best interest of the Community College System of New Hampshire, subject to proper adjustment in the

Contract Price. Acceptance of installed work in one instance or in any instance does not constitute a waiver of Specifications, General Conditions or contract requirements.

12.4 The Contractor shall hold the Community College System of New Hampshire and its officers, agents, servants, and employees harmless from liability of any nature including cost and expenses, for or on account of any patented or unpatented invention, process, article or applicable items manufactured or used in the performance of the Contract, including its use, unless otherwise specifically stipulated in the Contract Documents.

PART 13 ASSIGNMENTS

13.1 The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due, hereunder, without the written consent of the Commissioner and of all Sureties executing any Bonds on behalf of the Contractor if in connection with said Contract.

PART 14 SUPERINTENDENCE BY CONTRACTOR

14.1 The Contractor shall have on the project site, at all times when work is being performed, a competent English speaking Superintendent capable of reading and thoroughly understanding the contract documents and thoroughly experienced in the type of work being performed, satisfactory to the Community College System of New Hampshire. The Contractor shall not change superintendents without permission from the Contract Representative and shall submit a request in writing with justification for such a change.

A. The Superintendent shall be responsible for verifying that all materials, installation, coordination, and workmanship are in conformance with the contract documents.

B. Unless the Contract Representative has granted prior written approval, the Superintendent shall not, himself, engage in "hands-on" construction work.

C. In the event the Superintendent fails or refuses to perform functions mentioned above as determined by the Contract Representative, the Contractor agrees to a stipulated penalty of $1,200.00 per day, in addition to any liquidated damages provided hereunder.

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PART 15 FAILURE TO COMPLETE WORK ON TIME

15.1 If the Contractor fails to complete all of the work or sections of the Project, if sections are indicated, within the time specified in the Contract or within any additional time allowed, for each working day the Liquidated Damages identified in 16.3 will be deducted from any money due the Contractor. This deduction will be made, not as a penalty, but as fixed, agreed liquidated damages for inconvenience to the Community College System of New Hampshire and for reimbursing the Community College System of New Hampshire the cost of the Administration of the Contract, including personnel, time, engineering and inspection. Should the amount of money otherwise due the Contractor be less than the amount of such liquidated damages, the Contractor and its Surety shall be liable to the Community College System of New Hampshire for such deficiency.

15.2 If the Community College System of New Hampshire permits the Contractor to continue and finish the work after the time fixed for its completion, it shall in no way operate as a waiver on the part of the Community College System of New Hampshire of any of its rights under the Contract. When the final acceptance has been duly made by the Contract Representative, any liquidated damage charges shall end.

15.3 The fixed, agreed, liquidated damages shall be assessed in accordance with the following schedule:

Original Contract Amount, Plus Any Extras, Alteration Orders, and Alternates		Amount of Liquidated Damages Per Working Day
From More Than:	To and Including:	
$0	$25,000.00	$200.00
$25,000.00	$50,000.00	$250.00
$50,000.00	$100,000.00	$400.00
$100,000.00	$500,000.00	$450.00
$500,000.00	$1,000,000.00	$800.00
$1,000,000.00	$2,000,000.00	$1,200.00
$2,000,000.00	$5,000,000.00	$1,600.00
$5,000,000.00	$10,000,000.00	$2,000.00
$10,000,000.00	and above	$2,400.00

PART 16 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

Revised 12/08/04

16.1 The Contractor shall provide a signed Substantial Completion Application to the Contract Representative when the work is believed to be substantially complete, in accordance with specification section 01700, accompanied by a list of items, referred to as the Punch List, to be completed or corrected. The failure to include any items of such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. On the basis of an inspection by the Contract Representative who determines that the work is substantially complete, a Certificate of Substantial Completion will be issued.

A. The Certificate of Substantial Completion shall:
   1. Include any modifications to the Punch List or value as determined by the Contract Representative.
   2. Establish the Date of Substantial Completion.
      a. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion unless otherwise provided in the Certificate of Substantial Completion.
   3. Identify the responsibilities of the Community College System of New Hampshire and the Contractor for security, maintenance, heat, utilities, and damage to the work and insurance.
   4. Fix the time limit within which the Contractor shall complete the items listed herein.

16.2 Partial Occupancy or Use: The Community College System of New Hampshire may take occupancy or use of completed or partially completed portions of the work upon written agreement between the Commissioner and the Contractor. Said partial occupancy or use shall have the approval of the insurer and Code enforcement authorities having jurisdiction. Said partial occupancy or use, (whether substantial completion has been obtained or not) provided the Contract Representative and Contractor have agreed upon written terms detailing each of the entities responsibilities in their entirety, may be exercised under these General Conditions.

A. A Written agreement shall stipulate the time period for completion of all Work and the commencement date for all applicable contract warranties. Said written agreement shall be preceded by a Contractor generated listing of all incomplete Work, meeting with the approval of the Contract Representative, before partial occupancy or use is taken by the Community College System of New Hampshire with prior approval of the Division.

16.3 If the Contractor fails to complete the items on the "punch list," by the date specified on the Substantial Completion Certificate, then in addition to the corrective measures listed in the Certificate of Substantial Completion, the Community College System of New Hampshire may use the monies still due the Contractor to have such items completed and the Contractor shall lose any claim to the monies so used. The Surety may be notified of any delay or failure to complete the work.

16.4 Upon written notice that the work is ready for final inspection and acceptance, the Contract Representative shall promptly make such inspection, to determine the work is acceptable under the Contract Documents and the Contract fully performed. The Contractor shall submit a request for payment, specifically identifying Final Payment. The Contractor shall provide all certificates and reports, as required, throughout the contract and shall coordinate their preparation and submission

prior to request for final payment. Failure to submit such certificates and reports shall be considered default of contract.

PART 17 DEFAULT AND TERMINATION OF CONTRACT

17.1 If the Contractor:

A. Fails to begin work under Contract within the time identified in specification section 01100.

B. Fails to perform the work with sufficient workers and equipment, or with sufficient materials to assume prompt completion of said work, or

C. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

D. Discontinues the prosecution of the work, or

E. Fails to resume work, which has been discontinued, within a reasonable time after notice to do so, or

F. Becomes insolvent or has declared bankruptcy, or commits any act of bankruptcy or insolvency, or

G. Makes an assignment for the benefit of creditors, or

H. For any other causes whatsoever, fails to carry on the work in an acceptable manner.

17.2 The Commissioner will give notice, in writing, to the Contractor and his Surety for such delay, neglect, and default for any item identified above.

A. Upon receipt of Notification of Default and the Contractor or Surety does not proceed in accordance with said Notification, then the Commissioner will Terminate the Contract. Upon which, the Commissioner shall have full power and authority, without violating the Contract, to assume the prosecution of the work. The Commissioner may enter into one or more agreements for the completion of said Contract according to the terms and conditions thereof, or use such other methods as will be required for the completion of said Contract in an acceptable manner.

1. All extra costs and charges incurred by the Community College System of New Hampshire as a result of such delay, neglect or default, together with the cost of completing the work under the Contract will be deducted from any monies due or which may become due said Contractor. If such expenses exceed the sum that would have been payable under the Contract, then the Contractor and the Surety shall be liable and shall pay to the Community College System of New Hampshire, the amount of such excess.

PART 18 TERMINATION OF CONTRACT WITHOUT FAULT

18.1 Except in cases controlled by the preceding section, the Commissioner, for any cause, including, but not limited to an order of any Federal authority or petition of the Contractor due to circumstances beyond its control may, by written notice to the Contractor and the Surety, with the

concurrence of the Governor and Council, terminate the Contract or any portion thereof subject to the Condition(s) A, B, C, and D provided below.

18.2 Notwithstanding anything to the contrary contained in these conditions, it is understood and agreed by the parties hereto that all obligations of the Community College System of New Hampshire hereunder, including the continuance of payments, are contingent upon the availability and continued appropriation of State and/or Federal Funds, and in no event shall the Community College System of New Hampshire be liable for any payments hereunder in excess of such available or appropriated funds. In the event of a reduction, termination or failure to appropriate any or all such available funds or appropriations or a reduction of expenditures of Community College System of New Hampshire funds by the Advisory Budget Control Committee, the Commissioner may, by written notice to the Contractor and Surety, immediately terminate this Contract in whole or in part in accordance with the following conditions:

A. When a Contract, or portion thereof, is terminated before completion of all items of work in the Contract, payment will be made for the actual items of work completed. Payment of items of work not completed at time of termination shall be the greater of the following amounts:
   1. A percentage of the Contract unit price, which percentage shall be the percentage of completion of the particular item at time of termination.
   2. Such amount as shall be mutually agreed upon by the parties. No claim for loss of anticipated profits on items or units of work not completed will be allowed.

B. Reimbursement for organization of the work and mobilization, when not otherwise included in the Contract, shall be made where the volume of work completed is too small to compensate the Contractor for these expenses under the Contract; the intent being that an equitable settlement be made with the Contractor.

C. Acceptable materials, obtained or ordered by the Contractor for the work, and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor based upon the delivered cost of the materials at such points of delivery as may be designated by the Contract Representative. The Contractor shall do everything possible to cancel unfilled orders.

D. Termination of a Contract, or a portion thereof, shall not relieve the Contractor of its responsibilities for the work completed nor shall it relieve the Surety of its obligations for and concerning any claims arising out of the work performed.

PART 19 ASSIGNMENT PROVISION

19.1 The Contractor hereby agrees that it will assign to the Community College System of New Hampshire, all causes of action that it may acquire under the anti-trust laws of New Hampshire and the United States as a result of conspiracies, combinations of contracts in restraint of trade which affect the price of goods or services obtained by the Community College System of New Hampshire under this Contract, if so requested by the Community College System of New Hampshire.

END OF SECTION

SECTION 01100

SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contract description.

B. Work by College.

C. College supplied products.

D. Contractor's use of site.

E. Work sequence.

F. College occupancy.

G. Specification Conventions.

1.2 CONTRACT DESCRIPTION

A. This project consists of a renovation of an existing 8,220 SF construction lab area and a new 435 SF Mechanical mezzanine..

B. The Project will include but not be limited to the Disciplines of: Concrete work, wood construction, steel construction, mechanical work, and electrical work..

C. Perform Work of Contract under stipulated lump sum grand total contract with the College in accordance with Conditions of Contract.

D. The Contractor shall, except as otherwise specifically stated in the Contract Documents, provide and pay for all materials, labor, tools, equipment, water, heat, fuel, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

1.3 WORK BY COLLEGE

1. NONE

1.4 COLLEGE SUPPLIED PRODUCTS

1. NONE

1.5 CONTRACTOR'S USE OF SITE [AND PREMISES]

A. Limit use of site and premises to allow:
   1. College occupancy.
   2. Work by Others and Work by College.

B. Access to Site: Limited to Normal working hours.

C. Construction Operations: Limited to areas as designated in the plans and specifications.

D. Time Restrictions for Performing Work: Normal working hours of [7:30] am to [4:30] pm, Monday through Friday with the following restrictions:
   1. No access during the following observed holidays:
      a. New Year’s Day.
      b. Martin Luther King Jr. Civil Rights Day.
      c. Washington’s Birthday.
      d. Memorial Day.
      e. Independence Day.
      f. Labor Day.
      g. Veterans’ Day.
      h. Thanksgiving Day.
      i. Day after Thanksgiving.
      j. Christmas Day.
   2. Access for work outside of normal working hours shall be requested in writing to the Contract Representative, at least one week in advance. The Contract Representative may accept or reject the request.

E. Utility Outages and Shutdown: Shall be coordinated with the building users to minimize disruption of services, and may require work to take place outside of normal working hours with request and approval.

1.6 WORK SEQUENCE

A. Work shall commence within 7, days after issuance of Notice to Proceed. Failure to comply shall constitute Default of Contract.

B. Construct Work to accommodate College's occupancy requirements during construction period, coordinate construction schedule and operations with CCSNH Contract Administrator:

1.7 COLLEGE OCCUPANCY

A. The College intends to occupy the campus during the Project. The Contractor's guarantee of work identified in Section 1700 shall not commence until the Contractor is granted a Certificate of Substantial Completion.

B. Cooperate with College to minimize conflict, and to facilitate College's operations.

C. Schedule the Work to accommodate College occupancy.

D. Partial Occupancy. The College will be permitted to partially occupy the premises as phases of the project are completed. Warranties for items contained within the areas subject to partial occupancy shall commence upon the College's use of those premises identified in the Partial Occupancy. Warranties on systems extending beyond the area subject to the Partial Occupancy shall not commence until all areas utilizing those system(s) are complete and fully functional.

1.9 SPECIFICATION CONVENTIONS

E. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Allowances (intentionally omitted).

B. Testing and inspection allowances. (intentionally omitted)

C. Schedule of values.

D. Requisition for payment.

E. Change procedures.

F. Defect assessment.

G. Unit prices.

H. Alternates (intentionally omitted).

1.2 ALLOWANCES (intentionally omitted).

1.3 TESTING AND INSPECTION ALLOWANCES (intentionally omitted)

1.4 SCHEDULE OF VALUES

A. Submit printed schedule on AIA Form G703 - Continuation Sheet for G702. Contractor's standard form or electronic media printout will be considered.

B. Submit Schedule of Values in duplicate within 15 days after date of issuance of Notice to Proceed. Failure to submit within specified time period will constitute Default of Contract.

C. Format: Utilize Table of Contents of these Specifications. Identify each line item with number and title of major specification Section. Identify bonds and insurance, allowances, and alternates

D. Include a separate line item for the amount of each Allowance and Alternates specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.

E. Revise schedule to list approved Change Orders, with each Requisitions For Payment.

1.5 REQUISITION FOR PAYMENT

A. Submit one copy of each application.

B. Content and Format: Items on the Requisition for Payment shall be consistent with the items on the Proposal Form. Utilize the Schedule of Values as documentation for payment items.

C. Submit updated construction schedule with each Requisition for Payment.

D. Payment Period: Submit at intervals stipulated in Document 00708 General Conditions. CCSNH

E. Substantiating Data: When the Contract Representative requires substantiating information, submit data justifying dollar amounts in question.

F. Include the following with Requisition for Payment, payment will not be processed if any items are missing or incomplete:

1. Record documents as specified in Section 01700, for review by the Contract Representative, which will be returned to Contractor.
2. Affidavits attesting to off-site stored products.
3. Construction progress schedules, revised and current as specified in Section 01330.

1.6 CHANGE PROCEDURES

A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The Contract Representative will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time, or that may be necessary to carry out the work included in the Contract, by issuing supplemental instructions.

C. The Contract Representative may issue a Proposal Request including a detailed description of proposed change(s) with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. The Contractor will prepare and submit estimate within ten days.

D. Contractor may propose changes by submitting a request for change(s) to the Contract Representative , describing proposed change and its full effect on the Work. Each request shall be a separate item and sequentially numbered. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors.

E. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for Change Order as approved by the Contract

Representative. Submit the breakdown of the following items on a Stipulated Sum/Price Change Order Form for review and approval by the Contract Representative:

1. The Contractor shall include the following indirect costs for work performed by the General Contractor as part the Contractors' price:
   a. Worker's Compensation and Employee Liability.
   b. Unemployment and Social Security Taxes.
2. In addition to the above indirect costs the General Contractor shall be allowed the following markups:
   a. Ten percent (10%). Said ten percent (10%) shall be all inclusive for overhead, supervision, and profit for Work performed by the General Contractor
   b. Five percent (5%) on that part of work performed by Subcontractors.
   c. The same percentages above shall apply to Subcontractors.
3. On any change that involves a net credit to the State, no allowance for overhead, supervision and profit shall be figured.
4. Extension of Contract Time: State any requests for extension of Contract Time with justification for such a request.

F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

G. Construction Change Directive : The Contract Representative may issue directive, signed by the Bureau Administrator or Assistant Administrator, instructing the Contractor to proceed with change in the Work, for subsequent inclusion in a Time and Material Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change. Failure to comply will result in Default of Contract.

H. Time and Material Change Order: Submit itemized account and supporting data within 10 days of completion of change. The Contract Representative will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.

1. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
2. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation. If acceptable, a Change Order for a Not to Exceed Amount will be prepared.
3. The Contractor as payment in full, including superintendence and overhead, shall accept the compensation herein provided and profit, for extra work performed. For all such work, the Contractor shall furnish certified copies of the payrolls on forms provided for that purpose, invoices of all materials, and such other information as may be required by the Contract Representative. Submit the breakdown of items on a Bureau Time and Material Change Order Form for review and approval by the Contract Representative:
   a. Labor (Actual wage + 40%): The Construction Superintendent is responsible for logging the time for each individual. For all laborers and

foremen engaged on the specific operation and entered directly on the Contractor's payroll, the Contractor will receive the actual rate of wage for each and every hour said laborers and Foremen are actually engaged in such work to which will be added an amount equal to forty percent (40%) of the sum thereof, which percentage shall include the cost percentages of the following items as applied to the labor cost involved:

1) Contract Bond Premium.
2) Public Liability Insurance.
3) Worker's Compensation Insurance.
4) Federal Social Security.
5) Unemployment Compensation Taxes

b. Materials (Actual Cost + 10%): For all materials entering permanently into the work plus freight charges thereon, and for all labor not entered directly on his payroll, the Contractor will receive the actual cost, as shown by original receipted bills forwarded to the Contract Representative, to which cost will be added an amount equal to ten percent (10%) of the sum thereof. Bills presented by the Contractor for material taken back from his stock will be subject to the ten percent (10%) allowance if approved by the Contract Representative.

c. Equipment (Reasonable Rental Charge + 0%): For any trucks, machinery or special equipment, other than small tools, the Contractor will receive a reasonable rental charge to which sum no percentage will be added. This rental charge shall be agreed upon in writing before the work is begun and shall include an operator and all fuel, lubricants, and the upkeep of the equipment.

4. In addition to the above costs the General Contractor shall be allowed the following markups:
   a. Ten percent (10%). Said ten percent (10%) shall be all inclusive for overhead, supervision, and profit for Work performed by the General Contractor
   b. Five percent (5%) on that part of work performed by Subcontractors.
   c. The same percentages above shall apply to Subcontractors.
5. Extension of Contract Time: State any requests for extension of Contract Time with justification for such a request.

I. Any Changes that result in a credit to any portion of the contract and/or a change in the Contract Time must be processed as an Change Order except as provided for in Item 1.2E.

J. Execution of Change Orders: CCSNH Contract Representative will issue Change Orders per the following procedures.
1. The Contract Representative reviews cost for Change in Work. If needed the Contract Representative will request additional items, back-up information, and request any possible changes or clarifications.
2. Contract Representative will prepare a Change Order.
3. Contract Representative will issue the Change Order to the Contractor for review and signature.
4. Contractor submits signed Change Order to the Contract Representative.

5. The Contract Representative completes the Change Order with the signature of the College Representative
6. A fully signed and executed Change Order is issued to Contract Representative, Clerk of the Works, and Contractor.

K. Execution of Change Orders: The Contractor is responsible for preparing and updating a spreadsheet log itemizing all Proposed Changes. A separate spreadsheet shall be completed for each Allowance Item. The spreadsheet shall include columns for Proposed Change Number, Description, Amount of Change, (or initial order of magnitude), Status, and Approved Amounts. In addition a current balance remaining shall be included. Change Orders will be processed per the following procedures:
1. The Contract Representative reviews cost for Change in Work with the College and Consultant(s). If needed the Contract Representative will request additional items, back-up information, and request any possible changes or clarifications.
2. Contract Representative and College Representative signs Change Order.
3. Contractor can proceed with Change Order Work with direction from the Contract Representative.
4. Fully signed and executed Change Order is issued to the Contract Representative, Clerk of the Works, and Contractor.

L. Correlation Of Contractor Submittals:
1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
3. Promptly enter changes in Project Record Documents.

1.7 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Contract Representative, it is not practical to remove and replace the Work, the Contract Representative will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of the Contract Representative.

D. Defective Work will be repaired to instructions of and acceptance by the Contract Representative, and unit sum/price will be adjusted to new sum/price at discretion of the Contract Representative.

E. Authority of the Contract Representative to assess defects and identify payment adjustments, is final.

F. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.

3. Products not completely unloaded from transporting vehicle.
4. Products placed beyond lines and levels of required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

1.8 UNIT PRICES

A. NONE

1.9 ALTERNATES (intentionally omitted)

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01300

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and project conditions.

B. Permits and fees.

C. Field engineering.

D. Preconstruction meeting.

E. Site mobilization meeting.

F. Progress meetings.

G. Pre-installation meetings.

H. Cutting and patching.

I. Notification of Subcontractors and Workmen's Compensation Insurance (SB 78)

J. Special procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various sections of the Specifications to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. The Contractor shall comply with the "Underground Utility Damage Prevention System" by notification to DIG-SAFE SYSTEM of intent to excavate near or around any underground utility installations in public ways. The Contractor shall call 1-800/225-4977 at least seventy-two (72) hours in advance of starting any excavation. Saturday, Sundays, and legal holidays are not included in the computation of the required seventy-two (72) hour notice.

C. Prior to any Work, the Contractor shall hire an independent company to locate utilities potentially affected by the Work and as shown and/or identified in the Contract Documents. All utilities shall be identified by the Contractor on the Record Drawings.

D. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion [and for portions of Work designated for State's [partial] occupancy].

H. After State occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of State's activities.

1.3 PERMITS AND FEES

A. The CCSNH shall obtain and pay for all permits, and impact fees as may be required by law for construction of CCSNH's facility. The Contractor shall pay for all fees and charges, and use of the property other than the site of the work for storage of materials or other purposes.

B. The Contractor shall pay all applicable Federal, State, and Local sales and other taxes, except taxes and assessments on the real property comprising the site of the Project.

1.4 FIELD ENGINEERING (not used)

1.5 PRECONSTRUCTION MEETING

A. The Contract Representative will schedule meeting at the Project site prior to Contractor occupancy.

B. Attendance required (unless otherwise waived): Contract Representative, Clerk of the Works, Contractor, Contractor's Superintendent, and major Subcontractors.

C. Potential Agenda Topics:
1. Distribution of Contract Documents.
2. Submission of list of Subcontractors, insurance carriers, subcontracting relationship, list of products, schedule of values, and progress schedule.
3. Designation of personnel representing parties in Contract.
4. Use of premises by CCSNH and Contractor.
5. College's requirements and partial occupancy.
6. Construction facilities and controls provided by CCSNH.
7. Temporary utilities provided by CCSNH
8. Security and housekeeping procedures.
9. Schedules.
10. Application for payment procedures.
11. Procedures for maintaining record documents.

12. Requirements for start-up of equipment.
13. Inspection and acceptance of equipment put into service during construction period.

D. Contract Representative shall record minutes and distribute copies within two days after meeting to participants, with one copy to each person in attendance and one to those affected by decisions made.

1.6 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at weekly intervals.

B. Attendance required (unless otherwise waived): Contract Representative, Clerk of the Works, Contractor, Contractor's Superintendent, and major Subcontractors.

C. Potential Agenda Topics:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

D. Contract Representative shall record minutes and distribute copies within two days after meeting to participants, with one copy to each person in attendance and one to those affected by decisions made.

1.7 PRE-INSTALLATION MEETING(S)

A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

C. Notify the Contract Representative seven days in advance of meeting date.

D. Contractor shall prepare agenda and preside at meeting:
1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight exposed elements.
5. Work of CCSNH or separate contractor.

C. Execute cutting, fitting, and patching [including excavation and fill,] to complete Work, and to:
1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, roof, or floor construction; completely seal voids.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with material in accordance with design and code requirements, to full thickness of penetrated element.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

K. Identify hazardous substances or conditions exposed during the Work to the Contract Representative for decision or remedy.

3.2 SPECIAL PROCEDURES

A. Materials: As specified in product sections; match existing with new products [and salvaged products] for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to permit installation of new work and finishes.

G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to original condition for each material, with neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Contract Representative for review.

L. Where change of plane of 1/inch or more occurs, submit recommendation for providing smooth transition to Contract Representative for review.

M. Trim existing doors to clear new floor finish. Refinish trim to original condition.

N. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

O. Finish surfaces as specified in individual product sections.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Subcontractor list.

D. Proposed products list.

E. Product data.

F. Shop drawings.

G. Samples.

H. Design data.

I. Test reports.

J. Certificates.

K. Manufacturer's instructions.

L. Manufacturer's field reports.

M. Erection drawings.

N. Construction photographs.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal with CCSNH accepted form.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents. Incomplete items or items submitted without the Contractor's signed stamp of approval thereon will be returned rejected.

E. Schedule submittals to expedite Project. Coordinate submission of related items. Deliver to:

Contract Representative
Matthew Moore
memoore@ccsnh.edu
Director of Capital Projects & Planning
Community College System of New Hampshire
26 College Drive
Concord, NH 03301

F. For each submittal for review, allow 14 days excluding delivery time to and from Contract Representative.

1. All shop drawings to be returned to Contractor from the Contract Representative. Direct return of shop drawings from Architect or Engineer to Contractor is not permitted.

G. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect or Engineer review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

L. Work shall not begin until [All] submittal items have been approved and returned to General Contractor by the Contract Representative.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedules at PreConstruction Meeting.

B. Submit revised Progress Schedules with each Application for Payment.

C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

E. Submit horizontal bar chart with separate line for each major portion of Work or operation\ and section of Work, identifying first work day of each week.

F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

G. Indicate estimated percentage of completion for each item of Work at each submission.

H. Submit separate schedule of submittal dates for shop drawings, product data, and samples, including CCSNH furnished products and dates reviewed submittals will be required from Contract Representative. Indicate decision dates for selection of finishes. Selection of finishes cannot occur until ALL finish items are submitted and products are approved.

I. Indicate delivery dates for furnished products.

J. Revisions To Schedules:
   1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
   2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
   3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including effect of changes on schedules of separate contractors.

1.4 SUBCONTRACTOR LIST

A. Submit list, at the PreConstruction Meeting, of subcontractors setting forth in detail the work for which they will be responsible. In addition, the General Contractor shall identify what work will be performed with the Bidder's own forces.

B. Provide Subcontractor and Insurance information as required under SB 78.
   1. Subcontractor list is to include subcontracting relationship and the carrier of Workmen Compensation Insurance for all subcontractors, all tiers.
   2. Proof of Insurance is to be provided within 36 hours of request.
   3. Changes and additional to Subcontractor and Insurance is to be provided to the CCSNH within 36 hours of occurrence.
   4. The CCSNH will post this information in a publicly accessible website for the duration of the contract.

1.5 PRODUCT DATA

A. Product Data: Submit for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Submit electronic copies to the Contract Representative. The copy for the CCSNH is separate from the copy the Contractor to provide as part of close out procedures.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01700.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Submit an electronic copy to the Contract Representative. The copy for the CCSNH is separate from the copy the Contractor to provide as part of close out procedures.

D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01700.

1.7 SAMPLES

A. Samples: Submit for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Samples For Selection as Specified in Product Sections:
   1. Submit to Contract Representative for aesthetic, color, or finish selection.
   2. Submit samples of finishes from full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Contract Representative and System approval.

C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

D. Include identification on each sample, with full Project information.

E. Submit number of samples specified in individual specification sections; Contract Representative will retain one sample and Architect or Engineer will retain one sample.

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

G. Samples will not be used for testing purposes unless specifically stated in specification section.

H. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in Section 01700.

1.8 DESIGN DATA

A. Submit for Contract Representative's knowledge.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.9 TEST REPORTS

A. Submit for Contract Representative's knowledge.

B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor, to Contract Representative in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Contract Representative.

1.11 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, [start-up,] adjusting, and finishing, to the Contract Representative in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.12 MANUFACTURER'S FIELD REPORTS

A. Submit reports for Contract Representative's and System's benefit.

B. Submit report in duplicate within 7 days of observation to the Contract Representative for information.

C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.13 ERECTION DRAWINGS

A. Submit to the Architect and Contract Representative for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

B. Data indicating inappropriate or unacceptable Work may be subject to action by the Architect, Engineer, or Contract Representative.

1.14 CONSTRUCTION PHOTOGRAPHS

A. Provide photographs of construction throughout progress of Work produced by an experienced] photographer, acceptable to the Contract Representative.

B. Twice monthly submit photographs.

C. Photographs: Submit digital images on 3-1/2” diskettes or on compact discs.

D. Take multiple site photographs from differing directions and interior photographs indicating relative progress of the Work, three (3) days maximum prior to submitting.

E. Identify each image. Identify name of Project, contract number phase orientation of view, date and time of view.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Product substitution procedures.

F. Equipment electrical characteristics and components.

1.2 PRODUCTS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

B. All materials and equipment shall be new, except as specifically permitted by Contract Documents.

C. Furnish interchangeable components from same manufacturer for components being replaced.

D. The use of asbestos containing materials shall be prohibited.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection only with prior approval from the Contract Representative.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers with or without provision for substitutions: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed. Submit request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Where Bidding Documents stipulate particular Products, substitution requests will ONLY be considered before receipt of Bids. Submit requests per the requirements specified in this section.
   1. All requests shall be submitted to the Contract Representative not later than five (5) business days before the hour and day set for bid opening. Incomplete requests or requests received after this deadline will not be considered.
   2. All requests that are approved and are acceptable to the Department will be issued as part of an Addendum to each Bidder who has received a set of bidding documents, so that all Bidders may avail themselves of the change in submitting their Proposals.

B. Substitutions [may] be considered after bid opening when a product becomes unavailable through no fault of the Contractor. The Contractor shall apply to the Contract Representative, in writing, within ten (10) days of his realizing his inability to furnish the article specified, describing completely the substitution he desires to make. The Contractor shall include a dated written statement from the manufacturer outlining an explanation for the unavailability of the product. Substitutions for reasons of lead times, i.e., the time between when the Contractor orders necessary materials from the vendor

and anticipated delivery, will only be reviewed if the lead time is more than the length of the contract time. The Department may extend the contract time to accommodate the product specified. No additional costs from the Contractor will be considered due to the fact that the Contractor shall verify lead times and coordinate with contract time during the bidding phase.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that Bidder:
   1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
   2. Will provide same warranty for Substitution as for specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the State.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse Department and Architect and/or Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:
   1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
   2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
   3. The Department will notify Bidders in writing of decision to accept by issuing an addendum.

PART 2 PRODUCTS

A. Not used

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Protecting installed construction.

D. Project record documents.

E. Manual for materials and finishes.

F. Product warranties and product bonds.

G. Guarantee of work.

1.2 CLOSEOUT PROCEDURES

A. Submit a signed Substantial Completion Application attesting that the Contract Documents have been reviewed, Work has been inspected, and that all Work is complete in accordance with Contract Documents and ready for Contract Representative review. The Substantial Completion Application for use by the Contractor is attached to the end of this specification section. The Contract Representative may modify this Agreement to accommodate any changes in Work.

1. Provide submittals to the Contract Representative as required by the Contract Documents and as required by authorities having jurisdiction.

B. Only after completion of all Punch List items and submission of all items the Contractor shall submit a Final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

C. College will occupy portions of building as specified in Section 01100.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean debris from roofs, gutters, downspouts, and drainage systems.

C. Clean site; sweep paved areas, rake clean landscaped surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by State.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish [first] [main] floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

G. Submit documents to the Contract Representative at time of Substantial Completion.

1.6 MANUAL FOR MATERIALS AND FINISHES

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. The Contract Representative will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by State, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes (15) fifteen days prior to Substantial Completion. Draft copy be reviewed and returned after Substantial Completion, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.

D. Submit one set of revised final volumes in final form prior to final inspection, and one electronic version.

E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.

F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

H. Additional Requirements: As specified in individual product specification sections.

I. Include listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.7 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after Substantial Completion. All warranties start dates shall be the Substantial Completion Date, if project is phased all warranties to start at the date of Substantial Completion of each phase.

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time Of Submittals:
   1. For equipment or component parts of equipment put into service during construction with State's permission, submit documents within (10) ten days after acceptance.
   2. Make other submittals within (10) ten days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within (10) ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.8 GUARANTEE OF WORK

A. Except as otherwise specified, all work shall be guaranteed by the Contractor against defects resulting form the use of inferior materials, equipment or workmanship for one (1) year from the Date of Substantial Completion of the work.

B. If, within any guarantee period, repairs or changes are required in connection with guaranteed work, which in the opinion of the Contract Representative, is rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract shall, promptly upon receipt of notice from the Commissioner, and at his own expense:
   1. Place in satisfactory condition in every particular, all such guaranteed work, correct all defects therein.
   2. Make good all damage to the building or site, or equipment or contents thereof, which in the opinion of the Contract Representative, is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract.
   3. Make good any work or material, or the equipment and contents of said building or site disturbed in fulfilling any such guarantee.

C. In any case, wherein fulfilling the requirements of the Contract or of may guarantee, embraced in or required thereby, the Contractor disturbs any work guaranteed under another contract, he shall restore such disturbed work to a condition satisfactory to the Contract Representative and guarantee such resorted work to the same extent as it was guaranteed under such other contracts.

D. If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Commissioner may have the defects corrected and the Contractor and his/her Surety shall be liable for all expense incurred.

E. All special guarantees applicable to definite parts of the work that may be stipulated in the Specifications or other papers forming a part of the Contract shall be subject to the term of this paragraph during the first year of the life of such special guarantee.

F. Failure to adhere to guarantee terms may result in suspension or barring from the prequalification list, or, alternatively, the requirement of a Letter of Credit or other guaranty equal to a percentage of the Contract amount.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

Project #MCC19-01

EXHIBIT "A"

FOR

MCC LAB RENOVATIONS

AT

MANCHESTER COMMUNITY COLLEGE

1066 Front Street, Manchester, NH

A COMPONENT OF THE

Community College System of New Hampshire

26 College Drive, Concord, NH

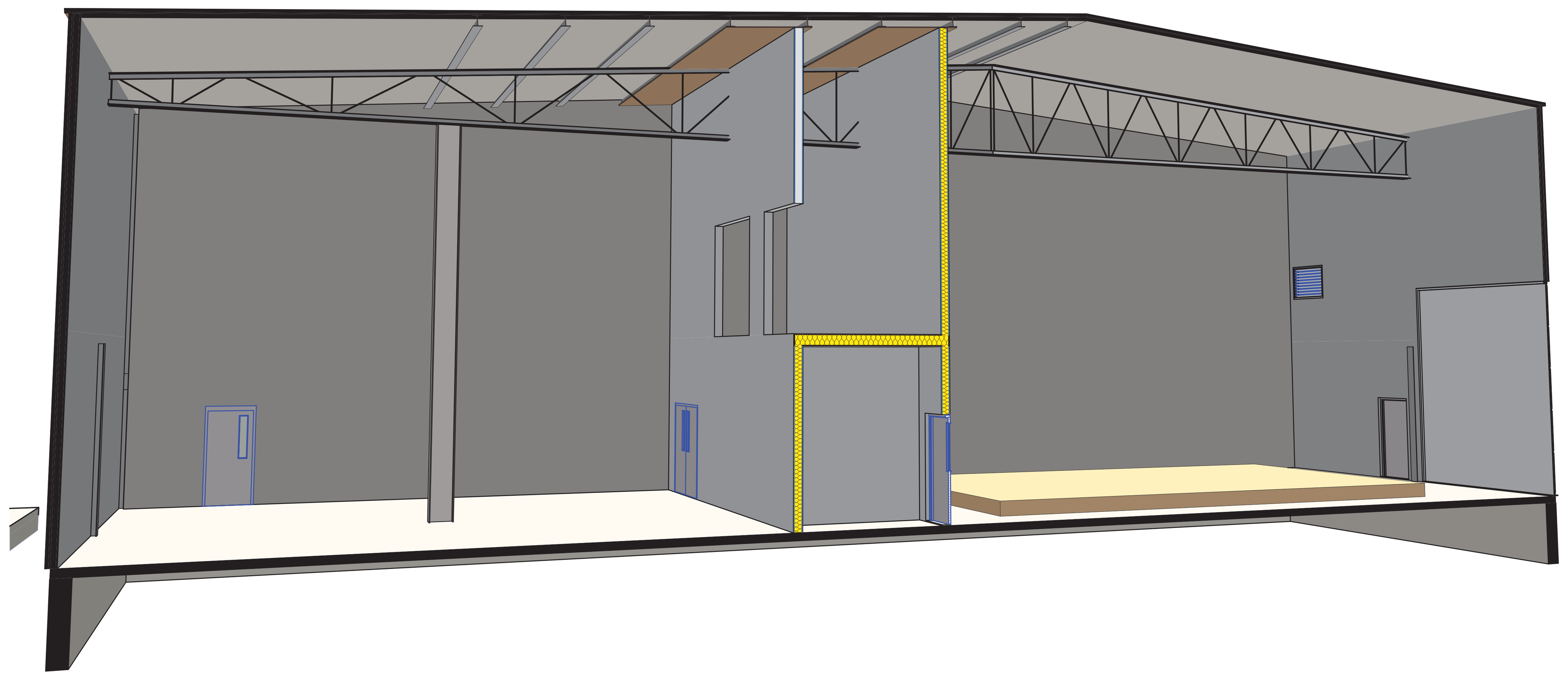
PROJECT MANUAL

Attached to this exhibit:

- Project Drawings and Specifications Dated April 19, 2019

MCC LAB RENOVATIONS

1066 FRONT STREET • MANCHESTER • New Hampshire



DRAWING LIST

ARCHITECTURAL

	Cover Sheet
A-001	General Notes
AD101	Demolition Plan
A-101	Proposed Plans
A-301	Sections & Details
A601	Schedules

MECHANICAL

M1	Existing conditions Demo plan
M2	New Lower and Mezzanine Levels
M3	New Lower and Mezzanine Levels
M4	Schedules
M5	Schedules

ELECTRICAL

E0.01	Legend & General Notes
E0.02	Electrical Spec., Schedules & Notes
E1.01	Floor Demolition Plans & Notes
E2.01	Floor Lighting Plan & Notes
E3.01	Floor Power Plan & Notes
FA.01	Floor Fire Alarm Plan & Notes

DENNIS MIRES, P.A.
THE ARCHITECTS
EXCELLENCE SINCE 1980

CODE REVIEW
MCC Lab renovation
1066 Front St, Manchester NH
April 2019

GENERAL BUILDING INFORMATION

LEVEL	AREA
Ground Floor	8,220 SF (SAME AS EXISTING)
Mech. mezzanine	435 SF (NEW)

2009 INTERNATIONAL BUILDING CODE: (IBC)
Refer to the following sections to determine compliance with the requirements for construction documents in Sections 105.0, 106.0, 107.0, 108.0, 109.0, 1704.0, 1804.0. The building must comply with all Sections of the International Building Code.

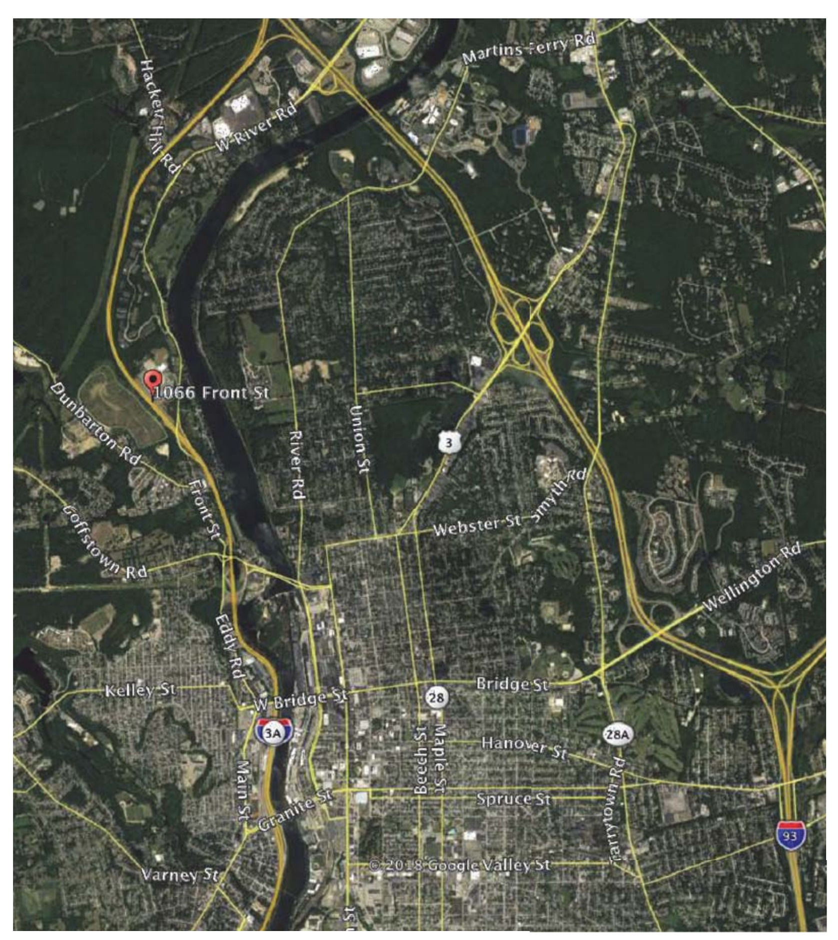
NFPA 101 2009 LIFE SAFETY CODE (LSC)

304 USE GROUP:
Business Group B
602 CONSTRUCTION CLASSIFICATION
Type 5B
505.5 Room called “Mechanical Mezzanine” on plan considered as Equipment Platform per IBC 505.5. Does not contribute to building area nor number of stories. Area of platform < 2/3 of area of room in which is located. Room considered unoccupied.
903 AUTOMATIC SPRINKLER SYSTEMS
Installed throughout
TABLE 601 REQUIRED FIRE RESISTANCE RATINGS OF STRUCTURE ELEMENTS:
Structural Frame: 0 hour
Bearing Walls: Exterior: 0 hour
Bearing Walls: Interior: 0 hour
Nonbearing walls and partitions interior: 0 hour
Floor Construction: 0 hour

IBC AND LIFE SAFETY CODE OCCUPANT LOADS & EGRESS COMPONENTS

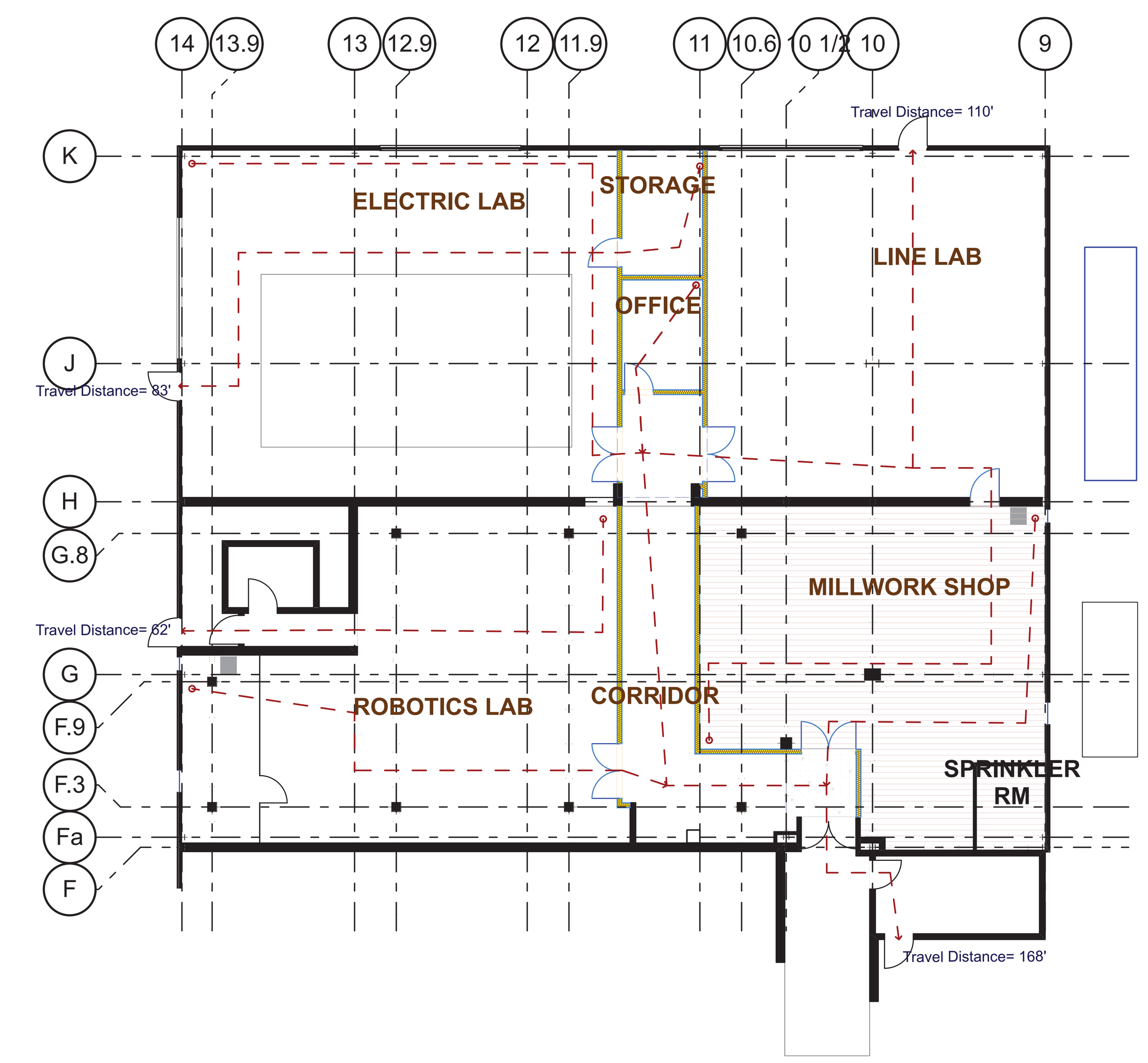
CALCULATIONS
1004 OCCUPANT LOAD: IBC 1004.1 & LSC (7.3.1.2), Most strict requirement used
Vocational room occupancy Maximum Floor Area allowances per occupant = 50sf net
Electrical Lab: 2025 sf: 41 occupants
Line Lab: 1572 sf: 32 occupants
Millwork Shop: 1283 sf: 26 occupants
Robotics Lab: 1620 sf: 33 occupants
Office: 118 sf: 1 occupant (@100 sf per occupant)
Storage: 135 sf: 1 occupant (@300 sf per occupant)
TOTAL OCCUPANTS = 134 OCCUPANTS

1005.1 CAPACITY OF EGRESS COMPONENTS: IBC & LSC (7.3.3.1)
165 occupants x .2 = 26.8 inches required: (4) 36 inch exits provided.
1021.1 NUMBER OF EGRESS EXITS per room:
2 Provided 1 Required per 1015.1 table as the maximum occupancy is less 49 for Group B.
1016 TRAVEL DISTANCE < 300ft



LOCUS MAP

N



Code Layout
SCALE: 1/16" = 1'-0"
0 8' 16' 32'

	ARCHITECT		CIVIL		STRUCTURAL	CONSTRUCTION MANAGER
DENNIS S. MIRES No. 1018 REGISTERED ARCHITECT STATE OF NEW HAMPSHIRE	**Dennis Mires, P.A., The Architects** 697 Union St Manchester, NH Tel: (603)625-4548 Fax: (603)625-1067 e-mail: upstairs@TheArchitects.Net				**SW&C Engineering, P.A.** **857 Wellington Rd** Manchester, NH Tel: (603)566-2988 e-mail: SWCEngineering@Comcast.net	
	PLUMBING		MECHANICAL		ELECTRICAL	
			Design Day Mechanicals Inc John Waitt Project Manager Tel: (603)269-7253 e-mail: Johnw@designdaymech.com		**Electrical Systems Engineering, Inc.** 22 Manchester Rd, Suite 8a, Derry NH Tel: (603)870-9009 Vic Reno e-mail: renoengineering@relightdesign.com	

MCC LAB RENOVATIONS
#Project Description

Issued: 4/19/19 Permit Set
proj. no.: 2018103

The material contained in these drawings and the design they are intended to convey are the exclusive property of Dennis Mires, P.A, The Architects. Possession and use hereof is granted only confidentially in connection with construction and / or sale of the structure depicted herein as authorized by him, and the recipient agrees to abide by these restrictions. Any use, reproduction or disclosure of any information, in whole or in part, contained herein, without written permission of Dennis Mires P.A., The Architects, is expressly prohibited.

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GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR AND REASONABLY INCIDENTAL TO THE CONSTRUCTION OF THE PROJECT.

2. THE CONTRACTOR SHALL REVIEW AND COORDINATE THE SCHEDULING OF ALL CONSTRUCTION PHASING WITH THE OWNER.

3. ALL WORK SHALL CONFORM TO ALL LOCAL BUILDING CODES AND ORDINANCES, AND ALL OTHER AGENCIES HAVING JURISDICTION. THE RULES AND REGULATIONS OF OSHA SHALL BE ADHERED TO FOR THIS PROJECT.

4.THE CONTRACTOR SHALL OBTAIN AND ~~PAY ALL FEES FOR BUILDING DEPARTMENT APPROVALS AND PERMITS~~, CONTROLLED INSPECTIONS, ~~OTHER AGENCY APPROVALS AND PERMITS WHERE REQUIRED, AND~~ FINAL INSPECTION SIGN-OFFS FOR PROJECT COMPLETION. COPIES OF ALL INSPECTION REPORTS TO BE FORWARDED TO THE OWNER AND ARCHITECT.

5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, AND FOR THE COORDINATION OF ALL PORTIONS OF WORK.

6. THE CONTRACTOR SHALL DO ALL CUTTING, FITTING AND PATCHING THAT MAY BE REQUIRED TO MAKE THE VARIOUS PARTS OF THE WORK READY TO RECEIVE OR BE RECEIVED BY THE WORK OF OTHERS OR OUTSIDE VENDORS AS SHOWN UPON REASONABLY IMPLIED BY THE DRAWINGS.

7. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS, MAINTAIN AND PAY ALL COSTS FOR TEMPORARY WATER AND PLUMBING, POWER AND LIGHTING AND HEATING OR VENTILATION AS HE MAY REQUIRE TO PROPERLY CONDUCT THE WORK OF THE CONTRACT. ALL HOISTING CHARGES, IF ANY, SHALL BE INCLUDED IN HIS BID.

8. THE CONTRACTOR SHALL THOROUGHLY VERIFY ALL DIMENSIONS PRIOR TO THE BID SUBMISSION. TO THE EXTENT PRACTICABLE, HE SHALL ALSO VERIFY FIELD CONDITIONS AT THE SITE. ANY AND ALL DISCREPANCIES SHALL BE REPORTED TO THE OWNER PRIOR TO HIS BID SUBMISSION, OTHERWISE THE CONTRACTOR SHALL BEAR ALL COSTS TO COMPLETE THE WORK AS INTENDED ON THE CONTRACT DOCUMENTS.

9. NOT USED

10. THE CONTRACTOR SHALL PATCH TO MATCH OR AS OTHERWISE DIRECTED, ALL AREAS WHICH ARE AFFECTED BY THE DEMOLITION AND/OR NEW CONSTRUCTION.

11. THE CONTRACTOR SHALL BE RESPONSIBLE, AT HIS OWN COSTS, FOR WAREHOUSING OF ALL MATERIALS TO BE INSTALLED UNDER THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECEIVING, PROTECTING OWNER FURNISHED ITEMS.

12. THE CONTRACTOR SHALL PROTECT THE BUILDING PREMISES AND ALL OCCUPANTS ON THE PROJECT SITE. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL NECESSARY COVERINGS, BOARDS, TEMPORARY PARTITIONS AND DOORS AS REQUIRED TO PROTECT THE EXISTING WORK AND FINISHES TO REMAIN AT THE JOB SITE AND ALL AREAS OF THE BUILDING AFFECTED BY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES CAUSED BY IMPROPER PROTECTION AND SHALL MAKE ALL NECESSARY REPLACEMENTS OR REPAIRS WITHOUT ANY ADDITIONAL CHARGE TO THE OWNER OR THE PARTY AFFECTED. THE CONTRACTOR SHALL TAKE CARE TO NOT OVERLOAD THE EXISTING FLOOR SLABS BEYOND THERE DESIGN CAPACITY WITH MATERIALS.

13. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER AND/OR ARCHITECT. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL APPLICABLE MANUFACTURER'S PRODUCTS GUARANTEES AND/OR WARRANTIES; AND SHALL SUBMIT COPIES OF EACH TO THE ARCHITECT PRIOR TO PURCHASE OF MATERIALS AND INSTALLATION.

15. THE CONTRACTOR SHALL MAINTAIN CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AND SHALL REMOVE TRASH AND DEBRIS AT THE END OF EACH WORKING DAY.

16. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT, IN WRITING, AND RECEIVE APPROVAL BEFORE ORDERING OR INSTALLING ITEMS OR MATERIALS WHICH ARE PROPOSED EQUALS. PROPOSED SUBSTITUTIONS SHALL BE SUBMITTED WITH BID PROPOSAL WITH ADD OR DEDUCT PRICING FROM THE ITEMS OR SYSTEM SPECIFIED IN THE CONTRACT DOCUMENTS.

17. JUST PRIOR TO THE OWNER'S OCCUPANCY, THE CONTRACTOR SHALL CLEAN ALL SURFACES OF DUST, DEBRIS, LOOSE CONSTRUCTION MATERIAL AND EQUIPMENT AND LEAVE ALL FLOORS VACUUMED CLEAN. REMAINING CONSTRUCTION MATERIAL AND EQUIPMENT, IF ANY, SHALL BE MOVED AND TEMPORARILY SECURED IN AN AREA DIRECTED BY THE OWNER.

18. WINDOWS AND PLUMBING FIXTURES SHALL BE WASHED JUST PRIOR TO OWNER OCCUPANCY.

19. ALL NEW WORK AND CONSTRUCTION OPERATIONS SHALL NOT UNDERMINE THE STRUCTURAL INTEGRITY OF THE BUILDING.

20. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND/OR ARCHITECT FOR ITEMS FURNISHED AND/OR INSTALLED BY OTHERS FOR EXACT LOCATIONS AND PROPER FITTING; AND SCHEDULE THEM FOR WORK.

21. THE CONTRACTOR SHALL SECURE AND LOCK UP THE OWNER'S PREMISES AT THE END OF EACH WORKING DAY AND SHALL NOT PERMIT UNAUTHORIZED PERSONNEL TO CIRCULATE IN THE OWNER'S SPACE.

22. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SAFE AND UNINTERRUPTED CIRCULATION OF HVAC, ELECTRICAL, PLUMBING, AND FIRE PROTECTION SYSTEMS IN EXISTING AREAS NOT AFFECTED BY CONSTRUCTION.

23. THE CONTRACTOR SHALL PATCH ALL HOLES AND CHASES BOTH ABOVE AND BELOW THE CEILING CREATED BY THE WORK OF ALL TRADES, TO MAKE WATERTIGHT AND FIREPROOF. INSTALLATION, ALTERATION OR REMOVAL OF DUCTS, PIPES, CONDUITS, CEILINGS, ETC., TO MATCH EXISTING SURFACE.

24. THE CONTRACTOR SHALL PROVIDE APPROVED FIRE RATED MINERAL WOOL OR APPROVED EQUAL PACKED SOLID AT SPACE AROUND PIPES, DUCTS, AND CONDUITS PENETRATING FIRE RATED WALLS OR PARTITIONS AND SHALL COMPLY WITH ALL REGULATIONS AS SET BY APPLICABLE SECTIONS OF THE STATE BUILDING CODE AND OTHER CODES HAVING JURISDICTION.

25. FIRESTOPPING SHALL BE AS REQUIRED BY APPLICABLE SECTIONS OF THE STATE BUILDING CODE AND OTHER CODES HAVING JURISDICTION.

26. ALL INTERIOR FINISHES AND BACKING SHALL COMPLY WITH APPLICABLE SECTIONS OF THE STATE BUILDING CODE AND OTHER CODES HAVING JURISDICTION.

27. THE CONTRACTOR SHALL PATCH ALL HOLES AND DEFECTS IN THE FLOOR AND PROVIDE FLASH PATCHING OF ALL FLOORING. THE CONTRACTOR SHALL INSPECT THE FLOORS WITH THE FLOORING INSTALLER AND SHALL MAKE THE NECESSARY REPAIRS PRIOR TO THE ACCEPTANCE OF THE FLOOR SUBSTRATE BY THE FLOORING INSTALLER.

28. THE CONTRACTOR SHALL INSPECT AND MAKE THE NECESSARY CORRECTIVE MEASURES TO INSURE THAT ALL PARTITIONS SHALL ALIGN WITHOUT ANY BREAKS BETWEEN APPROVED BREAK POINTS.

29. THE CONTRACTOR SHALL PROVIDE AND ESTABLISH AN ELEVATION BENCHMARK AT 0'-0" TO BE USED AS A WORK POINT BY ALL TRADES FOR VERTICAL DIMENSIONS.

30. SUPERVISION BY THE CONTRACTOR:
DURING THE ENTIRE PERIOD OF THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL BE REPRESENTED AT THE SITE OF THE WORK BY A QUALIFIED SUPERINTENDENT WHO SHALL BE EMPOWERED TO ACT ON HIS BEHALF, AND WHO SHALL BE RESPONSIBLE FOR:
1. ESTABLISHMENT AND MAINTENANCE OF PROPER AND SAFE WORKING CONDITIONS WITHIN THE STATE OF THE WORK.
2. COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS.
3. LAYOUT AND COMPLETE COORDINATION OF ALL ELEMENTS OF THE WORK INCLUDING MECHANICAL AND ELECTRICAL COORDINATION.
4. CHECKING OF ALL WORK IN PLACE FOR THE PURPOSE OF ASCERTAINING ITS COMPLIANCE WITH THE CONTRACT DOCUMENTS.
5. REMOVAL AND PROPER REPLACEMENT OF ALL INSTALLED WORK WHICH IS NOT IN COMPLIANCE WITH CONTRACT DOCUMENTS.

31. SUBMITTALS
A. CONTRACTOR SHALL SUBMIT SAMPLES AND SHOP DRAWINGS TO THE ARCHITECT FOR REVIEW PRIOR TO FABRICATION AND INFORM THE ARCHITECT IN WRITING AT THE TIME OF SUBMISSION OF ANY PROPOSED DEVIATION IN SUBMITTALS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. BY REVIEWING, APPROVING, AND SUBMITTING SHOP DRAWINGS AND SAMPLES PRIOR TO SUBMISSION TO THE ARCHITECT, THE CONTRACTOR REPRESENTS THAT HE HAS DETERMINED AND VERIFIED FIELD MEASUREMENTS, AND THAT EACH SUBMITTAL HAS BEEN CHECKED AND COORDINATED WITH THE REQUIREMENTS OF THE CONTRACT.
B. TIMING
1. PRIOR TO COMMENCING THE WORK THE CONTRACTOR SHALL PROVIDE THE ARCHITECT WITH A SUBMITTAL SCHEDULE FOR ALL ITEMS REQUIRED BY THE CONTRACT DOCUMENTS WHICH IS FULLY COORDINATED WITH THE CONSTRUCTION SCHEDULE TO INSURE A TIMELY REVIEW PROCESS.
2. MAKE SUBMITTALS FAR ENOUGH IN ADVANCE OF SCHEDULE DATES FOR INSTALLATION TO PROVIDE TIME REQUIRED FOR REVIEWS, FOR SECURING NECESSARY APPROVALS, FOR POSSIBLE REVISIONS AND RESUBMITTALS, AND FOR PLACING ORDERS AND SECURING DELIVERY.
C. SAMPLES
1. REJECTED SAMPLES SHALL BE RESUBMITTED AS SOON AS POSSIBLE AND SHALL BE IDENTIFIED AS "RESUBMITTED SAMPLES".

32. REMOVALS, CLEAN-UP, AND PROTECTION
A. REMOVE ALL WASTES, REFUSE, AND DEBRIS ACCUMULATING FROM CONSTRUCTION WORK AND LEGALLY DISPOSE OF INDEPENDENTLY FROM OTHERS IN THE BUILDING.
B. GENERAL CONTRACTOR SHALL ENSURE THAT CONSTRUCTION PREMISES ARE LEFT IN A GENERALLY CLEAN CONDITION AT THE END OF EACH WORKING DAY. ONCE HARDWOOD FLOORING HAS BEEN INSTALLED, ALL FLOORS WILL BE VACUUMED AND TEMPORARILY PROTECTED AGAINST DAMAGE DURING MOVE-IN. PROTECTION FOR WALLS, CORNERS, AND DOOR FRAMES WILL ALSO BE PROVIDED AS REQUIRED.
C. JUST PRIOR TO OWNER OCCUPANCY, CLEAN ALL SURFACES, REMOVE TEMPORARY LABELS, STAINS, AND FOREIGN SUBSTANCES, POLISH TRANSPARENT AND GLOSSY SURFACES, CLEAN EQUIPMENT AND FIXTURES TO A SANITARY CONDITION; REPLACE FILTERS OF MECHANICAL EQUIPMENT. REMAINING CONSTRUCTION MATERIAL AND EQUIPMENT, IF ANY, SHALL BE MOVED AND TEMPORARY SECURED IN AN AREA DIRECTED BY OWNER.
D. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AFTER-HOURS WORK AS REQUIRED BY THE OWNER- (I.E. EXCESSIVE NOISE, FUMES, ETC.)
E. CONTRACTOR IS RESPONSIBLE FOR COORDINATING AVAILABILITY OF PARKING FOR WORKERS WITH THE OWNER.
F. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING WORK OF SEPARATE CONTRACTS (I.E. ELECTRICAL, PLUMBING/HVAC CONTRACTORS., ETC).

SPRINKLERS

SPRINKLER COVERAGE TO BE VERIFIED AND ADJUSTED AS NEEDED TO MEET NFPA 13-2013

/Volumes/ActiveProjects/MCC Building Construction Lab - 2018103/Archicad 2018103/2018103 MCC BldgC - Lab Renovation _V21.pln Friday, April 19, 2019

MCC LAB RENOVATIONS
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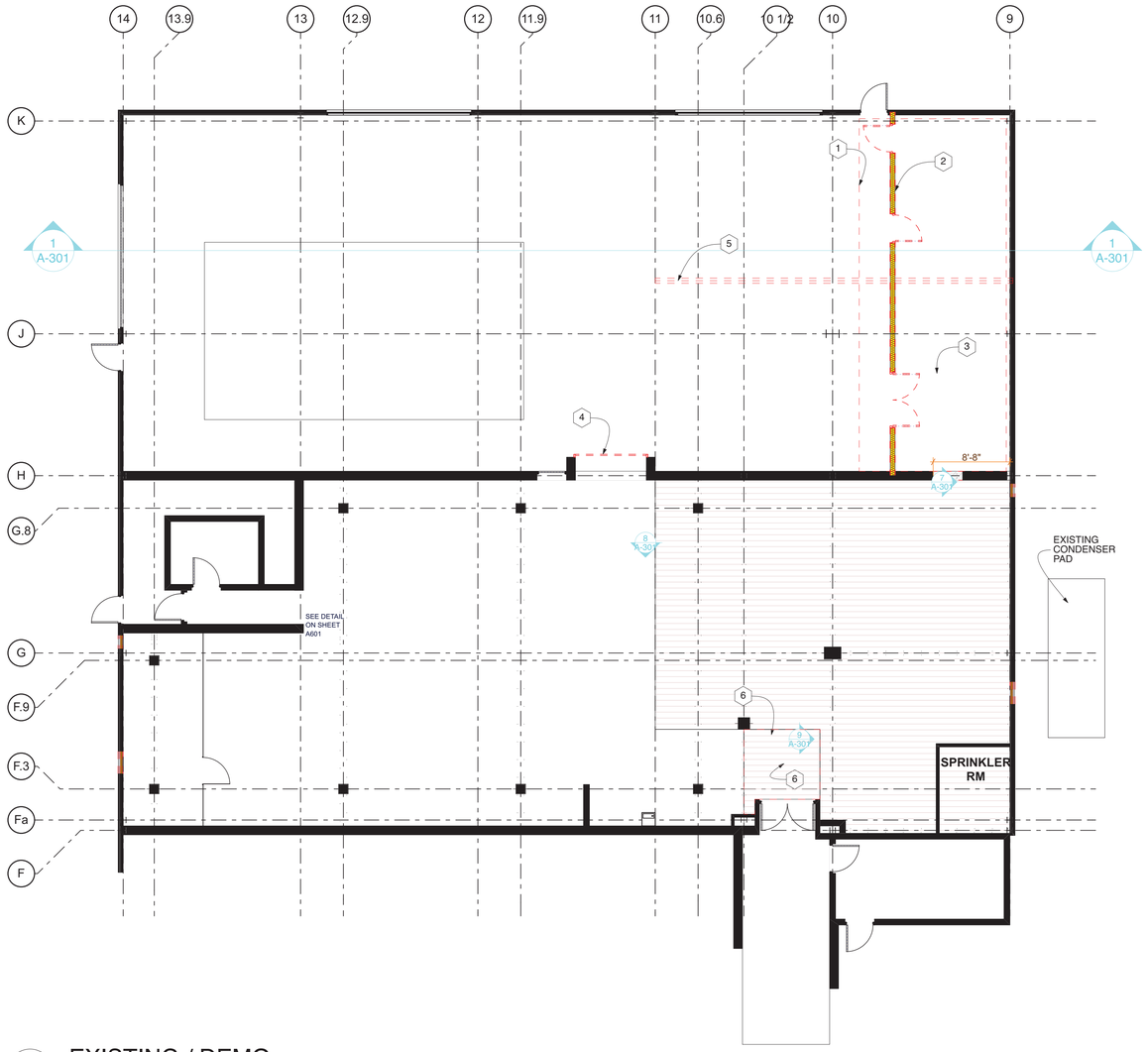
Issue ID	Issue Date	Issue Name
03	4/19/19	Permit Set

General Notes

proj. no.: 2018103

A-001

Printed: 4/19/19



1 AD101 EXISTING / DEMO

SCALE: 1/8" = 1'-0"

0 4' 8' 16'

KEYNOTES - DEMO

CONTRACTOR TO COORDINATE WITH OWNER TO DECIDE IF ANY ITEM PART OF THE DEMOLITION PROCESS IS TO BE SALVAGED. NO ITEM TO BE RE-USED IN THIS PROJECT UNLESS OTHERWISE NOTED.

1 - REMOVE AND DISPOSE OF 2 UPPER MEZZANINES (STRUCTURE, WALLS, FLOORING, RAILING, STAIR…)
2 - REMOVE AND DISPOSE OF GROUND LEVEL WALL, DOORS, WINDOWS.
3 - REMOVE AND DISPOSE OF ANY INTERIOR PARTITION
4 - REMOVE AND DISPOSE OF OVERHEAD DOOR
5 - REMOVE AND DISPOSE OF CRANE AND ITS STRUCTURE
6 - REMOVE AND DISPOSE OF HARDWOOD FLOOR AND SLIPPERS. SAVE AND RE-USE TRANSITION COVER PLATE FOR DOOR 102A.

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Issue ID	Issue Date	Issue Name
03	4/19/19	Permit Set
02	3/21/19	DD

Demolition Plan

proj. no.: 2018103

AD101

Printed: 4/19/19

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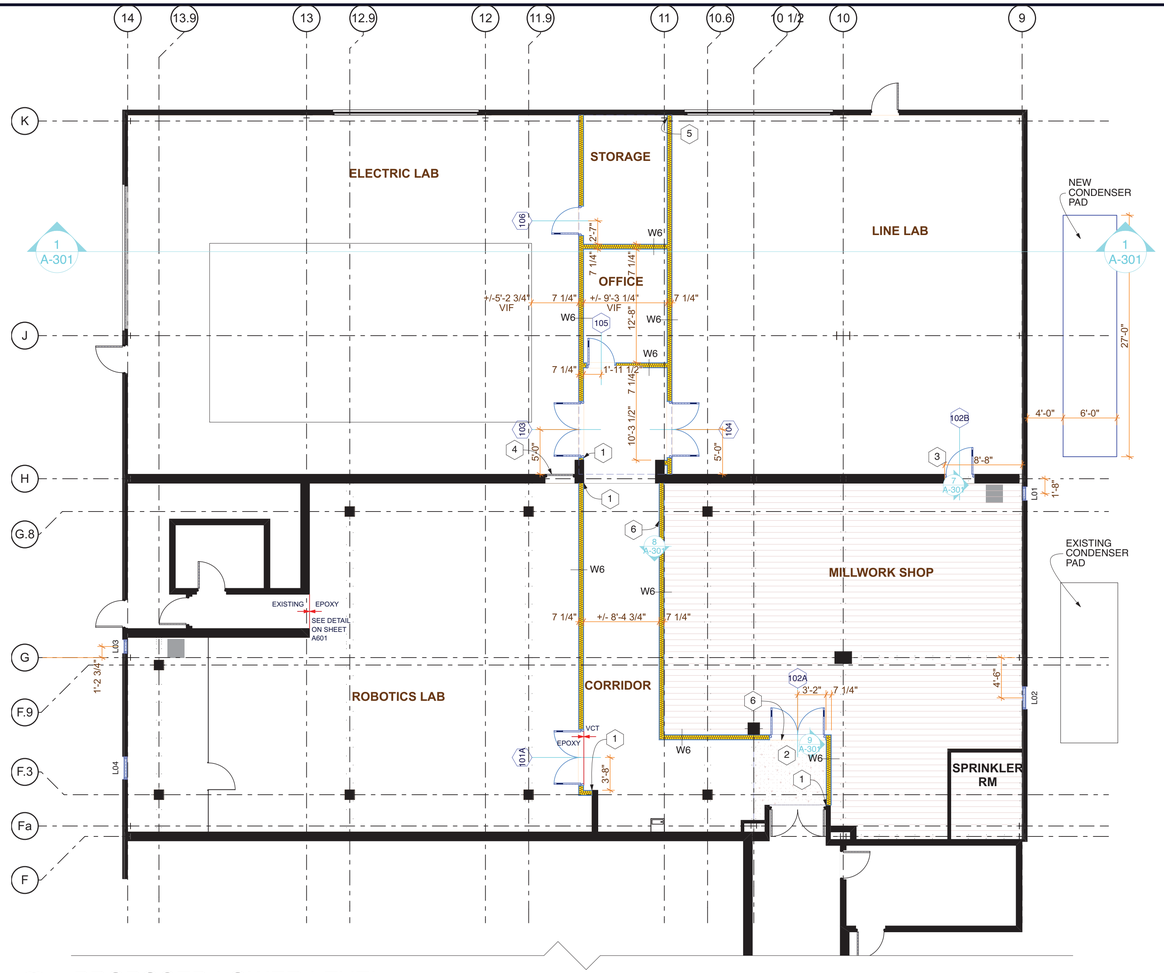
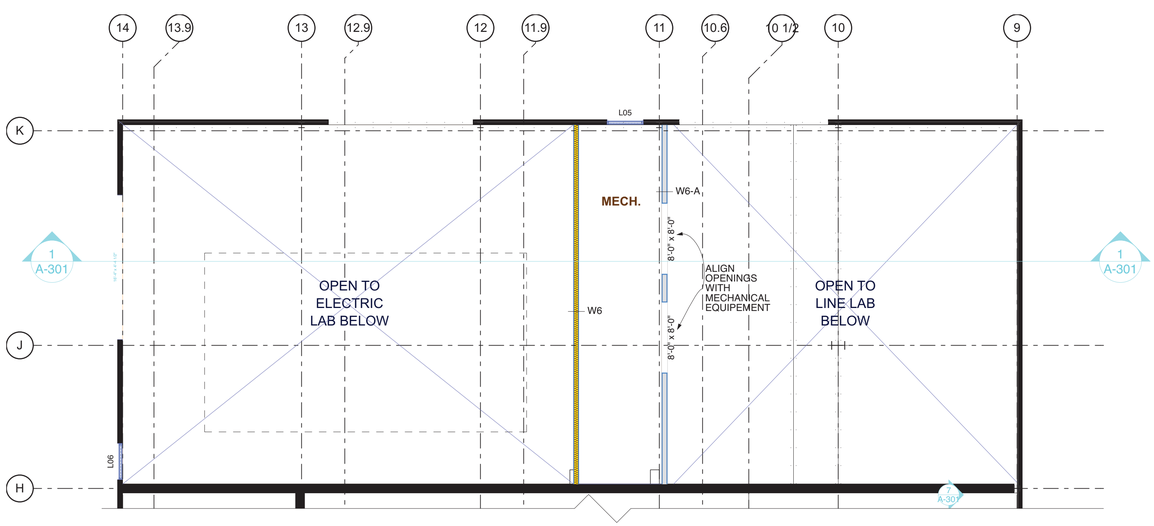


1 A-101 PROPOSED LOWER LEVEL

SCALE: 1/8" = 1'-0"



2 A-101 PROPOSED MECH. MEZZANINE

SCALE: 1/8" = 1'-0"

GENERAL NOTES

- DIMENSIONS TO OUTSIDE OF FINISH SURFACE
- VERIFY ALL DIMENSIONS IN THE FIELD. CONTACT ARCHITECT IF DISCREPANCIES ARE FOUND BETWEEN PLAN DIMENSIONS AND ON-SITE DIMENSIONS

KEYNOTES

1 - ALIGN NEW WALL FINISH TO EXISTING
2 - DEMO EXISTING H/W FLOOR AND SLEEPERS. INSTALL STEEL ANGLE @ H/W FLOOR EDGE. ADD PERIMETER COMPRESSIBLE FILLER. POUR NEW CONCRETE TOPPING FLUSH WITH ADJACENT FINISH FLOOR LEVEL. 4,000 PSI CONCRETE TO BE NOT AIR ENTRAINED. SEE DETAIL ON SHEET A301
3 - NEW DOOR OPENING IN MASONRY WALL. ALIGN WITH ACTUAL BLOCKS. SEE DOOR SCHEDULE FOR SIZE. LINTEL DETAIL ON SHEET A301. PROVIDE 6" MIN. BEARING AT EACH END.
4 - EXISTING DOOR TO REMAIN LOCKED.
5 - ALIGN THE STUD FACE TO THE COLUMN EDGE
6 - SEE H/W FLOOR / CONCRETE TRANSITION DETAILS ON SHEET A301 TO LOCATE THE WALL AND INSTALL THE COVER PLATE AT THE SILL OF DOOR 102A

WALL TYPES

- W6 TYP. NEW PARTITION TO BE 6" x 1-5/8" x 18 gage x @ 16" O.C. MTL STUD WITH ACOUSTIC INSULATION, 5/8" TYPE X GWB BOTH SIDE, TAPED & SCREWED PER UL LISTING & BEST PRACTICE. ACOUSTIC INSULATION SHALL BE 6" THERMA-FIBER OR APPROVED EQUAL. RUN CONTINUOUS BEAD OF ACOUSTIC SEALANT AT PERIMETER OF GYP AND AT ALL SEAMS, EXP. JOINTS AND PENETRATIONS.

- W6-A 6" x 1-5/8" x 18 gage x @ 16" O.C. MTL STUD, 5/8" TYPE X GWB BOTH SIDE, TAPED & SCREWED PER UL LISTING & BEST PRACTICE.

Light Gage Steel Notes

Members were designed and shall be fabricated and erected to conform with criteria in the Specification for the Design of Cold-formed Steel Structural Members, latest edition, published by the American Iron and Steel Institute.

Steel with thickness of 16 gage and greater shall have a minimum yield point of 50,000 psi and shall conform to requirements of ASTM A446-83, Grade D. Steel with thickness less than 16 gage shall have a minimum yield point of 33,000 psi and shall conform to requirements of ASTM A446-83, Grade A.

Steel shall be zinc coated (galvanized) in accordance with ASTM A525, G-60.

Contractor shall design connections other than those detailed on these drawings.

Contractor shall submit shop drawings of layout, members and connections for review and either approval, approval as noted or revise and resubmit by the Engineer and Architect. Fabrication shall not proceed prior to approval.

All field cutting of light gage steel members shall be done by sawing or shearing. Torch cutting is not allowed.

Notching of studs, joists or rafters is not allowed unless appropriate reinforcement designed by a licensed professional engineer is added. All holes made in the field shall be reinforced.

Splicing of studs, joists, rafters, headers, beams and columns is not allowed. All built-up beams and headers shall be constructed using only unpunched sections.

Alignment of members for lateral bracing shall be the responsibility of the Contractor. Bracing shall be installed at the time that walls, floors or roofs are constructed.

Three studs shall be used at the corners of all exterior walls and all interior bearing walls.

Joists, rafters or pre-engineered trusses shall bear directly over studs unless directly supported by a beam or header.

Minimum edge clearance and minimum spacing for screws shall be 3". Screw penetration through joined materials shall not be less than three exposed threads.

All welding shall conform to criteria in the latest version of AWS D1.3, Specifications for Welding Sheet Steel in Structures. Minimum weld throat thickness shall match or exceed the base steel thickness of the thinnest connected part.

Cladding or sheathing shall be uniformly attached to each framing member and shall provide lateral restraint.

All fasteners to be #12-14 self tapping screws, unless otherwise noted.

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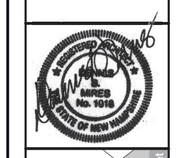

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Issue	Issue Date	Issue Name
03	4/18/19	Permit Set
02	3/21/19	DD
01	2/7/19	SCHEMATICS

Proposed Plans

proj. no.: 2018103

A-101

Printed: 4/18/19

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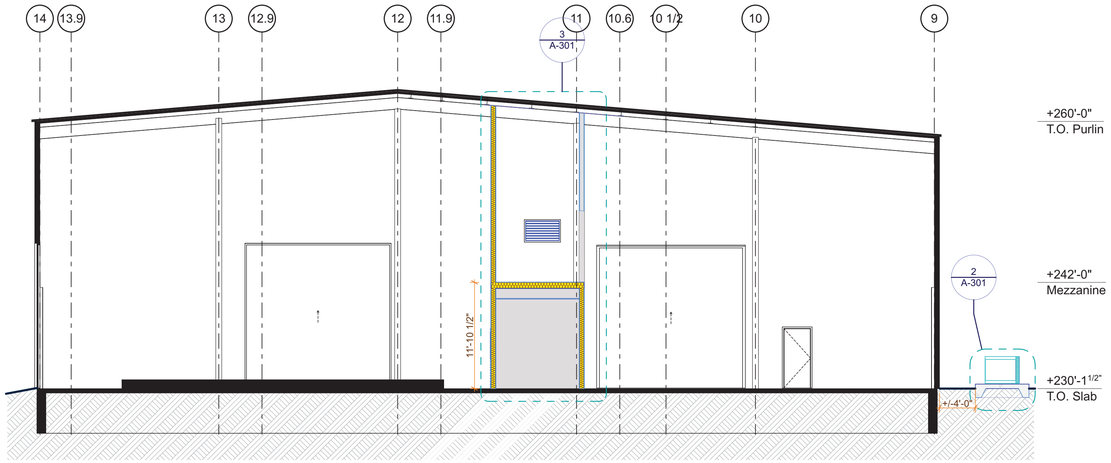
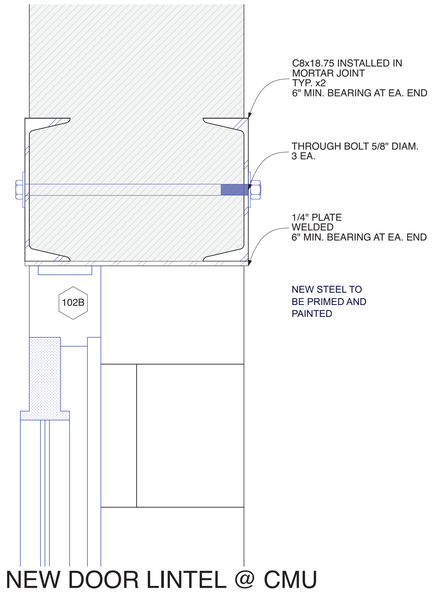


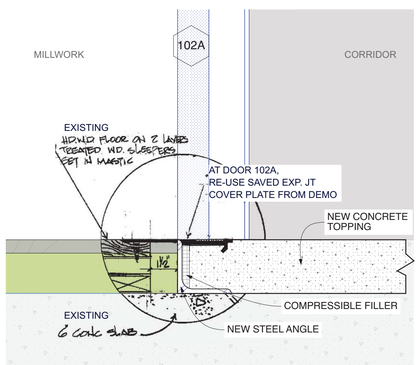
1 A-301 Cross Section Thru Labs - PROPOSED

SCALE: 1/8" = 1'-0"



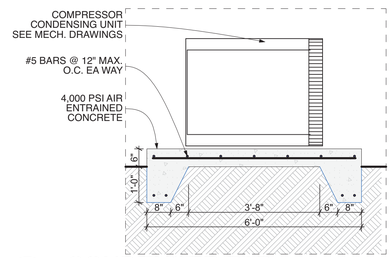
7 A-301 NEW DOOR LINTEL @ CMU

SCALE: 3" = 1'-0"



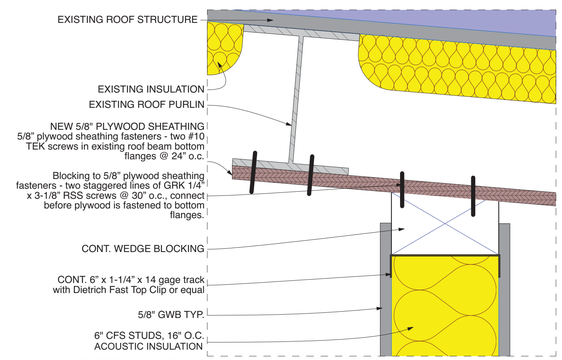
9 A-301 NEW H/W FLR/CONCRT TRANSITION DTL

SCALE: 3" = 1'-0"



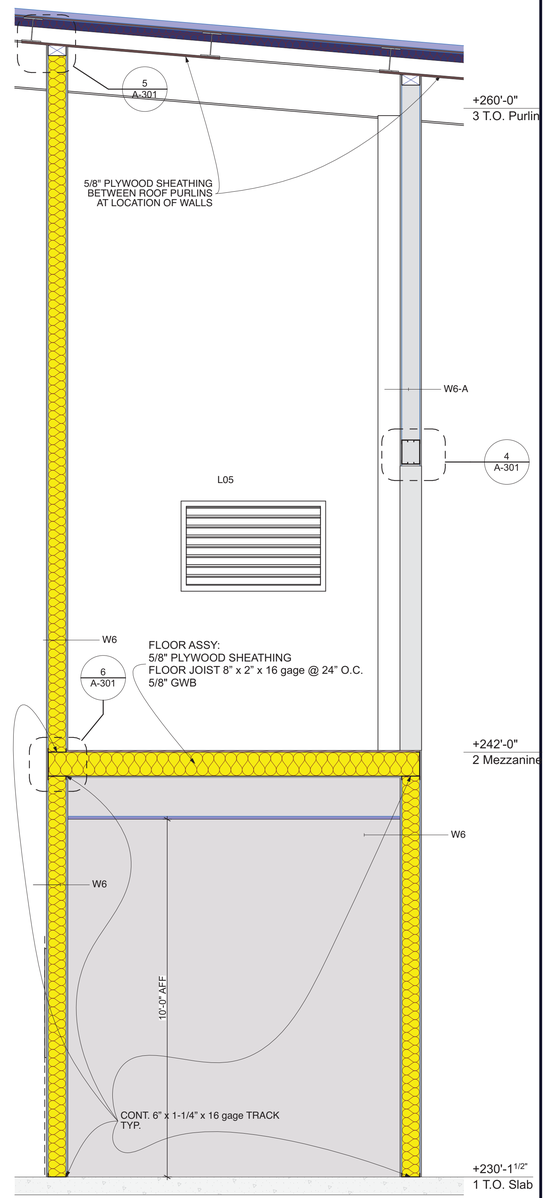
2 A-301 CONDENSER PAD

SCALE: 1/2" = 1'-0"



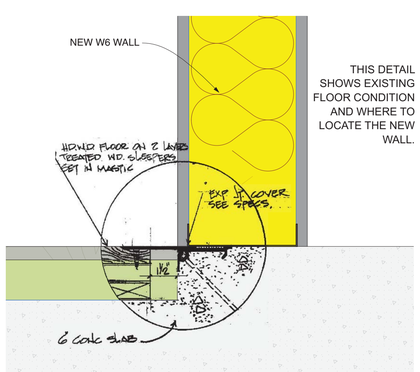
5 A-301 DETAIL ROOF CONNECTION

SCALE: 3" = 1'-0"



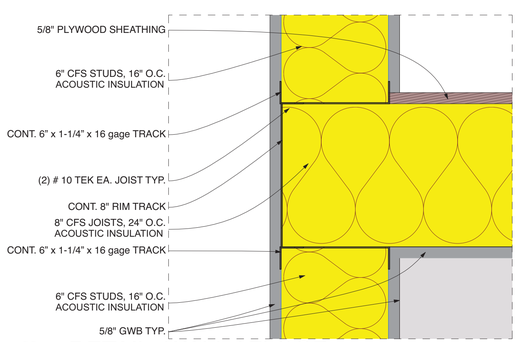
3 A-301 DETAIL SECTION

SCALE: 1/2" = 1'-0"



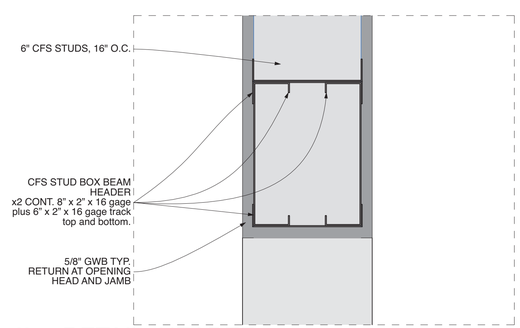
8 A-301 H/W FLR/CONCRT TRANSITION DTL

SCALE: 3" = 1'-0"



6 A-301 DETAIL -WALL / FLOOR

SCALE: 3" = 1'-0"



4 A-301 DETAIL -HEADER

SCALE: 3" = 1'-0"

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Issue	Issue Date	Issue Name
03	4/18/19	Permit Set
02	3/21/19	DD

Sections & Details

proj. no.: 2018103

A-301

Printed: 4/18/19

/Volumes/ActiveProjects/MCC Building Construction Lab - 2018103/Archicad 2018103/2018103 MCC Bldg/C - Lab Renovation_V21.pln Friday, April 19, 2019

Louver Schedule

Louver #	L01	L02	L03	L04	L05	L06
In Room	MILLWORK SHOP	MILLWORK SHOP	ROBOTICS LAB	ROBOTICS LAB	MECH.	ELECTRIC LAB
Elevation						
Size	1'-6"x3'-0"	2'-6"x2'-0"	1'-6"x3'-0"	2'-6"x2'-0"	4'-0"x2'-6"	4'-0"x3'-0"
Note	INTAKE	EXHAUST	INTAKE	EXHAUST	INTAKE	ADJUST EXISTING OPENING. EXHAUST

LOUVER NOTES

- SEE MECH. DRAWINGS for Specs and size confirmation
- LOUVER FRAMING: All louver openings should be framed with the following light gage steel members - 6" x 2" x 16 gage verticals. Top members and bottom members - double 6" x 2" x 16 gage .
- Finish: Pre-finished. Color to match existing louvers.

Door Schedule

Door #	101A	102A	102B	103	104	105	106
From Zone	CORRIDOR	CORRIDOR	MILLWORK SHOP	CORRIDOR	CORRIDOR	CORRIDOR	STORAGE
To Zone	ROBOTICS LAB	MILLWORK SHOP	LINE LAB	ELECTRIC LAB	LINE LAB	OFFICE	ELECTRIC LAB
Swing	A P	P A		A P	P A		
Elevation							
Leaf Size	6'-0"x6'-8"	6'-0"x6'-8"	3'-0"x6'-8"	6'-0"x6'-8"	6'-0"x6'-8"	3'-0"x6'-8"	3'-0"x6'-8"
Panic	No	No	Yes	No	No	No	No
Closer	■	■	■	■	■	□	□
Hardware Set	OFFICE	OFFICE	EGRESS	OFFICE	OFFICE	OFFICE	STORAGE
Note	HM FRAME AND DOOR	HM FRAME AND DOOR	HM FRAME AND DOOR	HM FRAME AND DOOR	HM FRAME AND DOOR	HM FRAME AND DOOR	HM FRAME AND DOOR

HM FRAME NOTES

- 2" WELDED FRAMES AT MASONRY WALLS, 4" FRAME HEAD
- 2" DRYWALL KD 18 GA.,1/2" BACKBEND
- PRIMED & PTD (SEMI GLOSS)
- COMPRESSION ANCHORS & 7 GA. HARDWARE REINFORCEMENTS

METAL DOOR NOTES

- 18 GA. FULL FLUSH.
- PRIMED & PTD (SEMI GLOSS)
- TEMPERED GLAZING AT VISION PANELS.
- "A" DESIGNATES THE ACTIVE LEAF, "P" THE PASSIVE LEAF.
- INSULATED TO U.23 W/ EXPANDED POLYSTYRENE

HARDWARE NOTES

- FINISH TO BE 626 SATIN CHROMIUM PLATED.
- CYLINDRICAL LOCKSETS TO BE LEVERS; SCHLAGE AL SERIES STANDARD DUTY COMMERCIAL..
- LEVER SET FUNCTIONS AS NOTED, TO BE CONFIRMED WITH OWNER.
-LEVER STYLE TO BE SCHLAGE NEPTUNE OR APPROVED SUBSTITUTE.
- PROVIDE SMALL FORMAT INTERCHANGEABLE CORES.
- PROVIDE DOOR STOPS FOR ALL DOORS, WALL STOPS WHEREVER POSSIBLE.
- DOME TYPE FLOOR STOPS OF THE PROPER HEIGHT WHERE WALL STOPS CANNOT BE USED.
- PROTECTIVE PLATES: KICK (8") x WIDTH OF DOOR LESS 1"- FOUR BEVELED EDGES WITH MATCHING FASTENERS
- CLOSERS TO BE LCN 4010/4110/1520/1460 SERIES OR SARGENT 280/1430. - ON ACTIVE LEAF ONLY.
- FLUSH BOLT ON PASSIVE LEAF - TOP AND BOTTOM
- DOOR SILENCERS - ROCKWOOD 608-RKW OR EQ.

FINISH SCHEDULE

Room Name	BASE	FLOOR	WALLS	CEILING	Note
CORRIDOR	VINYL	VCT 1	GWB PTD & WAINSCOTTING	GWB PTD / ACT	PATCH AND PAINT EXISTING CEILING GWB. ACT BEYOND CMU WALL @ 10'AFF
ELECTRIC LAB	AS EXISTING	AS EXISTING	AS EXISTING	OPEN CEILING	NEW WALL GWB PTD & VINYL BASE
LINE LAB	AS EXISTING	AS EXISTING	AS EXISTING	OPEN CEILING	NEW WALL GWB PTD & VINYL BASE
MECH.	VINYL	BARE FL. SHEATHING	GWB PTD	OPEN CEILING	
MILLWORK SHOP	AS EXISTING	AS EXISTING	AS EXISTING	GWB PTD	NEW WALL GWB PTD & VINYL BASE. PATCH AND PAINT EXISTING CEILING GWB.
OFFICE	VINYL	VCT 1	GWB PTD	ACT	ACT @ 10' AFF
ROBOTICS LAB	AS EXISTING	EPOXY	AS EXISTING	GWB PTD	NEW WALL GWB PTD & VINYL BASE. PATCH AND PAINT EXISTING CEILING GWB.
STORAGE	VINYL	AS EXISTING	GWB PTD	GWB PTD	

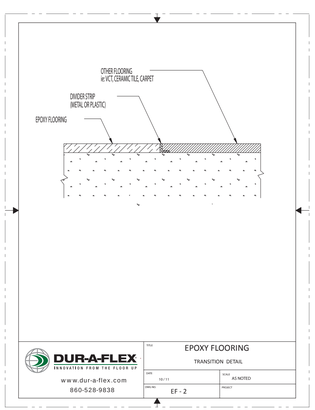
FINISH NOTES

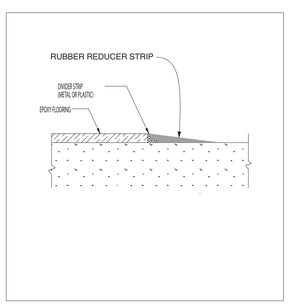
- VINYL BASE: 4" VINYL BASE. JOHNSONITE OR APPROVED EQ.
- VCT 1: ALLOWANCE OF $2.50/SQFT INSTALLED
- WAINSCOTTING: FIBERGLASS REINFORCED PANELS (W/ VINYL BASE). 4' AFF. ALUMINUM TRIM AND CORNER GUARDS. MARLITE INDURO FRP, USE WILSONART LAMINATE FINISH "ZINC DIAMOND PLATE Y0541"
- ACT: TYPICAL 24"x24" ACOUSTICAL CEILING PANELS TO BE ARMSTRONG DUNE TEGULAR 15/16 WITH HIGH RECYCLED CONTENT. COLOR OF GRID AND PANELS TO BE WHITE.
- GWB: TAPED AND PAINTED. PRIMED AND TWO FINISH COATS (EGG SHELL).
- EPOXY BASED FLOORING SYSTEM ON CONCRETE FLOOR:

Dur-A-Flex, Inc, Shop Floor, Epoxy-Based seamless flooring system.

1. System Materials:
   a. Primer: Dur-A-Flex, Inc, Dur-A-Glaze #4 WB resin and hardener.
   b. Broadcast and Grout Coat: Dur-A-Flex, Inc, Shop Floor resin and hardener.
   c. The aggregate shall be Dur-A-Flex, Inc. Flintshot or Q-Rok quartz aggregate.
   d. Topcoat: Dur-A-Flex, Inc. Armor Top resin, hardener and grit.
1. Patch Materials
   a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze #4 Cove Rez.
   b. Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Dur-A-Crete.

SEE DUR-A-FLEX DETAIL FOR EPOXY TO VCT (CORRIDOR) TRANSITION. AT THE STAIR TRANSITION BETWEEN EPOXY AND THE EXISTING FLOOR, INSTALL A RUBBER REDUCER STRIP AS NEEDED





/Volumes/ActiveProjects/MCC Building Construction Lab - 2018103/Archicad 2018103/2018103 MCC BldgC - Lab Renovation _V21.pln Friday, April 19, 2019

MCC LAB RENOVATIONS

1066 FRONT STREET

MANCHESTER • New Hampshire

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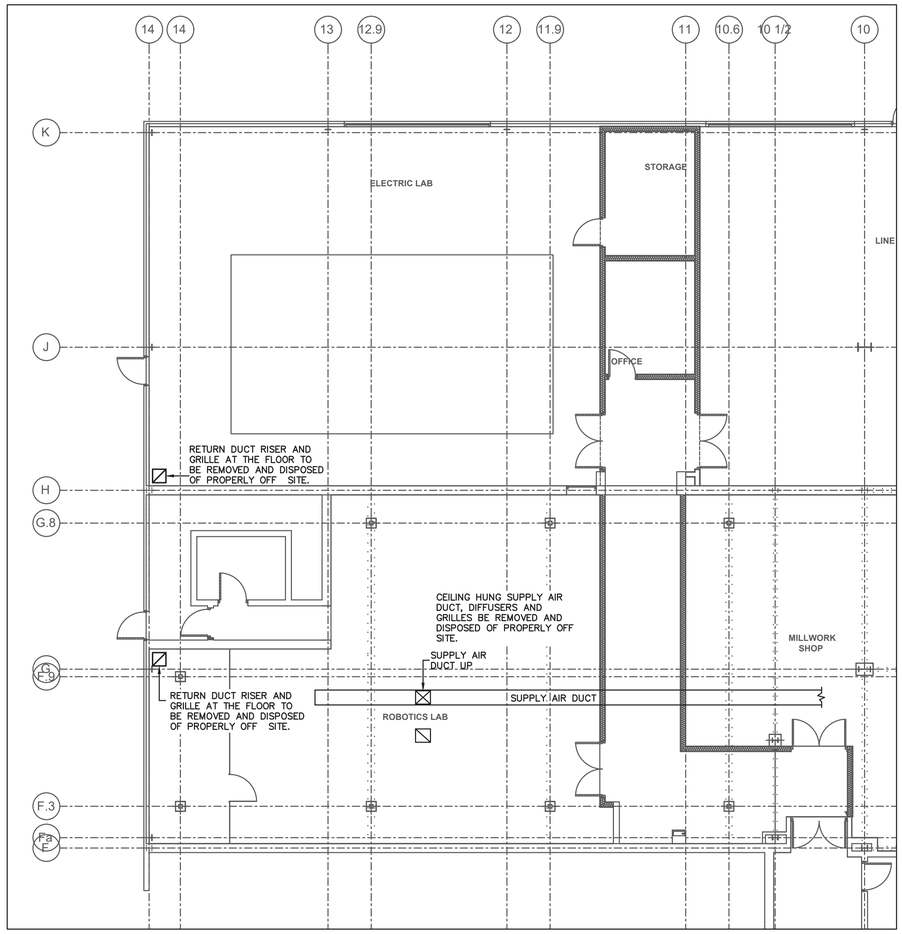
Issue	Issue Date	Issue Name
03	4/18/19	Permit Set

Schedules

proj. no.: 2018103

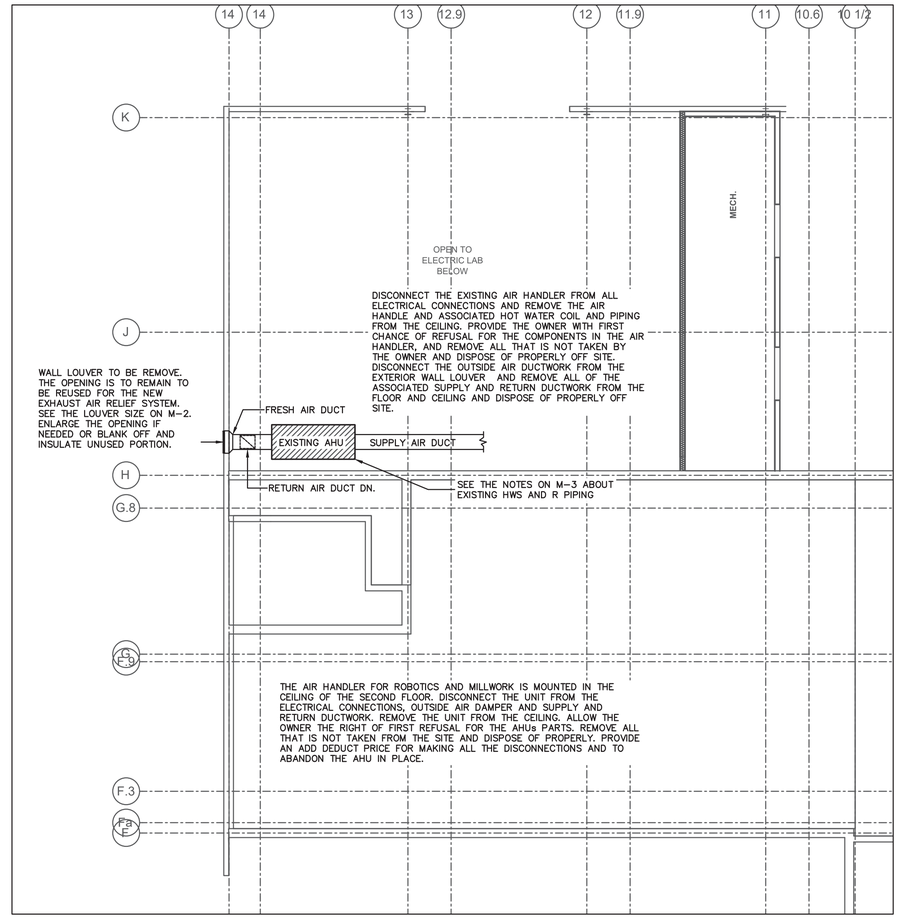
A601

Printed: 4/18/19



M1 / 1 LOWER LEVEL DEMO NOTES

1/8"=1'-0"



M1 / 2 MEZZANINE DEMO NOTES

1/8"=1'-0"

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EXISTING CONDITIONS DEMO PLAN

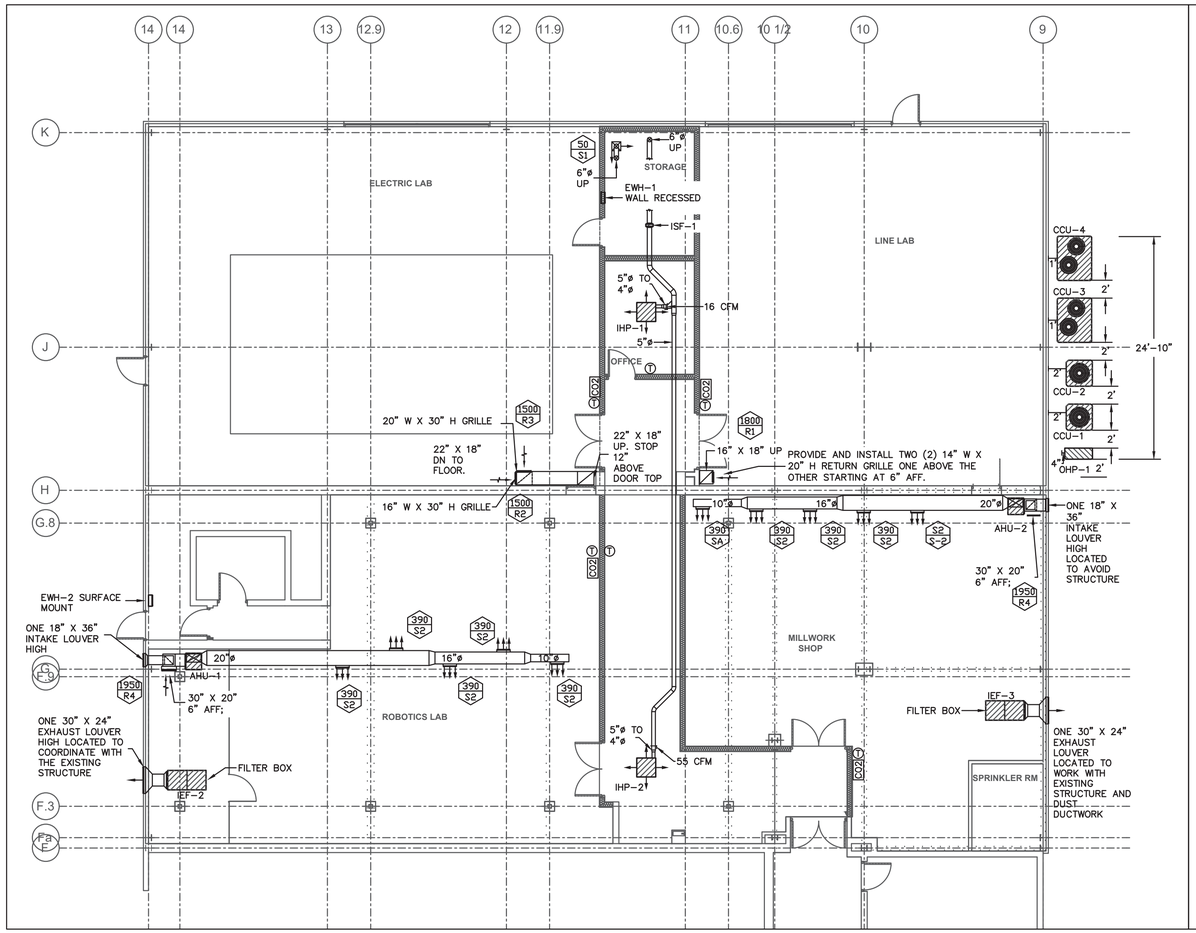
SCALE: AS NOTED

revisions:

date: 04/19/19

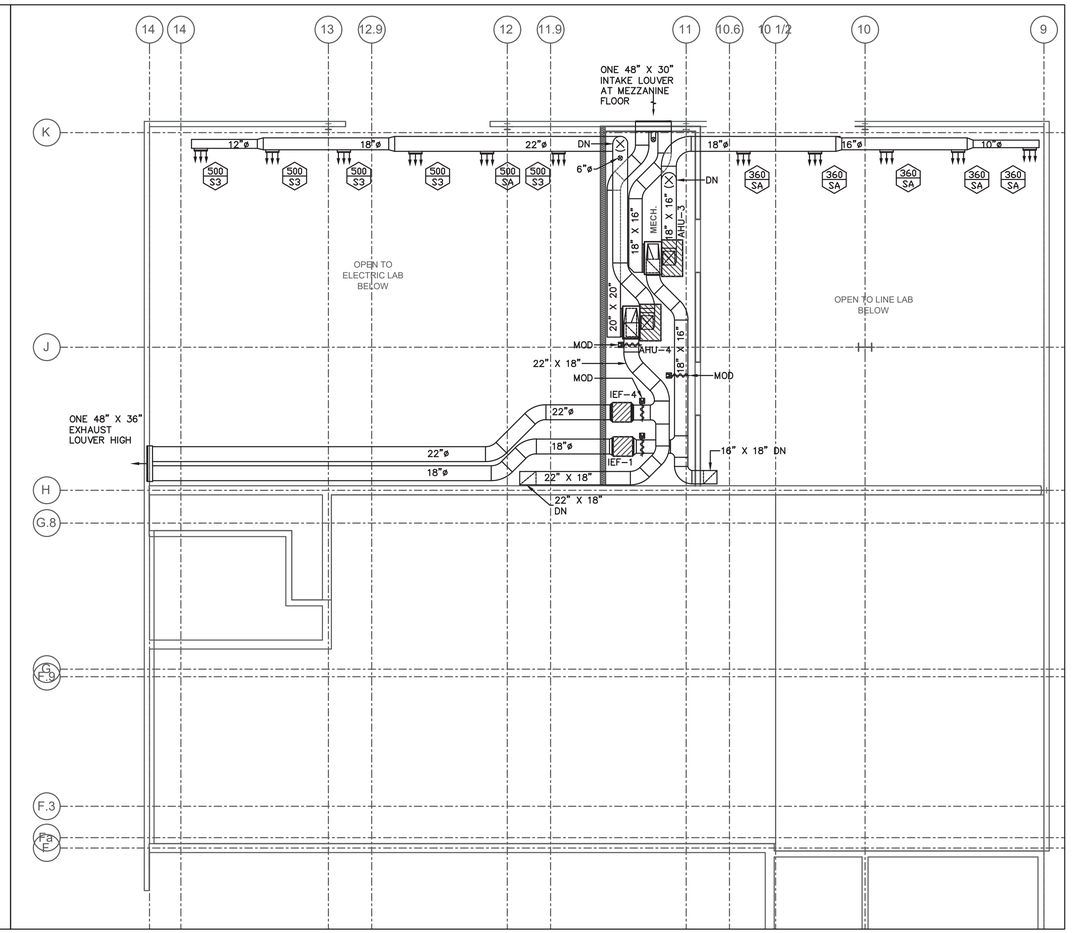
proj. no. –
DDM #19024

M1



M1 / 1 LOWER LEVEL HVAC PLAN

1/8"=1'-0"



M1 / 2 MEZZANINE LEVEL HVAC PLAN

1/8"=1'-0"

Manchester Community College					Per 2009 IMC Chapter 4 & ASHRAE 62.1-2007											
Manchester, NH																
Room Name	Occupancy Classification	IMC Requirements							Ez	Voz cfm	Supply Vpz cfm	Zp	Return cfm	Exhaust cfm	Notes
		Rp cfm/p	Pz # Occ	Rp*Pz cfm	Ra cfm/SF	Az Ft^2	Ra*Az cfm	Vbz cfm							
Line Lab	Classroom	10.0	30	300	0.12	1,550	186	486	0.8	608	1,800		1,800		Air Handler w/ Economizer
Electric Lab	Classroom	10.0	30	300	0.12	1,960	235	535	0.8	669	3,000		2,950		Air Handler w/ Economizer
Robotics Lab	Classroom	10.0	30	300	0.12	1,670	200	500	0.8	626	1,950		1,950		Air Handler w/ Economizer
Millwork Shop	Classroom	10.0	30	300	0.12	1,516	182	482	0.8	602	1,950		1,950		Air Handler w/ Economizer
Storage	Storage	5.0			0.06	139	8	8	0.8	10	50				Return Grille
Office	Office	5.0	1	5	0.06	127	8	13	0.8	16	260		260		Ceiling Mounted VRF Cassette
Corridor	Corridor	5.0			0.06	692	42	42	0.8	52	380		380		Ceiling Mounted VRF Cassette

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NEW LOWER AND MEZZANINE LEVELS

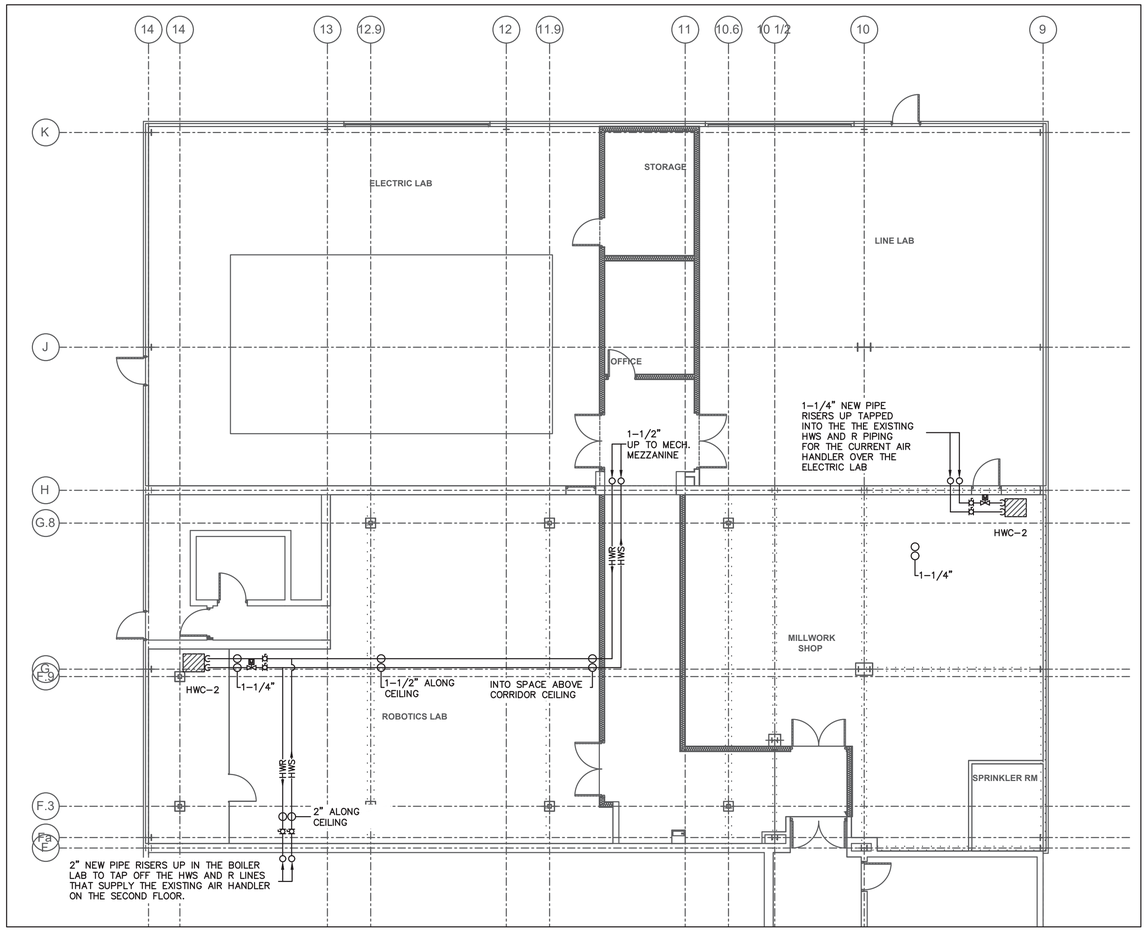
SCALE: AS NOTED

revisions:

date: 04/19/19

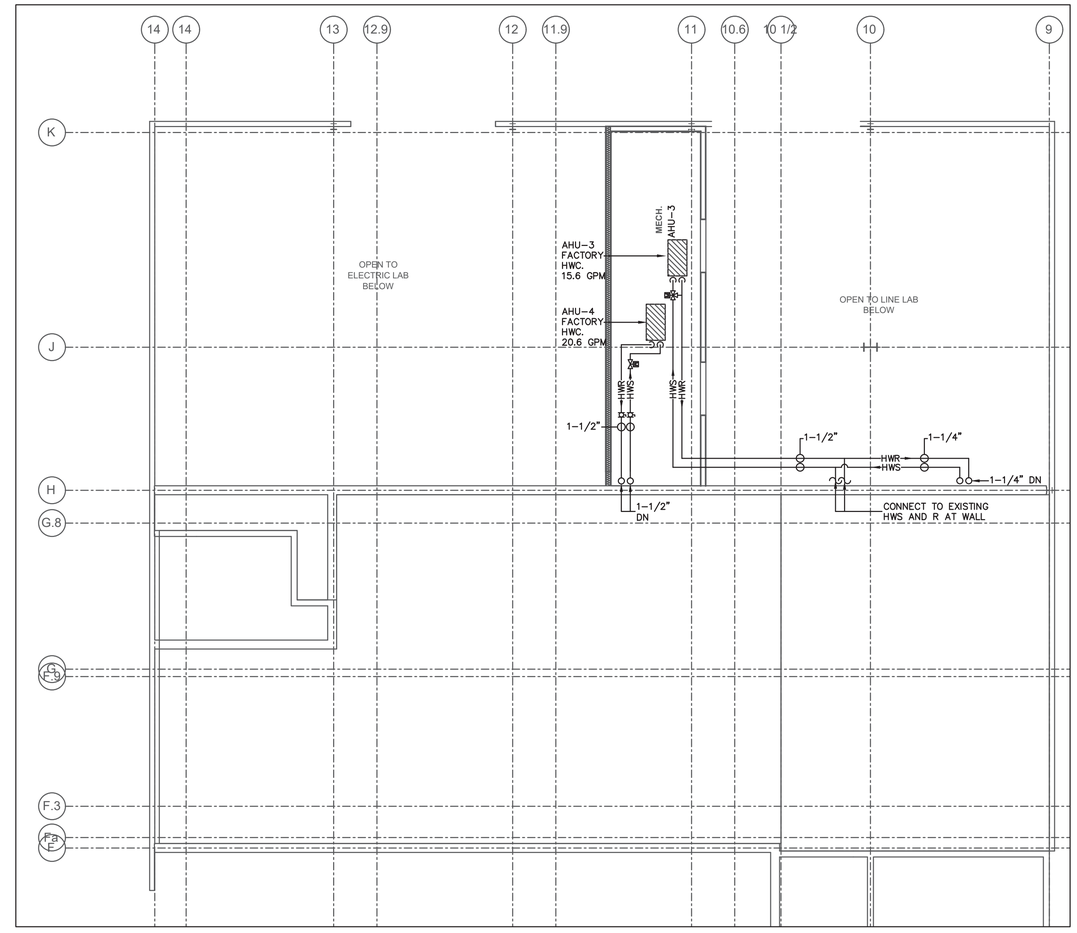
proj. no. –
DDM #19024

M2



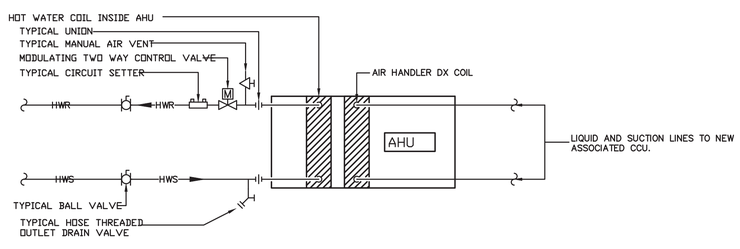
M1 1 LOWER LEVEL HVACPLAN

1/8"=1'-0"

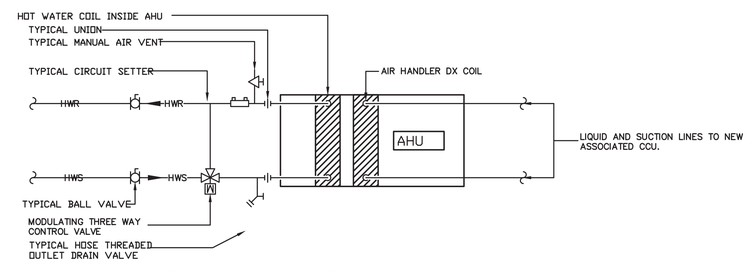


M1 2 MEZZANINE LEVEL PLAN

1/8"=1'-0"



DETAIL #1 - AHU-1, 2 AND 4 MODULATING TWO WAY CONTROL VALVE HOT WATER COIL PIPING DIAGRAM



DETAIL #2 - AHU-3 MODULATING BYPASS CONTROL VALVE HOT WATER COIL PIPING DIAGRAM

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NEW LOWER AND MEZZANINE LEVELS

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DDM #19024

M3

AIR HANDLING UNIT SCHEDULE (AHU)

MARK	MAKE	MODEL	SUPPLY (CFM)	ESP (IN. WC)	MIN OA ROOM PORTION	MIN OA AT MAX OCCUPANCY	COOLING (DX) TOTAL (MBH)	SENSIBLE (MBH)	EDB	EWB	ELECTRICAL VOLT/PH	FLA	MCA	MOCP	FILTER	DIMENSIONS L" X W" X H"	WEIGHT (LBS)	NOTES
AHU-1	CARRIER	FV4CNF006	1,999	0.50	250	630	58.0	44.0	80.0	67.0	208/1	6.8	8.5	15	2" MERV-8	21.13 X 22.1 X 53.44	172	1
AHU-2	CARRIER	FV4CNF006	1,999	0.50	210	610	58.0	44.0	80.0	67.0	208/1	6.8	8.5	15	2" MERV-8	21.13 X 22.1 X 53.44	172	1
AHU-3	CARRIER	40RUAA07	1,800	0.50	235	610	70.9	50.5	80.0	67.0	208/3	5.2	7.0	15	2" MERV-8	49" X 28.19" X 56..06	399	2
AHU-4	CARRIER	40RUAA08	3,000	0.50	300	670	77.7	51.3	80.0	67.0	208/1	5.2	7.0	15	2" MERV-8	49" X 28.19" X 56..06	404	2,3

NOTES:
1. DISCONNECT SWITCH, CONDENSATE TO RUN THROUGH EXTERIOR WALL. MOUNT ON A VIBRATION ISOLATION PAD. PROVIDE A MICROMETL ECONOMISER MIXING BOX MODEL NUMBER MB-GP20CA-D00B
2. DISCONNECT SWITCH, CONDENSATE TO RUN THROUGH EXTERIOR WALL. MOUNT ON A VIBRATION ISOLATION PAD. PROVIDE A MATCHING CARRIER MIXING BOX.
3. SUPPLY AND RETUN AIR DUCT SMOKE SENSORS.

COMPRESSOR CONDENSING UNIT SCHEDULE (CCU)

MARK	SERVES	MAKE	MODEL	RATED TONS	AIR FLOW CFM	CAPACITY TOTAL/ SEN MBH	SEER/ EER	LIQUID LINE	SUCTION LINE	NUMBER OF CIRCUITS	REFRIG	VOLT/PH	MCA	MOCP	DIMENSIONS L" X W" X H"	WEIGHT (LBS)	NOTES
CCU-1,2	AHU 1,2	CARRIER	24ACC660A0030	5.00	1950	58/ 44	/	3/8	7/8	1	R-410A	208/1	32.4	50	35" X 35" X 45.68"	299	1
CCU-3	AHU 3	CARRIER	38AUD07	6.00	1800	70.9/ 50.5	11.20	1/2	1-1/8	1	R-410A	208/3	25.0	30	59.25" X 46 " X 50.38"	633	1
CCU-4	AHU 4	CARRIER	38AUD08	7.50	3000	77.7/ 51.3	11.20	1/2	1-1/8	1	R-410A	208/3	37.0	60	59.25" X 46 " X 50.38"	633	1

NOTES:
1. PROVIDE CONCRETE MOUNTING PAD, INSULATED REFRIGERANT LINE SETS AND NON-FUSED DISCONNECT SWITCH

INLINE FAN SCHEDULE (IEF-EXHAUST; ISF-SUPPLY)

MARK	SERVES	MAKE	MODEL	PURPOSE	CFM	ESP (IN. WC)	RPM	BHP	MHP	WATTS	AMPS	VOLT/PH	SONES	WEIGHT	NOTES
IEF-1	CLASSROOM	GREENHECK	SQ-130-VG	ECONOMIZER EXHAUST	1800	0.3	1725	0.47	3/4			115/1	12.9	112 LBS	1
IEF-2	ROBOTICS LAB	GREENHECK	SQ-160-VG	ECONOMIZER EXHAUST	1950	0.3	1140	0.27	3/4			115/1	7.4	222 LBS	1
IEF-3	MILLWORK	GREENHECK	SQ-160-VG	ECONOMIZER EXHAUST	1950	0.3	1140	0.27	3/4			115/1	7.4	222 LBS	1
IEF-4	ELECTRIC LAB	GREENHECK	SQ-160-VG	ECONOMIZER EXHAUST	3000	0.3	1300	0.71	1			115/1	13.6	235 LBS	1
ISF-1	OFFICE/ CORRIDOR	FANTECK	FG4XL	FRESH AIR SUPPLY	75	0.3	1725			71	0.66	115/1			2

NOTES:
1. DISCONNECT SWITCH, MOTOR OPERATED BACKDRAFT DAMPER, FACTORY FILTER BOX 2" MERV FILTERS. INTERLOCKED TO OPEN WHEN ECONOMIZER IS OPERATION AND CLOSE WHEN WHEN ECONOMIZER ID NOT OPERATING.
1. DISCONNECT SWITCH, INSULATED INTAKE DUCT, VIBRATION ISOLATION HANGERS, BACKDRAFT DAMPER, TIMECLOCK TO SHUT THE FAN OFF DURING UNOCCUPIED HOURS.

OUTDOOR HEAT PUMP UNIT SCHEDULE (OHP)

MARK	MAKE	MODEL	COOLING TONS	COOLING TOTAL MBH	COOLING SEER	HEATING MBH	HEATING HSPF	REFRIG	REFRIGERANT PIPING LIQUID LINE	SUCTION LINE	BALANCE PIPE	ELECTRICAL VOLT/PH	MCA	MOCP	WEIGHT LBS	DIMENSION H" X L" W"	NOTES
OHP-1	CARRIER	38MGRQ18	1.5	18.0	30.10	18.8	9.90	R-410A	1/4"	3/8"	0.4	208/ 1	18	25	106	27.64" X 37.31" X 14.82"	1

NOTES:
1-OUTDOOR UNIT DOES POWER THE INDOOR UNITS.

INDOOR HEAT PUMP UNIT SCHEDULE (IHP-)

MARK	SYSTEM #	SERVES	MAKE	MODEL	TOTAL COOLING (MBH)	HEATING (MBH)	HIGH/LOW (CFM)	ESP (IN W.C.)	REF PIPE (IN) VAPOR-LIQUID	VOLT/PH	MCA	MOCP	STYLE
IHP-1,2	OHP-1	OFFICE	CARRIER	40MBQ09	9.5	10.5	380/ 260	NA	3/8 - 1/4	208/1	0.2	0	COMPACT CASSETTE

INDOOR UNITS ARE POWERED BY THE OUTDOOR UNIT.

HOT WATER COILS SCHEDULE (HWC)

MARK	SERVES	MAKE	MODEL	MBH	CFM	EAT	LAT	GPM	EWT	LWT	WPD (FT)	NOTES
HWC-1	AHU-1	GREENHECK	HW58S01S10-28.5x24	78.8	1950	55	92	8.1	180.0	160.0	2.4	1,2
HWC-2	AHU-2	GREENHECK	HW58S01S10-28.5x24	78.8	1950	55	92	8.1	180.0	160.0	2.4	1,2

NOTES:
1. ACCESS HATCH IN DUCT BEFORE COIL FOR CLEANING
2 COIL OPERATION TO BE CONTROLLED BY A 3 WAY MODULATING BYPASS VALVE CONNECTED TO THE SPACE THERMOSTAT SENSOR.

ELECTRIC WALL HEATER SCHEDULE (EWH)

MARK	MAKE	MODEL	KW	VOLT/PH	AMPS	STYLE	NOTES
EWH-1	QMARK	CWH2151DS	0.8	120/ 1	12.5	RECESSED	1,2
EWH-2	QMARK	CWH2208DS	2.0	208/1	9.6	RECESSED	2

NOTES:
1. FIELD WIRE TO 750 WATTS.
1. INTEGRAL THERMOSTAT

REGISTER GRILLE DIFFUSER SCHEDULE (RGD)

MARK	MAKE	MODEL	DAMPER	DIMENSIONS	PATTERN	NECK SIZE	FRAME STYLE	MATERIAL	DESCRIPTION	NOTES
S-1	PRICE	AMD	NO	6X6	CORNER THROW	SEE DWGS	AS NEEDED	ALUMINUM	SUPPLY	1
S-2	PRICE	520D	NO	14X10	DBL DEFL	SEE DWGS	AS NEEDED	STEEL	SUPPLY	1
S-3	PRICE	HCD	NO	10"/ 18"	DRUM LOUVER	SEE DWGS	AS NEEDED	STEEL	SUPPLY	1
R-1	PRICE	530	NO	14" x 20"	45° FIXED	SEE DWGS	AS NEEDED	STEEL	RETURN	1
R-2	PRICE	530	NO	16" X 30"	45° FIXED	SEE DWGS	AS NEEDED	STEEL	RETURN	1
R-3	PRICE	530	NO	20" X 30"	45° FIXED	SEE DWGS	AS NEEDED	STEEL	RETURN	1
R-4	PRICE	530	NO	30" X 20"	45° FIXED	SEE DWGS	AS NEEDED	STEEL	EXHAUST	1

NOTES:
1. PRIMARY VOLUME DAMPERS ARE TO BE INSTALLED IN THE DUCTS.

SEQUENCE OF OPERATIONS

HEAT PUMP OPERATION–OHP–1 IS A MULTI–HEAD OUTDOOR HEAT PUMP UNIT. EACH INDOOR IHP WILL OPERATE ON ITS WALL MOUNTED WIRED THERMOSTAT. PROVIDE AN ADDITIONAL WALL SENSOR IN THE OFFICE AND CORRIDOR TO ALLOW THE CAMPUS FRONT END DDC SYSTEM TO MONITOR SPACE TEMPERATURE AS A READ ONLY.

ELECTRIC WALL HEATERS 1 AND 2– EACH SHALL BE PROVIDED WITH AN INTEGRAL UNIT MOUNTED THERMOSTAT TO CONTROL THE HEATING SET POINT. PROVIDE AN ADDITIONAL WALL SENSOR IN EACH SPACE TO ALLOW THE CAMPUS DDC SYSTEM TO MONITOR SPACE TEMPERATURE AS A READ ONLY.

AIR HANDLING UNITS–1 THROUGH 4–PROVIDE AND INSTALL EACH AHU WITH A SPACE MOUNTED THERMOSTATIC SENSOR, COMPATIBLE WITH BOTH THE AHU AND THE EXISTING DDC SYSTEM, AN ECONOMIZER MIXING BOX WITH DUAL ENTHALPY CONTROLS TO PROVIDE FREE COOLING WHEN THE OUTSIDE AIR CONDITIONS ARE FAVORABLE AND PROVIDE EACH AHU SYSTEM WITH A CO2 SENSOR IN EACH ROOM THAT IT SERVICES. WHEN THE BUILDING IS IN OCCUPIED MODE, THE OUTSIDE AIR CONNECTION TO EACH AHU, THROUGH THE ECONOMIZER SHALL BE SET AT THE MINIMUM OA ROOM PORTION CFM AMOUNT SHOWN ON THE SCHEDULE. SHOULD THE CO2 SENSOR SENSE LEVELS ABOVE 900 PPM, THE DAMPER SHALL OPEN TO THE MAX OCCUPANCY CFM SETTING. ONCE THE LEVELS DROP TO 500 PPM, THE DAMPER SHALL RETURN TO THE LOWER OA SETTING. DURING UNOCCUPIED SET–BACK THE DAMPERS TO THE OUTSIDE SHALL BE CLOSED. DURING OCCUPIED HOURS, THE FANS FOR THE AHU'S SHALL RUN CONTINUOUSLY TO PROVIDE SPACE TEMPERATURE CONTROL AND MINIMUM VENTILATION. DURING SET–BACK HOURS, THE FAN SHALL CYCLE ON AND OFF TO MAINTAIN THE SET–BACK TEMPERATURE.

INLINE EXHAUST FANS 1 THROUGH 4 SHALL OPERATE IN CONJUNCTION WITH THE ECONOMIZER CONTROLS FOR THE AHUs. WHEN THE SYSTEMS GO INTO FREE COOLING THE IEF's SHALL TURN ON TO ENHANCE THE USE OF THE FREE COOLING SYSTEM AND RELEAVE SPACE PRESSURIZATION.

ISF–1 TO OPERATE DURING OCCUPIED HOURS TO PROVIDE FRESH AIR

LEGEND

BLOCK	BLOCK DESCRIPTION
	CONTINUED SYMBOL
	DIRECTION OF PITCH
	PIPE W/ DIRECTION OF FLOW
	PIPE UP
	PIPE DOWN
	PIPE CROSSOVER
	PIPE TEE DOWN
	PIPE END CAP
	PETES PLUG
	UNION
	GATEVALVE
	OS&Y GATE VALVE
	CHECKVALVE
	2 WAY MOTORIZED VALVE
	3 WAY MOTORIZED VALVE
	PRESSURE REDUCING VALVE
BFP	BACKFLOW PREVENTER
	BALL <2–1/2" BUTTERFLY VALVE >2"
	BOILER DRAIN
	CIRCUIT SETTER
	PRESSURE GUAGE
	STRAINER
	STRAINER W/ BLOW DOWN VALVE
	AIR SCOOP
	AUTOMATIC AIR VENT
HMV	MANUAL AIR VENT
	THERMOMETER
	BUCKET TRAP
	CIRCULATOR PUMP
	PUMP SUCTION DIFFUSER W/ STRAINER
	VACUUM BREAKER
	UNION OR FLANGE CONNECTION
	FLEXIBLE PIPE CONNECTION
	PRESSURE RELIEF VALVE
ST	STARTER
S	SWITCH
T	THERMOSTAT OR THERMOSTATIC SENSOR
	DUCT BALANCING DAMPER
FD	FIRE DAMPER
MOD	MOTOR OPERATED DAMPER
SD	SMOKE DAMPER
SD/FD	COMBINATION SMOKE AND FIRE DAMPER
	DIFFUSER AND GRILLE MARK
	DUCTWORK RETURN/ EXHAUST DROPS
	DUCTWORK SUPPLY DROPS
	DUCTWORK RETURN/ EXHAUST RISE
	DUCTWORK SUPPLY RISE
	RETURN/ EXHAUST ARROW
	SUPPLY ARROW

KEY TO ABBREVIATIONS

ABBREV.	DESCRIPTION
AC	AIR CONDITIONER
AFF	ABOVE FINISHED FLOOR
AH	AIR HANDLER
AMP	AMPACITY
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROL
BTU/H	BRITISH THERMAL UNITS/HOUR
CAP	CAPACITY
CCU	COMPRESSOR/ CONDENSING UNIT
CH	CHILLED
CHW	CHILLED WATER
C/HWR	CHILLED AND HOT WATER RETURN
C/HWS	CHILLED AND HOT WATER SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
COND	CONDENSATE DRAIN
CONN	CONNECTION
CW	COLD WATER, DOMESTIC
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DEG	DEGREES
DN	DOWN
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ERV	ENERGY RECOVERY VENTILATOR
EWT	ENTERING WATER TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
F	FAHRENHEIT
FPM	FEET/MINUTE
FPT	FEMALE PIPE THREAD
FT	FEET
FW	FRESH WATER
GC	GENERAL CONTRACTOR
GPM	GALLONS/MINUTE
HP	HORSEPOWER
HPS	HIGH PRESSURE STEAM
HR OR H	HOUR
HW	HOT WATER, DOMESTIC
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ID	INSIDE DIAMETER
IN	INCH
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LB(S)	POUND(S)
LPS	LOW PRESSURE STEAM
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
M	MINUTE
MAX	MAXIMUM
MBH	THOUSANDS OF BTU/H
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPS	MEDIUM PRESSURE STEAM
MPT	MALE PIPE THREAD
NA	NOT APPLICABLE
NAV	NOT AVAILABLE
NEZ	NON–ELECTRIC ZONE VALVE
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OD	OUTSIDE DIMENSION
PC	PERSONAL COMPUTER
PD	PRESSURE DROP
PG	PROPYLENE GLYCOL
PH	PHASE
PSI	POUNDS PER SQUARE INCH
S	SUPPLY
SF	SQUARE FEET
R	RETURN
SQ IN	SQUARE INCHES
SWT	SWEAT
TEMP	TEMPERATURE
VOLT	VOLTAGE
W	WATTS
WB	WET BULB
WC	WATER COLUMN
W/	WITH
WO/	WITHOUT
WPD	WATER PRESSURE DROP

MANCHESTER COMMUNITY COLLEGE
MANCHESTER, NH

STATE OF NEW HAMPSHIRE ANDREW W. ARSENAULT No. 7099 LICENSED PROFESSIONAL ENGINEER

DESIGN DAY MECHANICALS INC
THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW: PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.
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SCHEDULES

SCALE: 1/8"=1'–0"
revisions:

date: 04/19/19
proj. no. – DDM #19024

M4

SECTION 15500 – HVAC SPECIFICATIONS

I) GENERAL

A) WORK INCLUDED:

1)THESE SPECIFICATIONS INCLUDE GENERAL REQUIREMENTS FOR ALL WORK REPRESENTED ON THESE DRAWINGS. NOT ALL SYSTEMS OR SYSTEM COMPONENTS DESCRIBED IN THESE SPECIFICATIONS ARE NECESSARILY INCLUDED AS A PART OF THIS PROJECT.

2) THE HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) CONTRACTOR SHALL HEREAFTER BE DESCRIBED AS "THE CONTRACTOR" IN THIS HVAC SPECIFICATION. THE CONTRACTOR SHALL PROVIDE, INSTALL, PIPE, DUCT, AND WIRE, AS REQUIRED, HVAC SYSTEMS AS DESCRIBED BELOW, AND SHOWN OR DESCRIBED ON THESE PLANS AND SPECIFICATIONS.

B) QUALITY ASSURANCE:

1)THE NEW HAMPSHIRE STATE BUILDING CODE,THE INTERNATIONAL MECHANICAL CODE (IMC) 2009, NFPA 54 AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IEEC) 2009 ARE THE GOVERNING CODES FOR ALL HVAC WORK. THE CODES AND STANDARDS REFERENCED IN IMC CHAPTER 15 SHALL BE CONSIDERED A PART OF THE REQUIREMENTS OF IMC TO THE PRESCRIBED EXTENT OF EACH SUCH REFERENCE. WHERE DIFFERENCES OCCUR BETWEEN PROVISIONS OF IMC AND THE REFERENCED STANDARDS, THE PROVISIONS OF IMC SHALL APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE REQUIREMENTS OF ALL CODES AS THEY HAVE BEEN ADOPTED BY THE STATE OF NEW HAMPSHIRE AND THE LOCAL JURISDICTION.

2) EXCEPT AS SPECIFICALLY DESCRIBED OTHERWISE IN THESE SPECIFICATIONS, ALL COMPONENTS ALLOWED WITHIN THE ABOVE REFERENCED CODES SHALL BE ALLOWED AS A PART OF THE WORK.

3) THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL ORDINANCES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO, ALL APPLICABLE REGULATIONS OF THE CITY, COUNTY, AND STATE.

4) THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS AFFECTING THE PROPER EXECUTION OF THE CONTRACT, VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

5) DURING THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE IN THE HVAC INSTALLATION FROM THE LAYOUT AND MATERIALS CONTAINED IN THE APPROVED DRAWINGS AND SPECIFICATIONS.

6) DRAWINGS AND CATALOG CUTS, SHOWING ALL HVAC EQUIPMENT AND SYSTEM COMPONENTS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FIELD MEASURE AND COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ALL OTHER TRADES THE PROPOSED LOCATIONS FOR NEW EQUIPMENT AND COMPONENTS BEFORE PRODUCING SUBMITTALS. NO ITEMS SHALL BE PURCHASED OR ORDERED BEFORE APPROVAL IS GIVEN BY THE ENGINEER IN WRITING.

C) RELATED DOCUMENTS:

1)THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL GENERAL CONDITIONS OF THE CONTRACT AND DIVISION 1 SPECIFICATION SECTIONS PROVIDED BY THE ARCHITECT, AND ALL OTHER DRAWINGS AND SPECIFICATIONS PROVIDED AS A PART OF THIS PROJECT, APPLY TO THIS DIVISION 15 AND TO ALL CONTRACTORS, SUBCONTRACTORS, OR OTHER PERSONS SUPPLYING MATERIALS AND/OR LABOR, ENTERING INTO THE PROJECT SITE AND/OR PREMISES, DIRECTLY OR INDIRECTLY.

2) THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COMPLEMENTARY. A PARTICULAR SECTION, PARAGRAPH OR HEADING IN A DIVISION MAY NOT DESCRIBE EACH AND EVERY DETAIL CONCERNING WORK TO BE DONE AND MATERIALS TO BE FURNISHED. THE DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL OF THE WORK REQUIRED OR ALL CONSTRUCTION DETAILS. DIMENSIONS ARE SHOWN FOR CRITICAL AREAS ONLY AS AN AID TO THE CONTRACTOR; ALL DIMENSIONS AND ACTUAL PLACEMENTS ARE TO BE VERIFIED IN THE FIELD. IT IS TO BE UNDERSTOOD THAT THE BEST TRADE PRACTICES OF THE DIVISION WILL PREVAIL.

3) ALL TRADE SUBCONTRACTORS ARE TO NOTE THAT THE ORGANIZATION OF SPECIFICATIONS INTO DIVISIONS, AND LIKEWISE THE ARRANGEMENT OF THE DRAWINGS, IS SET UP FOR THE CONVENIENCE OF UNDERSTANDING THE SCOPE OF THE WORK ONLY. THIS STRUCTURING SHALL NOT CONTROL THE GENERAL CONTRACTOR IN DIVIDING THE WORK AMONG TRADE SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF THE WORK TO BE PERFORMED BY ANY TRADE. REFER TO GENERAL CONDITIONS.

II)PRODUCTS

A) GENERAL MECHANICAL MATERIALS:

1)ESCUTCHEONS: AT ALL FINISHED WALL PENETRATIONS, PROVIDE CHROME-PLATED, STAMPED STEEL, HINGED, SPLIT-RING ESCUTCHEON, WITH SET SCREW. INSIDE DIAMETER SHALL CLOSELY FIT PIPE OUTSIDE DIAMETER OR OUTSIDE OF PIPE INSULATION WHERE PIPE IS INSULATED. OUTSIDE DIAMETER SHALL COMPLETELY COVER THE OPENING IN FLOORS, WALLS, OR CEILINGS.

2) UNIONS: MALLEABLE-IRON, CLASS 150 FOR LOW PRESSURE SERVICE AND CLASS 250 FOR HIGH PRESSURE SERVICE; HEXAGONAL STOCK, WITH BALL-AND-SOCKET JOINTS, METAL-TO- METAL BRONZE SEATING SURFACES; FEMALE THREADED ENDS.

3) DIELECTRIC UNIONS: PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS FOR THE PIPE MATERIALS IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED), WHICH EFFECTIVELY ISOLATE DISSIMILAR METALS, TO PREVENT GALVANIC ACTION, AND STOP CORROSION.

4) SLEEVES: SCHEDULE 40 GALVANIZED, WELDED STEEL PIPE, ASTM A53, GRADE.

5) SLEEVE SEALS: MODULAR TYPE, CONSISTING OF INTERLOCKING SYNTHETIC RUBBER LINKS SHAPED TO CONTINUOUSLY FILL ANNULAR SPACE BETWEEN PIPE AND SLEEVE, CONNECTED WITH BOLTS AND PRESSURE PLATES WHICH CAUSE RUBBER SEALING ELEMENTS TO EXPAND WHEN TIGHTENED, PROVIDING WATERTIGHT SEAL AND ELECTRICAL INSULATION.

6) DRIP PANS: WHERE REQUIRED, PROVIDE DRIP PANS FABRICATED FROM CORROSION-RESISTANT SHEET METAL WITH WATERTIGHT JOINTS, AND WITH EDGES TURNED UP A MINIMUM OF 2-1/2". REINFORCE TOP, EITHER BY STRUCTURAL ANGLES OR BY ROLLING TOP OVER 1/4" STEEL ROD. PROVIDE HOLE, GASKET, AND FLANGE AT LOW POINT FOR WATERTIGHT JOINT AND 1" DRAIN LINE CONNECTION.

7) FIRESTOPPING/FIRE-RESISTANT SEALANT: WHERE REQUIRED, PROVIDE A FIRESTOP SYSTEM APPROPRIATE FOR THE ASSEMBLY PENETRATED AND THE PENETRATING ELEMENT. USE ONLY FIRESTOP PRODUCTS THAT HAVE BEEN UL 1479 OR ASTM E 814 TESTED FOR SPECIFIC FIRE-RATED CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR SPACE REQUIREMENT AND FIRE-RATING INVOLVED FOR EACH SEPARATE INSTANCE. SUBMIT MANUFACTUER'S SPECIFIC DETAIL FOR EACH TYPE OF PENETRATION.

8) ACCESS DOORS: WHERE REQUIRED FOR PROPER SERVICE AND MAINTENANCE OF ALL MECHANICAL COMPONENTS, PROVIDE STEEL ACCESS DOORS AND FRAMES, FACTORY-FABRICATED AND ASSEMBLED UNITS, COMPLETE WITH ATTACHMENT DEVICES AND FASTENERS SUITABLE FOR THE SERVICE.

9) VALVES – PRESSURE AND TEMPERATURE RATED AS REQUIRED TO SUIT SYSTEM PRESSURES AND TEMPERATURES. UNLESS OTHERWISE INDICATED, PROVIDE VALVES OF SAME SIZE AS UPSTREAM PIPE SIZE.

10) THERMOMETERS: PROVIDE DIRECT MOUNT THERMOMETERS 9" ADJUSTABLE ANGLE TYPE, ALUMINUM CASE, ACRYLIC LENS, ORGANIC SPIRIT FILL OR SOLAR TYPE, SUITABLE FOR SERVICE REQUIRED. SELECT RANGE SUCH THAT NORMAL FLUID TEMPERATURES FALL WITHIN THE MIDDLE THIRD OF THE DISPLAY. ACCURACY OF THERMOMETERS SHALL BE PLUS OR MINUS 1 PERCENT FULL SCALE. PROVIDE THERMOMETER WELLS, BRASS OR STAINLESS STEEL, PRESSURE RATED TO MATCH PIPING SYSTEM DESIGN PRESSURE.

11) PRESSURE GAUGES: PRESSURE GAUGES SHALL BE PHOSPHOR BRONZE BOURDON-TUBE TYPE, ALUMINUM OR BRASS CASE, GLASS LENS, SUITABLE FOR SERVICE REQUIRED. SELECT RANGE SUCH THAT NORMAL FLUID PRESSURES FALL WITHIN THE MIDDLE THIRD OF THE DISPLAY. ACCURACY OF PRESSURE GAUGES SHALL BE PLUS OR MINUS 1 PERCENT FULL SCALE. PROVIDE PRESSURE GAUGE COCKS BETWEEN PRESSURE GAUGES AND GAUGE TEES, CONSTRUCTED OF BRASS WITH 1/4" FEMALE NPT ON EACH END, AND "T" HANDLE BRASS PLUG, WITH 1/4" BRASS BUSHING SNUBBER WITH CORROSION RESISTANT POROUS METAL DISC, THROUGH WHICH PRESSURE FLUID IS FILTERED. SELECT DISC MATERIAL FOR FLUID SERVED AND PRESSURE RATING.

12) SUPPORTS AND ANCHORS: HANGERS FOR PIPE UP TO AND INCLUDING 4" SHALL BE SWIVEL RING, SPLIT RING, WROUGHT PIPE CLAMP, BAND, OR ADJUSTABLE WROUGHT CLEVIS TYPE. HANGERS FOR PIPES ABOVE 4" SHALL BE STANDARD CLEVIS OR ROLLER.

13) SADDLES AND SHIELDS: PROVIDE SADDLES AND SHIELDS UNDER PIPING HANGERS AND SUPPORTS, FACTORY-FABRICATED, FOR ALL INSULATED PIPING. SIZE SADDLES AND SHIELDS FOR EXACT FIT TO MATE WITH PIPE INSULATION.

B) ELECTRICAL REQUIREMENTS OF MECHANICAL WORK:

1)BASIC ELECTRICAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO ALL REQUIRED STARTERS, DISCONNECT SWITCHES, CONTROL DEVICES, AND MOTORS. IT INCLUDES MOTORS THAT ARE FACTORY-INSTALLED AS PART OF EQUIPMENT AND APPLIANCES AS WELL AS FIELD-INSTALLED MOTORS.

2) STARTERS AND DISCONNECTS: WHERE AVAILABLE, PROVIDE FACTORY MOUNTED DISCONNECTS AND STARTERS, OR, WHEN FACTORY MOUNTED STARTERS AND DISCONNECTS ARE NOT AVAILABLE PROVIDE COMBINATION STARTERS AND DISCONNECT SWITCHES, OR, WHERE COMBINATION STARTERS AND DISCONNECT SWITCHES ARE NOT SUITABLE OR AVAILABLE, PROVIDE SEPARATE STARTERS AND DISCONNECTS FOR ALL HVAC EQUIPMENT, AS REQUIRED FOR PROPER INSTALLATION AND OPERATION OF EQUIPMENT.

C) MECHANICAL IDENTIFICATION:

1)PROVIDE PIPE MARKERS, LINE MARKERS, VALVE TAGS, VALVE SCHEDULE FRAMES, AND EQUIPMENT MARKERS COMPLYING WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND INSTALLED VIEWING ANGLES OF IDENTIFICATION DEVICES.

2) SCHEDULES: SUBMIT VALVE SCHEDULE FOR EACH PIPING SYSTEM, TYPEWRITTEN AND REPRODUCED ON 8-1/2" X 11" BOND PAPER. TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON TAG), LOCATION OF VALVE (ROOM OR SPACE), AND VARIATIONS FOR IDENTIFICATION (IF ANY). MARK VALVES WHICH ARE INTENDED FOR EMERGENCY SHUT-OFF AND SIMILAR SPECIAL USES, BY SPECIAL "FLAGS", IN MARGIN OF SCHEDULE.

3) PLASTIC PIPE MARKERS

(a) SNAP-ON TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID, SNAP- ON, COLOR-CODED, PIPE MARKERS.

(b) PRESSURE-SENSITIVE TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, PERMANENT ADHESIVE, COLOR-CODED, PRESSURE-SENSITIVE VINYL PIPE MARKERS.

(c) INSTALL EVERY 40 FEET AND AT EACH CHANGE IN DIRECTION.

4) PLASTIC LINE MARKER – UNDERGROUND TYPE: MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS-PRINTED PLASTIC TYPE, INTENDED FOR DIRECT-BURIAL SERVICE; NOT LESS THAN 6" WIDE X 4 MILS THICK. PROVIDE TAPE WITH PRINTING WHICH MOST ACCURATELY INDICATES TYPE OF SERVICE OF BURIED PIPE.

5) PLASTIC VALVE TAGS: PROVIDE MANUFACTURER'S STANDARD SOLID PLASTIC VALVE TAGS WITH PRINTED ENAMEL LETTERING, WITH PIPING SYSTEM ABBREVIATION IN APPROXIMATELY 3/16" HIGH LETTERS AND SEQUENCED VALVE NUMBERS APPROXIMATELY 3/8" HIGH, AND WITH 5/32" HOLE FOR FASTENER.

6) VALVE TAG FASTENERS: MANUFACTURER'S STANDARD SOLID BRASS CHAIN (WIRE LINK OR BEADED TYPE), OR SOLID BRASS S-HOOKS OF THE SIZES REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES, AND MANUFACTURED SPECIFICALLY FOR THAT PURPOSE.

7) VALVE SCHEDULE FRAMES: FOR EACH PAGE OF THE VALVE SCHEDULE. PROVIDE A GLAZED DISPLAY FRAME, WITH SCREWS FOR REMOVABLE MOUNTING ON MASONRY WALLS. PROVIDE FRAMES OF EXTRUDED ALUMINUM OR PLASTIC WITH SSB-GRADE SHEET GLASS OR PLASTIC.

8) PLASTIC EQUIPMENT MARKERS: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC, COLOR CODED EQUIPMENT MARKERS.

9) LETTERING AND GRAPHICS: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING AND WORDING AS INDICATED OR, IF NOT OTHERWISE INDICATED, AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF MECHANICAL SYSTEMS AND EQUIPMENT.

D) VIBRATION CONTROL AND SEISMIC RESTRAINTS:

1)FIBERGLASS PADS AND SHAPES, NEOPRENE PADS, VIBRATION ISOLATION SPRINGS, PAD-TYPE ISOLATORS, PLATE-TYPE ISOLATORS, DOUBLE-PLATE-TYPE ISOLATORS, THREADED DOUBLE- PLATE-TYPE ISOLATORS, ALL-DIRECTIONAL ANCHORS, NEOPRENE MOUNTINGS, FREE STANDING SPRING ISOLATORS, HOUSED SPRING ISOLATORS, VERTICALLY-RESTRAINED SPRING ISOLATORS, EARTHQUAKE-RESISTANT SPRING ISOLATORS, SEISMIC SNUBBERS, THRUST RESTRAINTS, EQUIPMENT RAILS, FABRICATED EQUIPMENT BASES, INERTIA BASE FRAMES, ROOF-CURB ISOLATORS, ISOLATION HANGERS, RISER ISOLATORS, FLEXIBLE PIPE CONNECTORS SHALL BE PROVIDED AS REQUIRED AND AS SUITABLE FOR USE AND SERVICE.

2) WHERE SEISMIC RESTRAINTS ARE REQUIRED, THE CONTRACTOR SHALL PROVIDE CALCULATIONS, DETAILS AND LOCATIONS THAT ARE STAMPED BY A PROFESSIONAL ENGINEER.

E) DUCTWORK:

1)UNLESS OTHERWISE SPECIFIED, ALL RIGID DUCTWORK SHALL BE SHEET METAL MATERIALS AS SPECIFIED IN ASTM A700, WITH GALVANIZED SHEET STEEL: LOCK-FORMING QUALITY, ASTM A527, COATING DESIGNATION G90; MILL PHOSPHATIZED FINISH

2) PRESSURE CLASS AND SEAL CLASS (PER SMACNA):

(a) 2" PRESSURE CLASS, SEAL CLASS C.

3) RECTANGULAR DUCT FABRICATION: FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", TABLES 1-3 THROUGH 1-19, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.

4) WHERE DUCT SUPPORTS ARE REQUIRED BETWEEN THE BUILDING STRUCTURAL FRAMING, SUITABLE INTERMEDIATE STEEL FRAMING SHALL BE PROVIDED BY THE CONTRACTOR.

5) JOINT AND SEAM SEALANT: WATER BASED LIQUID RUBBER DUCT SEALANT, OR FLANGED JOINT MASTICS: ONE-PART, ACID- CURING, SILICONE ELASTOMERIC JOINT SEALANTS, COMPLYING WITH ASTM C920, TYPE S, GRADE NS, CLASS 25, USE O.

6) FLEXIBLE DUCT CONNECTORS SHALL BE INSTALLED AT POINTS AS CLOSE AS POSSIBLE TO AIR HANDLERS. THE CONNECTOR SHALL BE AT LEAST FOUR (4") INCHES WIDE, AND FABRICATED SPECIFICALLY FOR USE AS A FLEXIBLE CONNECTOR. ALL CONNECTIONS SHALL BE AIR TIGHT AND MADE SO THE CONNECTOR IS UNDAMAGED WHEN THE JOINT IS REMOVED.

7) FLEXIBLE DUCTS: LIMITED TO 6 FEET MAXIMUM STRAIGHT. DO NOT USE FLEX AS AN ELBOW.

(a) NORMAL DUTY (UP TO 2" PRESSURE CLASS): TRILAMINATE OF ALUMINUM FOIL, FIBERGLASS AND ALUMINZED POLYESTER MECHANICALLY LOCKED WITH A HELIX OF GALVANIZED STEEL. UL 181, CLASS 1. EQUIVALENT TO BUCKLEY FABRI-FLEX TYPE 3 (BARE) OR 3M (INSULATED WITH ALUMINUM JACKET).

8) BELLMOUTH OR 45 DEGREE TAKEOFFS SHALL BE USED FOR DUCT TAKEOFFS TO MINIMIZE PRESSURE DROP.

9) MANUAL VOLUME DAMPERS SHALL BE INSTALLED AT ALL DUCT TAKEOFFS AND AS NEEDED ELSEWHERE TO PROPERLY BALANCE THE SYSTEMS.

10) FIRE, SMOKE, COMBINATION FIRE/SMOKE DAMPERS AND CEILING RADIATION DAMPERS

(a) FIRE DAMPERS: UL 555 LISTED TYPE "B" (OUT OF AIRSTREAM) 1-1/2 HOUR RATED FOR LESS THAN 3-HOUR FIRE-RESISTANCE RATED ASSEMBLIES AND 3 HOUR RATED FOR 3-HOUR OR GREATER FIRE-RESISTANCE RATED ASSEMBLIES

(1) DYNAMIC FIRE DAMPERS SHALL BE USED IN SYSTEMS DESIGNED TO OPERATE WITH FANS ON DURING A FIRE.

(2) STATIC FIRE DAMPERS MAY BE USED IN SYSTEMS NOT OPERATIONAL DURING A FIRE.

(b) SMOKE DAMPERS: UL 555S LISTED.

(c) COMBINATION FIRE/SMOKE DAMPERS: UL 555 AND UL 555S LISTED

(d) CEILING RADIATION DAMPERS: UL 555C LISTED.

(e) REFER TO BOTH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR THE LOCATION OF RATED ASSEMBLIES.

11) SMOKE DETECTORS IN AIR SYSTEMS GREATER THAN 2000 CFM SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR IN BOTH THE SUPPLY AND RETURN AIR DUCTWORK AS PER IMC 2009.

(a) IF THERE IS A FIRE ALARM SYSTEM IN THE BUILDING, THIS CONTRACTOR SHALL NOTIFY THE FIRE ALARM CONTRACTOR TO PROVIDE DUCT SMOKE DETECTORS WHERE REQUIRED.

F) HYDRONIC AND AIR CONDITIONING PIPING:

1)HYDRONIC PIPING (HOT WATER AND CHILLED WATER) SHALL BE SCHEDULE 40 ASTM A53, GRADE B, TYPE E (ERW) STEEL OR ASTM B88, TYPE L COPPER TUBE (COPPER THROUGH 2" ONLY) WITH THE FOLLOWING JOINING METHODS:

(a) THROUGH 2" SHALL USE CAST IRON CLASS 150 THREADED FITTINGS PER ASME B16.3 FOR STEEL PIPE OR COPPER SOLDERED FITTINGS FOR COPPER TUBE.

(b) 2-1/2" AND UP SHALL USE STEEL WELDED (ASME B16.9, STD WEIGHT) OR FLANGED (ASME B16.5, CLASS 150, RAISED FACE) FITTINGS.

(c) UPONOR ASTM F876/F877 SDR9 CROSSLINKED POLYETHYLENE (PEX-A) PIPING WITH ASTM F1960 COLD EXPANSION FITTINGS AND PEX REINFORCING RINGS INSTALLED PER MANUFACTURER'S INSTRUCTIONS IS ALSO ALLOWED.

(d) MECHANICAL GROOVED STEEL WITH MECHANICAL GROOVED STEEL FITTINGS AND COUPLINGS AS MANUFACTURED BY VICTAULIC COMPANY OF AMERICA OR GRUVLOCK BY ANVIL INTERNATIONAL, INC AND FOR SIZES 2" AND SMALLER TYPE "L" HARD DRAWN COPPER TUBING, PRESSED FITTINGS CONFORMING TO THE MATERIAL AND SIZING REQUIREMENTS OF ASME B16.22, SUCH AS PRO-PRESS ASME B16.18 OR ASME OPTS. THE O-RINGS FOR THE COPPER PRESS FITTINGS SHALL BE EPDM. IF THE CONTRACTOR CHOOSES SOLDERED COPPER FITTINGS CAN BE USED.

2) HYDRONIC VALVES:

(a) THROUGH 2" BRONZE BALL VALVES EQUAL TO APOLLO 70 SERIES.

(b) 2-1/2" AND UP DUCTILE IRON LUG STYLE BUTTERFLY VALVE WITH LEVER EQUAL TO CENTERLINE 200 SERIES.

3) AIR CONDITIONING CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC.

(a) ROOF TOP UNITS SHALL DRAIN CONDENSATE ONTO ROOF.

(b) INDOOR UNITS SHALL DRAIN CONDENSATE TO SANITARY VIA INDIRECT CONNECTION.

4) PROVIDE AND INSTALL ISOLATION VALVES, UNIONS/FLANGES, MANUAL AIR VENTS, AND DRAIN VALVES AT ALL PIECES OF EQUIPMENT.

5) PITCH WATER PIPING UP IN THE DIRECTION OF FLOW, 1 INCH PER 40 FEET MINIMUM. PROVIDE AN AIR VENT AT ALL HIGH POINTS AND A DRAIN VALVE AT ALL LOW POINTS.

6) CUT ALL HOLES OF SUFFICIENT SIZE AND HANG ALL PIPE SO THAT THERE WILL BE NO COPPER OR STEEL TO METAL CONTACT AND RESULTANT NOISE DURING PIPE EXPANSION AND CONTRACTION. PROVIDE EXPANSION LOOPS WITH ROLLERS, GUIDES AND ANCHORS WHERE STRAIGHT RUNS OF PIPE EXCEED 100 FEET.

7) BEFORE SYSTEM OPERATION, CLEAN AND FLUSH ALL PIPING SYSTEMS TO REMOVE GREASE, OIL, SCALE, ETC. OPERATE SYSTEM FOR A MINIMUM OF 24 HOURS WITH STARTUP STRAINERS TO REMOVE DEBRIS, THEN REMOVE AND DISPOSE OF STARTUP STRAINER.

8) PROIVDE CHEMICAL WATER TREATMENT CHEMICALS TO PROHIBIT CORROSION FOR WATER SYSTEMS. PROPYLENE GLYCOL (CONCENTRATION SHALL PROVIDE FREEZE PROTECTION TO 5°F BELOW THE LOWEST ANTICIPATED AMBIENT TEMPERATURE) IS SUFFICIENT FOR WATER TREATMENT FOR SYSTEMS NEEDING FREEZE PROTECTION.

G) REFRIGERATION PIPING SYSTEMS:

1)COPPER TUBE AND FITTINGS:

(a) DRAWN-TEMPER OR ANNEALED COPPER TUBE: ASTM B280, TYPE ACR.

(b) WROUGHT-COPPER FITTINGS: ASME B16.22.

(c) BRAZING FILLER METALS: AWS A5.8, CLASSIFICATION BAG-1 (SILVER)

2) PROVIDE AND INSTALL ALL REFRIGERANT PIPING SPECIALTIES REQUIRED AND RECOMMENDED BY THE REFRIGERATION EQUIPMENT MANUFACTURER.

H) INSULATION:

1)ALL INSULATION SHALL BE UL APPROVED FOR A FLAME SPREAD RATING OF NOT OVER 25 AND A SMOKE DEVELOPED RATING OF NOT OVER 50.

2) ALL INSULATION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2009.

3) HYDRONIC PIPING: ALL HYDRONIC PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED WITH FIBERGLASS INSULATION IN ACCORDANCE WITH THE THICKNESS LISTED BELOW, BASED ON THE PIPE INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/H*FT2*°F. PROVIDE ASJ OR OTHER JACKET TO PROTECT INSULATION. SIMILAR TO JOHNS MANVILLE MICRO-LOK.

(a) NOTE THAT ALL PIPES CONTAINING FLUIDS AT TEMPERATURES LESS THAN LOCAL DEWPOINT MUST BE INSULATED FOR CONDENSATION CONTROL.

(b) MINIMUM PIPE INSULATION

(1) PIPE DIAMETER 1.5" AND LESS:

(i) STEAM AND STEAM CONDENSATE: 1.5" THICK

(ii) HOT AND CHILLED WATER: 1.5" THICK

(2) PIPE DIAMETER GREATER THAN 1.5":

(i) STEAM AND STEAM CONDENSATE: 3" THICK

(ii) HOT WATER: 2.0" THICK

(iii) CHILLED WATER: 1.5" THICK

(c) EXCEPTIONS:

(1) REFER TO IEEC.

4) REFRIGERANT PIPING INSULATION SHALL BE FLEXIBLE ELASTOMERIC THERMAL INSULATION: CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534, TYPE I FOR TUBULAR MATERIALS AND TYPE II FOR SHEET MATERIALS.

(a) ADHESIVE: AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER.

(b) ULTRAVIOLET-PROTECTIVE COATING: AS RECOMMENDED BY INSULATION MANUFACTURER.

(1) COPPER PIPE, LESS THAN 1½": ½" THICK.

(2) COPPER PIPE, 1½" AND LARGER: 1" THICK.

5) DUCTWORK: ALL INDOOR SUPPLY AND OUTDOOR AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH FIBERGLASS WITH FSK JACKET WITH A MINIMUM OF R-5 INSULATIO; INSTALLED, SIMILAR TO JOHNS MANVILLE MICROLITE EQ TYPE 75, 2" THICK.

(a) ROOF MOUNTED SUPPLY AND EXHAUST AIR DUCTS SHALL BE INSULATED WITH 3.0 PCF FIBERGLASS INSULATION BOARD WITH FSK JACKET WITH A MINIMUM INSTALLED R-8 INSULATION, SIMILAR TO JOHNS MANVILLE 814, 2" THICK. PITCHED TOP AND COVERED WITH POLYGUARD ALUMAGUARD ALL-WEATHER WITH COOL WRAP FINISH OR SIMILAR WATERPROOF COVERING.

(b) EXCEPTIONS:

(1) REFER TO IECC.

III) EXECUTION

A) THE CONTRACTOR SHALL PROVIDE ALL SUPERVISION, LABOR, EQUIPMENT, MATERIAL, MACHINERY, PLANS, RIGGING, AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE MECHANICAL SYSTEM. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEM SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF HEREIN SPECIFIED OR SHOWN ON THE DRAWINGS.

B) THE CONTRACTOR SHALL INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES CHECKING THE MANUFACTURER'S INSTRUCTIONS TO DETERMINE WHAT TYPE OF GLYCOL SYSTEM MAY BE USED WITHI EQUIPMENT SO AS NOT TO VOID THE WARRANTY OR IMPAIR THE OPERATION OF THE EQUIPMENT. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ENGINEER.

C) THE HVAC EQUIPMENT MAY NOT BE USED FOR TEMPORARY HEAT DURING CONSTRUCTION. THE HVAC EQUIPMENT SHALL NOT BE STARTED AND TESTED UNTIL ALL CONSTRUCTION ACTIVITY THAT HAS THE POTENTIAL OF CREATING AIR BORNE PARTICULATES THAT COULD BE DRAWN INTO THE HVAC EQUIPMENT AND DUCTWORK SYSTEMS HAS BEEN COMPLETED. IN ADDITION, ALL DUTWORK OPENINGS SHALL BE SEALED UNTIL THE TIME WHEN THE WHEN HVAC EQUIPMENT IS TO BE STARTED AND TESTED.

D) DUCTWORK AND FITTINGS SHALL HAVE ENDS COVERED WITH PLASTIC AT ALL TIMES.

E) UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN, OIL AND GREASE (UNLESS FACTORY LUBRICATED) ALL FANS, PUMPS, MOTORS, ALL OTHER RUNNING EQUIPMENT AND APPARATUS AND MAKE CERTAIN THAT ALL SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND MADE READY FOR TESTING.

F) REPLACE ALL FILTERS USED DURING CONSTRUCTION.

G) EQUIPMENT SHALL BE STARTED, TESTED, ADJUSTED AND PLACED IN SATISFACTORY OPERATING CONDITION BY THE CONTRACTOR.

H) THE CONTRACTOR SHALL INSTRUCT OWNER IN THE PROPER OPERATION OF EQUIPMENT, EXPLAIN THE PROPER OPERATING AND MAINTENANCE PROCEDURES AND SHALL FURNISH THE OWNER WITH ALL INSTRUCTION PAMPHLETS, BOOKS AND OTHER MATERIAL FURNISHED BY THE VARIOUS MANUFACTURERS

I) ALL VIBRATING EQUIPMENT NOT MOUNTED ON THE GROUND FLOOR SHALL BE MOUNTED ON OR SUSPENDED FROM VIBRATION ISOLATORS.

J)EQUIPMENT SHALL BE INSTALLED WITH CLEARANCE FOR PROPER MAINTENANCE. FILTERS, COILS, DRIVES, VALVES, AND CONTROLS SHALL BE ACCESSIBLE FOR SERVICING AND/OR REPLACEMENT.

K) EQUIPMENT SHALL BE COVERED FOR ONE YEAR FROM THE REVIEWING ENGINEER'S DATE OF ACCEPTANCE AND/OR THE DURATION OF THE MANUFACTURER'S GUARANTEE OR WARRANTY, WHICH EVER IS LONGER. THE CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEES OR WARRANTIES.

L)THE CONTRACTOR SHALL PROVIDE FOR BALANCING OF THE WATER AND AIR SYSTEMS TO WITHIN 10 PERCENT OF THE GPM AND CFM VALUES SHOWN ON THE APPROVED HVAC PLANS. BALANCING SHALL BE DONE IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE AABC USING REPORT SHEETS DEVELOPED BY THE AABC. SUBMIT REPORTS TO THE ENGINEER.

END OF SECTION 15500

MANCHESTER COMMUNITY COLLEGE
MANCHESTER, NH

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED PROFESSIONAL ENGINEER

DESIGN DAY MECHANICALS INC
THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW: PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.
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SCHEDULES

SCALE: NA
revisions:

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proj. no. – DDM #19024

M5

ELECTRICAL LEGEND

LIGHT OUTLET AND FIXTURE - LETTER REFERS TO FIXTURE SCHEDULE

Symbol	Description
F	LED, FLUORESCENT OR LINEAR INCANDESCENT FIXTURE
C,R OR P	LED, INCANDESCENT, FLUORESCENT, OR H.I.D. FIXTURE
W	WALL MOUNTED FIXTURE
	DIRECTIONALLY ORIENTATED FIXTURE
OR	FIXTURE EQUIPPED WITH INTEGRAL EMERGENCY BATTERY UNIT OR FIXTURE WIRED TO EMERGENCY CIRCUIT OR EMERGENCY INVERTER
NL	FIXTURE WIRED TO NIGHT LIGHTING CIRCUIT
	EXIT SIGN - SINGLE FACE ⊗ DOUBLE FACE - DIRECTIONAL ARROWS AS INDICATED

WIRING DEVICES - SWITCHES 20A., 120/277V. M.H. 48" TO ℄ EXCEPT AS NOTED

Symbol	Description
S	SINGLE POLE
S2	DOUBLE POLE
S3	THREE WAY
S4	FOUR WAY
	SINGLE POLE SWITCH WITH THERMAL ELEMENT
D	DIMMER SWITCH - 600W-120V. (UNLESS NOTED OTHERWISE) LINEAR SLIDE BAR TYPE
FL D	DIMMER SWITCH - FLOURESCENT RATED - LINEAR SLIDE BAR TYPE
SMC	MAINTAINED CONTACT-THREE POSITION-CENTER OFF-SINGLE POLE-DOUBLE THROW
S	SPEED SWITCH - FURNISHED BY HVAC CONTRACTOR - INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
SD	DOOR OPERATED SWITCH

OCCUPANCY SENSORS / AUTOMATIC CONTROL DEVICES

Symbol	Description
S	WALL MOUNTED - PIR AND ULTRASONIC, 120/277V RATED, MANUAL OVERIDE, WHITE FINISH - 15 MINUTE SETTING - WATTSTOPPER #DW-100-W
S 2	DUAL CIRCUIT WALL MOUNTED - PIR AND ULTRASONIC, 120/277V RATED, MANUAL OVERIDE, WHITE FINISH - 15 MINUTE SETTING - WATTSTOPPER #DW-200-W
S CLG	SURFACE CEILING MOUNTED - PIR AND ULTRASONIC, 120/277V RATED, WHITE FINISH - WITH POWER PACK(S) AS REQUIRED - WATTSTOPPER #DT-300 - EXTENDED RANGE LENS, 24V DC
WP S	WALL MOUNTED LOW TEMPERATURE PIR OCCUPANCY SENSOR - 24V DC, WIDE ANGLE LENS - WATTSTOPPER #CB100 WITH POWER PACK(S) AS REQUIRED - MOUNTED 6" BELOW CEILING
ST	WALL MOUNTED - DIGITAL COUNT DOWN TIMER, 120/277V RATED, MANUAL OVERIDE (FIELD SET DIP SWITCHES AT 2 HOURS), WHITE FINISH - WATTSTOPPER #TS400W
HD S CLG	SURFACE CEILING MOUNTED PASSIVE INFRARED - 24V DC RATED - WHITE FINISH - 15 MINUTE SETTING - HIGH DENSITY LENS. WATTSTOPPER #CI-300-1 WITH POWER PACK(S) AS REQUIRED.
HV/HD S CLG	SURFACE CEILING MOUNTED PASSIVE INFRARED - 24V DC RATED - WHITE FINISH - 15 MINUTE SETTING - HIGH DENSITY LENS. WATTSTOPPER #CI-24-1 WITH INTERNAL ISOLATED RELAY
HV S CLG	SURFACE CEILING MOUNTED PASSIVE INFRARED - 24V DC RATED - WHITE FINISH - 15 MINUTE SETTING - EXTENDED RANGE LENS. WATTSTOPPER #CI-24 WITH INTERNAL ISOLATED RELAY
DT S CLG	SURFACE CEILING MOUNTED DUAL TECHNOLOGY - 24V DC RATED - WHITE FINISH - 15 MINUTE SETTING - HIGH DENSITY LENS. WATTSTOPPER #DT-300 WITH POWER PACK(S) AS REQUIRED.
PP	POWER PACK AND ENCLOSURE - 120/277V, 20A INPUT RATED. WATTSTOPPER #BZ-100
S DIM	WALL MOUNTED PIR DIMMABLE WALL SWITCH SENSOR - 120/277V RATED - WHITE FINISH - 15 MINUTE SETTING. WATTSTOPPER #WD-180-W

DAYLIGHTING SENSORS / AUTOMATIC CONTROL DEVICES

Symbol	Description
SZ DS CLG	SURFACE CEILING MOUNTED DAYLIGHTING CONTROLLER - SINGLE ZONE - 24V DC RATED. WATTSTOPPER #LS-101 WITH POWER PACK(S) AS REQUIRED.
MZ DS CLG	SURFACE CEILING MOUNTED DAYLIGHTING CONTROLLER - MULTI ZONE - 24V DC RATED. WATTSTOPPER WITH POWER PACK(S) AS REQUIRED.
DS	SURFACE CEILING MOUNTED LINE VOLTAGE DAYLIGHT SENSOR. HUBBELL #DLC-PC-O
DS DM	DAYLIGHT SENSOR DIMMING MODULE - 24V DC RATED WATT STOPPER LCD-203 WITH BT-203 POWER PACK AND LS-E8 ENCLOSURE - MOUNT NIGH ON WALL ADJACENT TO LITE CONTROLS CONTROL SPLICE BOX (CSB)

CONDUIT AND WIRING (BRANCH AND FEEDER CIRCUITRY)

Symbol	Description
	CONDUIT AND WIRING - DIAGONAL LINES INDICATE # OF WIRES (GROUNDING WIRE NOT SHOWN) MINIMUM WIRE SIZE #12 AWG. MINIMUM CONDUIT SIZE 3/4" (TYPICAL U.N.O.)
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	HOMERUN TO PANELBOARD DESIGNATED - 2 #12 & #12G-3/4"C. TO 20A-1P CIRCUIT BREAKER (TYPICAL UNLESS NOTED OTHERWISE)
	FLEXIBLE CONDUIT AND EQUIPMENT CONNECTION

MISCELLANEOUS

Symbol	Description
E #	INDEXING SYMBOL
	ELECTRIC RADIATION - FURNISHED AND INSTALLED BY HVAC CONTRACTOR, WIRED BY THE ELECTRICAL CONTRACTOR
SP	PUBLIC ADDRESS FLUSH CEILING MOUNTED SPEAKER WITH VOLUME CONTROL
CR	CARD READER - PROVIDED BY SECURITY SYSTEM VENDOR
J or J	JUNCTION BOX
TC	TIME CLOCK (SWITCH) 7 DAY ASTRONOMIC DIAL - 24 HOUR - DIGITAL CONTROL - BATTERY BACKUP
LV T	LINE VOLTAGE THERMOSTAT
DR	ELECTRIC DOOR RELEASE
PP	POWER POLE - DUAL CHANNEL
TV	COAXIAL OUTLET FOR C.A.T.V.

WIRING DEVICES - RECEPTACLES 20A., 125V. GROUNDING TYPE. M.H. 18" TO ℄ A.F.F. (EXCEPT AS NOTED)

Symbol	Description
	DUPLEX - WALL MOUNTED
	DOUBLE DUPLEX
GFI	DUPLEX - GROUND FAULT INTERRUPTER TYPE WITH LED INDICATOR STATUS LIGHT
IG	DUPLEX - ISOLATED GROUND TYPE
WP	DUPLEX - WEATHERPROOF
R	RANGE OUTLET - 50A 125/250V GROUNDING TYPE
TP	TAMPERPROOF TYPE RECEPTACLE
KP	DUPLEX - KICKPLATE MOUNTING
C OR	DUPLEX - MOUNTED 42" A.F.F. OR ABOVE COUNTER BACKSPLASH
C OR USB	DUPLEX WITH INTEGRAL USB PORTS - MOUNTED 42" A.F.F. OR ABOVE COUNTER BACKSPLASH
	SPECIAL PURPOSE RECEPTACLE - REFER TO FLOOR PLANS FOR TYPE
	CLOCK OUTLET - SINGLE OR DUPLEX - 15A., 120V., MTD. 8'-0" A.F.F. TO ℄
	WIREMOLD G4000 DUAL CHANNEL SURFACE MOUNTED (42" A.F.F.) RACEWAY SYSTEM WITH DUPLEX 20A-125V OUTLETS 24" O.C. ALTERNATELY WIRED AND DATA/VOICE OUTLETS AS REQUIRED BY THE TENANT
	DUPLEX OUTLET WIRED TO NORMAL/EMERGENCY DISTRIBUTION SYSTEM

FLOOR BOXES AND POKE THRU DEVICES

Symbol	Description
FB P	FLUSH MOUNTED POWER FLOOR BOX WITH CONDUIT TAKE-OFF FOR FURNITURE POWER. WALKER #880MP WITH 880MPA, 817P FLANGE AND 829CK1 COVER PLATE
FB T D/V	FLUSH MOUNTED TELECOM FLOOR BOX WITH CONDUIT TAKE-OFF FOR VOICE/DATA CABLING. WALKER #880MP WITH 880MPA, 817P FLANGE AND 829CK1 COVER PLATE
FB	DUAL GANG FLUSH MOUNTED CAST IRON FLOOR BOX WITH 120V-20A DUPLEX RECEPTACLE, DATA/VOICE OUTLET AND BRASS COVER PLATE
PT	DUAL GANG FLUSH MOUNTED FIRE RATED POKE-THRU DEVICE WITH 20A-125V DUPLEX RECEPTACLE AND DATA/VOICE OUTLET AND BRASS COVER PLATE - REFER TO DETAIL ON DRAWING E-*
PT TV	TRIPLE GANG FLUSH MOUNTED FIRE RATED POKE-THRU DEVICE WITH 20A-125V DUPLEX RECEPTACLE, DATA/VOICE OUTLET AND CATV OUTLET AND BRASS COVER PLATE - REFER TO DETAIL ON DRAWING E-*
FB TV	TRIPLE GANG FLUSH MOUNTED FIRE RATED FLOOR BOX WITH 20A-125V DUPLEX RECEPTACLE, DATA/VOICE OUTLET AND CATV OUTLET AND BRASS COVER PLATE - REFER TO DETAIL ON DRAWING E-*
PT BF V D	COMBINATION POWER AND VOICE/DATA FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION - REFER TO DETAIL ON DRAWING E-*
PT BF	POWER ONLY FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION - REFER TO DETAIL ON DRAWING E-*
PT V D	VOICE/DATA ONLY FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION - REFER TO DETAIL ON DRAWING E-*
PT	MONUMENT TYPE FIRE RATED POKE THRU - REFER TO DETAIL ON DRAWING E-*
BF	BASE FEED MODULE CONNECTION TO PARTITION SYSTEM - REFER TO DETAIL ON DRAWING E-*

MOTOR CONTROLS AND DISTRIBUTION EQUIPMENT

Symbol	Description
	NON-FUSIBLE DISCONNECT SWITCH - RATING AS INDICATED
	FUSIBLE DISCONNECT SWITCH - RATING AS INDICATED
CB	ENCLOSED CIRCUIT BREAKER - RATING AS INDICATED
1	MAGNETIC MOTOR STARTER - NUMERAL INDICATES NEMA SIZE
1	MOTOR - NUMERAL INDICATES HORSEPOWER
CP	CONTROL PANEL
	TRANSFORMER - NUMERAL INDICATES KVA RATING
	LIGHTING AND/OR POWER PANELBOARD
	METER - CHECK METER EMON-DEMON WITH "PEAK DEMAND" READING - AMPERE AS INDICATED
VFD	VARIABLE FREQUENCY DRIVE

EMERGENCY LIGHTING SYSTEMS - 12 VOLT

Symbol	Description
	BATTERY UNIT - DUAL-LITE #LZ15N12V03L (TYPICAL UNLESS NOTED OTHERWISE)
R	BATTERY UNIT - DUAL-LITE #LZ20N12V03L (TYPICAL UNLESS NOTED OTHERWISE)
M	BATTERY UNIT - DUAL-LITE #EV402L (TYPICAL UNLESS NOTED OTHERWISE)
	REMOTE HEAD-WALL MOUNTED - DUAL-LITE #LZRSW1203L (TYPICAL U.N.O.) (UL DAMP LOCATION LISTED)
	REMOTE HEADS-WALL MOUNTED - DUAL-LITE #LZRDW1203L (TYPICAL U.N.O.) (UL DAMP LOCATION LISTED)
—E—	EMERGENCY WIRING - 2#12-1/2" CONDUIT (TYPICAL UNLESS NOTED OTHERWISE)
WP	WEATHERPROOF EMERGENCY REMOTE HEAD - DUAL-LITE #OCRSW1203L
WP	WEATHERPROOF EMERGENCY REMOTE HEADS - DUAL-LITE #OCRDW1203L
TR	EMERGENCY TRANSFER RELAY - REFER TO DETAIL ON DRAWING E-*

BUSWAY DISTRIBUTION SYSTEM

Symbol	Description
	FEEDER TYPE BUSWAY-AMPERAGE AS INDICATED
	PLUG-IN TYPE BUSWAY-AMPERAGE AS INDICATED
EC	END CABLE TAP BOX
CB	PLUG-IN CIRCUIT BREAKER UNIT - REFER TO SCHEDULE

EXISTING ELECTRICAL EQUIPMENT

Symbol	Description
ETR	EXISTING EQUIPMENT TO REMAIN
	DOTTED DENOTES EXISTING EQUIPMENT
XR	EXISTING EQUIPMENT TO BE RELOCATED
RX	NEW LOCATION OF RELOCATED EXISTING ELECTRICAL EQUIPMENT
X	EXISTING EQUIPMENT TO BE REMOVED

FIRE ALARM SYSTEM - ADDRESSABLE

Symbol	Description
FACP	FIRE ALARM CONTROL PANEL
F	MANUAL PULL STATION - M.H. 48" TO ℄ A.F.F. - "S" INDICATES MANUAL STATION WITH STOPPER COVER
F	HORN/STROBE UNIT - M.H. 80" AFF OR 6" BELOW CEILING - CANDELA RATING AS INDICATED
F S	SPEAKER/STROBE UNIT - M.H. 80" AFF OR 6" BELOW CEILING - CANDELA RATING AS INDICATED
520 F	FIRE ALARM 520HZ SOUNDER - M.H. 80" AFF OR 6" BELOW CEILING
F	STROBE UNIT - M.H. 80" A.F.F. OR 6" BELOW CEILING - CANDELA RATINGS AS INDICATED
KK	KEY KEEPER - LOCK BOX - 10 KEY CAPACITY
HD	HEAT DETECTOR - COMBINATION TYPE - "DC" INDICATES DUAL CONTACTS
HD F	HEAT DETECTOR - FIXED TEMPERATURE TYPE
SD	SMOKE DETECTOR - "DC" INDICATES DUAL CONTACTS
SD	WALL MOUNTED SMOKE DETECTOR
SD L	SINGLE OR MULTISTATION LOCAL 120V PHOTOELECTRIC TYPE WALL MOUNTED SMOKE DETECTOR WITH INTERNAL LOW FREQUENCY AUDIBLE DEVICE AND BATTERY BACKUP
SD L	SINGLE OR MULTISTATION LOCAL 120V PHOTOELECTRIC TYPE SMOKE DETECTOR WITH INTERNAL LOW FREQUENCY AUDIBLE DEVICE AND BATTERY BACKUP
CO L	SINGLE OR MULTISTATION LOCAL 120V CARBON MONOXIDE DETECTOR WITH INTERNAL LOW FREQUENCY AUDIBLE DEVICE AND BATTERY BACKUP
TR BD	BEAM TYPE SMOKE DETECTOR - TRANSMITTER
REC BD	BEAM TYPE SMOKE DETECTOR - RECEIVER
SA SD	DUCT MOUNTED SMOKE DETECTOR - INSTALLED BY HVAC CONTR.,FURNISHED & WIRED BY ELECT. CONTR.
RTS	REMOTE INDICATING AND TESTING STATION WITH LED INDICATING LIGHT
EB	STANDBY BATTERY UNIT
WF	WATER FLOW SWITCH - FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
TS	TAMPER (SUPERVISORY) SWITCH - FURN. & INSTALLED BY SPRINKLER CONTR., WIRED BY ELEC. CONTR.
PIV TS	TAMPER SWITCH - POST INDICATOR VALVE - FURNISHED & INSTALLED BY SPRINKLER CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR
PS	PRESSURE SWITCH - FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
RAI	REMOTE ALARM INDICATOR
RDD	REMOTE DIGITAL DISPLAY UNIT
DH	MAGNETIC DOOR HOLDER
F	RED EXTERIOR FLASHING BEACON
R FA	FIRE ALARM MONITORING RELAY
B	FIRE ALARM BELL - FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
MM	MONITOR MODULE
CM	CONTROL MODULE
VOM	VENTILATION OVERIDE MODULE
F	MASTER BOX (SEE SPECIFICATIONS)
SD T	SMOKE DETECTOR WITH INTEGRAL THERMAL ELEMENT
177 F SD L	SINGLE OR MULTISTATION LOCAL 120V PHOTOELECTRIC TYPE SMOKE DETECTOR WITH INTERNAL LOW FREQUENCY AUDIBLE AND VISUAL DEVICE AS WELL AS BATTERY BACKUP. CANDELA RATING AS INDICATED.
CO PE SD L	SINGLE OR MULTISTATION LOCAL 120V PHOTOELECTRIC TYPE SMOKE DETECTOR WITH INTEGRAL CARBON MONOXIDE DETECTOR, INTERNAL LOW FREQUENCY AUDIBLE DEVICE AND BATTERY BACKUP
CO SD PE	COMBINATION SMOKE DETECTOR (PHOTOELECTRIC) AND CARBON MONOXIDE DETECTOR WITH THERMAL AND INFRARED HEAT DETECTION
SD VF	SYSTEM PHOTOELECTRIC SMOKE DETECTOR WITH VERIFICATION FEATURE
SB SD VF	SYSTEM PHOTOELECTRIC SMOKE DETECTOR WITH VERIFICATION FEATURE AND 520HZ SOUNDER BASE
CO SB SD PE VF	COMBINATION SMOKE DETECTOR (PHOTOELECTRIC) AND CARBON MONOXIDE DETECTOR WITH THERMAL AND INFRARED HEAT DETECTION, VERIFICATION FEATURE AND 520HZ SOUNDER BASE
FA R MV	MULTI-VOLTAGE RELAY - 120V TO 24V DC
SD	SMOKE/FIRE DAMPER FURNISHED AND INSTALLED BY OTHERS, WIRED BY THE ELECTRICAL CONTRACTOR

VOICE/DATA SYSTEMS

Symbol	Description
D/V J	DATA/VOICE CONNECTION TO PARTITION SYSTEM
	VOICE/DATA OUTLET - WALL MOUNTED
	TELEPHONE OUTLET - WALL MOUNTED
	DATA OUTLET - WALL MOUNTED
—V—	CABLE HOMERUN TO TERMINAL STRIP - REFER TO NOTES ON VOICE/DATA PLANS
—D—	CABLE HOMERUN TO PATCH PANEL - REFER TO NOTES ON VOICE/DATA PLANS
	DATA ANTENNA STUB - PROVIDED BY TELECOMMUNICATIONS SYSTEM VENDOR

CABLE TRAY SYSTEMS

Symbol	Description
9	9" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
18	18" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
24	24" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
	90° HORIZONTAL BEND
	CABLE TRAY TEE-SIZE AS REQUIRED

NOTE: THIS SYMBOL LIST IS A MASTER SCHEDULE. SOME OF THE SYMBOLS LISTED ABOVE MAY NOT BE APPLICABLE TO THE SCOPE OF WORK FOR THIS PROJECT.

GENERAL NOTES

1. ELECTRICAL CONDUIT SHALL BE RUN CONCEALED WHEREVER POSSIBLE. RUN EXPOSED CONDUIT PERPENDICULAR OR PARALLEL TO BUILDING WALLS OR COLUMNS.

2. WIRE AND CONDUIT SIZES INDICATED ON HOMERUNS SHALL RUN CONTINUOUS THROUGHOUT CIRCUIT.

3. A PROPERLY SIZED EQUIPMENT GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS INSTALLED IN PVC, EMT OR RIGID STEEL RACEWAYS AND IN ALL PREMANUFACTURED WIRING SYSTEMS.

4. CONDUITS AND CIRCUITRY INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC ONLY. FINAL LOCATION OF CONDUIT SHALL BE FIELD COORDINATED SO AS TO AVOID CONFLICTS WITH OTHER TRADES.

5. ALL 120V BRANCH CIRCUITS WHEN 100 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).

6. ALL 208V OR 277V BRANCH CIRCUITS WHEN 200 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).

7. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH H.V.A.C., PLUMBING, AND FIRE PROTECTION CONTRACTOR'S.

8. COORDINATE EXACT LOCATION OF TENANT EQUIPMENT WITH THE ARCHITECT'S FIELD SUPERVISOR.

9. RACEWAYS RUN THROUGH AREAS OF WIDELY DIFFERENT TEMPERATURES SHALL BE SEALED WITH A PLIABLE COMPOUND AT THE VARIANT TEMPERATURE AREA.

10. WHEN ROUGHING IN, OUTLET BOXES FOR DEVICES SHALL BE MEASURED OFF OF FINISHED FLOOR TO A SET HEIGHT, AND THEN ALIGNED HORIZONTALLY SO THAT ALL DEVICES WILL BE LEVEL WITHIN A GIVEN AREA.

11. PROVIDE ELECTRICAL OUTLET DEVICE PLATE GASKETS IN ALL WIRING DEVICE BOXES INSTALLED IN WALLS SEPARATING CONDITIONED AND UNCONDITIONED SPACES.

12. ALL RACEWAY PENETRATIONS THROUGH FIRE RATED WALL, CEILING, OR FLOOR ASSEMBLIES SHALL BE PROPERLY FIRE SEALED.

13. PROVIDE SEISMIC RESTRAINTS FOR ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NATIONAL ELECTRIC CODE RECOMMENDATIONS. SEISMIC SYSTEM DESIGN AND CALCULATIONS SHALL BE PREPARED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.

14. OUTLETS OR DEVICES MOUNTED ON EXISTING CMU OR CONCRETE WALLS SHALL BE SURFACE MOUNTED IN APPROPRIATE BOXES.

15. ELECTRICAL RACEWAYS WHICH TRAVERSE THROUGH CMU WALLS SHALL BE PROPERLY WEATHERSEALED.

16. FEEDERS OR BRANCH CIRCUITS TO ALL ELECTRICALLY POWERED ROOFTOP MOUNTED EQUIPMENT SHALL BE RUN IN THE JOIST SPACE ON THE UNDERSIDE OF THE ROOF DECK. FOR ROOFTOP AIR CONDITIONING UNITS THE POWER CIRCUIT AND RACEWAY SHALL RISE UP TO THE TERMINALS OF THE UNIT CONTROL PANEL WITHIN THE CURB CUT OPENING. FOR ALL OTHER ELECTRICALLY POWERED ROOFTOP EQUIPMENT PROVIDE PITCH POCKETS AND RACEWAY SEALS AS REQUIRED.

17. BACK TO BACK RECEPTACLES, SWITCH, AND/OR VOICE/DATA DEVICES AND OUTLETS WILL NOT BE ALLOWED IN THE SAME STUD SPACE OF ACOUSTICALLY TREATED OR FIRE RATED WALL PARTITIONS.

18. CONFIRM THE VOLTAGE AND AMPERAGE CHARACTERISTICS OF ALL ELECTRICALLY POWERED HVAC, PLUMBING OR FIRE PROTECTION EQUIPMENT WITH THE MECHANICAL CONTRACTORS PRIOR TO COMMENCING WORK AND BEFORE ORDERING ELECTRICAL DISTRIBUTION EQUIPMENT.

19. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL RIGID OR FLEXIBLE WIRING SYSTEMS INSTALLED CONCEALED ABOVE SUSPENDED CEILINGS ARE NOT VISIBLE (FROM THE FINISHED SPACE) THROUGH PERFORATED OR BLADE TYPE SUPPLY OR RETURN AIR CEILING REGISTERS OR DIFFUSERS.

20. THE VOICE/DATA CONTRACTOR SHALL ENSURE THAT ALL RIGID OR FLEXIBLE WIRING SYSTEMS INSTALLED CONCEALED ABOVE SUSPENDED CEILINGS ARE NOT VISIBLE (FROM THE FINISHED SPACE) THROUGH PERFORATED OR BLADE TYPE SUPPLY OR RETURN AIR CEILING REGISTERS OR DIFFUSERS.

21. ALL WALL MOUNTED LIGHTING CONTROL DEVICES (I.E. ELECTRONIC TIMER SWITCHES, OCCUPANCY SENSORS, ETC.) SHALL HAVE A NEUTRAL CONDUCTOR INCLUDED WITH THE SWITCH LEGS OR CIRCUIT CONDUCTORS RUN FROM THE WALL BOX TO THE AREA LIGHTING CONTROLLED.

22. STRUCTURAL METAL THAT IS INTERCONNECTED TO FORM A METAL BUILDING FRAME OR THAT IS NOT INTERCONNECTED, BUT IS LIKELY TO BECOME ENERGIZED, AND IS NOT INTENTIONALLY GROUNDED SHALL BE BONDED TO THE BUILDING GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH N.E.C.

23. ALL WIRING DEVICES SHALL HAVE THEIR PANELBOARD ORIGIN AND CIRCUIT NUMBERS STAMPED OR TAPED ON THE BACKSIDE OF THEIR ASSOCIATED WALLPLATE.

24. WIRING DEVICE COLORS SHALL AS FOLLOWS, UNLESS NOTED OTHERWISE: NORMAL POWER DEVICES: WHITE WITH WHITE WALL PLATES. ISOLATED GROUND: ORANGE WITH WHITE WALLPLATES. NORMAL/STANDBY OR EMERGENCY POWER: RED WITH RED FACEPLATES. UPS POWER: GREEN WITH WHITE FACEPLATES. CONFIRM COLOR OF DEVICES AND WALLPLATES WITH ARCHITECT PRIOR TO ORDERING.

25. ALL WIRING DEVICES, OUTLET BOXES, ETC SHALL BE FLUSH MOUNTED IN NEW WALLS OR CEILINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.

26. ALL NEMA 5-15R AND 5-20R RECEPTACLES SHALL BE TAMPER RESISTANT TYPE UNLESS SPECIFICALLY NOTED OTHERWISE.

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LEGEND AND GENERAL NOTES

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GENERAL NOTES

1. ELECTRICAL CONDUIT SHALL BE RUN CONCEALED WHEREVER POSSIBLE. RUN EXPOSED CONDUIT PERPENDICULAR OR PARALLEL TO BUILDING WALLS OR COLUMNS.
2. WIRE AND CONDUIT SIZES INDICATED ON HOMERUNS SHALL RUN CONTINUOUS THROUGHOUT CIRCUIT.
3. A PROPERLY SIZED EQUIPMENT GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS INSTALLED IN PVC, EMT OR RIGID STEEL RACEWAYS AND IN ALL PREMANUFACTURED WIRING SYSTEMS.
4. CONDUITS AND CIRCUITRY INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC ONLY. FINAL LOCATION OF CONDUIT SHALL BE FIELD COORDINATED SO AS TO AVOID CONFLICTS WITH OTHER TRADES.
5. ALL 120V BRANCH CIRCUITS WHEN 100 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).
6. ALL 208V OR 277V BRANCH CIRCUITS WHEN 200 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).
7. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH H.V.A.C., PLUMBING, AND FIRE PROTECTION CONTRACTOR'S.
8. COORDINATE EXACT LOCATION OF TENANT EQUIPMENT WITH THE ARCHITECT'S FIELD SUPERVISOR.
9. RACEWAYS RUN THROUGH AREAS OF WIDELY DIFFERENT TEMPERATURES SHALL BE SEALED WITH A PLIABLE COMPOUND AT THE VARIANT TEMPERATURE AREA.
10. WHEN ROUGHING IN, OUTLET BOXES FOR DEVICES SHALL BE MEASURED OFF OF FINISHED FLOOR TO A SET HEIGHT, AND THEN ALIGNED HORIZONTALLY SO THAT ALL DEVICES WILL BE LEVEL WITHIN A GIVEN AREA.
11. PROVIDE ELECTRICAL OUTLET PLATE GASKETS IN ALL DEVICE BOXES INSTALLED IN WALLS SEPARATING CONDITIONED AND UNCONDITIONED SPACES.
12. ALL RACEWAY PENETRATIONS THROUGH FIRE RATED WALL, CEILING, OR FLOOR ASSEMBLIES SHALL BE PROPERLY FIRE SEALED.
13. OUTLETS OR DEVICES MOUNTED ON EXISTING CMU OR CONCRETE WALLS SHALL BE SURFACE MOUNTED IN APPROPRIATE BOXES.
14. ELECTRICAL RACEWAYS WHICH TRAVERSE THROUGH CMU WALLS SHALL BE PROPERLY WEATHERSEALED.
15. FEEDERS OR BRANCH CIRCUITS TO ALL ELECTRICALLY POWERED ROOFTOP MOUNTED EQUIPMENT SHALL BE RUN IN THE JOIST SPACE ON THE UNDERSIDE OF THE ROOF DECK. FOR ROOFTOP AIR CONDITIONING UNITS THE POWER CIRCUIT AND RACEWAY SHALL RISE UP TO THE TERMINALS OF THE UNIT CONTROL PANEL WITHIN THE CURB CUT OPENING. FOR ALL OTHER ELECTRICALLY POWERED ROOFTOP EQUIPMENT PROVIDE PITCH POCKETS AND RACEWAY SEALS AS REQUIRED.
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18. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL RIGID OR FLEXIBLE WIRING SYSTEMS INSTALLED CONCEALED ABOVE SUSPENDED CEILINGS ARE NOT VISIBLE (FROM THE FINISHED SPACE) THROUGH PERFORATED OR BLADE TYPE SUPPLY OR RETURN AIR CEILING REGISTERS OR DIFFUSERS.
19. THE VOICE/DATA CONTRACTOR SHALL ENSURE THAT ALL RIGID OR FLEXIBLE WIRING SYSTEMS INSTALLED CONCEALED ABOVE SUSPENDED CEILINGS ARE NOT VISIBLE (FROM THE FINISHED SPACE) THROUGH PERFORATED OR BLADE TYPE SUPPLY OR RETURN AIR CEILING REGISTERS OR DIFFUSERS.
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24. ALL WIRING DEVICES, OUTLET BOXES, ETC SHALL BE FLUSH MOUNTED IN NEW WALLS OR CEILINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.
25. ALL NEMA 5-15R AND 5-20R RECEPTACLES SHALL BE TAMPER RESISTANT TYPE UNLESS SPECIFICALLY NOTED OTHERWISE.

ELECTRICAL SPECIFICATIONS

1. THE GENERAL CONDITIONS SHALL BE CONSIDERED AS FORMING A PART OF THESE SPECIFICATIONS AND SHALL BE CAREFULLY EXAMINED BEFORE PROPOSALS FOR ANY WORK ARE SUBMITTED.

2. THE SCOPE OF WORK SHALL CONSIST OF ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE ALL WORK INDICATED ON THE DRAWINGS AND IN THESE SPECIFICATIONS. THE WORK SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING:

A. MODIFICATIONS TO THE SECONDARY DISTRIBUTION SYSTEM AS INDICATED ON THE DRAWINGS.

B. GROUNDING AND BONDING OF ELECTRICAL SYSTEMS AND EQUIPMENT.

C. WIRING DEVICES (SWITCHES AND RECEPTACLES) COMPLETE WITH ASSOCIATED WALL PLATES.

D. POWER WIRING TO HVAC, PLUMBING AND FIRE PROTECTION EQUIPMENT OR APPLIANCES.

E. LIGHTING SYSTEM INCLUDING ALL FIXTURES, LAMPS, SWITCHING, ETC. AS REQUIRED.

F. FIRE ALARM SYSTEM MODIFICATIONS COMPLETE WITH DEVICES AND WIRING.

G. ALL OTHER SYSTEMS HEREINAFTER SPECIFIED OR AS INDICATED ON THE DRAWINGS.

3. ALL ELECTRICAL WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF ALL NATIONAL, STATE, MUNICIPAL AND OTHER AUTHORITIES HAVING JURISDICTION OVER ELECTRICAL CONSTRUCTION WORK AND THE PROJECT.

4. OBTAIN AND PAY FOR ALL PERMITS, FEES, INSPECTIONS, AND TESTS, AND COMPLY WITH ALL LAWS, ORDINANCES AND CODES PERTAINING TO THIS PORTION OF THE CONTRACT.

5. ALL WORK PROVIDED UNDER THIS SECTION SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE WORK.

6. PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIALS A LIST OF THEIR MANUFACTURERS AND "SHOP DRAWINGS" CATALOG CUTS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

7. ALL BRANCH WIRING, AND MAIN FEEDERS RUN IN EXPOSED AREAS SHALL BE RUN IN EMT RACEWAYS. COORDINATE ANY EXPOSED WIRING WITH ARCHITECT FOR APPROVAL PRIOR TO ROUGHIN. BRANCH CIRCUITRY RUN ABOVE SUSPENDED CEILINGS OR RUN WITHIN STUD WALLS SHALL BE METAL CLAD CABLE TYPE MC W/ INSULATED GROUND CONDUCTOR. ISOLATED GROUND RECEPTACLES CIRCUITS SHALL BE CIRCUITED WITH "HOSPITAL GRADE" BX.

8. ALL WIRING SHALL BE COPPER WITH 600V INSULATION, THWN OR THHN FOR BRANCH CIRCUITRY, AND XHHW FOR FEEDERS. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG. USE SOLID OR STRANDED CONDUCTORS FOR #12 AND #10 AWG. USE STRANDED COPPER FOR #8 AWG AND LARGER.

9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE OUTLET, JUNCTION AND PULL BOXES AT ALL LOCATIONS WHERE THEY ARE REQUIRED TO FACILITATE THE PULLING, SUPPORTING, OR CONNECTING OF WIRES AND CABLES.

10. STANDARD DUPLEX CONVENIENCE RECEPTACLES SHALL BE 20A-125V-3 WIRE, GROUNDING TYPE BACK & SIDE WIRED. NEMA 5-20R, WHITE IN COLOR. STANDARD SWITCHES SHALL BE TOGGLE TYPE, AC QUITE DESIGN, 20A 125V/277V, SPEC GRADE WHITE IN COLOR. PROVIDE WHITE PLASTIC WALLPLATES WITH ALL WIRING DEVICES.

11. ALL EQUIPMENT AND SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH BEST INDUSTRY PRACTICE AND SHALL COMPLY WITH 2017 NATIONAL ELECTRICAL CODE REQUIREMENTS.

12. BEFORE AN APPLICATION FOR FINAL ACCEPTANCE OF THE WORK, ALL TESTS DEEMED NECESSARY BY THE ARCHITECT TO SHOW PROPER EXECUTION OF THE WORK SHALL HAVE BEEN PERFORMED AND COMPLETED IN THE PRESENCE OF THE ARCHITECT. ANY DEFECTS OR DEFICIENCIES DISCOVERED IN ANY OF THE ELECTRIC WORK SHALL BE CORRECTED.

13. AS PART OF THE ELECTRICAL WORK, A COMPLETE SET OF "AS BUILTS" OR RECORD ELECTRICAL DRAWINGS SHALL BE MADE UP AND DELIVERED TO THE ARCHITECT. THE DRAWINGS SHALL BE PREPARED ON AUTOCAD AND SUBMITTED ON DISK AND ONE SET OF REPRODUCIBLE PLOTS AT THE COMPLETION OF THE PROJECT.

14. SUPPORT AND FASTEN ELECTRICAL WORK IN ACCORDANCE WITH BEST INDUSTRY PRACTICE.

15. ALL ELECTRICAL CONDUIT SHALL BE RUN CONCEALED WHEREVER POSSIBLE. RUN EXPOSED CONDUIT PERPENDICULAR OR PARALLEL TO BUILDING WALLS OR COLUMNS.

16. EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF ANY ELECTRICAL ITEM IN THE DRAWINGS OR SPECIFICATIONS FOR ELECTRICAL WORK CARRIES WITH IT THE INSTRUCTION TO FURNISH, INSTALL AND CONNECT THE ITEM AS PART OF THE ELECTRICAL WORK REGARDLESS OF WHETHER OR NOT IT IS SPECIFICALLY STATED TO DO SO.

17. IT SHALL BE UNDERSTOOD THAT THE SPECIFICATIONS AND DRAWINGS FOR ELECTRICAL WORK ARE COMPLIMENTARY AND ARE TO BE TAKEN TOGETHER FOR A COMPLETE INTERPRETATION OF THE ELECTRICAL WORK, EXCEPT THAT INDICATIONS ON THE DRAWINGS, WHICH REFER TO AN INDIVIDUAL ELEMENTS OF WORK, TAKE PRECEDENCE OVER THE SPECIFICATIONS WHERE THEY CONFLICT WITH SAME.

18. THE ELECTRICAL CONTRACTOR SHALL BE PERMITTED TO INSPECT THE CONDITIONS AT THE SITE, IF HE/SHE SO DESIRES. FAILURE TO INSPECT EXISTING CONDITIONS OR TO FULLY UNDERSTAND THE WORK WHICH IS REQUIRED SHALL NOT EXCUSE THE ELECTRICAL CONTRACTOR FROM HIS/HER OBLIGATIONS TO FURNISH AND INSTALL THE WORK IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE CONTRACT DRAWINGS AND UNDER ALL SITE CONDITIONS AS THEY EXIST.

19. IN SPACES WITHIN SUSPENDED CEILINGS UTILIZED AS RETURN AIR PLENUMS, ALL WIRING SYSTEMS MUST EITHER BE RUN IN METALLIC RACEWAYS OR SHALL BE UL APPROVED FIRE RATED PLENUM CABLE.

20. ALL MATERIALS SHALL BE NEW AND SHALL BEAR THE UL LABEL.

21. THE INSULATION OF EACH WIRE OR CABLE SHALL BE COLOR CODED, AS PER THE 120/208V OR 277/480V 2017 NATIONAL ELECTRIC CODE REQUIREMENTS.

22. QMQB DISTRIBUTION SWITCHES SHALL BE NEMA TYPE HEAVY DUTY (GENERAL DUTY WHERE 60A OR LESS) HORSEPOWER RATED SWITCHES.

23. THE HVAC CONTRACTOR SHALL PROVIDE MAGNETIC MOTOR STARTERS WHERE INDICATED FOR MECHANICAL EQUIPMENT. PROVIDE AUXILIARY CONTACTS IN MOTOR STARTERS WHERE REQUIRED FOR INTERLOCKING PURPOSES.

24. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, PATCHING OR CORING OF WALL AND FLOOR SURFACES REQUIRED FOR THE INSTALLATION OF ANY ELECTRICAL WORK.

25. PROVIDE A TEMPORARY LIGHTING AND POWER SYSTEM THROUGHOUT THE SPACE FOR USE DURING THE CONSTRUCTION PERIOD. USE THE EXISTING PANELBOARDS FOR THE TEMPORARY FEED POINT. PROVIDE ALL EQUIPMENT THAT MAY BE REQUIRED INCLUDING METERING, PANELS, ETC. REMOVE ALL TEMPORARY WIRING, FIXTURES AND OUTLETS AT THE TERMINATION OF THE CONSTRUCTION PERIOD. THE GENERAL CONTRACTOR SHALL PAY FOR ALL ENERGY CONSUMED DURING THE CONSTRUCTION PERIOD.

26. THE GENERAL CONTRACTOR SHALL X-RAY THE SLAB BEFORE CUTTING OR CORING ANY EXISTING CONCRETE SLABS OR SURFACES.

27. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEMOLITION AND REMOVAL OF ALL EXISTING ELECTRICAL WORK IN THE DESIGNATED RENOVATED AREAS UNLESS SPECIFICALLY NOTED OTHERWISE. COORDINATE ALL ITEMS TO BE DEMOLISHED WITH THE ARCHITECT BEFORE COMMENCING WORK.

28. OUTLETS OR DEVICES MOUNTED ON EXISTING C.M.U. WALLS SHALL BE SURFACE MOUNTED IN APPROPRIATE BOXES.

29. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND RE-INSTALLING ALL EXISTING CEILING TILES REQUIRED FOR THE ELECTRICAL CONTRACTOR TO PERFORM HIS/HER WORK.

30. ALL DRY TYPE TRANSFORMERS SHALL BE VENTILATED TYPE AND SHALL BE TP-1 RATED.

31. ALL WIRING DEVICES SHALL HAVE THEIR PANELBOARD ORIGIN AND CIRCUIT NUMBERS STAMPED OR TAPED ON THE BACKSIDE OF THEIR ASSOCIATED WALLPLATE.

32. PANELBOARDS SHALL BE OF BOLT-ON CONSTRUCTION WITH EQUIPMENT GROUND BAR AND TYPED CIRCUIT DIRECTORIES.

33. ALL NEW FIRE ALARM DEVICES SHALL BE AS MANUFACTURED BY THE EXISTING FIRE ALARM MANUFACTURER.

34. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING THE FIRE ALARM SYSTEM AT THE COMPLETION OF THE WORK TO THE SATISFACTION OF THE LOCAL FIRE DEPARTMENT OR THE LOCAL AUTHORITY HAVING JURISDICTION.

LIGHT FIXTURE SCHEDULE

MOUNTING	FLUORESCENT	INCANDESCENT/HID	EXIT	LANDSCAPE
RECESSED	FR	R	XR	LR
CEILING/SURFACE	FC	C	XC	LC
WALL	FW	W	XW	LW
PENDANT/SUSPENDED/POLE	FP	P	XP	LP
TRACK	FT	T		LT

TYPE	DESCRIPTION	MANUFACTURER & CATALOG NO.	LAMPS NO.	LAMPS TYPE	INPUT VOLTS	INPUT WATTS	REMARKS
A	-	METALUX 4ILED-LD5-16-W-FL-UNV-L835-CD	1-127W	LED	UNV	127W 16,216LM	-
B	-	METALUX 4ILED-LD5-9-W-FL-UNV-L835-CD	1	LED	UNV	-	-
B1	-	METALUX 4ILED-LD5-5-W-FL-UNV-L835-CD	1	LED	UNV	-	-
C	2X2 LED FLAT PANEL	METALUX 22SP3435	1	LED	UNV	32W 3,400LM	-
XW XC XP	SINGLE FACE UNIVERSAL MOUNT ILLUMINATED LED EXIT SIGN WITH INTEGRAL EMERGENCY BATTERY	LITHONIA LIGHTING # LQM-S-W-3-R-120/277-ELN	LED	LED	120 / 277	2.9	PROVIDE DIRECTIONAL ARROWS AS INDICATED
XW1 XC1 XP1	DUAL FACE UNIVERSAL MOUNT ILLUMINATED LED EXIT SIGN WITH INTEGRAL EMERGENCY BATTERY	LITHONIA LIGHTING # LQM-S-W-3-R-120/277-ELN	LED	LED	120 / 277	2.9	PROVIDE DIRECTIONAL ARROWS AS INDICATED
XW2	SINGLE FACE WALL MOUNTED LED EXIT SIGN WITH EMERGENCY BATTERY AND DUAL HEADS	LITHONIA LIGHTING # LHQM-LED-R-HO	LED	LED	120 / 277	5.3	PROVIDE DIRECTIONAL ARROWS AS INDICATED
XW2A	SINGLE FACE WALL MOUNTED LED EXIT SIGN WITH EMERGENCY BATTERY AND NO HEADS	LITHONIA LIGHTING # LHQM-LED-R-HO-RO	LED	LED	120 / 277	5.3	PROVIDE DIRECTIONAL ARROWS AS INDICATED

SCHEDULE OF MECHANICAL EQUIPMENT

ITEM	EQUIPMENT DESIGNATION	HP	AMPS	KW	VOLTS	PHASE	ELECTRICAL WORK REQUIRED
AHU 1	AIR HANDLING UNIT	-	6.8	-	208	1	1, 3, 5
AHU 2	AIR HANDLING UNIT	-	6.8	-	208	1	1, 3, 5
AHU 3	AIR HANDLING UNIT	-	5.2	-	208	3	1, 3, 5
AHU 4	AIR HANDLING UNIT	-	5.2	-	208	1	1, 3, 5
CCU 1	COMPRESSOR CONDENSING UNIT	-	29.8	-	208	1	1, 3, 5
CCU 2	COMPRESSOR CONDENSING UNIT	-	29.8	-	208	1	1, 3, 5
CCU 3	COMPRESSOR CONDENSING UNIT	-	23	-	208	3	1, 3, 5
CCU 4	COMPRESSOR CONDENSING UNIT	-	34	-	208	3	1, 3, 5
EWH 1	ELECTRIC WALL HEATER	-	12.5	0.8	120	1	1, 3, 5
EWH 2	ELECTRIC WALL HEATER	-	9.6	2.0	208	1	1, 3, 5
IEF 1	INLINE EXHAUST FAN	.75	-	-	115	1	1, 3, 5
IEF 2	INLINE EXHAUST FAN	.75	-	-	115	1	1, 3, 5
IEF 3	INLINE EXHAUST FAN	.75	-	-	115	1	1, 3, 5
IEF 4	INLINE EXHAUST FAN	1	-	-	115	1	1, 3, 5
IHP 1	INDOOR HEAT PUMP UNIT	1	0.2	-	208	1	1, 3, 5
IHP 2	INDOOR HEAT PUMP UNIT	1	0.2	-	208	1	1, 3, 5
OHP 1	OUTDOOR HEAT PUMP UNIT	-	16.6	-	208	1	1, 3, 5

LIGHT FIXTURE SCHEDULE NOTES

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LIGHTING FIXTURES COMPLETE WITH MOUNTING ACCESSORIES TO MEET JOB CONDITIONS.
2. THE ELECTRICAL CONTRACTOR SHALL VERIFY FIXTURE MOUNTING AND EXACT LOCATIONS AGAINST ARCHITECTS REFLECTED CEILING PLANS, ELEVATIONS AND DETAIL DRAWINGS.
3. ALL FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE, INDEPENDENT OF HUNG CEILING.
4. EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL FIXTURES SHALL BE CONFIRMED WITH THE ARCHITECT PRIOR TO ROUGHING IN.
5. INFORMATION LISTED IN THE SECOND COLUMN OF THE FIXTURE SCHEDULE ABOVE SETS THE GENERAL DESCRIPTION OF EACH FIXTURE. INFORMATION LISTED IN THE THIRD COLUMN OF THE FIXTURE SCHEDULE SETS THE STANDARD OF QUALITY. IF DISCREPANCIES ARISE BETWEEN DESCRIPTION OF FIXTURE AND THE CATALOG NUMBER THEN NOTIFY THE ENGINEER BEFORE ORDERING SAID FIXTURE.
6. MANUFACTURERS AND CATALOG NUMBERS ARE LISTED IN THE FIXTURE SCHEDULE TO SET A STANDARD OF QUALITY FOR THE LIGHTING FIXTURES, SUBSTITUTION OF LIGHTING FIXTURES WILL BE ALLOWED WHEN THE SUBSTITUTED FIXTURE(S) EQUAL OR EXCEED THE AESTHETIC AND PERFORMANCE CHARACTERISTICS OF THE LIGHTING FIXTURE(S) SPECIFIED, AND ARE APPROVED BY THE ENGINEER.
7. FOR ALL FIXTURES EQUIPPED WITH REFLECTORS; PROVIDE ALIGNER CLIPS AT ALL FIXTURE JOINTS.
8. ALL FLUORESCENT LAMPS OR LED ARRAYS SHALL BE LOW MERCURY T.C.L.P. COMPLIANT.
9. ALL LED LUMINAIRES SHALL COMPLY WITH LM79 AND LM80 TESTING STANDARDS.

ELECTRIC WORK NOTES PERTAINING TO SCHEDULE OF MECHANICAL EQUIPMENT

1. REFER TO FLOOR PLANS FOR EXACT QUANTITIES OF ALL SCHEDULED EQUIPMENT. ALL SCHEDULED EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY OTHERS. UNLESS NOTED OTHERWISE.
2. INSERT PLUG OF EQUIPMENT INTO RECEPTACLE.
3. EXTEND INDICATED POWER CIRCUIT AND CONNECT SAME TO THE LINE TERMINALS OF THE EQUIPMENT. WHEN THE SCHEDULED EQUIPMENT IS SUBJECT TO VIBRATION OR MOVEMENT, THE FINAL PORTION OF THE POWER FEED (NOT TO EXCEED 48" IN LENGTH) SHALL BE WITH FLEXIBLE METALLIC CONDUIT.
4. LEAVE SUITABLE SLACK ON WIRES FOR POWER CIRCUIT CONNECTION BY OTHERS. PROVIDE SUITABLE PLATE ON OUTLET BOX.
5. PROVIDE DISCONNECT MEANS AND CONNECTIONS AS REQUIRED TO INTERPOSE SAME BETWEEN TERMINATION OF BUILDING WIRING AND LINE TERMINALS OF UNIT -- TYPE OF DISCONNECT MEANS AND MOUNTING LOCATION TO BE IN ACCORDANCE WITH INSTRUCTION ISSUED BY THE MANUFACTURER OF THE UNIT.
6. PROVIDE CONTROL CIRCUIT RUN FROM EQUIPMENT STARTER TO ACTUATING DEVICE -- RUN TO CONTAIN AN ADEQUATE NUMBER OF WIRES FOR PROPER OPERATION.
7. EQUIPMENT IS PROVIDED WITH INTEGRAL DISCONNECT SWITCH WITHIN EQUIPMENT HOUSING - SEE MECHANICAL DRAWINGS.
8. EQUIPMENT IS PROVIDED WITH INTEGRAL STARTER AND ACTUATING DEVICE WITH OFF POSITION. PROVIDE NECESSARY POWER AND CONTROL WIRING FOR EQUIPMENT OPERATION.
9. INSTALL CONTROLLER FURNISHED SEPARATE FROM ELECTRIC WORK AS DIRECTED.

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ELECTRICAL SPECIFICATIONS, SCHEDULES AND NOTES

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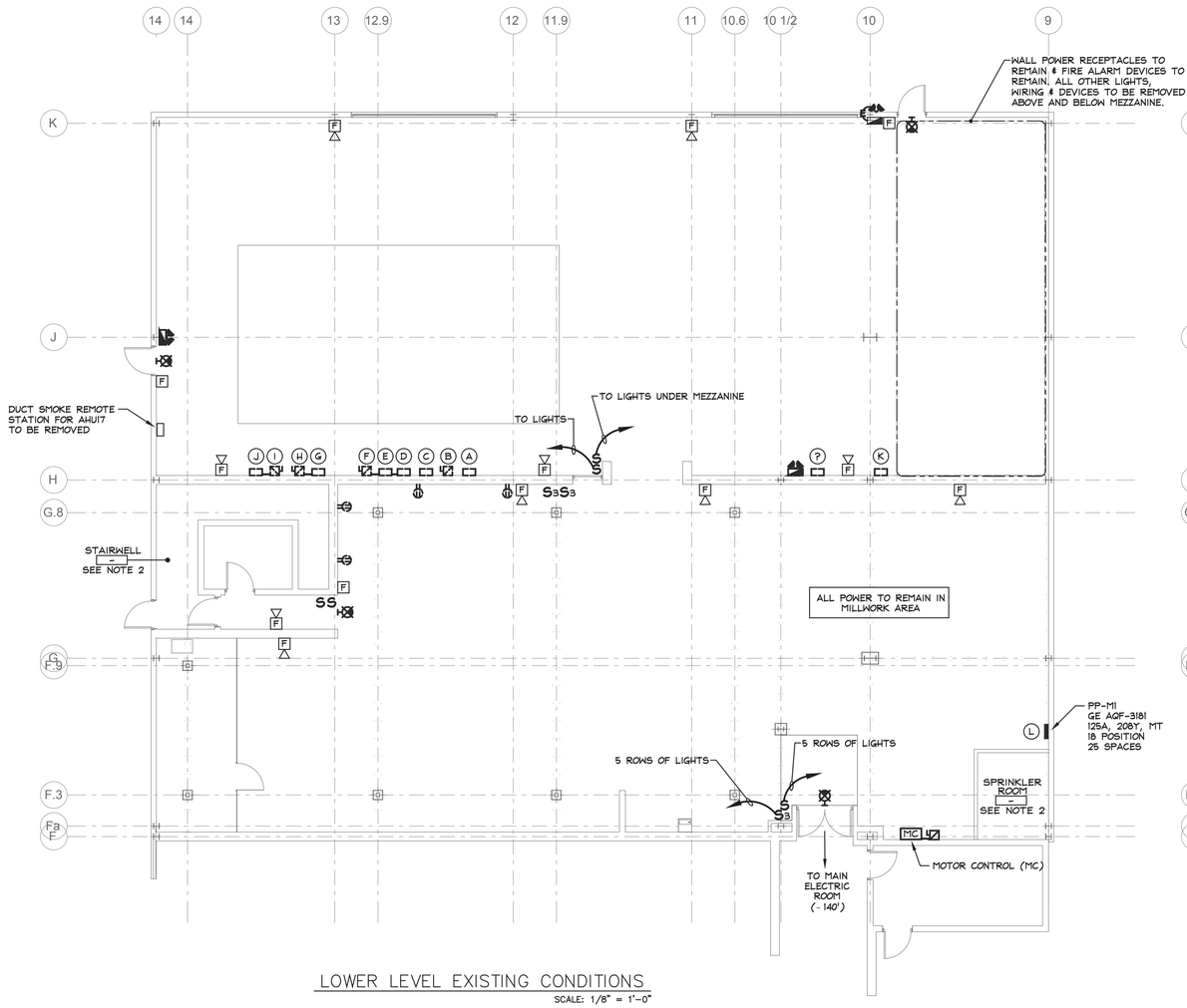
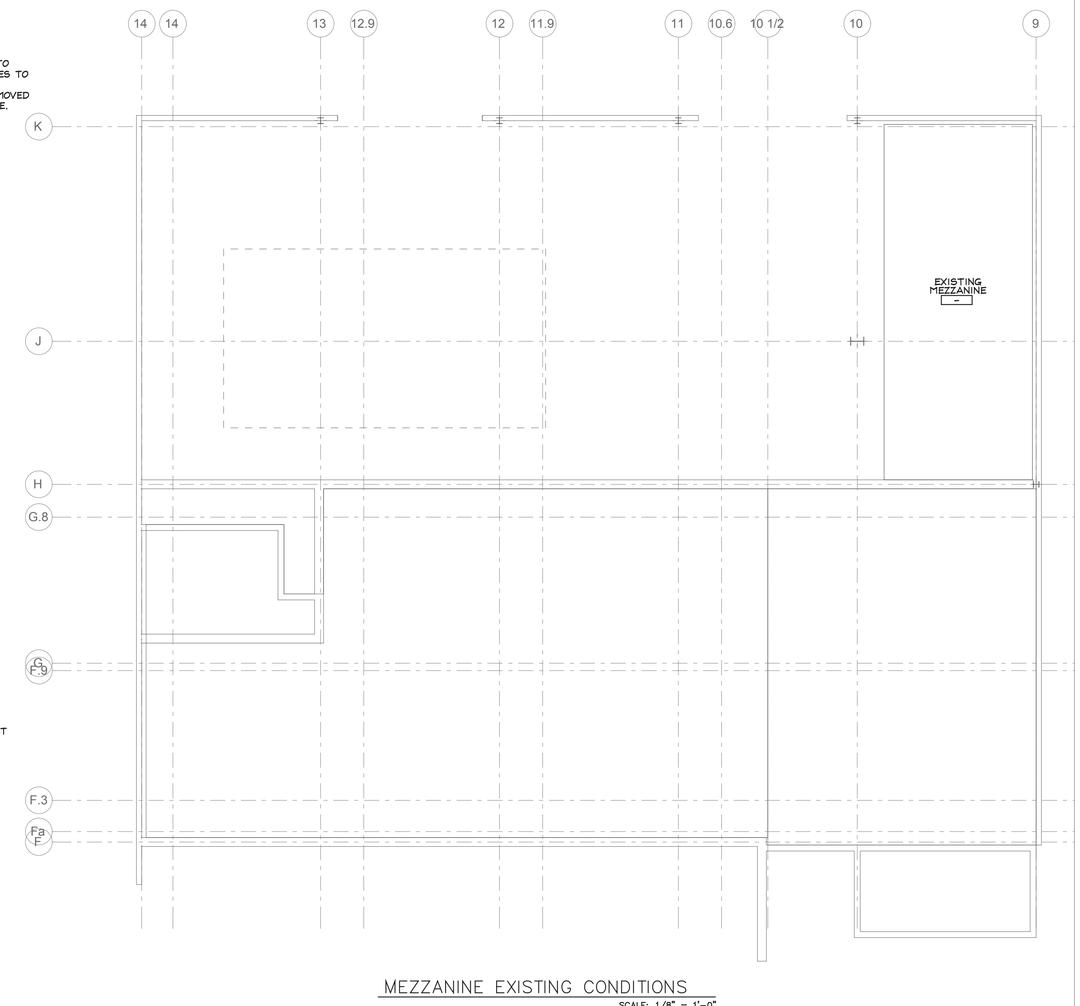


LOWER LEVEL EXISTING CONDITIONS

SCALE: 1/8" = 1'-0"



MEZZANINE EXISTING CONDITIONS

SCALE: 1/8" = 1'-0"

DEMOLITION PLAN NOTES

1. ALL EXISTING LIGHTING /LIGHT FIXTURES SHALL BE REMOVED AND PROPERLY DISPOSED OF OFF SITE EXCEPT AS NOTES.
2. ALL EXISTING LIGHTING, SWITCHING AND ASSOCIATED BRANCH CIRCUITRY, IN THIS ROOM OR AREA, SHALL REMAIN UNLESS SPECIFICALLY NOTED OTHERWISE.
3. FIRE ALARM DEVICES TO REMAIN. PROTECT THEM DURING CONSTRUCTION.
4. LIGHTING FIXTURES DESIGNATED BY "RX" IS AN EXISTING LIGHTING FIXTURE TO BE RELOCATED (ALONG WITH ITS ASSOCIATED BRANCH CIRCUITRY) AND TO BE CLEANED AND REINSTALLED AT LOCATIONS SHOWN ON LIGHTING PLAN.
5. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING TOGGLE SWITCH TO BE RELOCATED (ALONG WITH ITS ASSOCIATED BRANCH CIRCUITRY) TO THE LOCATION INDICATED ON THE FLOOR PLAN.
6. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE SAFE ALL LIGHTING FIXTURES, LIGHTING CIRCUITS, ETC. REMOVAL AND DISPOSAL OF LIGHT FIXTURES, CONDUIT, WIRE, BOXES, CABLE, HARDWARE, ETC SHALL BE PROVIDED BY THE DEMOLITION CONTRACTOR.
7. THE ELECTRICAL CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL FLUORESCENT LAMPS.
8. ALL EXISTING WIRING DEVICES, ELECTRICAL EQUIPMENT, ETC. AND ASSOCIATED CIRCUITRY IN THIS ROOM OR AREA SHALL REMAIN UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL EXISTING WIRING DEVICES, ELECTRICAL EQUIPMENT, ETC. AND ASSOCIATED CIRCUITRY IN THIS ROOM OR AREA SHALL BE REMOVED UNLESS SPECIFICALLY NOTED OTHERWISE.
10. MAINTAIN EXISTING BRANCH CIRCUITS OUTSIDE OF RENOVATED AREAS.
11. HOLES OR OPENINGS LEFT BY THE REMOVAL OF EXISTING POKE-THRU DEVICES SHALL BE FIRE SEALED, FILLED AND GRINDED TO A SMOOTH FINISH BY THE GENERAL CONTRACTOR.
12. EACH ITEM REFERRED TO THIS NOTES IS AN EXISTING WIRING DEVICE TO BE RELOCATED (ALONG WITH ITS ASSOCIATED BRANCH CIRCUITRY) TO THE LOCATION INDICATED.
13. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING UNIT OF MECHANICAL EQUIPMENT TO BE RELOCATED (ALONG WITH ITS ASSOCIATED POWER CIRCUITRY) TO THE LOCATION INDICATED.
14. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING PANELBOARD TO BE RELOCATED (ALONG WITH ALL OF ITS BRANCH AND FEEDER CIRCUITRY) TO THE LOCATION INDICATED ON THE FLOOR PLANS. REPLACE FLUSH TRIM WITH NEW SURFACE TRIM.
15. REPLACE EXISTING IVORY WIRING DEVICES WITH NEW WHITE DEVICE WITH WHITE WALL PLATES.
16. REMOVE EXISTING RECEPTACLE AND MAINTAIN EXISTING BRANCH CIRCUIT.
17. EACH ITEM REFERED TO THIS NOTE IS AN EXISTING BASE FEED MODULE POWER AND VOICE/DATA CONNECTION TO BE RELOCATED (ALONG WITH IT'S ASSOCIATED BRANCH CIRCUITRY) TO THE LOCATION INDICATED.
18. RELOCATE CORD DROP RECEPTACLE AND EXTEND ALL ASSOCIATED CIRCUITRY AS NECESSARY.
19. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING UNIT OF MECHANICAL EQUIPMENT TO BE ELECTRICALLY DISCONNECTED BY THE ELECTRICAL CONTRACTOR, AND REMOVED BY THE MECHANICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL REMOVE THE MECHANICAL EQUIPMENT BRANCH CIRCUITRY OR FEEDER BACK TO ITS POINT OF SUPPLY, AND SHALL REMOVE AND DISCARD ALL UNIT CONTROLLERS AND/OR SAFETY SWITCHES.
20. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE SAFE ALL ELECTRICAL POWERED EQUIPMENT, GENERAL POWER, ETC. REMOVAL AND DISPOSAL OF EQUIPMENT, CONDUIT, WIRE, BOXES, CABLE, HARD, ETC SHALL BE PROVIDED BY THE DEMOLITION CONTRACTOR.

EXISTING EQUIPMENT

- (A) 150 AMP, 230 VOLT DELTA, 30 POSITION POWER DISTRIBUTION PANEL
- (B) 100 AMP, 3 POLE FUSED DISCONNECT
- (C) 50 KVA TRANSFORMER - 480V TO 230V Δ
- (D) 208Y/120V PANEL
- (E) 15 KVA TRANSFORMER, 480V TO 208V
- (F) 30 AMP, 3 POLE FUSED DISCONNECT
- (G) (H) FUSED DISCONNECT AND MOTOR CONTROL FOR HEAT UNIT 1 (FROM PP1, BREAKER 3) - THESE CAN PROBABLY BE ABANDONED SINCE THE UNIT WILL BE REMOVED AS PART OF THE RENOVATIONS
- (I) (J) FUSED DISCONNECT AND MOTOR CONTROL FOR HEAT EF-1 (FROM PP1, BREAKER 3) - THESE CAN PROBABLY BE ABANDONED
- (K) SQUARE D QOC420L PANEL WITH 60A/3P MAIN BREAKER; 30A/3P FOR 3 PHASE RECEPTACLE ON EAST WALL; 30A/3P FOR 3 PHASE RECEPTACLE ON WEST WALL; 40A/2P FOR COPIER?
- (G) PANEL PP-M1, GE AQF3181 125A, 208Y/120V, 18 POSITION

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FLOOR DEMOLITION PLANS AND NOTES

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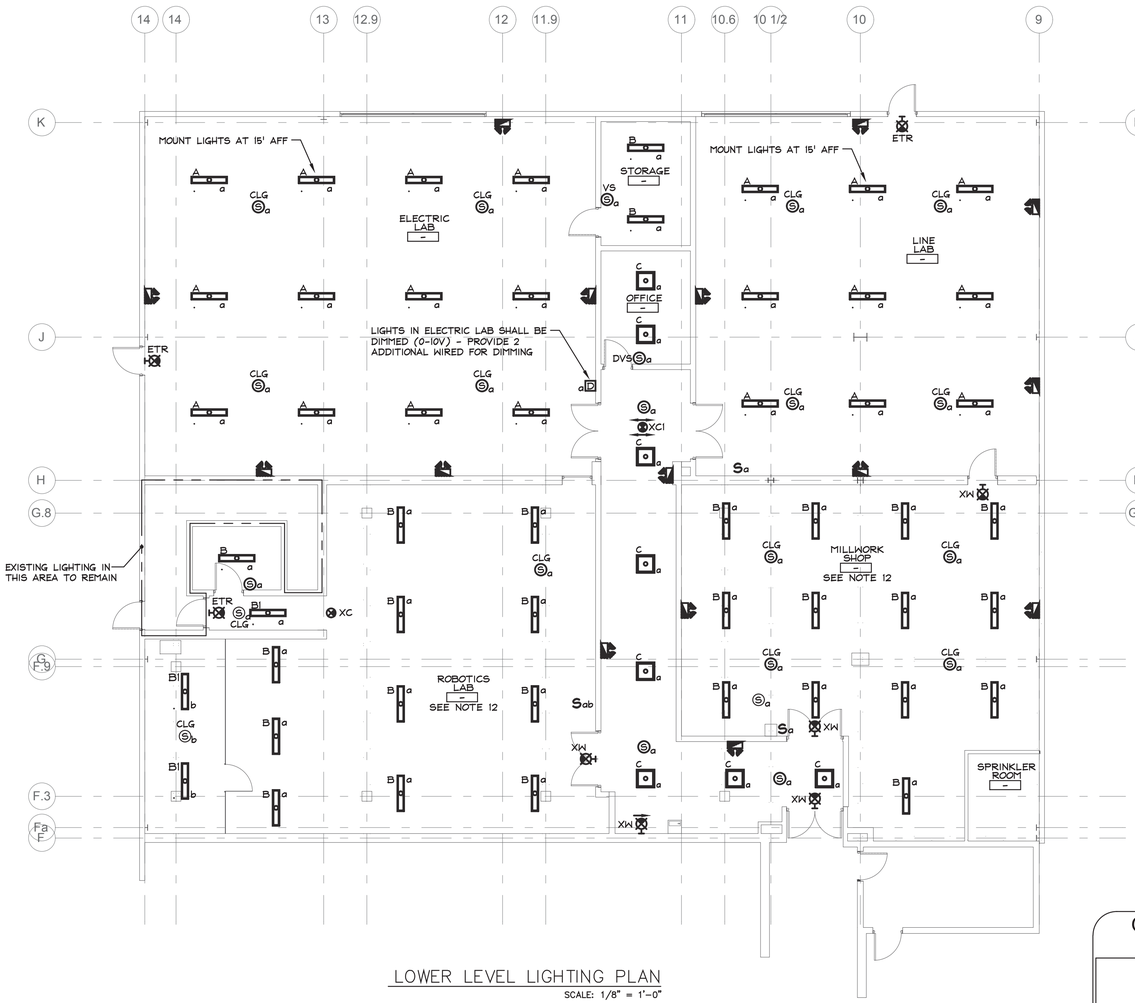
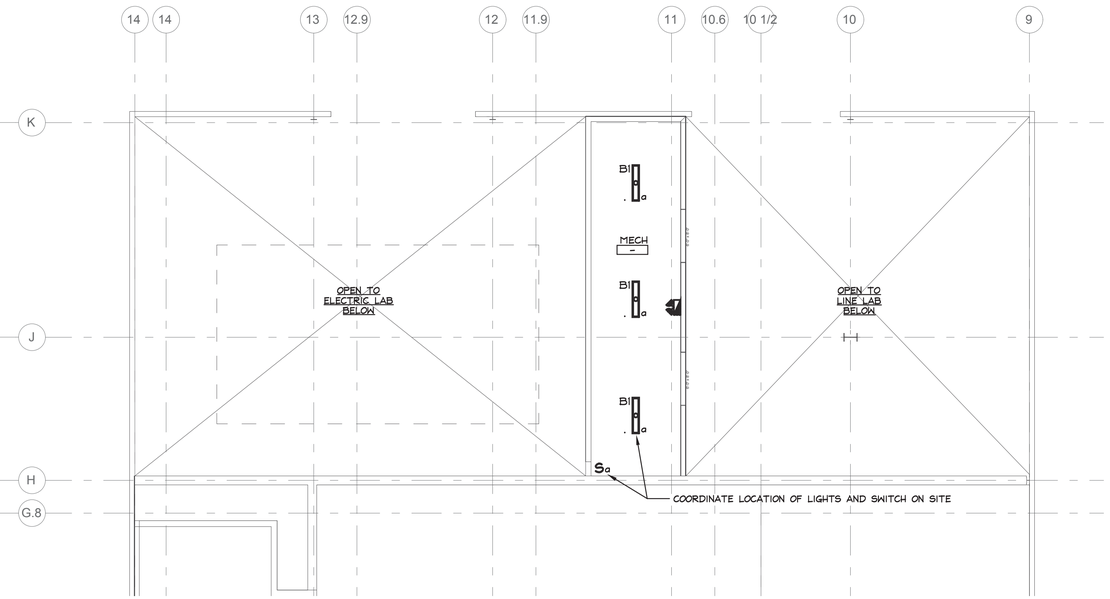


LOWER LEVEL LIGHTING PLAN

SCALE: 1/8" = 1'-0"



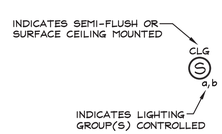
MEZZANINE LIGHTING PLAN

SCALE: 1/8" = 1'-0"

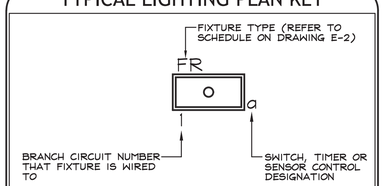
LIGHTING PLAN NOTES

1. ALL EXISTING LIGHTING SHALL BE REMOVED UNLESS SPECIFICALLY NOTED OTHERWISE. SWITCHES AND BRANCH CIRCUITRY SHALL REMAIN.
2. SEE ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHTS AND EXACT LOCATIONS.
3. COORDINATE LOCATION OF FIXTURES WITH DRAWINGS AND DETAILS BEFORE INSTALLING.
4. REFER TO NOTES ON BRANCH CIRCUIT SIZING ON DRAWING E-1.
5. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES AND SWITCHING AS PER CIRCUIT NUMBER'S AND SWITCH GROUPS INDICATED.
6. ALTHOUGH NOT ALL BRANCH CIRCUIT WIRING IS SHOWN ON THESE PLANS, IT IS THE INTENT OF THESE DRAWINGS, THAT A COMPLETE BRANCH WIRING SYSTEM SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATION.
7. REFER TO TYPICAL MULTIPLE OCCUPANCY SENSOR WIRING DIAGRAM ON DRAWING E-?.
8. EMERGENCY BATTERY UNITS SHALL BE CIRCUITED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING, RELAYS, OR CONTROLS.
9. ALL EXIT SIGNS SHALL BE WIRED TO THE AREA 120V LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING, RELAYS, OR CONTROLS. ALL NEW EXIT SIGN SHALL BE STANDARD TYPE FOR BUILDING.
10. CONNECT TO EXISTING AREA NORMAL 120V HOUSE LIGHTING CIRCUIT.
11. TEST EXISTING EBU AND REPLACE WITH AS NECESSARY.
12. TRY TO REPLACE EXISTING LIGHTS WITH NEW FIXTURES AT EXISTING LIGHT FIXTURE LOCATIONS WHERE POSSIBLE. COORDINATE INSTALLATION WITH EXISTING CONDITIONS.

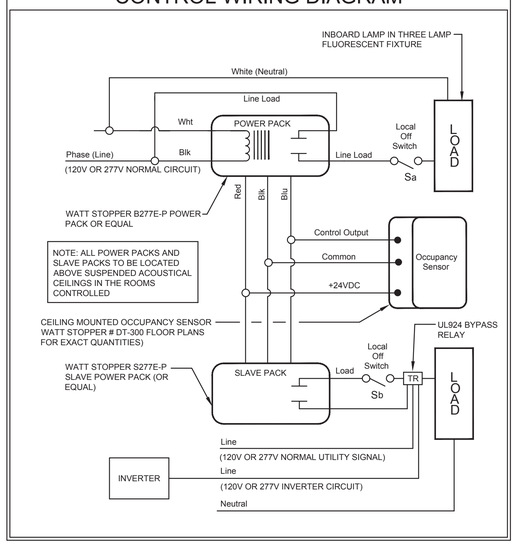
TYPICAL SENSOR KEY



TYPICAL LIGHTING PLAN KEY



OCCUPANCY SENSOR WITH UL924 RELAY CONTROL WIRING DIAGRAM



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FLOOR LIGHTING PLAN AND NOTES

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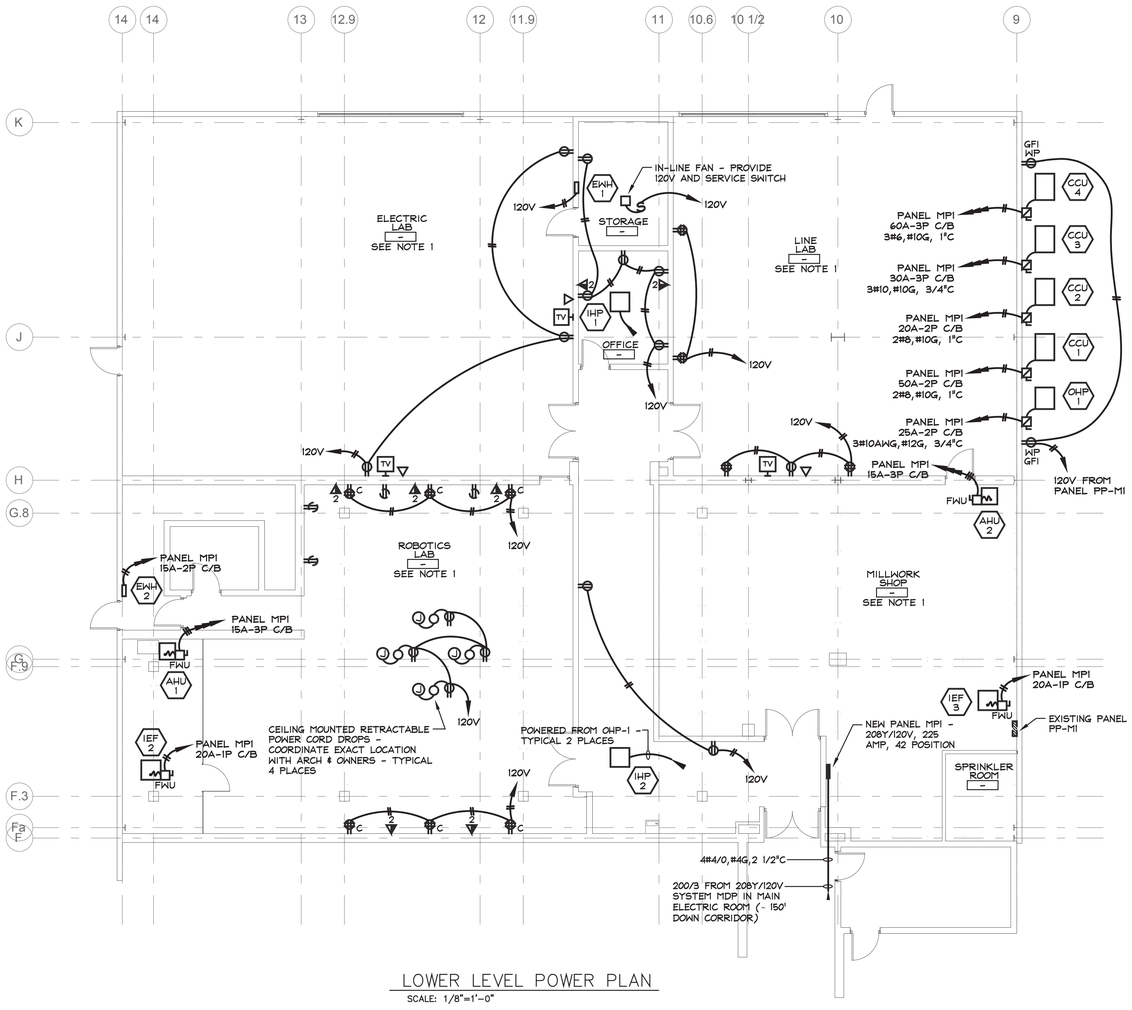
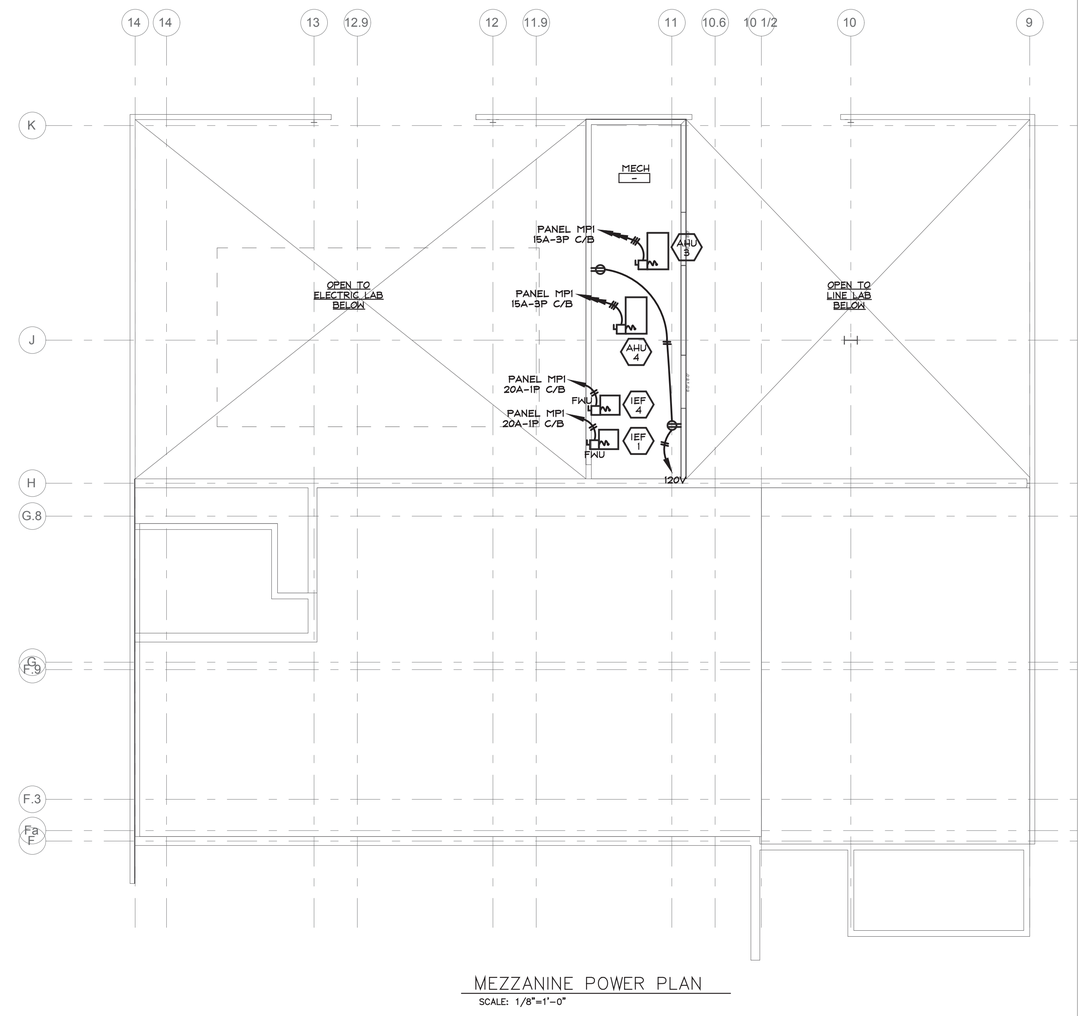


LOWER LEVEL POWER PLAN

SCALE: 1/8"=1'-0"



MEZZANINE POWER PLAN

SCALE: 1/8"=1'-0"

POWER PLAN NOTES

1. ALL EXISTING WIRING DEVICES, ELECTRICAL EQUIPMENT, ETC. AND ASSOCIATED CIRCUITRY IN THIS ROOM OR AREA SHALL REMAIN UNLESS SPECIFICALLY NOTED OTHERWISE.
2. REMOVE POWER FROM EXISTING MECHANICAL EQUIPMENT TO BE REMOVED (SEE MECHANICAL DRAWINGS). REMOVE WIRE AND CONDUIT BACK TO PANEL OF ORIGIN.
3. SEE EXISTING CONDITIONS DRAWINGS FOR LOCATION PANEL AND DEVICES. USE EXISTING 120V CIRCUITS WHERE POSSIBLE.

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FLOOR POWER PLAN AND NOTES

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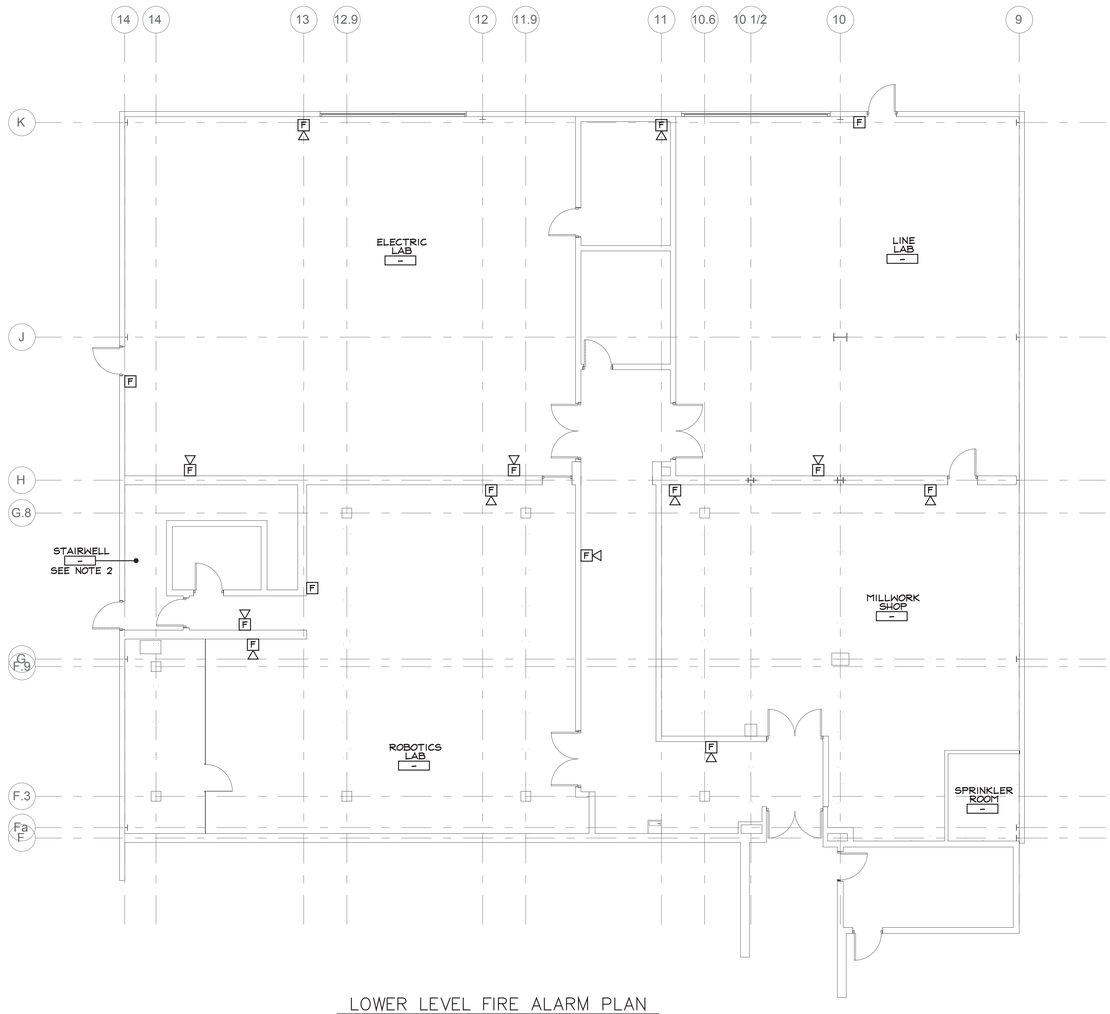
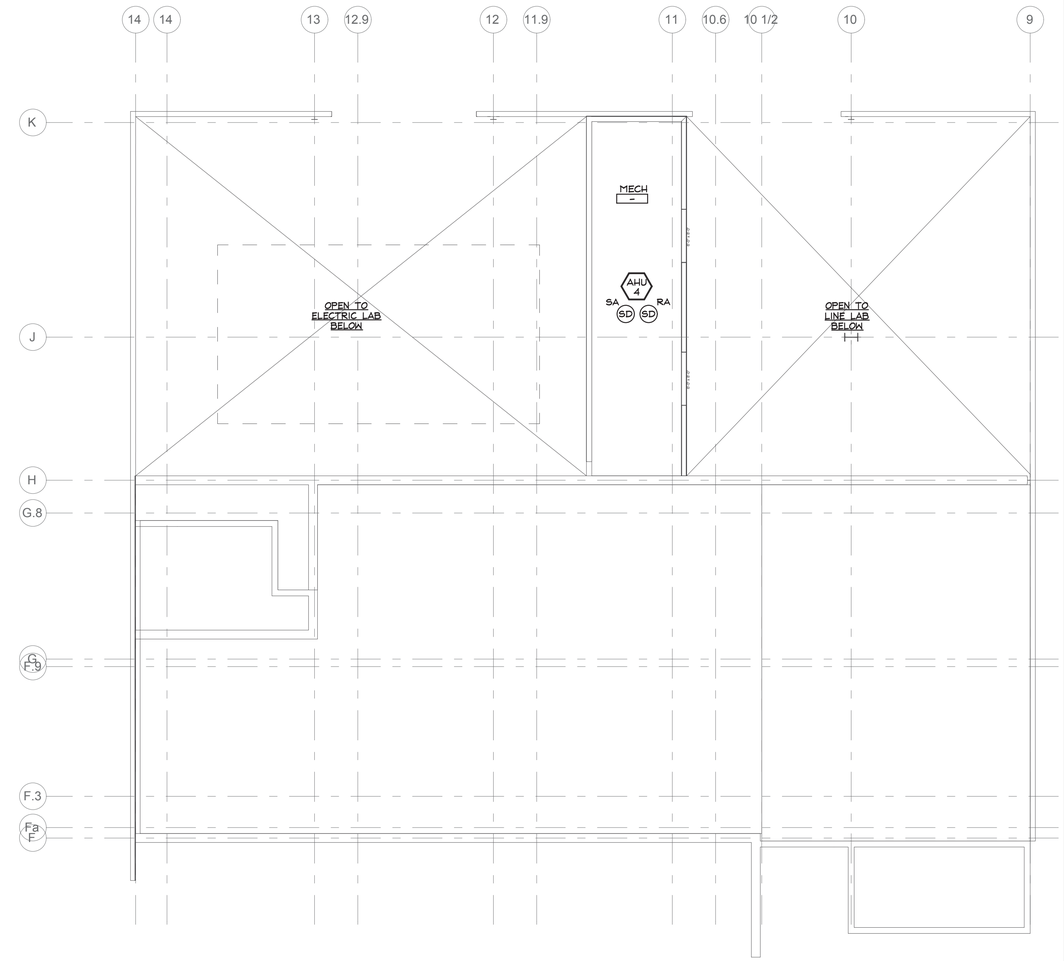


LOWER LEVEL FIRE ALARM PLAN

SCALE: 1/8"=1'-0"



MEZZANINE FIRE ALARM PLAN

SCALE: 1/8"=1'-0"

FIRE ALARM PLAN NOTES

1. ALL EXISTING FIRE ALARM DEVICES, COMPONENTS, WIRING, ETC. SHALL REMAIN UNLESS SPECIFICALLY NOTED OTHERWISE.
2. RELOCATE EXISTING INDICATING DEVICE AND ASSOCIATED ZONE CIRCUITRY AS REQUIRED.
3. REMOVE EXISTING INDICATING DEVICE AND ASSOCIATED ZONE CIRCUITRY. MAINTAIN CONTINUITY OF EXISTING FIRE ALARM CIRCUIT.
4. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A FIRE ALARM PERMIT FROM THE LOCAL FIRE DEPARTMENT PRIOR TO COMMENCING WORK.
5. AT THE COMPLETION OF THE PROJECT, THE FIRE ALARM SYSTEM SHALL BE TESTED TO THE SATISFACTION OF THE LOCAL FIRE DEPARTMENT.
6. ALL SMOKE DETECTORS WHICH ARE EXISTING TO REMAIN OR ARE EXISTING TO BE RELOCATED IN THE RENOVATED AREA SHALL BE BAGGED AT THE BEGINNING OF EACH WORK SHIFT AND SHALL BE DE-BAGGED AT THE END OF EACH WORK SHIFT.
7. ALL INDICATING DEVICES SHALL BE SYNCHRONIZED TO COMPLY WITH INTERNATIONAL BUILDING CODE 2009 EDITION AND NFPA 72 2013 ANNEX A 18.4.2.5 REQUIREMENTS. REPLACE EXISTING NON-SYNCHRONIZED MODULES AS REQUIRED OR UTILIZE SYNCHRONIZED HORN/STROBES THROUGHOUT THE RENOVATED SPACE. PROVIDE A/V POWER SUPPLY BOOSTER IN NEMA RED ENCLOSURE IF REQUIRED BY CURRENT DRAW OF A/V CIRCUIT.
8. ALL NEW DEVICES SHALL BE AS MANUFACTURED BY THE BASE BUILDING SYSTEMS MANUFACTURER. ONLY AUTHORIZED DEVICES SHALL BE TIED INTO THE BUILDING'S FIRE ALARM SYSTEM.
9. THE BUILDING ENGINEER MUST BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF ANY WORK TO BE PERFORMED ON THE FIRE ALARM SYSTEM. THE FIRE ALARM SERVICE CONTRACTOR MUST BE PRESENT TO DISABLE AND RESTORE THE SYSTEM AT THE ELECTRICAL CONTRACTORS EXPENSE.
10. NO PORTION OF THE FIRE ALARM SYSTEM SHALL BE PERMITTED TO REMAIN OUT OF SERVICE OVERNIGHT.
11. IF ANY DEVICES ARE ADDED OR CHANGED IN ANY WAY, THEN THE CHANGES MUST BE REFLECTED AT THE FIRE ALARM CONTROL PANEL VIA LABELLING, PROGRAMMING, ETC. COST OF THE CHANGES ARE TO BE INCLUDED IN THE ELECTRICAL CONTRACTORS BID.
12. FIRE ALARM TESTING MUST COMPLY WITH BUILDING MANAGEMENTS REQUIREMENTS (SEE UNH SYSTEM STANDARDS).
13. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING SMOKE DETECTOR THAT SHALL BE REMOVED FROM THE EXISTING SUSPENDED CEILING DURING DEMOLITION AND RE-INSTALLED AT THE SAME LOCATION ON THE NEW SUSPENDED CEILING.
14. CONNECT TO EXISTING AREA ADDRESSABLE CIRCUIT. PROGRAM DEVICE INTO SYSTEM AND TEST SYSTEM AS PER FIRE DEPARTMENT REQUIREMENTS.

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FLOOR FIRE ALARM PLAN AND NOTES

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