

### **ADVERTISEMENT**

#### Bid Solicitation - Roads Division Building Remodel

Worcester County is seeking Bids from qualified Vendors for the renovation of the Worcester County Roads Building located at 10146 Main Street, Berlin, Maryland in conformity with the requirements contained herein Bid Documents.

Bid Documents for the above referenced project may be obtained from the Worcester County Commissioner's Office by either e-mailing the Procurement Officer, Nicholas Rice, at <a href="mailto:nrice@co.worcester.md.us">nrice@co.worcester.md.us</a> or by calling 410-632-1194 during normal business hours, or via the County's Bids page on the County's <a href="website">website</a>. Vendors are responsible for checking this website for addenda prior to submitting their bids. Worcester County is not responsible for the content of any Bid Document received through any third party bid service. It is the sole responsibility of the vendor to ensure the completeness and accuracy of their Completed Bid Documents.

A pre-bid meeting will be held at the Worcester County Roads Building on Wednesday, May 24, 2023 at 1:30 PM. The last day for questions will be noon on Tuesday, June 6<sup>th</sup>, 2023. Sealed Bid Documents are due no later than 2:30pm on Tuesday, June 13<sup>th</sup>, 2023 and will be opened and read aloud in the Office of the County Commissioners, Worcester County Government Center – Room 1103, One West Market Street, Snow Hill, Maryland 21863.

Late Bid Documents will not be accepted.

Minority vendors are encouraged to compete for award of the solicitation.

Nicholas W. Rice, CPPO, CPPB, NIGP-CPP Procurement Officer Worcester County, Maryland

## PROJECT MANUAL

### **RENOVATIONS FOR:**

## WORCESTER COUNTY ROADS BUILDING BERLIN, MARYLAND

### **BID SPECIFICATIONS**



MARCH 2023 GMB FILE NO. 210241



#### ARCHITECTS/ENGINEERS

206 WEST MAIN STREET SALISBURY, MD 21801 410.742.3115

SALISBURY/BALTIMORE/SEAFORD

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### **DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

#### **SECTION 00 11 16**

#### **INVITATION TO BID**

You are invited to bid on a General Contract for the renovation of the Worcester County Roads Building located at 10146 Main Street, Berlin, Maryland. First floor renovation to include removal of a spiral staircase, small partition addition and installation of new door and frame. The second-floor renovation will create new office space, update the bathroom to be accessible and a new janitor closet. The removal of the existing skylight and chimney and patching the roof with all necessary appurtenances. The completed work shall include masonry, wood framing, EIFS, roofing, drywall, mechanical, electrical and plumbing. The Contractor shall provide all necessary labor, equipment, tools, materials and incidentals, and shall perform all operations required to completely finish all of the work in the manner approved by the Architect.

Subcontractors shall be qualified and experienced in projects of similar size, type and complexity as this one, and shall be subject, if requested by the Owner, to submit evidence of same prior to execution of the construction contract.

Bids must be on a lump sum basis and may not be withdrawn for 60 days.

A pre-bid meeting will be held at the Worcester County Roads Building on Wednesday, May 24, 2023 at 1:30 PM. Attendance is recommended but not mandatory to bid. By submitting their bid, Bidders acknowledge they have examined the site in sufficient detail and familiarized themselves to prepare a complete and responsible bid for the specified work. No claims will be approved during construction for items that can be reasonably verified by field examination. Last day for questions is noon on Tuesday, June 6th, 2023. All questions shall be addressed to the County's Procurement Officer, Nicholas Rice at nrice@co.worcester.md.us.

Sealed proposals will be accepted until 2:30 PM (EDT) on the 13th day, June,

2023 in the: Office of the County Commissioners

Worcester County Government Center One West Market Street; Room 1103

Snow Hill, Maryland 21863

Envelops shall be marked "Bid Enclosed – Worcester County Roads Building – Berlin, MD" in the lower left-hand corner.

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Electronic files can be located on the County's website, https://www.co.worcester.md.us/commissioners/bids.

Bidders must be registered to perform work in the State of Maryland and shall include their license number on the Bid Form.

Bid Security in the amount of five (5) percent of the Bid must accompany each bid in the Instructions to Bidders. The successful Bidder's security will be retained until he has signed the Contract and furnished a Performance Bond and a Payment Bond AIA Document A312, each in the amount of the contract sum.

Contractor is required, as an attachment to his bid, to provide a "Contractor's Qualification Statement", current AIA Document A305, including financial data. Bids received without this information will be considered non-responsive.

The right is reserved, as the interests of Worcester County may appear, to reject any and all bids, to waive any informality in bids received, and to accept or reject any items of any bid.

#### **END OF SECTION**

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 21 13

# **AIA DOCUMENT A701-2017 INSTRUCTIONS TO BIDDERS**

Bidders shall comply with the requirements of the above document. Submitting a bid denotes acknowledgement by the Bidder that he has read and understands the content of this document.

**END OF SECTION** 

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 22 13

# SUPPLEMENTARY INSTRUCTIONS TO BIDDERS AIA DOCUMENT A701

Supplementary Instructions contain changes and additions to AIA Document A701 2018 Edition. Where any part of the INSTRUCTIONS TO BIDDERS are modified or voided by the Supplementary Instructions, the unaltered provisions remain in effect.

#### **MODIFICATIONS**

#### **ARTICLE 2 - BIDDER'S REPRESENTATION**

- **2.1** Add the following subparagraph to Paragraph 2.1:
  - 2.1.7: This bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

#### **ARTICLE 3 - BIDDING DOCUMENTS**

#### 3.1 COPIES

Delete Paragraphs 3.1.1 and 3.1.2 and substitute the following:

3.1.1: Bidders and Sub-bidders may purchase complete sets <u>only</u> of the Bidding Documents from the issuing office designated in the Invitation to Bid for a sum determined by the issuing office. The purchase sum is not refundable.

#### 3.3 SUBSTITUTIONS

Delete Paragraphs 3.3.2.2 and 3.3.2.3 and substitute the following:

3.3.2.2: All requests for substitution prior to receipt of Bids shall be submitted on this attached "SUBSTITUTION REQUEST FORM, DOCUMENT 00 26 00".

#### **ARTICLE 4 - BIDDING PROCEDURES**

#### 4.1 PREPARATION OF BIDS

Add the following sentence to Subparagraph 4.1.1:

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Only one copy of the Bid is to be submitted.

#### 4.2 BID SECURITY

Add the following subparagraph to Paragraph 4.2:

4.2.5: If a Bidder refuses to execute the Agreement and obtain the performance and payment bonds within the agreed time, the Owner may consider the Bidder in default, in which case the Bid Bond accompanying the Bid shall become the property of the Owner.

#### 4.4 MODIFICATION OR WITHDRAWAL OF BIDS

Delete Subparagraph 4.4.1 and substitute the following:

4.4.1 No Bidder may withdraw, modify or cancel, a Bid within 60 calendar days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the Bidder.

#### **ARTICLE 5 - CONSIDERATION OF BIDS**

#### 5.3 ACCEPTANCE OF BID (AWARD)

Delete Subparagraph 5.3.2 and substitute the following:

5.3.2 The Owner shall have the right to accept Alternates in the sequence or combinations listed and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

#### **END OF SECTION**

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# DIVISION 00 – BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT

#### **SECTION 00 26 00**

SUBSTITUTION REQUEST

#### SUBSTITUTION REQUEST FORM

No substitution will be considered prior to receipt of Bids unless written request is made on this SUBSTITUTION REQUEST FORM at least ten days prior to the date for receipt of Bids. Requests for substitution after Contract award shall be done so at proposer's risk that item may be disapproved. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

10:			
SPECIFIED ITEM:			
Section	Page	Paragraph	Description
The undersigned r	requests consideration of	the following:	
PROPOSED SUB	STITUTION		
		pecifications, drawings, photog of the data are clearly identified	graphs, performance and test data adequate for l.
Attached data incluits proper installation		ges to the Contract Documents	which the proposed substitution will require for
<ol> <li>The p</li> <li>The u</li> <li>constr</li> <li>The p</li> <li>warrar</li> <li>Mainte</li> </ol>	roposed substitution does not indersigned will pay for charaction costs caused by the roposed substitution will have requirements.  The states that the function of the states in the states that the function independent of the states in the	requested substitution. ave no adverse effect on other ill be locally available for the pr	n on the drawings.  n, including engineering design, detailing, and  trades, the construction schedule, or specified
Signature			For use by the design consultant
Firm			Accepted
Address			Accepted as noted
			Not accepted
Date			Received too late
Telephone			Remarks
Attachments			
		END OF SECTION	

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 41 23

## **BID FORM**

TO:			
WORCESTER COUNTY PUBLIC WORKS 6113 TIMMONS ROAD	WORCESTER COUNTY ROADS		
SNOW HILL, MARYLAND			
Roads Building. I have also received Adde	ents titled Renovation to <u>Worcester County</u> enda Nos, and have included their nined both the documents and the site and		
In submitting this bid, I agree:			
furnish Performance and Labor and Supplementary Instructions to AIA D  3. To accomplish the work in accord wi  4. To complete the work to Substant Architect within following receip  5. Bidder agrees to pay \$1,000 per not completing the work within the specific part of the second sec	ct, if awarded on the basis of this bid, and to Material Payment Bonds in accord with the ocument A701.  th the Contract Documents.  ial Completion as certified in writing by the of written notice to proceed.  calendar day in Liquidated Damages for		
SCHEDULE A - LUMP SUM BID PRICE			
	s project for the lump sum price of:		
	_ Dollars (\$)		
Included within the lump sum price is \$ bond premium.	for the full payment & performance		
I include a copy of my current Maryland Comy bid.	ontractor's license or proof of application with		
I include the required Bid Security with my	bid.		

#### SCHEDULE B - BID ALTERNATES

I include the following BID COST ALTERNATES. Worcester County reserves the right to incorporate alternates, in part or in total, it deems to be in its own best interests.

	<b>DEDUCT ALTERNATE NO. 1:</b>	Existing doors 208A to remain
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**DEDUCT ALTERNATE NO. 2:** Contractor to remove all HVAC work from contract. Contractor to coordinate with Worcester County who will provide HVAC work.

**DEDUCT ALTERNATE NO. 3:** Contractor to remove all electrical work from the contract. Contractor to coordinate with Worcester County who will provide electric work.

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**DEDUCT ALTERNATE NO. 4:** Contractor to remove all low voltage work (access control, cameras, security and fire alarm) from the contract. Contractor to coordinate with Worcester County who will provide low voltage work.

DEDUCT S	<b>5</b>
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#### **SCHEDULE C - ALLOWANCES**

I include the following ALLOWNACES in my Lump Sum Price.

- 1. Allow Six Hundred Dollars (\$600.00) to provide and install a new kitchen faucet and sprayer in the existing kitchen sink that is to be reused.
- 2. Allow Sixty Thousand Dollars (\$60,000.00) for running data/cable lines to the building.
- 3. Allow Thirty-six Thousand, Seven Hundred and Fifty Dollars (\$36,750.00) for Absolute Security to install the security alarm system, fire alarm system, keyscan access control and the IP camera system.

#### **SUBCONTRACTORS**

The undersigned BIDDER proposes to use the following named SUBCONTRACTORS:	
MASONRY	

CARPENTRY	
ROOFING	
EIFS	
PAINT	
DOOR/HARDWARE	
HVAC	
PLUMBING	
The following Corporation is chartered	in the State of Maryland.
Witness	Signature
CORPORATE SEAL	Title
	Firm Name
Date	Business Address
	Maryland Contractor's License #

## **END OF SECTION**

# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 43 13

### AIA DOCUMENT A310 - 2010 BID SECURITY FORMS

Bidders are required to submit an executed AIA DOCUMENT A310 – BID BOND as an attachment to their bid.

**END OF DOCUMENT** 

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 52 53

# AIA DOCUMENT A101-2017 AGREEMENT FORM BETWEEN OWNER-DESIGN AND CONTRACTOR - STIPULATED SUM

The successful bidder shall be required to execute the above named agreement. Submitting a bid denotes acknowledgement by the Bidder that he has read and understands the content of this document.

**END OF DOCUMENT** 

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 61 13

### AIA DOCUMENT A312 - 2010 PERFORMANCE BOND AND PAYMENT BOND

The successful bidder shall be required to execute the above named bonds as a requirement of the contract.

**END OF DOCUMENT** 

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 65 19.13

# AIA DOCUMENT G706 - 1994 CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

At completion, and as a condition of final acceptance and payment, the contractor shall be required to submit documentation according to the requirements of the above document.

**END OF DOCUMENT** 

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 65 19.16

### AIA DOCUMENT G706A - 1994 CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS

At completion, and as a condition of final acceptance and payment, the contractor shall be required to submit documentation according to the requirements of the above document.

**END OF DOCUMENT** 

210241 00 65 19.16 - 1

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# DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS SECTION 00 72 00

# AIA DOCUMENT A201-2017 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The successful bidder shall be required to execute his contract according to the requirements of the above named document. Submitting a bid denotes acknowledgement by the Bidder that he has read and understands the content of this document.

**END OF SECTION** 

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### DIVISION 00 – BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT

#### **SECTION 00 90 00**

#### MODIFICATIONS TO THE GENERAL CONDITIONS

These modifications contain changes and conditions to the General Conditions of the Contract for Construction AIA Document A201, 2017 Edition. Where any part of the General Conditions are modified or deleted by these modifications, the unaltered provisions remain in effect.

#### **MODIFICATIONS**

#### ARTICLE 1 – GENERAL PROVISIONS

Add 1.2.1.2: The Contractor shall be responsible for coordinating his own work with all the contract drawings and other trades affecting his work. A claim of limitation of responsibility by the contractor due to the failure to do such coordination is not acceptable.

#### **ARTICLE 3 - CONTRACTOR**

Add 3.13.2: The Contractor shall confine his work to the 'Limit of Construction'. He shall not obstruct public roads by delivery or other vehicles and shall work out material storage areas, vehicular access and work crew parking.

Paragraph 3.18.1, line 5, delete the phrase "other than the Work itself".

#### **ARTICLE 5 - SUBCONTRACTORS**

Add 5.2.5: Approval of Subcontractors. The Bid Form requires that the Contractor shall state the name of certain major subcontractors whom he proposes to employ. The Contractor shall be required to enter a subcontract with the subcontractors named in his proposal for these major divisions of the work, except those against whom the Architect or Owner shall have reasonable objection before the execution of the Contract. Subcontractors shall furnish suitable evidence of qualifications, experience, references and financial background, when requested by the Owner, to assist the Owner in its evaluation if such question should arise.

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#### **ARTICLE 7 – CHANGE ORDERS**

Add 7.2.3: Costs Excluded - The term Cost of the Work shall not include any of the following items:

- .1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- .2 Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- .3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- .4 Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- .5 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in the work.

#### **ARTICLE 9 - PAYMENTS AND COMPLETION**

Add 9.3.1.3: Progress Payments will be 90% monthly and will cover the period up to the first day of each month and are to include payment for stored materials and equipment. Stored materials shall be only stored on site or in a bonded warehouse assigned to the Owner.

Add 9.3.1.4: In applying for payments, excluding the first payment and the final payment, the Contractor shall submit a written certificate in the exact wording that he has paid:

- .1 Labor to date.
- .2 Vendors and material suppliers in full to include items included in his previous statement and for which he received payment from the Owner.
- .3 Subcontractors in full, less the related 10%, to the amount included in his previous statement and for which he received payment from the Owner.

Contractor shall submit partial lien releases for work performed or materials provided by his subcontractors when work is complete and when requested by the Architect.

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Add 9.3.1.5: Upon Substantial Completion of the entire work, the sum of the total payments will be required to equal 95% of the Contract Sum, less amounts for incomplete work and unsettled claims.

#### **ARTICLE 11 - INSURANCE**

.1 Reference Exhibit A attached.

**END OF SECTION** 

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#### EXHIBIT A

#### Worcester County Maryland Standard Terms

The provisions below are applicable to all Worcester County ("County") contracts. These provisions are not a complete agreement. These provisions must be attached to an executed document that identifies the work to be performed, compensation, term, incorporated attachments, and any special conditions ("Contract"). If the Standard Terms and any other part of the Contract conflict, then the Standard Terms will prevail.

- 1. **Amendment**. Amendments to the Contract must be in writing and signed by the parties.
- 2. **Bankruptcy**. If a bankruptcy proceeding by or against the Contractor is filed, then:
  - a. The Contractor must notify the County immediately; and
  - b. The County may cancel the Contract or affirm the Contract and hold the Contractor responsible for damages.
- 3. **Compliance with Law.** Contractor must comply with all applicable federal, state, and local law. Contractor is qualified to do business in the State of Maryland. Contractor must obtain, at its expense, all licenses, permits, insurance, and governmental approvals needed to perform its obligations under the Contract.
- 4. **Contingent Fee Prohibition**. The Contractor has not directed anyone, other than its employee or agent, to solicit the Contract and it has not promised to pay anyone a commission, percentage, brokerage fee, contingent fee, or other consideration contingent on the making of the Contract.
- 5. **Counterparts and Signature**. The Contract may be executed in several counterparts, each of which may be an original and all of which will be the same instrument. The Contract may be signed in writing or by electronic signature, including by email. An electronic signature, a facsimile copy, or computer image of the Contract will have the same effect as an original signed copy.
- 6. **Exclusive Jurisdiction.** All legal proceedings related to this Contract must be exclusively filed, tried, and maintained in either the District Court of Maryland for Worcester County, Maryland or the Circuit Court of Worcester County, Maryland. The parties expressly waive any right to remove the matter to any other state or federal venue and waive any right to a jury trial.
- 7. **Force Majeure**. The parties are not responsible for delay or default caused by fire, riot, acts of God, County-declaration-of-emergency, or war beyond their reasonable control. The parties must make all reasonable efforts to eliminate a cause of delay or default and must, upon cessation, diligently pursue their obligations under the Contract.
- 8. **Governing Law.** The Contract is governed by the laws of Maryland and the County.
- 9. **Indemnification**. The Contractor must indemnify the County and its agents from all liability, penalties, costs, damages, or claims (including attorney's fees) resulting from personal injury, death, or damage to property that arises from or is connected to the performance of the work or failure to perform its obligations under the Contract. All indemnification provisions will survive the expiration or termination of the Contract.

#### 10. Independent Contractor.

- a. Contractor is an "Independent Contractor", not an employee. Although the County may determine the delivery schedule for the work and evaluate the quality of the work, the County will not control the means or manner of the Contractor's performance.
- b. Contractor is responsible for all applicable taxes on any compensation paid under the Contract. Contractor is not eligible for any federal Social Security, unemployment insurance, or workers' compensation benefits under the Contract.
- c. Contractor must immediately provide the County notice of any claim made against Contractor by any third party.

#### 11. Insurance Requirements.

- a. Contractor must have Commercial General Liability Insurance in the amounts listed below. The insurance must include coverage for personal injury, discrimination, and civil rights violation claims. All insurance must name County, its employees, and agents as "ADDITIONAL INSURED". A copy of the certificate of insurance must be filed with the County before the Contract is executed, providing coverage in the amount of \$1,000,000 per occurrence, \$2,000,000 general aggregate, and \$500,000 for property damage.
- b. Contractor must have automobile insurance on all vehicles used in the Contract to protect Contractor against claims for damages resulting from bodily injury, including wrongful death, and property damage that may arise from the operations in connection with the Contract. All insurance must name County, its employees, and agents as "ADDITIONAL INSURED".
- c. Contractor must provide the County with a certification of Workers' Compensation Insurance, with employer's liability in the minimum amount required by Maryland law in effect for each year of the Contract.
- d. All insurance policies must have a minimum 30 days' notice of cancellation. The County must be notified immediately upon cancellation.
- e. When insurance coverage is renewed, Contractor must provide new certificates of insurance prior to expiration of current policies.
- 12. **Nondiscrimination**. Contractor must not discriminate against any worker, employee, or applicant because of religion, race, sex, age, sexual orientation, physical or mental disability, or perceived disability. This provision must be incorporated in all subcontracts related to the Contract.

#### 13. Ownership of Documents; Intellectual Property.

a. All documents prepared under the Contract must be available to the County upon request and will become the exclusive property of the County upon termination or completion of the services. The County may use the documents without restriction or without additional compensation to the Contractor. The County will be the owner of the documents for the purposes of copyright, patent, or trademark registration.

- b. If the Contractor obtains, uses, or subcontracts for any intellectual property, then it must provide an assignment to the County of ownership or use of the property.
- c. The Contractor must indemnify the County from all claims of infringement related to the use of any patented design, device, materials, or process, or any trademark or copyright, and must indemnify the County, its officers, agents, and employees with respect to any claim, action, costs, or infringement, for royalties or user fees, arising out of purchase or use of materials, construction, supplies, equipment, or services covered by the Contract.
- 14. **Payments**. Payments to the Contractor under the Contract will be within 30 days of the County's receipt of a proper invoice from the Contractor. If an invoice remains unpaid 45 days after the invoice was received, interest will accrue at 6% per year.
- 15. **Records**. Contractor must maintain fiscal records relating to the Contract in accordance with generally accepted accounting principles. All other relevant records must be retained by Contractor and kept accessible for at least three years after final payment, termination of the Contract, or until the conclusion of any audit, controversy, or litigation related to the Contract. All subcontracts must comply with these provisions. County may access all records of the Contractor related to the Contract.

#### 16. Remedies.

- a. **Corrections of errors and omissions**. Contractor must perform work necessary to correct errors and omissions in the services required under the Contract, without undue delays and cost to the County. The County's acceptance will not relieve the Contractor of the responsibility of subsequent corrections of errors.
- b. **Set-off**. The County may deduct from any amounts payable to the Contractor any back-charges, penalties, or damages sustained by the County, its agents, or employees caused by Contractor's breach. Contractor will not be relieved of liability for any costs caused by a failure to satisfactorily perform the services.
- c. **Cumulative**. These remedies are cumulative and without waiver of any others.

#### 17. Responsibility of Contractor.

- a. The Contractor must perform the services with the standard of care, skill, and diligence normally provided by a Contractor in the performance of services similar the services.
- b. Notwithstanding any review, approval, acceptance, or payment for the services by the County, the Contractor will be responsible for the accuracy of any work, design, drawings, specifications, and materials furnished by the Contractor under the Contract.
- c. If the Contractor fails to conform with subparagraph (a) above, then it must, if required by the County, perform at its own expense any service necessary for the correction of any deficiencies or damages resulting from the Contractor's failure. This obligation is in addition to any other remedy available to the County.

- 18. **Severability/Waiver**. If a court finds any term of the Contract to be invalid, the validity of the remaining terms will not be affected. The failure of either party to enforce any term of the Contract is not a waiver by that party.
- 19. **Subcontracting or Assignment**. The Contractor may not subcontract or assign any part of the Contract without the prior written consent of the County. The County may withhold consent for any reason the County deems appropriate.
- 20. **Termination**. If the Contractor violates any provision of the Contract, the County may terminate the Contract by written notice. All finished or unfinished work provided by the Contractor will, at the County's option, become the County's property. The County will pay the Contractor fair compensation for satisfactory performance that occurred before termination less the amount of damages caused by the Contractor's breach. If the damages are more than the compensation payable to the Contractor, the Contractor will remain liable after termination and the County can affirmatively collect damages.
- 21. **Termination of Contract for Convenience**. Upon written notice, the County may terminate the Contract when the County determines termination is in the County's best interest. Termination for convenience is effective on the date specified in the County's written notice. The County will pay for reasonable costs allocable to the Contract for costs incurred by the Contractor up to the date of termination. But the Contractor will not be reimbursed for any anticipatory profits that have not been earned before termination.
- 22. **Termination of Multi-year Contract**. If funds are not available for any fiscal period of the Contract after the first fiscal period, then the Contract will be terminated automatically as of the beginning of unfunded fiscal period. Termination will discharge the Contractor and the County from future performance of the Contract, but not from their rights and obligations existing at the time of termination.
- 23. **Third Party Beneficiaries**. The County and Contractor are the only parties to the Contract and are the only parties entitled to enforce its terms. Nothing in the Contract gives any benefit or right to third persons unless individually identified by name and expressly described as intended beneficiaries of the Contract.
- 24. **Use of County Facilities**. Contractor may only County facilities that are needed to perform the Contract. County has no responsibility for the loss or damage to Contractor's personal property which may be stored on County property.
- 25. **Whole Contract**. The Contract, the Standard Terms, and attachments are the complete agreement between the parties and supersede all earlier agreements, proposals, or other communications between the parties relating to the subject matter of the Contract.

## **SECTION 01 11 00**

## **SUMMARY OF WORK**

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

- A. Award of the following work to one (1) General Contractor for single source responsibility. This firm shall engage other specialist firms to perform any part of the work which they are not equipped or qualified to perform properly with their own personnel.
  - 1. Do not engage any firm unacceptable to manufacturers of products to be used.
  - 2. General Contractor is responsible for coordination of materials/data submission, production/delivery, installation, warranties and guarantees, and administration of subcontracts
  - 3. Do not engage any firm unacceptable to Architect or Owner.
- B. Furnish labor and materials to construct the project as specified in the construction documents.
- C. The Owner reserves the right, without penalty, not to award a Contract.

### 1.02 CONTRACT

A. The specified work is to be accomplished under a single Base Bid.

#### 1.03 EXCLUSIVE VENDOR CONTRACTS

- A. The owner has elected to engage the services of a select list of specialist vendor/subcontractors for this project.
- B. The General Contractor shall enter into subcontracts with the named specialist vendor/subcontractor firms as part of the general construction contract.
  - 1. Bids by firms other than those listed herein will not be accepted
- C. List of approved Exclusive Specialist Vendor/Subcontractors:

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- 1. Fire and Carbon Monitoring System:
  - a. Absolute Security Group, Inc., 300 Mill Street Suite A, Salisbury, Maryland 21801, 410-860-0620, <a href="https://www.absolutesecuritygroup.com">www.absolutesecuritygroup.com</a>.

### 1.04 WORK SCHEDULE

- A. A construction schedule based upon the base bid shall be submitted for approval by the Owner along with the Contractor's bid prior to start of construction.
- B. Contractor shall update his construction schedule on a monthly basis or as otherwise requested by the owner.

#### 1.05 USE OF PREMISES

A. Use of premises by Contractor to be limited to the specified work areas and Owner approved storage area.

#### 1.06 OWNER OCCUPANCY

A. The Contractor shall work toward substantial completion of all work concurrently.

#### **1.07 CODES**

A. All work shall be performed in accordance with the applicable codes and rules and regulations of the regulatory agencies which have jurisdiction over this project and its location.

#### 1.08 PROGRESS MEETINGS

A. In addition to a pre-construction meeting, progress meetings will be held during the course of the project at dates and times to be announced.

#### 1.09 PERMITS AND LICENSES

- A. All required permits shall be paid for and obtained by the Contractor.
- B. All Contractors must be licensed by the State of Maryland.

## **PART 2 - PRODUCTS**

Not used.

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## **PART 3 – EXECUTION**

Not used.

## **END OF SECTION**

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## DIVISION 1 – GENERAL REQUIREMENTS SECTION 01 21 00

## **ALLOWANCES**

#### **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

- A. This section includes administrative and procedural requirements governing allowances.
- B. Certain materials and equipment are specified in the contract documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- C. Allowance amounts are for materials only. Installation shall be covered in Base Bid unless noted otherwise.

#### 1.02 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Owner of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the work.
- B. At Owner's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products selected by Owner from the designated supplier.

#### 1.03 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

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#### 1.04 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner after installation has been completed and accepted.
- B. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

#### **PART 2 - PRODUCTS**

Not used.

#### PART 3 - EXECUTION

### 3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

#### 3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

#### 3.03 SCHEDULE OF ALLOWANCES

#### A. ALLOWANCE NO. 1:

1. Allow Two Six Hundred Dollars (\$600.00) for providing a new kitchen faucet and sprayer in the existing kitchen sink that is being reused.

#### B. ALLOWANCE NO. 2:

1. Allow Sixty Thousand Dollars (\$60,000.00) for running data/cable lines to the building.

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## C ALLOWANCE NO 3:

 Allow Thirty-six Thousand, Seven Hundred and Fifty Dollars (\$36,750.00) for Absolute Security including fire and carbon monitoring system.

## **END OF SECTION**

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## DIVISION 1 – GENERAL REQUIREMENTS SECTION 01 23 00

## **ALTERNATES**

#### **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

- A. Changes to be incorporated into the work, only when that Alternate is made a part of the work by specific provisions in the Owner-Contractor Agreement. The Owner reserves the right to incorporate alternates, or parts of alternates, deemed to be in the Owner's best interest.
- B. Referenced Sections of specifications stipulate pertinent requirements for products and methods to achieve the work stipulated under each Alternate.
- C. Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each Alternate, and to provide the complete construction required by Contract Documents.
- D. The alternates are described in Section 00 41 23, Bid Form.

#### **PART 2 - PRODUCTS**

Not used.

#### **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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## **SECTION 01 29 00**

#### PAYMENT PROCEDURES

#### 1.01 SECTION INCLUDES

- A. Payment for the work completed under this Contract will be made at the lump sum, contingent/unit, and allowance prices bid, which prices shall include the furnishing of all labor, tools, equipment and materials and the performance of all work required to complete the project as indicated and specified in accordance with all requirements of the Contract Documents.
- B. All incidental minor and miscellaneous items, work and materials for which no specific lump sum or unit price bid item is shown and which are necessary to complete the work and to maintain and/or repair the work, shall be done and furnished by the Contractor without extra charge.

### 1.02 PAYMENT

- A. After the award of the Contract, the Contractor will develop an itemized breakdown of the bid amount according to specific work activities. The Contractor will be required to submit an itemized breakdown of his bid for approval within 14 days after the Pre-construction Conference. At the end of each pay period, the Contractor shall submit to the Owner or his authorized representative for approval an invoice showing percent complete for each item on the breakdown.
- B. With each Application for Payment, the Contractor shall submit a Form of Waiver and Release of Mechanic's Liens relating to the work for which they are to be paid with the proceeds of such Application of Payment.
- C. The Contractor shall promptly pay each Subcontractor (including suppliers, laborers and material men) performing labor or furnishing material for the work upon receipt of payment from the Owner out of the amount paid to the Contractor on account of the work for each subcontractor, supplier, laborer, or material men, the amount to which said subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such work.
- D. The Owner may, on request and at his discretion, furnish to any subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the Owner on account of work done by such contractor.

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- E. The Owner shall not have any obligation to pay or to see to the payment of any monies to any subcontractor except as may otherwise be required by law.
- F. No progress payment or any partial or entire use of occupancy of the Project by the Owner shall constitute an acceptance of any work which is not in accordance with the Contract Documents.

### 1.03 PAYMENTS WITHHELD

- A. The Owner may decline to pay all or any part thereof or, because of subsequent observations, it may nullify the whole or any part of any payment previously issued, to such extent as may be necessary in its opinion to protect the Owner from loss because of:
  - 1. Defective work not remedied.
  - 2. Third party claims filed or reasonable evidence indicating probable filing of such claims.
  - 3. Failure of the Contractor to make payments properly to subcontractors or for labor, material or equipment.
  - 4. Reasonable evidence that the work cannot be completed for unpaid balance of the Contract Sum.
  - 5. Damage to the Owner or another Contractor.
  - 6. Reasonable evidence that the work will not be or has not been completed within the Contract time.
  - 7. Failure to carry out the work in accordance with the Contract Documents.
  - 8. Cancellation, material change or lapse of required insurance as specified in the Contract Documents.

### **END OF SECTION**

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### **SECTION 01 31 19**

## PROJECT MEETINGS

## **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

- A. Owner's Representative, known hereafter as the Project Manager (PM), will schedule and administer pre-construction meeting, call progress meetings throughout progress of the work, and will:
  - 1. Prepare agenda for meetings.
  - 2. Set meeting date.
  - 3. Make arrangements for meeting room.
  - 4. Preside at meetings.
  - 5. Record minutes; include significant proceedings and decisions.
  - 6. Reproduce and distribute copies of minutes within five days after each meeting.
    - a. To participants in meeting.
    - b. To parties affected by decisions made at meeting.
- B. Representatives of contractors and subcontractors attending meeting shall be qualified and authorized to act on behalf of entity each represents.

#### 1.02 PRE-CONSTRUCTION MEETING

- A. Schedule within 15 days after date of Notice to Proceed.
- B. Location: As announced.
- C. Attendance:
  - 1. Owner's Representative (Project Manager).
  - 2. Architect and his professional consultants.
  - 3. Contractor's Superintendent.
  - 4. Major Subcontractors.
  - 5. Others as appropriate.
- D. Suggested Agenda:

- 1. Discussion of:
  - a. Contract.
  - b. Certificates of Insurance.
  - c. Bonds.
  - d. List of major subcontractors and suppliers.
  - e. Projected Construction Schedule.
- 2. Critical work sequencing.
- 3. Project Coordination.
  - a. Designation of responsible personnel.
  - b. Architect's representative.
  - c. Owner's representative.
  - d. Contractor's superintendent.
- 4. Procedures and processing of:
  - a. Field decisions.
  - b. Proposal requests.
  - c. Substitutions.
  - d. Installation procedures.
  - e. Closeout procedures.
  - f. Submittals.
    - (1) Shop drawings To be submitted as PDF electronic files.
    - (2) Samples.
  - g. Change Orders.
  - h. Monthly Applications for Payment.
    - (1) How many copies?
    - (2) Who approves same?
    - (3) Schedule of values.
    - (4) Stored material payments. (Off-site) (Insurance)
- 5. Adequacy of distribution of Contract Documents.
- 6. Procedures for maintaining Record Documents.
- 7. Use of premises.
  - a. Office, work and storage areas.
  - b. Owner's requirements.
- 8. Construction facilities, controls and construction aids.
- 9. Temporary utilities.
- 10. Safety and first-aid procedures.
- 11. Security procedures.
- 12. Housekeeping procedures.
- 13. Contractor's after-hours telephone number (3 key people).
- 14. Temporary usage of permanent elevator.
- Other business.

#### 1.03 PROGRESS MEETINGS

Schedule as called.

- B. Location of meetings: As Announced.
- C. Attendance:
  - 1. Same personnel as at pre-construction meeting.
  - 2. Others as appropriate.
- D. Suggested Agenda:
  - 1. Review, approval of minutes of previous meeting.
  - 2. Review of work progress since previous meeting.
  - 3. Field observations, problems, and conflicts.
  - 4. Problems which impede Construction Schedules.
  - 5. Corrective measures and procedures to regain projected schedule.
  - 6. Revisions to Construction Schedule.
  - 7. Plan progress, schedule, during succeeding work period.
  - 8. Coordination of schedules.
  - 9. Review submittal schedules; expedite as required.
  - 10. Maintenance of quality standards.
  - 11. Review proposed changes for effect on Construction Schedule on completion date.
  - 12. Other business.

#### 1.04 FINAL INSPECTION

- A. Schedule as called.
- B. Attendance:
  - 1. Same personnel as at pre-construction meeting.
  - 2. Others as appropriate.
- C. Suggested agenda for walk-through:
  - 1. The final inspection and acceptance of the work will focus largely on the appearance of the finished work.

#### **PART 2 - PRODUCTS**

Not used.

## **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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## DIVISION 1 – GENERAL REQUIREMENTS SECTION 01 32 00

## CONSTRUCTION DOCUMENTATION

#### **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Construction schedule updating reports.
  - 2. Daily construction reports.
  - 3. Site condition reports.
  - 4. Unusual event reports.

#### 1.02 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in PDF electronic files.
- B. Construction Schedule Updating Reports: Submit with Applications for Payment.
- C. Daily Construction Reports: Submit at weekly intervals.
- D. Site Condition Reports: Submit at time of discovery of differing conditions.
- E. Unusual Event Reports: Submit at time of unusual event.

#### **PART 2 - PRODUCTS**

#### 2.01 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report recording the following information concerning events at Project site:
  - 1. List of subcontractors at Project site.
  - 2. List of separate contractors at Project site.
  - Approximate count of personnel at Project site per contractor and subcontractor.
  - 4. Equipment at Project site.
  - 5. Material deliveries.
  - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
  - 7. Accidents.
  - 8. Meetings and significant decisions.

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

#### 2.02 SITE CONDITION REPORTS

A. Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents

#### **PART 3 - EXECUTION**

Not used.

**END OF SECTION** 

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#### **SECTION 01 33 00**

### SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Shop drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills or material and other data prepared by the Contractor, his subcontractors, suppliers or manufacturers which illustrate the manufacturer, fabrication, construction and installation of the work, or a portion thereof.
- B. All costs necessary for compliance with the requirements of this Section of the Specifications shall be included under the lump sum price bid.
- C. Detailed shop drawings, data, literature for fabricated materials or equipment to be incorporated in the work shall be submitted to the Architect for review for general compliance with the Contract Documents before fabrication. The Contractor shall obtain and check manufacturer's shop drawings, certified prints and other pertinent data for conformance with all requirements of the Plans and Specification and in ample time to permit satisfactory progress of the work. After the completion of such checking and verification by the Contractor, the Contractor shall sign or stamp such drawing, which stamp shall state as follows:

Checked by	·
·	(Contractor's Name)
Signed by	
· , _	(Checker's Name)

- D. All data, drawings and correspondence from subcontractors, manufacturers or suppliers shall be routed through the Contractor. The Architect shall review only such data and details as are transmitted to him by the Contractor. All correspondence from the Contractor to the Architect shall refer to the appropriate section of these specifications containing the subject matter of the inquiry.
- E. All shop drawings shall be in conformity with all requirements of the plans and specifications. All shop drawings, except diagrams, brochures, schedules and illustrations, shall be to an appropriate scale, no smaller than 1/8 inch = 1 foot 0 inches,

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and shall give all dimensions necessary for installation and incorporation in the work. All shop drawings shall be accurate and complete, showing outline and section views, details, materials, accessories, appurtenances and related items.

- F. The Contractor shall submit to the Architect PDF electronic files of shop drawings and approval data. The Architect's notation of the action taken will be noted on the returned PDF electronic file. At the time of each submission, the Contractor shall call to the Architect's attention, in writing, any deviations that the shop drawings may have from the requirements of the Plans and Specifications. At conclusion of the project, the Contractor shall provide (1) print copy and (1) combined PDF electronic file of all electronic file submittals.
- G. Within fourteen (14) days of the Pre-construction Conference, the Contractor shall submit a list of all shop drawings to be submitted. This list can then be used as a check to ensure that all items are submitted.

#### 1.02 OPERATION AND MAINTENANCE MANUALS

A. The Contractor shall furnish the Architect six (6) copies of a complete instruction manual for installation, operation, maintenance and lubrication of each component of all equipment. The operation and maintenance manual shall be submitted at least ninety (90) days prior to the anticipated completion of the project.

PART 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

**END OF SECTION** 

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## **SECTION 01 40 00**

### QUALITY REQUIREMENTS

#### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

### A. General:

- 1. The Contractor shall give all necessary notices, obtain all permits (except those referenced above) and pay all governmental taxes, fees and other costs in connection with the work, file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction, obtain all required Certificates of Inspection and Approval for the work and deliver same to the Architect, except as otherwise noted herein.
- B. Compliance: All materials furnished and all work installed shall comply with the requirements of all governmental departments having jurisdiction.

#### 1.02 STANDARDS

A. Any reference to standards in the Contract Documents shall always refer to the latest issue in effect, including all revisions at the time bids are taken, of said standards unless otherwise stated.

#### 1.03 VERIFICATION OF DIMENSIONS

- A. The Contractor shall be responsible for field verification of all dimensions of existing facilities and other items which are shown on the Contract Drawings.
- B. The Contractor shall be responsible for cross checking dimensions between different drawings as facilities are being laid out. Any discrepancies shall immediately be brought to the attention of the Architect.

## **PART 2 - PRODUCTS**

Not used.

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## **PART 3 – EXECUTION**

Not used.

## **END OF SECTION**

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## **SECTION 01 41 00**

### REGULATORY REQUIREMENTS

### PART 1 – GENERAL

#### 1.01 SECTION INCLUDES

- A. Contractor shall select, employ and pay for services of an Independent Testing Laboratory to perform specified inspection, sampling and testing where specified in the various sections of the specifications.
  - 1. Contractor shall cooperate with laboratory to facilitate execution of its required services.
  - 2. Employment of laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.

#### 1.02 LABORATORY DUTIES

- A. Cooperate with Architect and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction.
  - 1. Comply with specified standards.
  - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Architect of observed irregularities or deficiencies of work or products.
- D. Promptly submit five (5) copies of written report of each test and inspection to Architect. Each report shall include:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Testing laboratory name, address and telephone number.
  - 4. Name and signature of laboratory inspector.
  - 5. Date and time of sampling or inspection.

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- 6. Record of temperature and weather conditions.
- 7. Date of test.
- 8. Identification of product and specification section.
- 9. Location of sample or test in the Project.
- 10. Type of inspection or test.
- 11. Results of tests and compliance with Contract Documents.
- 12. Interpretation of test results, when requested by Architect.
- E. Perform additional tests as required by Owner or the Owner.

#### 1.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
  - 2. Approve or accept any portion of the Work.

### 1.04 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with laboratory personnel and provide access to Work.
- B. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested and to maintain traffic in order to provide laboratory personnel a safe work site.
  - 2. To obtain and handle samples at Project site or at source of product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
- C. Inspection and testing exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor, at no additional cost to the Owner.

#### PART 2 - PRODUCTS

Not used.

#### **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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#### **SECTION 01 42 00**

## **REFERENCES**

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

- A. Where "as shown", "as indicated", "as detailed", or words of similar import are used, it is understood that reference to the drawings accompanying this specification is made unless stated otherwise.
- B. Where "as directed", "as required", "as selected", "permitted", "acceptance", or words of similar import are used, it is understood that direction, requirement, selection, permission or acceptance by the Architect and compliance with codes and regulations are intended unless stated otherwise.
- C. Where used "provide" is understood to mean "provide complete in place"; that is "furnished and installed".
- D. Where "items of material, equipment, work, etc." and "methods of installation, finish, and accomplishment, etc." are referred to in this specification it is understood to refer to all such "items, materials, equipment, work, finish, etc."
- E. Where "includes" is used, it is understood to mean "includes, but is not limited to".
- F. Where "Engineer" and "Architect" are used, they shall be understood to have the same meaning and to be the same reference.

#### 1.02 SPECIFICATION REFERENCE

- A. Materials or operations specified by reference to specification of a manufacturer or society or institute or other standard must comply with requirements of current specification or standard listed.
- B. In case of conflict between referenced specification or standard, the one having the more stringent requirement governs.

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## 1.03 INSTITUTE, SOCIETY, ASSOCIATION AND STANDARDS ABBREVIATION

AAMA Architectural Aluminum Manufacturer's Association

ACI American Concrete Institute
AIA American Institute of Architects

AISC American Institute of Steel Construction
ANSI American National Standards Institute
ASTM American Society for Testing and Materials

AWS American Welding Society

FM Factory Mutual FS Federal Standard

NEC National Electrical Code

NRCA National Roofing Contractors Association
OSHA Occupational Safety and Health Act

SIGMA Sealed Insulating Glass Manufacturer's Association

SMACNA Sheet Metal and Air Conditioning Contractors National Association

SSPC Steel Structures Painting Council

UL Underwriter's Laboratories

Not all of the above names are necessarily referenced in the specifications.

#### PART 2 - PRODUCTS

Not used.

#### **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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### **SECTION 01 51 00**

## **TEMPORARY UTILITIES**

#### **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

A. Furnishing, installing and maintaining temporary utilities required for construction; remove on completion of work.

#### 1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with Federal, State and local codes and regulations and with utility company requirements.

#### **PART 2 - PRODUCTS**

#### 2.01 GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

#### 2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Contractor to tie into existing service for temporary power and lighting at the owner's expense.
- B. Provide adequate artificial lighting for areas of work when natural light is not adequate.
- C. Provide and maintain necessary temporary night lighting devices to properly mark hazards and obstructions and to maintain security of property and materials.

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#### 2.03 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation, if necessary, to maintain adequate environmental conditions to facilitate progress of work, to meet specified minimum conditions for installation of materials, and to protect materials and finishes from damage due to temperature or humidity.
- B. Use of portable heaters when required shall be standard approved units complete with controls. Fuel costs shall be paid by Contractor.

### 2.04 TEMPORARY WATER

A. Contractor to tie into existing service at no charge.

#### 2.05 SANITARY FACILITIES

- A. Provide temporary sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.

#### **PART 3 - EXECUTION**

#### 3.01 GENERAL

- A. Maintain and operate systems to assure continuous service.
- B. Modify and extend systems as work progress requires.

#### 3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore existing facilities used for temporary services to specified, or to original, condition.

## **END OF SECTION**

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## **SECTION 01 52 13**

## FIELD OFFICES AND SHEDS

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

- A. At the contractor's discretion, furnish, install and maintain temporary field office and storage sheds during construction period.
- B. At completion of work, remove field offices, sheds and contents.

#### 1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with requirements of Federal, State and local codes and regulations.

### 1.03 OTHER REQUIREMENTS

A. Prior to installation of offices and sheds, consult with Owner on location, access and related facilities. Location must be approved by the Public Work Department prior to placement.

#### PART 2 - PRODUCTS

Not used.

#### **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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#### **SECTION 01 54 00**

### **CONSTRUCTION AIDS**

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

A. Furnishing, installing and maintaining construction aids; remove on completion of work.

#### 1.02 SAFETY REQUIREMENTS

- A. Except as modified by governing codes and by this Specification comply with applicable provisions and recommendations of following standards.
  - 1. ANSI A10.2, Safety Code for Building Construction.
  - 2. ANSI A10.8, Safety Requirements for Scaffolding.
  - 3. ANSI A10.10, Safety Requirements for Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry.
  - 4. ANSI A14.2, Safety Requirements for Portable Metal Ladders.
- B. Comply with Federal, State and local codes and regulations.
- C. Upon request, contractor shall furnish written certification that he has adhered to the referenced standards in the performance of his work on this project.

#### **PART 2 - PRODUCTS**

#### 2.01 CONSTRUCTION AIDS

- A. Provide and maintain in good condition required temporary ladders, ramps, chutes, scaffolding, and platforms as required.
- B. Temporary Enclosures: Provide as required for protecting the work. Provide for both exterior and interior openings, for passageways, and any other location where temporary enclosures and protection may be required.

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## **PART 3 - EXECUTION**

### 3.01 PREPARATION

A. Review site conditions and factors which affect construction procedures and construction aids.

#### 3.02 GENERAL

A. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of Owner.

## 3.03 REMOVAL

- A. Completely remove temporary materials, equipment and services at completion of project.
- B. Clean, repair damage caused by installation or by use of temporary facilities.
- C. Restore existing facilities used for temporary purposes to specified, or to original, condition.

### **END OF SECTION**

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## **SECTION 01 56 00**

## TEMPORARY BARRIERS AND ENCLOSURES

#### **PART 1 - GENERAL**

### 1.01 SECTION INCLUDES

A. Furnishing, installing and maintaining suitable barriers as required to prevent entry, and to protect the work and existing facilities from construction operations; remove when no longer needed, or at completion of work.

#### 1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with federal, state and local codes and regulations.

### **PART 2 - PRODUCTS**

### 2.01 MATERIALS

A. Materials may be new or used, suitable for the intended purpose, and shall comply with the requirements of applicable codes and standards.

#### 2.02 BARRIERS

A. Contractor's option, as appropriate to serve the required purpose.

#### **PART 3 - EXECUTION**

#### 3.01 GENERAL

- A. Install facilities of a neat and reasonable uniform appearance, structurally adequate for the required purposes.
- B. Maintain during entire construction period.
- C. Relocate as required by progress of construction.

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## 3.02 REMOVAL

- A. Completely remove barricades when construction has progressed to the point that they are no longer needed, and when approved by the Architect.
- B. Clean and repair damage caused by installation.

## **END OF SECTION**

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# DIVISION 1 - GENERAL REQUIREMENTS SECTION 01 70 00

## **EXECUTION AND CLOSEOUT REQUIREMENTS**

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

A. Substantial Completion: The project will be considered substantially complete when building and all equipment has been completed, installed and tested and the building is ready to be used for its intended use.

#### 1.02 CLEANUP

A. Upon completion of the work and before Final Acceptance will be made, the work site, storage areas, and other areas occupied by the Contractor during construction shall be cleaned, and all surplus and discarded materials, false work and rubbish placed thereon by the Contractor shall be removed by the Contractor. The Contractor's storage area shall be top soiled, seeded and mulched. No separate payment will be made for the work as all such costs shall be included in the lump sum price bid.

### 1.03 TOOLS, ACCESSORIES AND SPARE PARTS

- A. The Contractor shall, unless otherwise stated, furnish with each type, kind and size of equipment, one complete set of any special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment.
- B. Each piece of equipment shall be provided with a substantial name plate, which is securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture and principal rating data.
- C. Where the Specifications require spare parts to be furnished by the Contractor, said spare parts for each item of equipment shall be kept separate and tagged to identify the specific item of equipment to which they belong, shall be packaged so as to preclude damage from handling and storage, and shall be bagged or packaged together where items are small in dimension.

#### 1.04 DELAYS AND EXTENSIONS OF TIME

- A. The Contractor shall not be entitled to payment or compensation of any kind from the Owner for direct, indirect or impact damages, including but not limited to costs of acceleration arising because of hindrance or delay from any cause whatsoever, whether such hindrances or delays be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable; provided, however, that this provision shall not preclude recovery by the Contractor of damages for hindrances or delays due solely to fraud or bad faith on the part of the Owner or his agents.
- B. In the event the Contractor requests an extension of the Contract Time, he shall furnish such justification and supporting evidence as the Owner may deem necessary for a determination of whether or not the Contractor is entitled to an extension of time under the provisions of the Contract. The Owner shall base his findings of fact and decision on such justification and supporting evidence and shall advise the Contractor in writing thereof. If the Owner finds that the Contractor is entitled to any extension of the Contract Time, the Owner's determination of the total number of days' extension shall be based upon the currently approved progress schedule and on all data relevant to the extension. Such data will be incorporated into the schedule in the form of a revision thereto, accomplished in a timely manner. The Contractor acknowledges and agrees that the actual delays in activities or time that are required to execute change order activities which, according to the schedule, do not affect the critical path and therefore do not have any effect upon Contract completion time, will not be a basis for an extension of time.

#### 1.05 WARRANTY AND GUARANTEE

- A. After the project is substantially complete and the Architect has issued the Certificate of Substantial Completion, all guarantees and warranties shall commence.
- B. The Contractor warrants to the Owner the following for a period of one year:
  - 1. That all materials and equipment provided under this Contract are new, unless otherwise specified.
  - 2. That all work is of good quality and free from faults and defects and in accordance with the requirements of the Contract Documents.
  - 3. That all equipment and systems and each and every part thereof, shall operate (with proper care and attention) in a satisfactory and efficient manner, and in accordance with the Contract Documents.
  - 4. That the Contractor shall, upon receipt of written notice from the Owner, promptly replace with workmanship and materials which comply with these Specifications, and re-execute, correct or repair, without cost to the Owner, all work which may be found to be not in accordance with the Contract Documents.

- 5. That the guarantee obligations assumed by the Contractor under these Contract Documents shall not be held or taken to be in any way impaired because of the Specifications, indication or approval by or on behalf of the Owner of any articles, materials, means, combinations of things used or to be used in the construction, performance and completion of the work, or any part thereof.
- 6. That no use or acceptance by the Owner of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments or corrections made by the Owner due to the Contractor's failure to comply with any of his obligations under the Contract Documents, shall impair in any way the guarantee obligations of the Contractor under these Contract Documents.
- C. If the Contractor fails to make repairs during the guarantee period, the Owner may cause such damaged or defective work to be repaired and made good at the cost and expense of the Contractor, including, but not limited to, compensation if required for additional professional Owners. The Contractor shall also bear the expenses of making good all work destroyed or damaged by the correction, removal or replacement of his defective work.

### 1.06 TESTING OF EQUIPMENT AND SYSTEMS

## A. Preliminary Testing

- 1. When the Contractor has completed the installation of all equipment including electrical appurtenances, he shall perform preliminary testing on each piece of equipment.
- Contractor shall provide for the inspection of each piece of equipment by authorized and qualified manufacturer's representatives. These manufacturer's representatives shall verify that all equipment has been installed properly.
- 3. Manufacturer's representatives shall verify that the individual equipment and/or components are functioning in accordance with the Contract Documents.
- 4. The manufacturer of each piece of equipment shall provide a manufacturer's certificate in accordance with Section 01 33 00 SUBMITTALS.

## B. Pre-Final Testing

1. Pre-final testing shall include the actual running of equipment to ensure that all electric and controls are properly connected. This testing shall be done under the supervision of the manufacturer's representative.

#### 1.07 FINAL ACCEPTANCE

- A. Upon completion of all work under this Contract, the Contractor shall request, in writing, final acceptance by the Owner.
- B. Prior to this request, all specified operation and maintenance instructions and training shall have been provided for the plant personnel and all certificates, spare parts, test equipment, record drawings, and other items required to be delivered shall have been provided.
- C. Upon receipt of the request, the Architect, the Owner, and the Contractor will make an inspection of the Project to determine the status of completion as follows:
  - 1. If the Architect does not consider the Project to be complete, the Architect will notify the Contractor in writing of this fact, and will include the reasons why the Project is not considered complete.
  - 2. Any items that are not satisfactorily completed or unsatisfactory as determined by the Architect, shall be promptly remedied or completed.
  - 3. Upon satisfactory correction of defects or incomplete information or work, the Architect will certify to the Owner that the plant is finally complete.

#### PART 2 - PRODUCTS

Not used.

**PART 3 - EXECUTION** 

Not used.

**END OF SECTION** 

# DIVISION 1 – GENERAL REQUIREMENTS SECTION 01 73 29

#### **CUTTING AND PATCHING**

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

- A. Provision for cutting, removing, replacing, patching, restoration, refinishing and similar type work as necessary to work scheduled to remain. Restore existing facilities damaged as a result of construction activities to a condition equivalent to that prior to the start of work, except where otherwise specified.
- B. Extent of work includes removal and replacement of defective work and installation of new work to be installed in existing construction.

#### 1.02 SUBMITTALS

- A. Submit procedures proposed for accomplishment of cutting, patching and repairing when such work affects:
  - 1. The structural value of or structural integrity of any element of the project.
  - 2. Integrity of effectiveness of weather-exposed or moisture-resistant elements or systems.
  - 3. Efficiency and operational life, maintenance or safety of operational elements.
  - 4. Visual qualities of sight-exposed elements.

#### B. The submittals shall include:

- 1. Identification of project.
- 2. Description of affected work.
- 3. Necessity for cutting, patching or alteration.
- 4. Effect on structural or weatherproof integrity of project.
- 5. Alternatives to cutting, patching or repairing.

#### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS

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A. Materials for replacement, repairing, patching, restoration and similar type work shall conform to applicable sections of the specifications. Waste materials resulting from cutting and removal work shall be removed from the job site.

#### **PART 3 – EXECUTION**

#### 3.01 INSPECTION AND PREPARATION

- A. Inspect existing conditions of work for possible movement or damage during cutting or uncovering procedures. After uncovering work, inspect conditions affecting installation of new products. Do not proceed with further cutting, patching or repair work if defects are observed or if any unsafe condition exists.
- B. Prior to cutting or uncovering work provide shoring, bracing and supports as required to maintain structural integrity of project. Prior to restoration work properly prepare existing surfaces to receive new materials such as to provide a proper bond or joining.

#### 3.02 CUTTING

- A. Cutting shall be performed by hand or power tools. Cut holes and slots neat and to the size required, with a minimum disturbance of adjacent work.
- B. Saw cut patch perimeters 1/4" deep minimum to prevent feathering of patch material.

#### 3.03 PATCHING AND REPAIRS

- A. Existing work shall be cut, altered, removed, temporarily removed and replaced as required for performance of work specified. Work remaining in place that is damaged or defaced by reason of alteration or renovation shall be restored to a condition equivalent or better than that prior to start of work. Contractor shall be responsible for coordinating patching and repairing involving the various trades, whether or not specifically mentioned under the respective sections.
- B. Restore surfaces affected by patching and repairing work to match existing adjacent surfaces. Repainting of affected areas or surfaces shall match color and shade of existing painted surfaces.

#### **END OF SECTION**

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#### **DIVISION 1 – GENERAL REQUIREMENTS**

#### **SECTION 01 74 00**

#### **CLEANING AND WASTE MANAGEMENT**

#### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

A. Cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

#### 1.02 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

#### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer on the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

#### **PART 3 - EXECUTION**

#### 3.01 DURING CONSTRUCTION

- A. Execute daily cleaning to keep Work, site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from renovation operations.
- B. Provide on-site containers for collection of waste materials, debris and rubbish.

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C. Remove waste materials, debris and rubbish from site periodically and dispose of at legal disposal areas away from site.

#### 3.02 FINAL CLEANING

- A. Employ skilled workmen for final cleaning.
- B. Remove mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Wash and shine glazing.
- D. Polish glossy surfaces to a clear shine.
- E. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- F. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

#### **END OF SECTION**

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#### **DIVISION 1 – GENERAL REQUIREMENTS**

#### **SECTION 01 78 39**

#### PROJECT RECORD DOCUMENTS

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

- A. Maintain at site one record copy of:
  - 1. Drawings.
  - 2. Specifications.
  - Addenda.
  - 4. Change orders and other modifications to contract.
  - 5. Architect field orders or written instructions.
  - 6. Approved shop drawings, product data and samples.
  - 7. Field test reports.

#### 1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
  - 1. Provide files and racks for storage of documents.
  - 2. Provide secure storage space for storage of samples.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

#### 1.03 MARKING DEVICES

A. Provide felt tip marking pens for recording information.

#### 1.04 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress.
- C. Drawings: Legibly mark to record actual construction.

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- D. Specifications and Addenda: Legibly mark each section to record
  - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
  - 2. Changes made by Field Order or by Change Order.

#### 1.05 SUBMITTAL

- A. Submit electronic copies of the as-built Record Documents to the Architect at the end of the project.
- B. At contract close out, deliver paper and electronic copies of the Record Documents to Architect or Owner as directed. Final payment will not be due and payable until acceptable Record Documents are submitted to the Architect.
- C. Accompany submittal with transmittal letter in duplicate, containing:
  - 1. Date.
  - 2. Project title and number.
  - Contractor's name and address.
  - 4. Title and number of each Record Document.
  - 5. Signature of Contractor or his authorized representative.

#### PART 2 - PRODUCTS

Not used.

#### **PART 3 - EXECUTION**

Not used.

#### **END OF SECTION**

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#### **DIVISION 1 – GENERAL REQUIREMENTS**

#### **SECTION 01 80 00**

#### PERFORMANCE REQUIREMENTS

#### **PART 1 - GENERAL**

#### 1.01 SECTION INCLUDES

A. Owner's expectations for the performance, quality, workmanship, management and cooperation of the General Contractor and his Sub-Contractors in the execution of the Construction Contract of this project.

#### 1.02 OWNER'S PROJECT REQUIREMENTS

- A. The completed facility shall provide comfortable conditions in an energy efficient way.
- B. The completed facility shall be an environment that does not promote the propagation of mold.
- C. The completed facility shall be constructed in compliance with all applicable building standards.
- D. The completed facility will operate efficiently, and in full compliance with the intent of the plans and specifications, to ensure 100% utilization by the Owner at all times.
- E. The completed building work will be aesthetically acceptable to the owner/architect. Unacceptable work will be corrected by the contractor without additional cost to the owner. The contractor will use the most cost effective practices and exhibit pride of workmanship of the builders and workers who construct the project.

#### 1.03 CONTRACTING OF LOCAL SUBCONTRACTORS

A. The Contractor shall make good faith efforts to encourage the participation of qualified local sub-contractors and personnel in bidding and performance of his Contract.

#### 1.04 WORK SCHEDULE

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- A. An executed Contract shall denote acknowledgment by the Contractor and his Sub-Contractors that they understand the critical need of constructing the project within the required schedule, in a professional and efficient manner.
  - 1. The construction schedule and requirements for Liquidated Damages are defined in Section 00 41 23, Bid Form.

#### **END OF SECTION**

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Berlin Yard	Building	
	al Building Code 2018	
	• •	ACHITECTS/ENGINEERS
NFPA 101 - TOPIC	Life Safety Code 2018  DESCRIPTION	CODE REFERENCE
OCCUPANCY	BUSINESS (B)	IBC SECT. 304, 311.2
GROUP	STORAGE (S-1)	NFPA 6.1.11, 6.1.13
CLASSIFICATION OF WORK	ALTERATION - LEVEL 2 (RECONFIGURATION DOES NOT EXCEED 50% OF EXISTING BUILDING AREA 1,643 SF. ALTERATION = 30% OF EXISTING 5,513 SF. BUILDING AREA	IEBC CHAPTER 8
	1 HOUR ENCLOSURES REQUIRED FOR VERTICAL OPENINGS NOT TO EXCEED THREE STORIES	IEBC SECT. 802.2.1
	DEAD-END CORRIDORS SHALL NOT EXCEED 35 FEET	IEBC 805.6
	MEANS OF EGRESS COMPLYING WITH BUILDING CODE UNDER WHICH IT WAS CONSTRUCTED SHALL BE CONSIDERED COMPLIANT IF CODE OFFICAL DEEMS IT DO CONSTITUTE A DISTINCT HAZARD	IEBC 805.2.2  ES
	SINGLE HAND RAIL ALLOW ON EXIT STAIR UNDER 66 INCHES IN WIDTH	IEBC 805.9.1
	LEVEL 2 ALTERATION ARE PERMITTED WITHOUT REQUIRING BUILDING TO COMPLY WITH ENERGY REQUIREMENTS OF THE IECC	IEBC 810.1
CONSTRUCTION CLASSIFICATION	SHELL IS EXISTING, INTERIOR FIT-OUT ONLY TYPE V-B, NONSPRINKLED	IBC TABLE 601
CE/ BSII TE/ (ITOI)	TYPE V 000, NONSPRINKLED	NFPA 220
AREAS	FIRST FLOOR (B) 1,787 S.F. FIRST FLOOR (S-1) 2,053 S.F. SECOND FLOOR (B) 1,673 S.F. TOTAL 5,513 S.F. MAX, AREA: B/S-1=9,000 S.F	IBC TABLE 506.2
OCCUPANT LOAD	FIRST FLOOR AREA (B) = 1787 SF/150 OCC. LOAD FACTOR 12 OCC. FIRST FLOOR AREA (S-1) = 2053/500 OCC. LOAD FACTOR 4 OCC. SECOND FLOOR AREA (B) = 1673 SF/150 OCC. LOAD FACTOR 11 OCC. TOTAL OCCUPANT LOAD 27 OCC.	IBC TABLE 1004.5 NFPA TABLE 7.3.1.2
MAX TRAVEL DISTANCE	200 FEET (UNSPRINKLERED)	IBC TABLE 1017.2 NFPA 39.2.6.2
OCCUPANCY SEPARATION	S-1 & B = NO SEPARATION REQUIRED	IBC TABLE 508.4
CORRIDOR WDITH	36 INCHES (OCCUPANT LOAD UNDER 50)	IBC TABLE 1020.2
NUMBER OF EXITS	SINGLE EXIT FROM EACH STORY PERMITTED SINCE LESS THAN 30 OCCUPANT LOAD AND TRAVEL DISTANCE IS UNDER 100 FEET	IBC 1006.3.3.1 NFPA 38.2.4.2

# RENOVATION OF: WORCESTER COUNTY ROADS BUILDING

10146 MAIN STREET BERLIN, MARYLAND



# GENERAL NOTES:

- THE CONTRACTOR SHALL PAY ALL FEES, GIVE ALL NOTICES, FILE ALL NECESSARY DRAWINGS AND OBTAIN
- 2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE FINAL CONSTRUCTION DOCUMENTS. THE GENERAL CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND PROJECT CONDITIONS AND SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES, CONFLICTS AND OMISSIONS THAT WOULD INTERFERE WITH THE SATISFACTORY COMPLETION OF THE PROJECT.
- BASE INFORMATION INDICATED ON THESE DRAWINGS WAS DERIVED FROM VISUAL AND CASUAL OBSERVATIONS AND ALL DIMENSIONS ARE APPROXIMATE. THIS BASE INFORMATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR AND IS NOT TO BE CONSTRUED AS A RE-MEASURED OR "AS-BUILT" PLAN BY THE ARCHITECT, BUT RATHER AS REFERENCED DATA WHICH FROM ALL SURFACE APPEARANCES OBSERVED AT THE SITE IS BASICALLY ACCEPTABLE FOR THE PURPOSES OF THIS PROJECT.
- 4. A STRUCTURAL ASSESSMENT WAS NOT PERFORMED AS PART OF THIS PROJECT.
- 5. AFTER DEMOLITION AND REMOVALS ARE COMPLETED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT, IN WRITING, OF ANY CONDITIONS THAT ARE MADE EVIDENT THAT WILL CONFLICT WITH THE COMPLETION OF THE PROJECT OR REQUIRE ADDITIONAL DEMOLITION TO MEET THE REQUIREMENTS OF THE NEW SCOPE OF WORK REQUIRED BY THE CONTRACT.
- THE CONTRACTOR AGREES TO WORK WITH THE ARCHITECT IN RESOLVING CONFLICTS IN A TIMELY MANNER, INCLUDING CONCEALED OR UNANTICIPATED CONDITIONS THAT AFFECT THE WORK OF THIS CONTRACT.
- 7. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS OF THE GOVERNING AGENCIES HAVING JURISDICTION OVER THE PROJECT.
- THE CONTRACTOR SHALL TAKE ADEQUATE CARE TO PROTECT ALL AREAS OF THE BUILDING WHERE THE WORK OF THIS ALTERATION IS LOCATED AS WELL AS AREAS ADJACENT TO THE AREA OF WORK OF THIS PROJECT SO AS TO PREVENT DAMAGE TO LIFE OR PROPERTY AS A RESULT OF THIS ALTERATION AND NEW CONSTRUCTION. PROVIDE ALL NECESSARY SAFEGUARDS, BARRICADES, FENCES, SIGNAGE, ETC. AS REQUIRED TO PROTECT THE OCCUPANTS, PUBLIC AND EMPLOYEES FROM ANY POSSIBLE INJURY RESULTING FROM THE WORK.
- 9. IN ALL CASES, DRAWINGS SHALL NOT BE SCALED FOR INFORMATION. FIGURED DIMENSIONS SHALL GOVERN THE WORK AND ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD.
- 10. THE CONTRACTOR AND EACH SUB-CONTRACTOR SHALL KEEP ACCURATE RECORDS OF ANY MODIFICATION OR DEVIATIONS FROM THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL DELIVER TO THE ARCHITECT A COMPLETE SET OF "AS-BUILT" DRAWINGS PRIOR TO APPROVAL OF FINAL PAYMENT.
- 11. THE CONTRACTOR SHALL NOT MAKE, CAUSE TO BE MADE, OR PERMIT A SUBCONTRACTOR OR STAFF MEMBER OR LOCAL REPRESENTATIVE OF THE OWNER TO MAKE ANY CHANGES TO WHAT IS SPECIFIED ON THE DRAWINGS WITHOUT SPECIFIC AUTHORIZATION OF THE ARCHITECT.
- 12. REPAIR OR REPLACE ALL AREAS DAMAGED AS A RESULT OF THE WORK TO THE SATISFACTION OF THE OWNER.
- 13. EXISTING DOCUMENTATION SHOWN PROVIDED BY OWNER THEREFORE GMB DOES NOT TAKE ANY RESPONSIBILITY FOR ERRORS AND OMISSIONS OF THE GRAPHIC INFORMATION PROVIDED WHICH IS FOR PERMIT
- 14. REFER TO OWNER SPEC FOR FINISH/COLOR CHOICES, FIXTURE AND EQUIPMENT MANUFACTURERS, DEMOLITION AND REPAIR INSTRUCTIONS AND OTHER MISCELLANEOUS ITEMS.
- 15. MECHANICAL. ELECTRICAL AND PLUMBING DESIGN BUILD BY OTHERS.

# CONTACTS:

OWNER REP.: WORCESTER COUNTY PUBLIC WORKS 6113 TIMMONS ROAD

SNOW HILL, MD 21863 410-632-5623

MR. DALLAS BAKER DIRECTOR OF PUBLIC WORKS

ARCHITECT/ GEORGE, MILES & BUHR, LLC STRUCTURAL: 206 W. MAIN STREET SALISBURY, MD 21801

> MORGAN H. HELFRICH, AIA, LEED AP - ARCHITECTURAL A. REGGIE MARINER, JR., P.E. - STRUCTURAL

410-742-3115

MECHANICAL/ ELECTRICAL/ PLUMBING:

ALLEN + SHARIFF ENGINEERING, LLC 205 E. MARKET STREET SALISBURY, MD 21801 443-545-1300

DONALD HOCKING, P.E.

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A2.2 ELEVATIONS A5.1 SCHEDULES REFLECTED CEILING PLAN

MECHANICAL DATA SHEET MECHANICAL SPECIFICATIONS

MECHANICAL SECOND FLOOR DEMO PLAN MECHANICAL SECOND FLOOR PLAN MECHANICAL ROOF FLOOR

MECHANICAL DETAILS MECHANICAL SCHEDULES

PLUMBING DATA SHEET PLUMBING SPECIFICATIONS PO.2

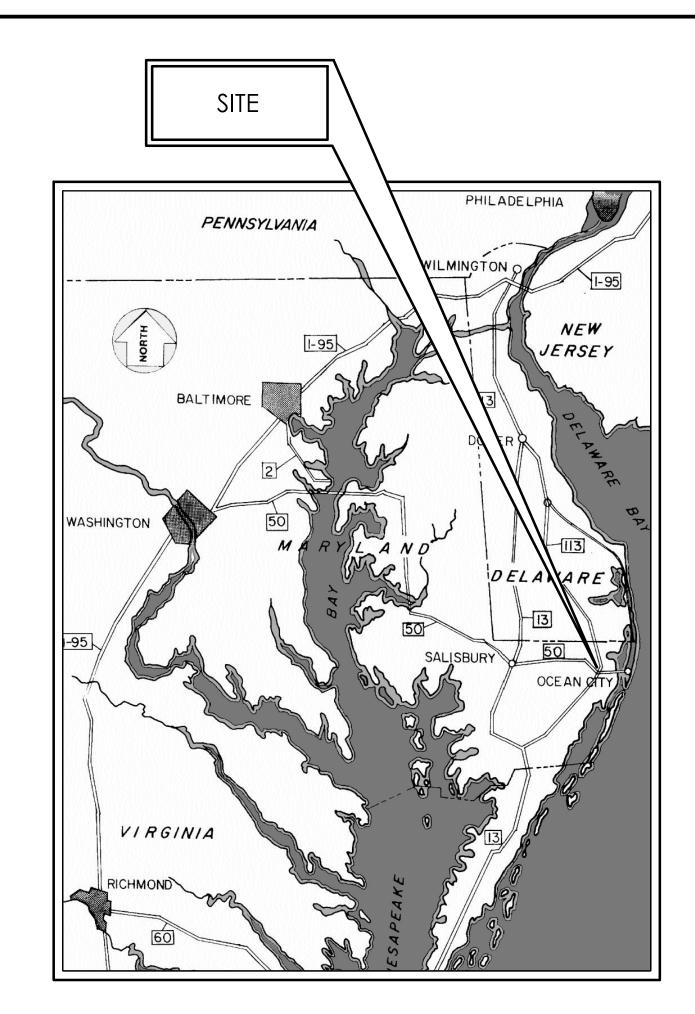
PLUMBING SECOND FLOOR DEMO P2.1 DRAINAGE SECOND FLOOR PLAN - NEW WORK SUPPLY SECOND FLOOR PLAN - NEW WORK

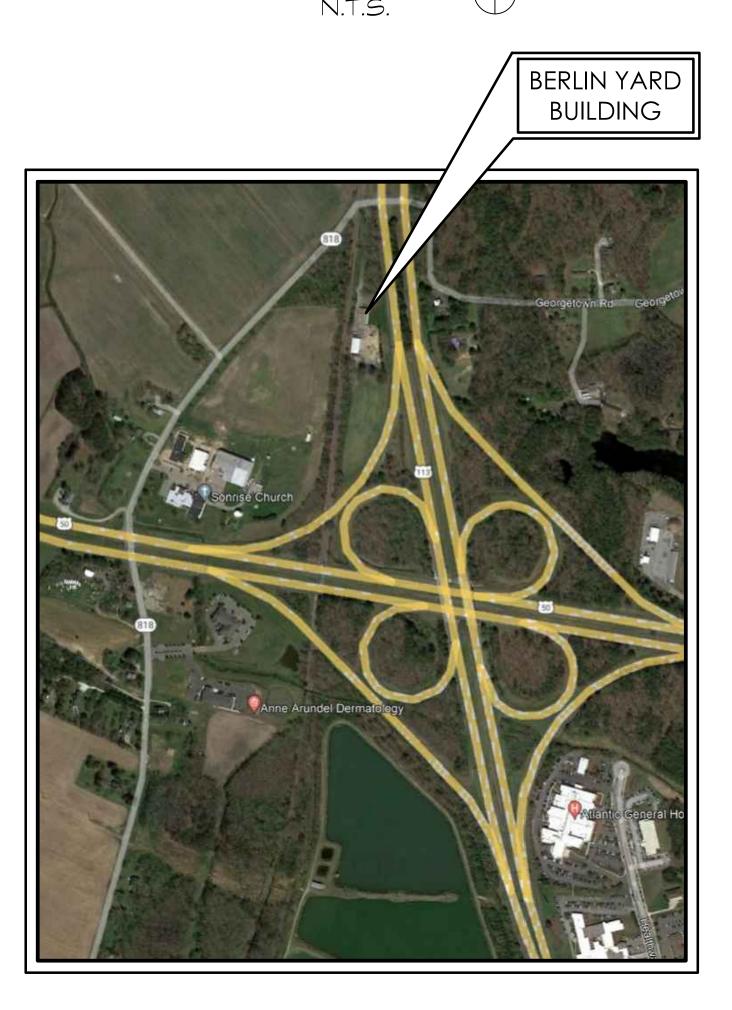
ELECTRICAL DATA SHEET ELECTRICAL SPECIFICATIONS E0.2

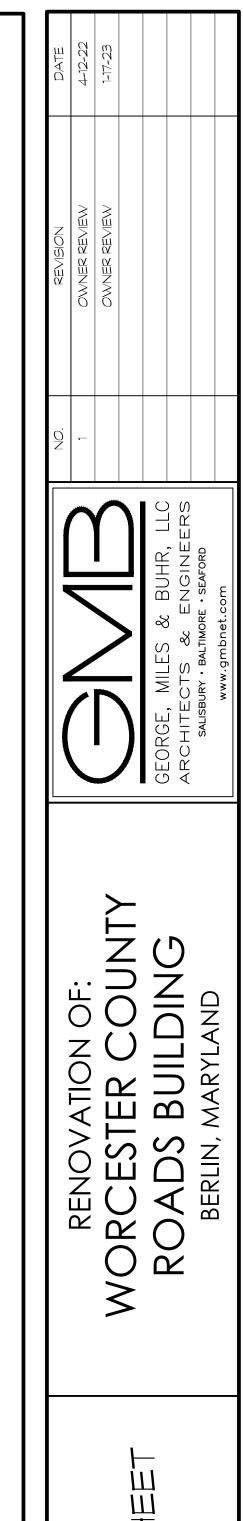
LIGHTING DEMO

POWER DEMO PLAN E3.0 LIGHTING FIRST FLOOR PLAN LIGHTING SECOND FLOOR PLAN POWER FIRST FLOOR PLAN E4.0

POWER SECOND FLOOR PLAN







: AS NOTED SCALE DESIGN BY : MHH DRAWN BY : LKW CHECKED BY : MHH GMB FILE : 210241 : 12-6-21

#### **OUTLINE SPECIFICATIONS**

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE CODES, AND RULES AND REGULATIONS OF THE REGULATORY AGENCIES HAVING JURISDICTION OVER THIS PROJECT AND ITS LOCATION.
- FURNISH REQUIRED CONSTRUCTION AIDS, BARRIERS, TEMPORARY ENCLOSURES AND SAFETY AIDS NECESSARY TO
- ACCOMPLISH THE WORK IN A SAFE AND EFFICIENT MANNER, IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS. REMOVE UPON COMPLETION OF WORK.
- EXECUTE PROPER CLEANING DAILY DURING THE PROGRESS OF THE WORK AND AT COMPLETION OF THE JOB.
- ALL CONTRACTORS SHALL BE LICENSED IN THE STATE OF MARYLAND.
- CONTRACTOR SHALL SELECT, EMPLOY AND PAY FOR SERVICES OF AN INDEPENDENT TESTING LABORATORY TO PERFORM SPECIFIED INSPECTION, SAMPLING AND TESTING WHERE SPECIFIED IN BID DOCUMENTS.
- COMPLY WITH FEDERAL, STATE AND LOCAL CODES AND REGULATIONS FOR FURNISHING REQUIRED CONSTRUCTION AIDS AND BARRIERS FOR PERFORMANCE OF THE WORK.

#### SUBSTITUTIONS

 WHERE SPECIFIC MANUFACTURERS AND MODEL NUMBERS ARE SHOWN, OWNER MAY CONSIDER SUBSTITUTION REQUESTS, PRIOR TO BID, OF EQUIVALENT OR SUPERIOR FUNCTION, APPEARANCE AND QUALITY, WHEN CERTIFIED IN WRITING BY PROPOSER AND ACCEPTED IN WRITING BY THE ARCHITECT/ENGINEER

#### **02 41 00 - DEMOLITION**

- DEMOLITION OF SYSTEMS MUST OCCUR IN A MANNER THAT ALLOWS OWNER'S OPERATIONS TO CONTINUE DURING CONSTRUCTION. THE CONTRACTOR SHALL DEMOLISH, REMOVE, AND OR DISPOSE OF ALL ITEMS NECESSARY FOR THE
- ACCOMPLISHMENT OF THE PROJECT.
- PERSONNEL SAFETY: PERFORM WORK IN A SAFE MANNER IN ORDER TO AVOID ACCIDENTS AND PROPERTY DAMAGE. WORKMEN MUST BE EXPERIENCED IN THIS TYPE OF WORK. EQUIPMENT SHOULD BE OF SUITABLE TYPE, IN GOOD WORKING
- CONDITION, AND OPERATED BY SKILLED OPERATORS. PREVENT ACCESS OF UNAUTHORIZED PERSONS.
- UTILITY REMOVAL, RELOCATION, ETC., SHALL BE SEQUENCED SUCH THAT UTILITY SERVICE TO EXISTING BUILDING SHALL NOT BE INTERRUPTED WITHOUT PROPER NOTIFICATION TO OTHER TENANTS OR PUBLIC SPACES.
- SALVAGE: CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL CONDUCT WALK THROUGH OF BUILDING PRIOR TO COMMENCEMENT OF WORK TO IDENTIFY NECESSARY ITEMS.

#### 06 10 00 - ROUGH CARPENTRY

- STRUCTURAL FRAMING: SOUTHERN PINE #1200 FIBER STRESS FOR EXTERIOR, SPF #2 FOR INTERIOR (BENDING STRESS, Fb = 875 PSI, MIN.)
- PRESERVATIVE TREATED WOOD: PRESSURE TREATED WITH ALKALINE COPPER QUATERNARY (ACQ) CONFORMING TO AWPA
- STANDARD C2.2 FOR RESIDENTIAL AND COMMERCIAL CONSTRUCTION. TREATED FRAMING LUMBER: SOUTHERN YELLOW PINE, SPIB GRADE #2
- MACHINE BOLTS: ASTM A307
- LAG SCREWS: FED. SPEC. FF-B-561 • NAILS: FED. SPEC. FF-N-105 (USE GALVANIZED OR STAINLESS 304 OR 316 FASTENERS AT EXTERIOR LOCATIONS AND WITH
- PRESERVATIVE TREATED LUMBER)
- PLYWOOD SHEATHING: APA RATED (C-D RATED WITH WATER-PROOF GLUE, EXPOSURE 1
- FRAMING ANCHORS: FABRICATED OF GALVANIZED STEEL. PROVIDE SIZE AND TYPE RECOMMENDED BY MANUFACTURER FOR
- EACH USE, INCLUDING RECOMMENDED NAILS. "STRONG TIE" MANUFACTURED BY SIMPSON, SAN LEANDRO, CA OR APPROVED SUBSTITUTION.

#### 06 20 00 - FINISH CARPENTRY

- FINISH CARPENTRY WORK AS SHOWN ON THE DRAWINGS AND IN SCHEDULES. SIZES: AS SHOWN ON DRAWINGS.
- CONDITION WOODWORK TO AVERAGE PREVAILING HUMIDITY CONDITIONS IN INSTALLATION AREAS PRIOR TO INSTALLING.
- INSTALL MATERIALS PLUMB, LEVEL, TRUE AND STRAIGHT WITH NO DISTORTIONS. SHIM AS REQUIRED USING CONCEALED SHIMS. CUT TO FIT TO EXACT SIZE. WHERE WOODWORK ABUTS OTHER FINISHED WORK, SCRIBE AND CUT FOR ACCURATE FIT. BEFORE MAKING CUTOUTS, DRILL PILOT HOLES AT CORNERS.

#### 06 41 00 - ARCHITECTURAL WOOD CASEWORK

- PLASTIC LAMINATE CASEWORK: AWI PREMIUM GRADE. FACE CONSTRUCTION AS INDICATED ON THE DRAWINGS (DRAWER FRONTS, DOORS AND FIXED PANELS PARTITALLY CONCEALED CASEWORK BEHIND). EXPOSED EDGES TO MATCHING PLASTIC LAMINATE PANEL SURFACE. EASE EXPOSED EDGE OF OVERLAP SHEET. COLOR AND PATTERN TO BE SELECTED BY OWNER FROM MANUFACTURER'S STANDARD SATIN-FINISHED SHEETS
- PLASTIC LAMINATE COUNTERS: SAME AWI GRADE AS CASEWORK. COUNTER CONSTRUCTION TO BE 4" HIGH INTEGRAL BACK-SPLASH AND END SPLASH, TOP MOUNTED SQUARE BUTT JOINT, FULLY COVERED WITH MATCHING PLASTIC LAMINATE EASED EDGES. EXPOSED EDGE TO BE COVERED WITH PLASTIC LAMINATE MATCHING SURFACE. COLOR AND PATTERN TO BE SELECTED BY OWNER FROM MANUFACTUER'S STANDARD SATIN-FINISHED SHEETS
- CASEWORK HARDWARE: SHELF SUPPORTS FOR LINED DRILLED APPLICATIONS; 50-LB DRAWER SLIDES WITH BALL BEARING NYLON WHEEL ROLLERS; MAGNETIC CABINET CATCHES; INVISIBLE HINGES; FINISH FOR HARDWARE: 626 - BRUSHED CHROME.

#### **07 21 16 - BATT INSULATION**

- UN-FACED GLASS FIBER FOR SOUND BATT, ASTM C655, TYPE I. INSULATION BLANKETS, THERMAL (MINERAL FIBER) OF THE INDICATED THICKNESS.
- •• OWENS CORNING, TOLEDO, OH 43659

## 07 21 16 - INSULATION FOR THERMOPLASTIC POLYOLEFIN ROOFING

- RIGID POLYISOCYANURATE BOARD: COMPRESSIVE STRENGTH 25 PSI CONFORMING TO ASTM C 1289, TYPE I OR II. FACER TO COMPLY WITH ROOFING MEMBRANE MANUFACTURER. APPROVAL SUBJECT TO MEETING THERMOPLASTIC POLYOLEFIN ROOFING TOTAL SYSTEM WARRANTY - SEE PROJECT MANUAL SECTION 07 54 23 THERMOPLASTIC POLYOLEFIN ROOFING (TPO). EVERGUARD POLYISO INSULATION
- PROVIDE BOARD WITH TAPER WHERE REQUIRED. SLOPE AS INDICATED
- MISCELLANEOUS MATERIALS: ADHESIVE, MASTIC, FASTENERS, ETC. AS RECOMMENDED BY ROOF MEMBRANE MANUFACTURER..
- •• GAF, PARSIPPANY, NJ 07054

# 07 92 00 - SEALANTS AND CAULKING

- ONE-PART ACETOXY SILICONE, HIGH-MODULUS ACID CURE, FDA APPROVED OR AS RECOMMENDED BY MANUFACTURER OF SPECIFIC SYSTEMS OR APPLICATIONS.
- •• PECORA CORPORATION, HARLEYSVILLE, PA 19438.

## 08 14 00 - WOOD PANEL INTERIOR DOORS

- TRADITIONAL 6-PANEL HOLLOW-CORE DOOR, PRE-HUNG SPLIT-JAMB, WITH SATIN NICKEL HINGES
- MANUFACTURER TO PROVIDE 1 YEAR WARRANTY. •• MASONITE INTERNATIONAL, TAMPA, FL 33605

# 08 14 16 - RATED FLUSH WOOD DOORS

- NATURAL BIRCH VENEER FACES WITH PARTICLEBOARD CORE, HARDWOOD STYLES AND RAILS, FIVE PLY CONSTRUCTION, TYPE I
- GLASS OPENING (RATED DOOR): FACTORY OPENING WITH APPROVED FRAME SHIPPED WITH DOOR ON THE SAME BILL OF
- LADING. INSTALL WITH POSTS ON CORRIDOR SIDE AND SCREWS ON OCCUPANCY SIDE. FRAME TYPE 115. ALLOW FOR 1/4 INCH GLAZING MATERIAL.
- MANUFACTURER SHALL EXTEND A LIMITED LIFETIME WARRANTY. •• VT INDUSTRIES, HOLSTEIN, IA 51025.

#### 08 11 13 - HOLLOW METAL DOORS & FRAMES • EXTERIOR DOORS: INSULATED TUBULAR STILE AND RAIL STEEL DOOR. DOORS TO BE LEVEL 2, MODEL 2, AND COMPLY WITH

- ANSI A250.8. PROVIDE MANUFACTURER'S STANDARD FOAM INSULATED CORE CONSTRUCTION WITH U-VALUE OF AT LEAST 0.48 (R2.72) WHEN TESTED IN ACCORDANCE WITH SDI 113. 16 GA STEEL, SEAMLESS WITH WELDED CORNERS. FINISH TO BE A60 GALVANIZED, FACTORY PRIMED.
- FRAMES: LEVEL 2 HEAVY-DUTY SEAMLESS DESIGN, 16 GAUGE FRAMES. PROVIDE WELDED UNIT TYPES. SLIP-ON TYPES ACCEPTABLE AT DRYWALL PARTITIONS ONLY.
- SHEET STEEL FOR DOORS AND FRAMES: COLD ROLLED STEEL: ASTM A366 OR A620; HOT ROLLED STEEL: ASTM A569, TYPE B. GALVANIZED STEEL: ASTM A 653 WITH A40/ZF120 COATING MINIMUM.
- FINISH: DOORS AND FRAMES ARE CLEANED, PHOSPHATIZED AND PRIMED WITH A COAT OF FORCE CURED RUST INHIBITING PRIMER THAT MEETS OR EXCEEDS THE REQUIREMENTS OF ANSI A250.10. PROVIDE UNITS OF GALVANIZED STEEL WHERE
- INDICATED ON THE DOOR SCHEDULE. •• CECO DOOR PRODUCTS, MILAN, TN 38358.

## **08 71 00 - DOOR HARDWARE**

- HINGES, LEVER STYE LOCKSETS, THRESHOLDS, CLOSERS, WEATHERSTRIPPING AND OTHER HARDWARE REQUIRED FOR A COMPLETED ASSEMBLY.
- HEAVY DUTY USAGE COMFORMING TO APPLICABLE PROVISIONS OF BHMA A 156 FOR RATED AND EXTERIOR DOORS

## • FINISH SATIN STAINLESS STEEL, BHMA CODE 630 FOR EXTERIOR HARDWARE.

- 08 54 13 ALUMINUM WINDOWS • HEAVY COMMERCIAL GRADE, THERMAL BREAK, INULATED, FIXED ALUMINUM WINDOW. SERIES 8225TL ISOLOCK.
- FASTENERS TO BE ALUMINUM OR STAINLESS STEEL ANCHORS, CLIPS AND ACCESSORIES TO CONFORM TO ASTM A 386
- COMPRESSION TYPE GLAZING STRIPS AND WEATHERSTRIPPING. MANUFACTURER'S OPTION OF NEOPRENE OF EPDM GASKETS COMPLYING WITH AAMA SG-1 OR MOLDED PVC GASKETS COMPLYING WITH ASTM D 2287 OR MOLDED EXPANDED EPDM GASKETS COMPLYING WITH ASTM C509, GRADE 4.
- SLIDING TYPE WEATHERSTRIPPING COMPLYING WITH AAMA 701.2.
- FINISH TO MATCH EXISTING STOREFRONT •• KAWNEER COMPANY, INC., NORCROSS GA 30092

#### 08 80 00 - GLAZING

- TEMPERED GLASS: CLEAR FLOAT, 1/4 INCH THICK (ASTM C 1036 AND ANSI A 97.1-1975)
- INSULATED GLASS UNITS: ONE LIGHT OF 1/4 INCH THICK TINTED GLASS ON EXTERIOR AND ONE LIGHT OF 1/4 INCH THICK CLEAR GLASS WITH LOW-E COATING ON INTERIOR. SEPARATED BY A 1/2 INCH SPACER FILLED WITH MOISTURE ABSORBING DESICCANT SPACE BETWEEN LIGHTS HERMETICALLY SEALED USING DOUBLE SEALED ORGANIC SEALANTS. CORNERS FUSED. •• SUBMIT GLAZING SAMPLE FOR COLOR MATCHING TO EXISTING GLAZING. FINAL SELECTION SHALL BE BY OWNER.
- 1. EXTERIOR GLASS LAYER: COLOR OF TINT SELECTED BY OWNER.
- 2. INTERIOR GLASS LAYER: CLEAR GLASS. SOLARBAN 60 SOLAR CONTROL LOW-E.

#### 09 21 16 - GYPSUM BOARD SYSTEMS

- CONFORM TO ASTM C 36, 5/8 INCH THICK, TAPERED EDGES, TYPE-X.
- PROVIDE MANUFACTURER RECOMMENDED JOINT TAPE, JOINT COMPOUND, FASTENERS, AND ACCESSORIES AS
- RECOMMENDED BY MANUFACTURER. • FINISH U.O.N.: LEVEL 4 PER ASTM C840.

•• PPG INDUSTRIES, PITTSBURGH, PA 15222

- PROVIDE MANUFACTURER RECOMMENDED JOINT TAPE, JOINT COMPOUND, FASTENERS, AND ACCESSORIES AS
- RECOMMENDED BY MANUFACTURER. • WET-ROOM WALLBOARD: WATER RESISTANT WALL BOARD, CONFORM TO ASTM C 1396 WATER-REPELLENT-TREATED CORE,
- MOLD RESISTANT, TAPERED EDGE, 5/8 INCH THICK, TYPE-X. • USG FIBEROCK INTERIOR PANEL OR APPROVED SUBSTITUTION.

- 09 65 16 RESILIENT SHEET FLOORING RESIDENTIAL WOOD OR MARBLE STYLE VINYL SHEET FLOORING, 10 MIL. WEAR LAYER, TO BE INSTALLED OVER WOOD
- COLORS/STYLE TO BE SELECTED BY OWNER.

•• U.S. GYPSUM CO., CHICAGO, IL 60606.

•• MOHAWK INDUSTRIES, INC., CALHOUN, GA 30701

#### 09 68 00 - CARPETING

- CARPET: BROADLOOM; COLORSTRAND SD NYLON WITH MOHAWK PROTECTION PLUS STAIN WITH CUT AND LOOP
- APPEARANCE. ALADDIN METRO GRID 1M47. •• MACHINE GAUGE (PITCH): 1/12".
- •• STITCHES/INCH: 11.6 PILE WEIGHT/SQUARE YARD: 28 OUNCES.
- BACKING: WELDLOK
- •• FLAMMABILITY: ASTM E 648 CLASS 1 (GLUE DOWN).
- COLORS SHALL BE SELECTED BY THE OWNER. MOHAWK GROUP, CALHOUN, GA

#### 09 91 00 - PAINT

- CLEAN SURFACES TO BE PAINTED AS REQUIRED TO REMOVE DUST, DIRT OR OTHER SURFACE CONTAMINATION.
- GYPSUM WALLBOARD: SATIN FINISH. ONE COAT PROMAR 200 INTERIOR LATEX PRIMER, TWO COATS PROMAR 200 INTERIOR LATEX. WALLS MUST BE PAINTED/FINISHED FROM TRUE FLOOR TO TRUE CEILING.
- CEILINGS: SATIN FINISH. ONE COAT PROMAR 200 INTERIOR LATEX PRIMER, TWO COATS PROMAR 200 INTERIOR LATEX.
- STEEL (UNPRIMED OR SHOP PRIMED): SEMI-GLOSS FINISH. ONE COAT PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER (TOUCH-UP ONLY ON SHOP PRIMED), TWO COATS SOLO ACRYLIC SEMI-GLOSS. GALVANIZED STEEL: TWO COATS SOLO ACRYLIC
- OBTAIN PAINT AND COATING PRODUCTS FROM A SINGLE MANUFACTURER. COLOR: TO BE SELECTED FROM MANUFACTURER'S FULL RANGE OF STANDARD COLORS.
- •• SHERWIN WILLIAMS PAINTS, INC., CLEVELAND, OH 44115
- COLORS SHALL BE SELECTED BY OWNER.

#### **10 14 00 - INTERIOR SIGNAGE**

- MOHAWK GRAPHIC PROCESS SERIES 200A SAND CARVED, USING FORMAT D.
- TACTILE CHARACTERS SHALL BE RAISED THE REQUIRED 1/32" FROM SIGN FACE. GLUE-ON LETTERS OR ETCHED BACKGROUNDS
- ARE NOT ACCEPTABLE. • ALL TEXT SHOULD BE ACCOMPANIED BY GRADE 2 BRAILLE. BRAILLE SHALL BE SEPARATED ½" FROM THE CORRESPONDING RAISED CHARACTERS OR SYMBOLS. GRADE 2 BRAILLE TRANSLATION SHALL BE PROVIDED BY THE SIGNAGE MANUFACTURER.

ALL LETTERS, NUMBERS AND SYMBOLS SHALL BE LIGHT ON A DARK BACKGROUND, WITH NON-GLARE FINISH.

•• MOHAWK SIGN SYSTEMS, SCHENECTADY, NY, 12301. •• COLOR: BLACK SIGN w/ WHITE LETTERING & BORDER.

# 10 26 13 - WALL AND CORNER GUARDS

- CORNER GLIARD: CS MODEL SSM-25 SLIREACE MOLINTED CORNER GLIARD WITH ACROVYN WALL COVERING INSERT WHERE REQUIRED DUE TO VARYING WALL THICKNESSES AND/OR END WALL APPLICATIONS WITH DOUBLE CORNER GUARDS.
- EXTRUSIONS: HIGH IMPACT VINYL/ACRYLIC WITH A MATTE FINISH PEBBLETTE GRAIN SURFACE IN COLOR, FURNISH END CAPS
- IN COORDINATING COLOR, DESIGNED FOR DIRECT MECHANICAL ATTACHMENT TO THE RETAINER.
- RETAINERS: ALUMINUM EXTRUSION OF .063" THICKNESS. INCLUDE NON-CORROSIVE ATTACHMENT HARDWARE. •• CONSTRUCTION SPECIALTIES, INC. MUNCH, PA 17756.

## 10 28 00 - TOILET ACCESSORIES

- GRAB BARS: 18 GAUGE STAINLESS STEEL WITH OUTSIDE DIAMETER OF 1 ½". CONCEALED MOUNTING. MODEL: BOBRICK
- B-6806 SERIES. • FRAMELESS MIRRORS: 1/4" GLASS MIRROR WITH SAFETY BACKING. ASBESTOS-FREE MIRROR MASTIC ADHESIVE COMPOUND SPECIFICALLY PRODUCED FOR SETTING MIRRORS. TOP AND BOTTOM CLEAR ANODIZED ALUMINUM J-CHANNELS. MOUNTING BRACKETS AND SELF-TAPPING SCREWS PER MANUFACTURER INSTALLATION INSTRUCTIONS.
- HAT AND COAT HOOK: TYPE 304 STAINLESS STEEL WITH SATIN FINISH. MODEL: BOBRICK B-6827.
- UTILITY SHELF WITH MOP/BROOM HOLDERS: STAINLESS STEEL UTILITY SHELF WITH MOP/BROOM HOLDERS AND RAG HOOKS. 18 GAUGE SHELF 8" DEEP. UNIT 34" LONG WITH 2 SHELF BRACKETS, 4 HOOKS AND 3 MOP HOLDERS: BOBRICK B-239 x 34.
- OWNER TO PROVIDE SOAP, TOILET PAPER AND PAPER TOWEL DISPENSERS. •• BOBRICK WASHROOM EQUIPMENT, INC., NORTH HOLLYWOOD, CA 91605

# 10 44 00 - FIRE EXTINGUISHERS

- RECESSED FIRE EXTINGUISHER CABINET: SEMI-RECESSED ROLLED EDGE SATIN STAINLESS STEEL FRAME AND DOOR, WITH 1/4"
- CLEAR ACRYLIC PLASTIC PANEL DOOR INSERT. COSMOPOLITAN SERIES FULL GLASS F10 DOOR, SERIES 1037. • SURFACE MOUNTED FIRE EXTINGUISHER CABINET: SURFACE MOUNT SQUARE TRIM STAINLESS STEEL FRAME AND DOOR.
- COSMLPOLITAN SERIES FULL GLASS F10 DOOR, SERIES 1033. • FIRE EXTINGUISHER: UL RATED 4A-80BC, 10 LB. CAPACITY FOR CLASS ABC FIRES, WITH STEEL CYLINDER. COSMIC 10E,
- MULTI-PURPOSE DRY CHEMICAL •• J.L. INDUSTRIES, BLOOMINGTON, MN 55435

# 12 24 00 - SOLAR SHADES

SMOOTH OPERATION.

- SHADES: CORDLESS FLEXSHADE SYSTEM. MANUALLY-OPERATED WINDOW SHADES WITH INDEPENDENT CONTROL. ANSI/WCMA A100.1 COMPLIANT, MANUALLY-OPERATED, VERTICAL ROLL-UP, FABRIC WINDOW SHADE WITH COMPONENTS NECESSARY FOR COMPLETE INSTALLATION. METAL END BRACKETS COMPATIBLE WITH ROLLER SIZE MOUNTED TO JAMB OR WALL. ALUMINUM ROLLER TUBE CONNECTED TO FABRIC WITH LSE DOUBLE-SIDED ADHESIVE. ADJUST ROLLER TENSION FOR
- HEM BAR: CLOSED POCKET ELLIPTICAL SLAT, 1" ALUMINUM INSIDE HEAT SEALED POCKET.
- SOLAR SCREEN FABRICS: PHIFER SHEARWEAVE SW 2510 WOVEN VINYL POLYESTER YARNS, 1% OPENNESS FACTOR. •• DRAPER, INC. SPICELAND, INDIANA 47385.

# 12 36 61 - SOLID SURFACE FABRICATIONS

•• DUPONT INC., BUFFALO, NY 14207

- 1/2" THICK LAVATORY TOPS WITH UNDERMOUNT BOWLS, INTEGRAL BACKSPLASH, APRON AND PLUMBING SKIRT.
- CAST, NONPOROUS, FILLED POLYMER WITH THROUGH BODY COLORS MEETING ANSI Z 124.3 OR ANSI Z 124.6 • MANUFACTURER'S STANDARD BOWL CLIP, PANEL INSERTS AND FASTENERS FOR ATTACHMENT OF UNDERMOUNT SINKS.

# **DIV 22 - PLUMBING**

SEE PLUMBING DRAWINGS

#### DIV 23 - MECHANICAL SEE MECHANICAL DRAWINGS

**DIV 26 - ELECTRICAL** SEE ELECTRICAL DRAWINGS

: AS NOTED SCALE DESIGN BY : MHH DRAWN BY : LKW CHECKED BY : MHH GMB FILE : 21024 : 12-6-21 DATE



TOTAL PARKING SPACES: 12

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

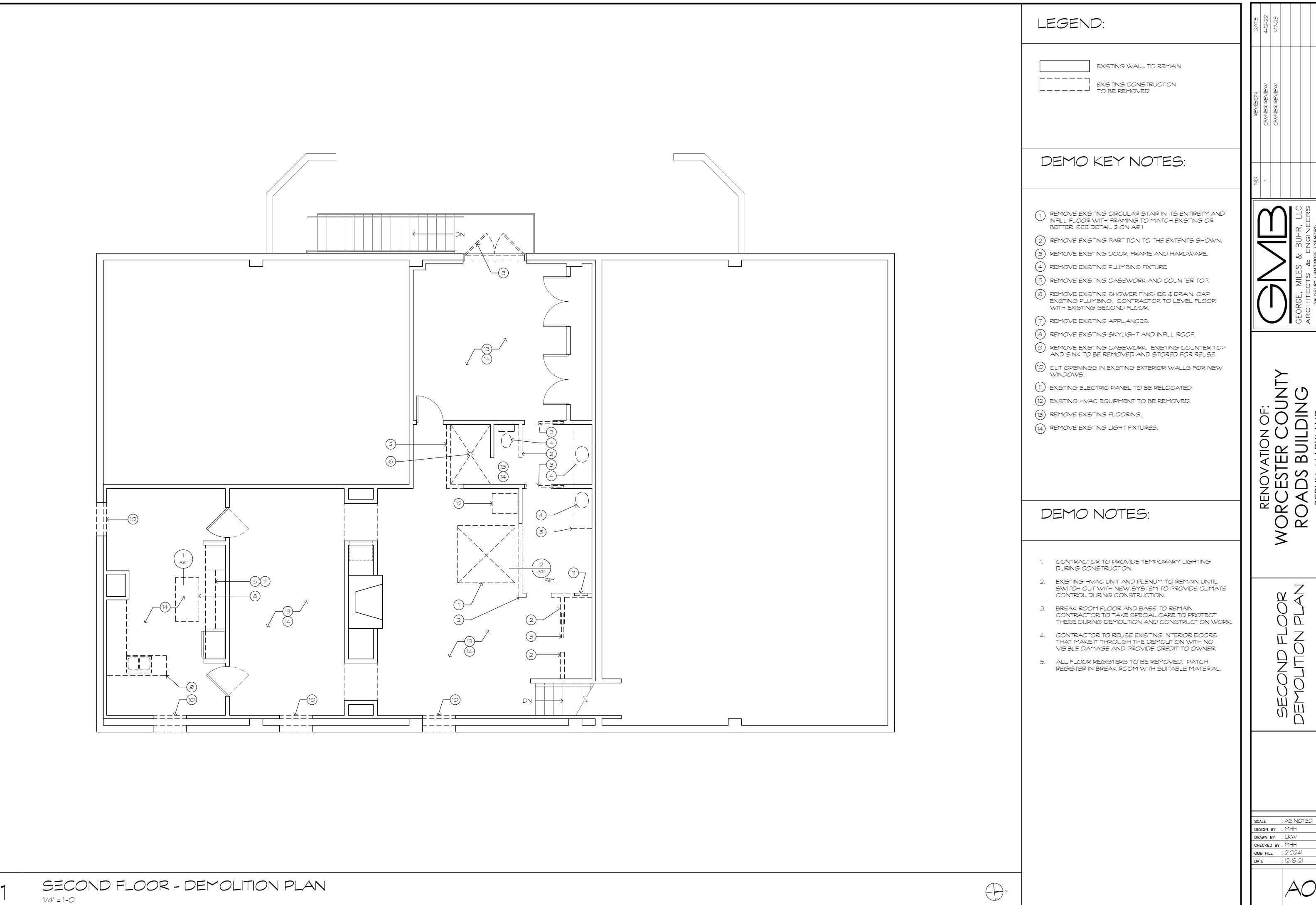
DESIGN BY : MHH

DRAWN BY : LKW

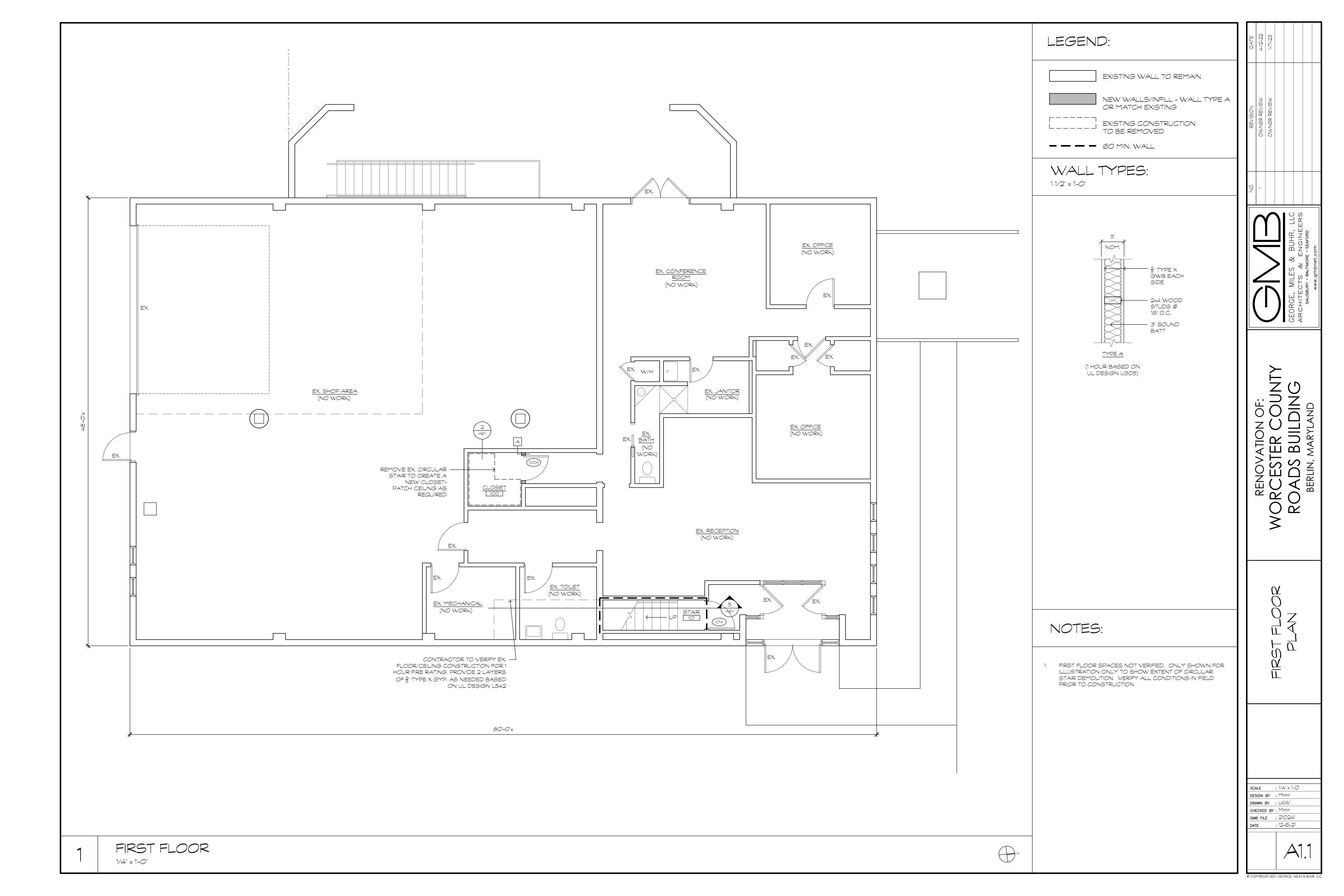
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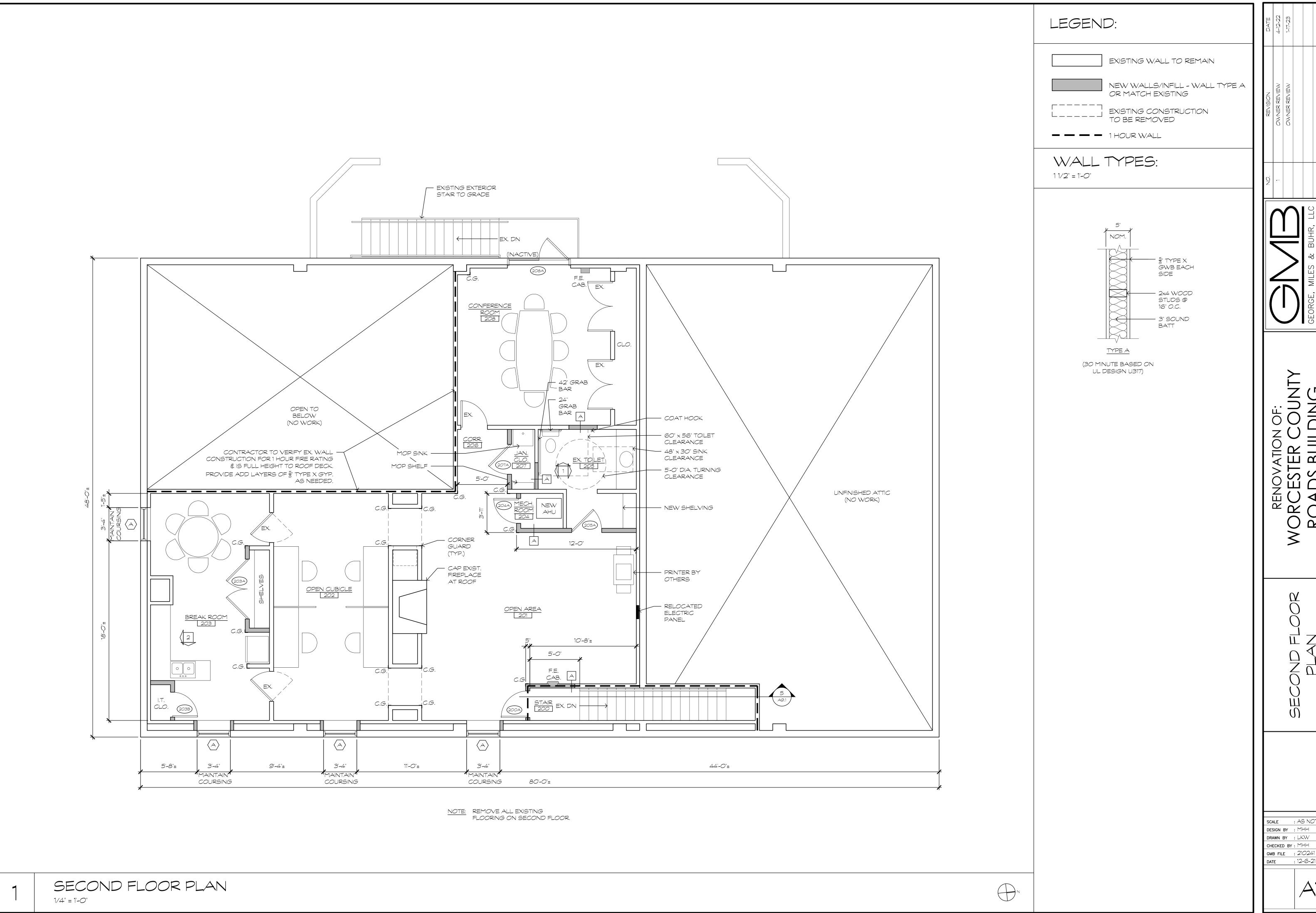
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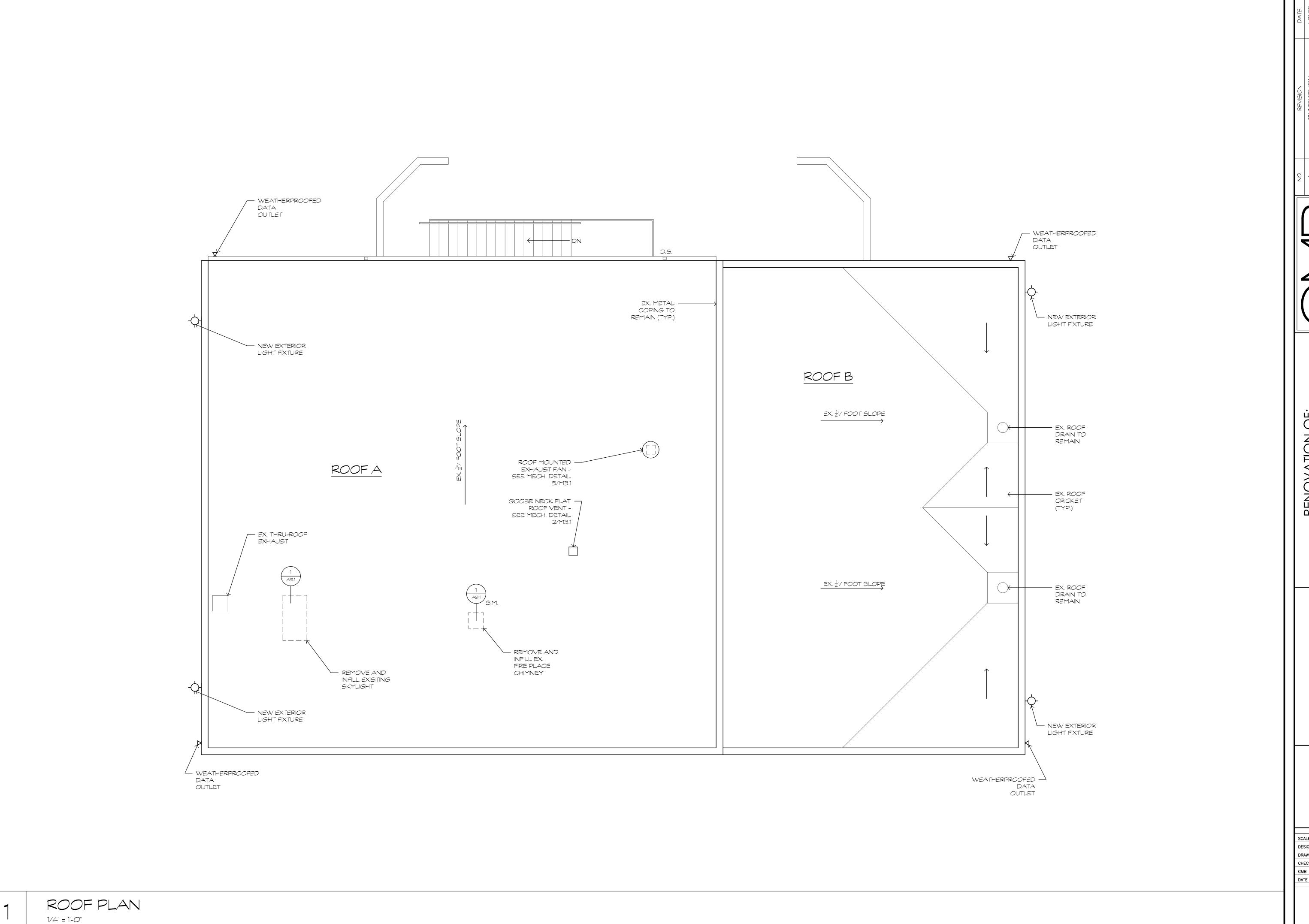
: 12-6-21





RENOVATION OF:
WORCESTER COUN
ROADS BUILDING
BERLIN, MARYLAND

SCALE : AS NOTED : 12-6-21



NO. REVISION DATE

1 OWNER REVIEW 4-12-22

OWNER REVIEW 1-17-23



RENOVATION OF:
WORCESTER COUNTY
ROADS BUILDING
BERLIN, MARYLAND

ROOF PLAN

SCALE : AS NOTED

DESIGN BY : MHH

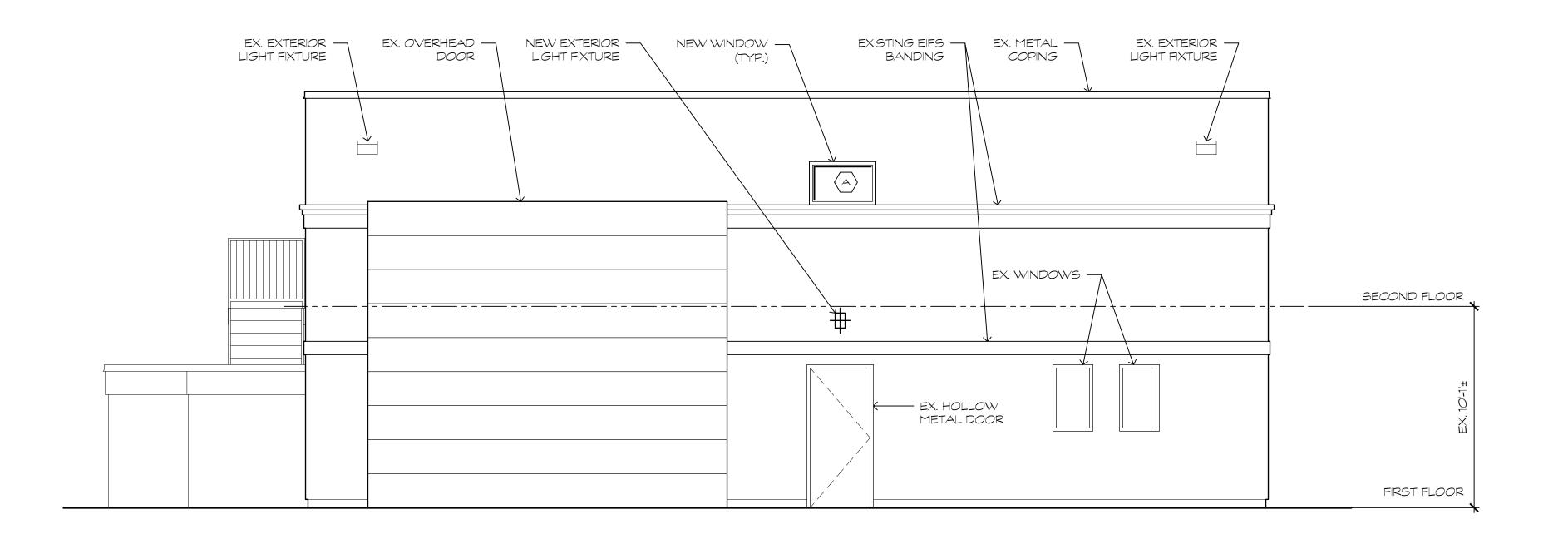
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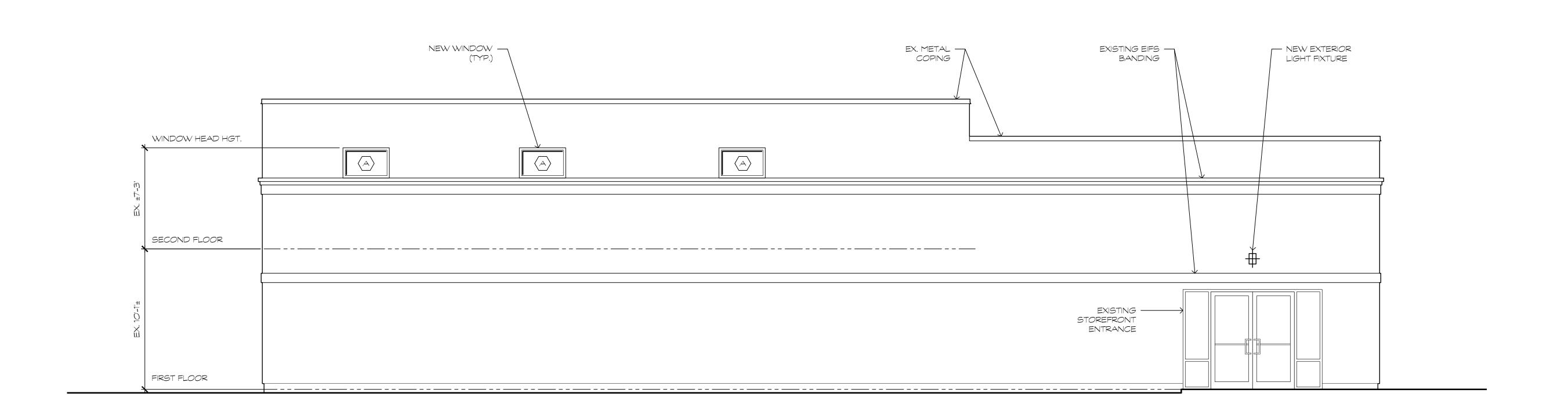
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DATE : 12-6-21

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# SOUTH ELEVATION



EAST ELEVATION

SCALE : 1/4" = 1'-0"

DESIGN BY : MHH

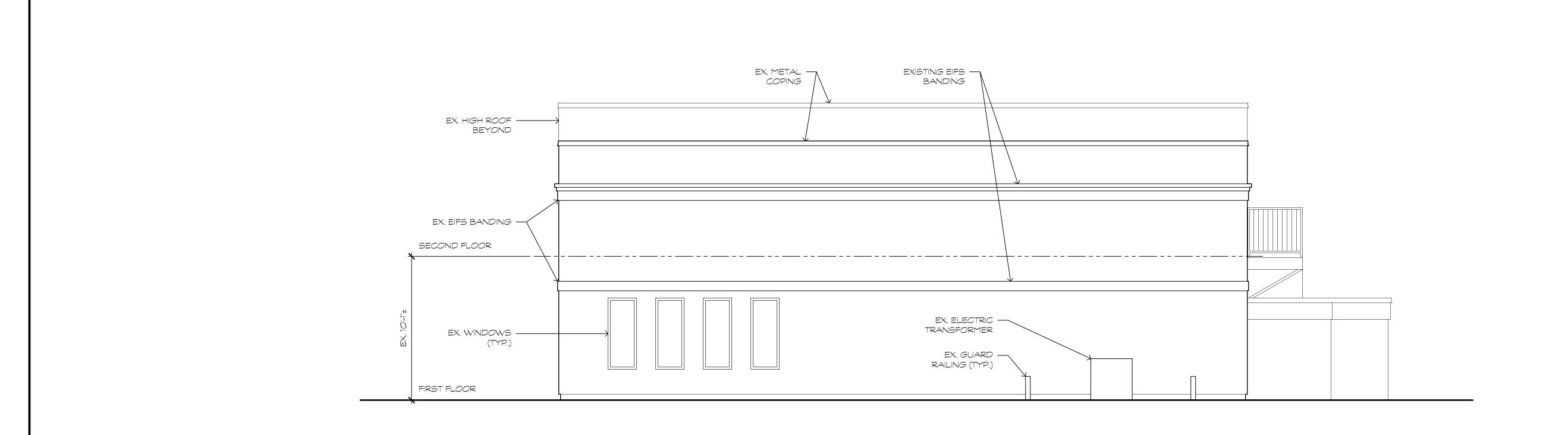
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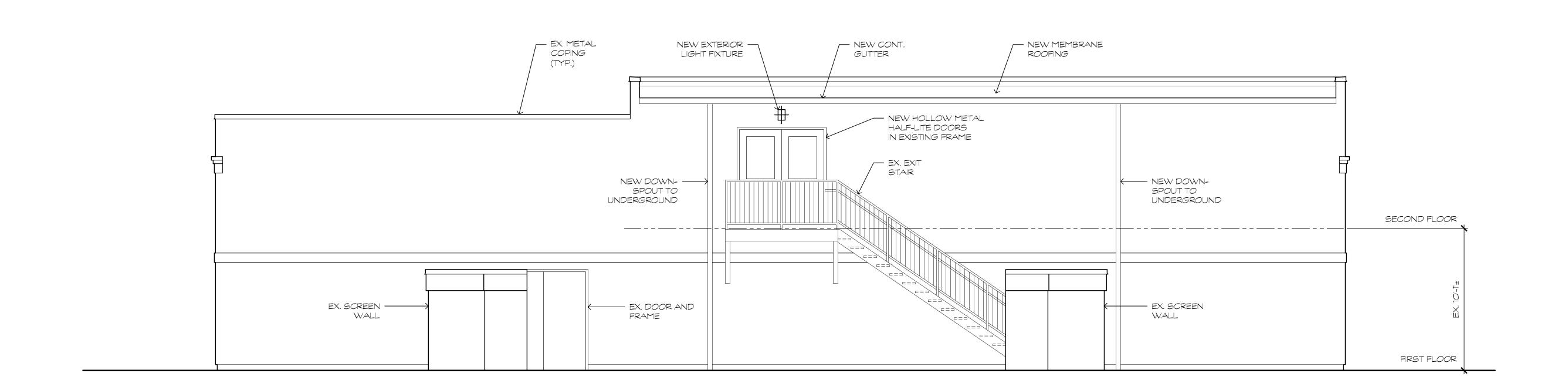
GMB FILE : 210241

DATE : 12-6-21

ELEVATIONS
1/4" = 1'-0"



# NORTH ELEVATION



# WEST ELEVATION

SCALE : 1/4" = 1-0"DESIGN BY : MHH DRAWN BY : LKW CHECKED BY : MHH GMB FILE : 210241 DATE : 12-6-21

ELEVATIONS

				DOOR	.SCH	HEDUL	_E		
DOOR#	ROOM NAME	TYPE	MATL.	SIZE	THICK	RATING	FRAME.	HARDWARE	REMARKS
100A	CLOSET	В	WD	2'-8" × 6'-8"	13/8"		F-1	HW-1	PRE-HUNG UNIT, PASSAGE LOCK.
101A	STAIR	А	WD	3'-0" × 6'-8"	13/4"	1 HR.	F-1	HW-2	
200A	STAIR	А	WD	3'-0" × 6'-8"	1 3/4"	1 HR.	F-1	HW-2	
203A	BREAK ROOM	С	WD	6'-0" × 6'-8"	1 3/8"		F-1	HW-4	PRE-HUNG UNIT
203B	BREAK ROOM	В	WD	3'-0" × 6'-8"	13/8"		F-1	HW-1	PRE-HUNG UNIT, PASSAGE LOCK.
204A	MECHANICAL ROOM	В	WD	3'-0" × 6'-8"	1 3/8"		F-1	HW-1	PRE-HUNG UNIT, PASSAGE LOCK.
205A	EX. TOILET	В	WD	3'-0" × 6'-8"	13/8"		F-1	HW-1	SEE MECHANICAL DRAWINGS FOR UNDERCUT DIM PRE-HUNG UNIT, PRIVACY LOCK
207A	JANITOR CLOSET	В	WD	3'-0" × 6'-8"	13/8"		F-1	HW-1	SEE MECHANICAL DRAWINGS FOR UNDERCUT DIM PRE-HUNG UNIT, PASSAGE LOCK
208A	SHARED OFFICE	D	НМ	PAIR 3'-0" × 6'-8"	13/4"		F-1	HW-3	INSULATED GALV. DOOR IN EXISTING FRAME

# HARDWARE SETS:

HW-1 1 SN RESIDENTIAL LEVER STYLE

 $\frac{\text{HW-2}}{\text{1}\frac{1}{2}\text{ PR HINGES (BB)}}$ PASSAGE LOCKSET (LEVER TYPE)

#### WALL BUMPER 2 KICKPLATES

<u>HW-3</u> 3 PR HINGES (BB)

1 CLOSER

ENTRY LOCKSET (LEVER TYPE) T\$B FLUSHBOLTS (INACTIVE LEAF) CLOSER (ACTIVE LEAF)

WEATHERSTRIP THRESHOLD

2 SN RESIDENIAL LEVER SYLE PULLS

2 TOP OF DOOR BALL CATCH LATCH

- EX. EIFS

• •

— PATCH EIFS AS REQUIRED

— CASING BEAD

- CONT. HEAD

CAULK

---- EX. EIFS

- EX. WALL

CONSTRUCTION

- 2x P.T. WOOD

- PATCH EIFS AS REQUIRED

— CASING BEAD

NEW WINDOW

AS SCHEDULED

— ALUM. SUB SILL BY WINDOW MANUFACTURER

FLASHING- SLOPE EFIS TOP TO

CREATE POSITIVE

- PATCH EX. EIFS AS

- SILL PAN

DRAINAGE

REQUIRED

BLOCKING

- EX. EIFS

WINDOW DETAILS

2x P.T. WOOD

CAULK

BLOCKING

FLASHING AND

- NEW WINDOW

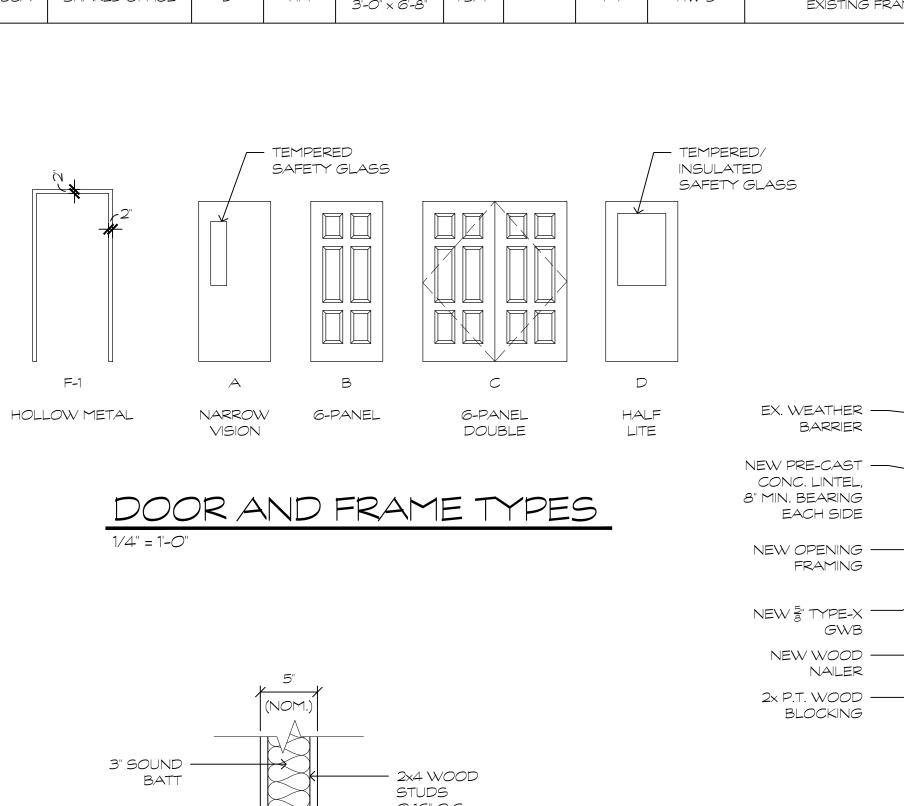
AS SCHEDULED

KICKPLATES (INTEROR SIDE ONLY)

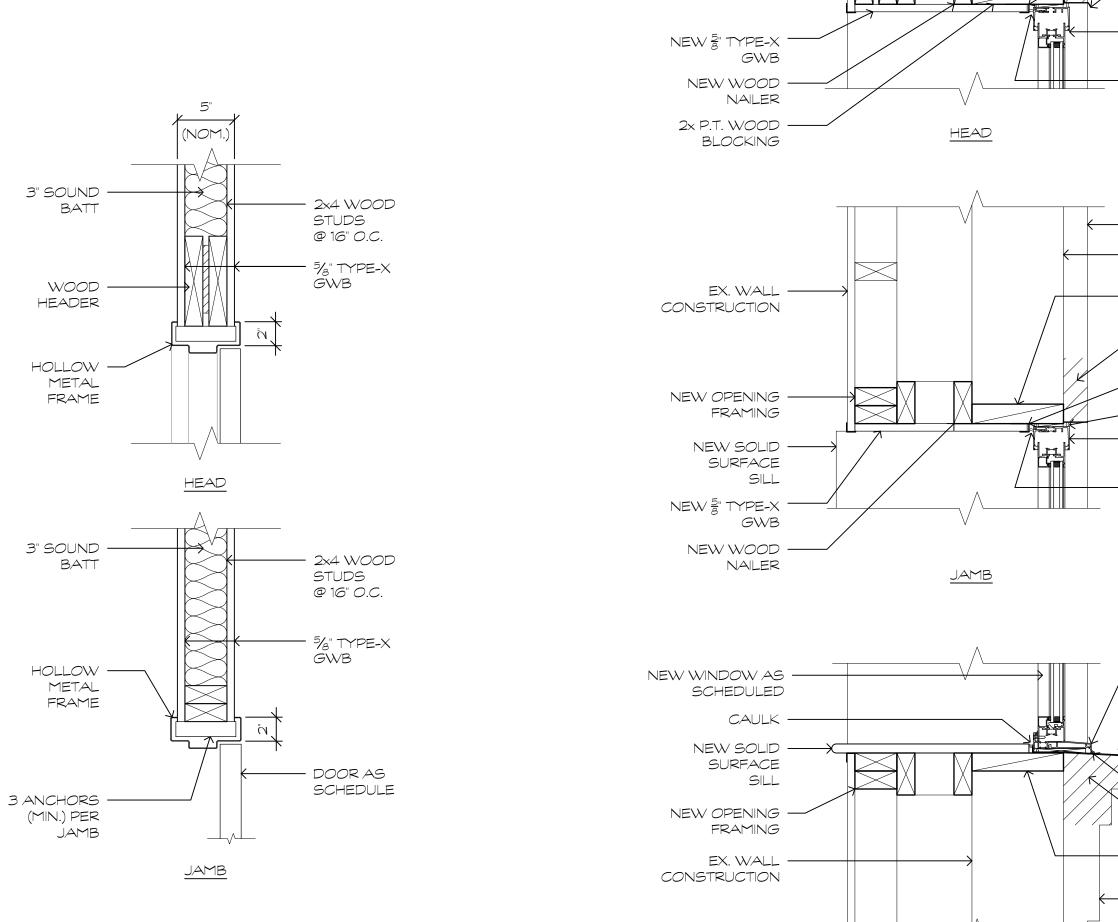
					FINISH	SCHE	DULE				
ROOM #	ROOM NAME	FLOOR	BASE		WA	LLS	1	CEILING	CLG. HT.	SIGNAGE	NOTES
20011#	ROOFTVALL	1000	D/OL	N	E	S	W	OLILINO	OLO.111.	51014-01	NOTES
100	CLOSET	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	9'-0"		
101	STAIR	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.		
200	STAIR	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.		
201	OPEN AREA	CARPET	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.		
202	OPEN CUBICLE	CARPET	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.	•	
203	BREAK ROOM	EX.	EX.	PAINT	PAINT	PAINT	PAINT	PAINT	EX.	•	
204	MECHANICAL ROOM	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.		
205	EXISTING TOILET	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.	•	
206	CORRIDOR	CARPET	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.		
207	JANITOR CLOSET	VINYL	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.	•	
208	CONFERENCE ROOM	CARPET	WD	PAINT	PAINT	PAINT	PAINT	PAINT	EX.	•	

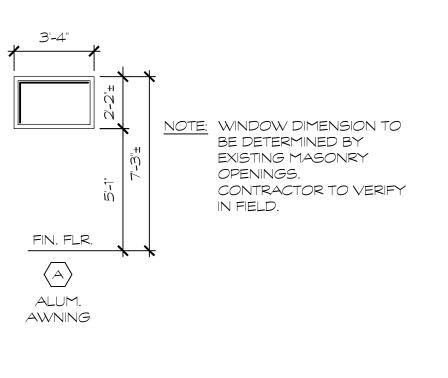
#### FINISH NOTES:

1. LABELING OF INTERIOR SIGNAGE TO BE COORDINATED WITH OWNER. 2. WOOD CASING AND BASE MOLDING TO MATCH.

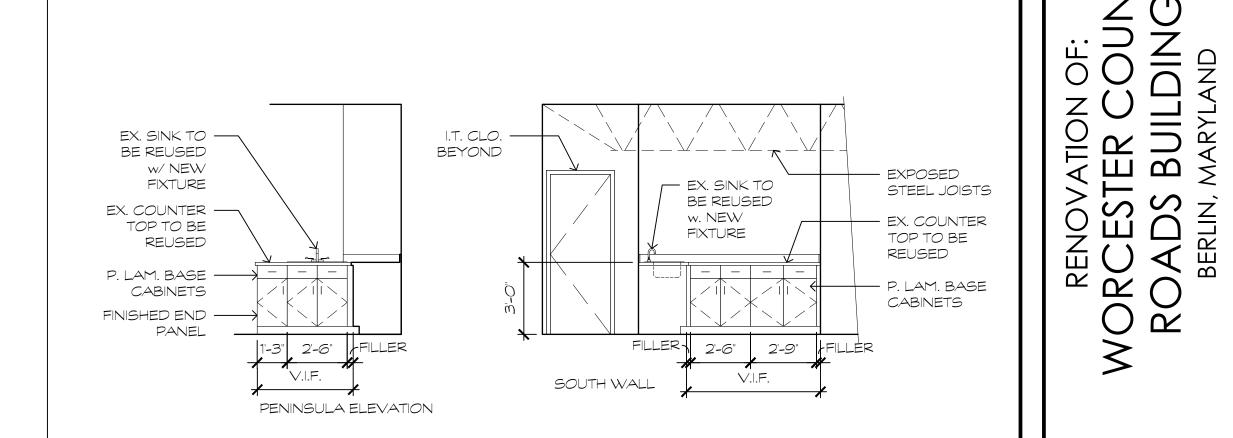


DOOR DETAILS



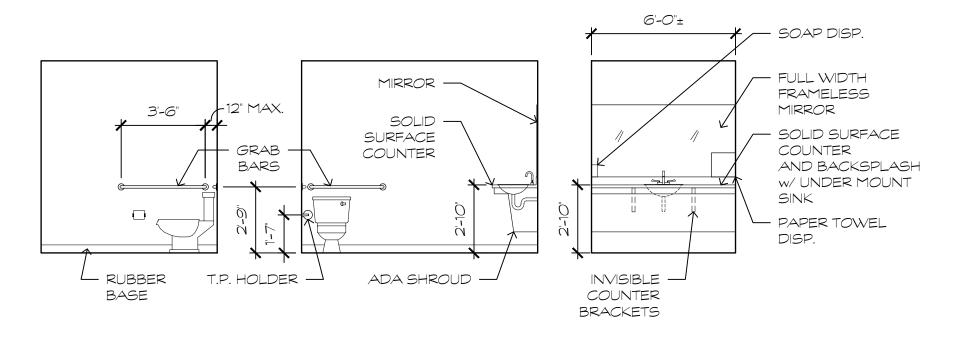






BREAK ROOM 203

205



EX. TOILET

# NOTES:

FIELD VERIFY EXISTING CONDITIONS BEFORE FABRICATION.

TOILET ACCESSORIES WILL BE PROVIDED AND INSTALLED BY OWNER.

INTERIOR ELEVATIONS 1/4" = 1'-0"

: AS NOTED DESIGN BY : MHH DRAWN BY : LKW

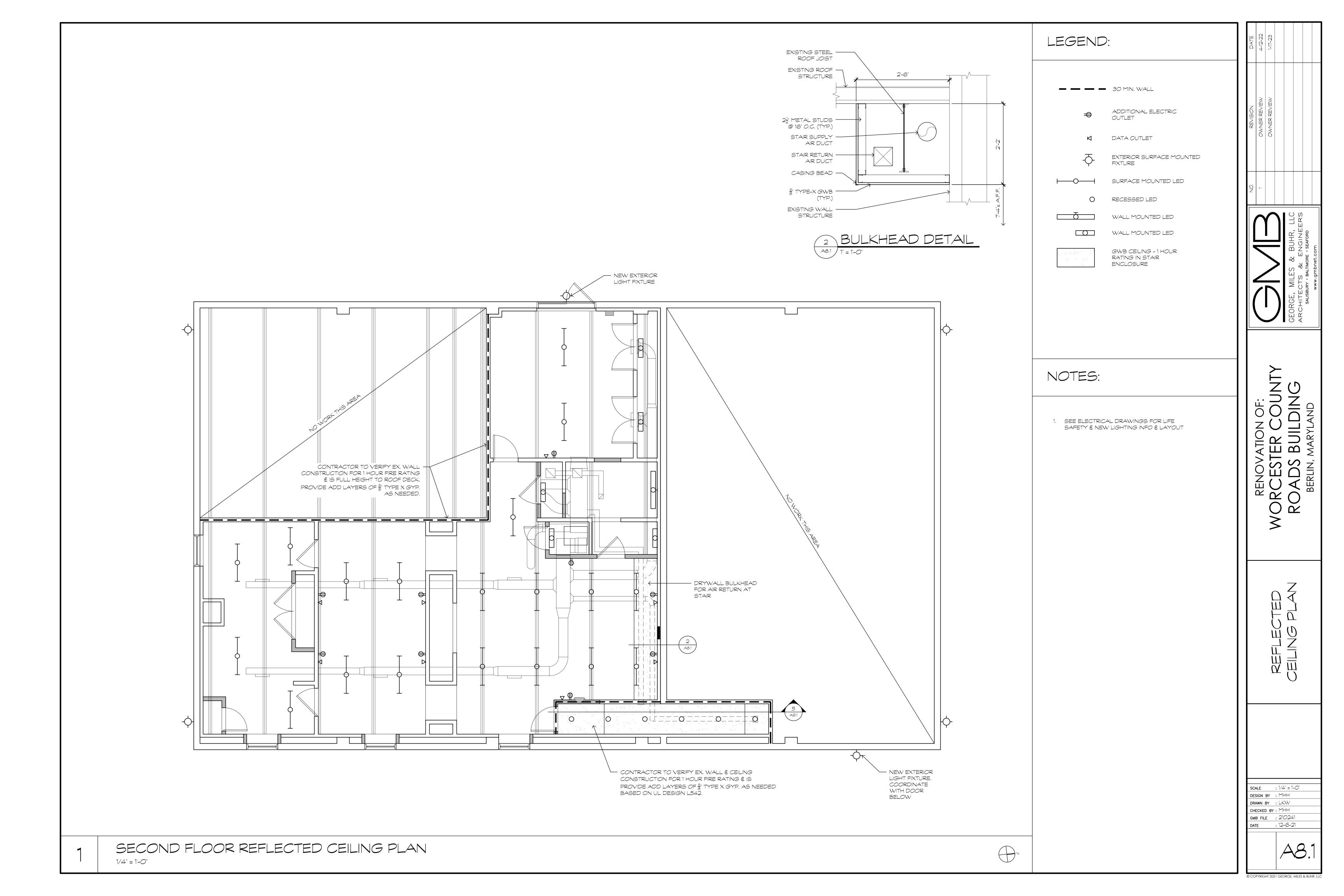
SCALE

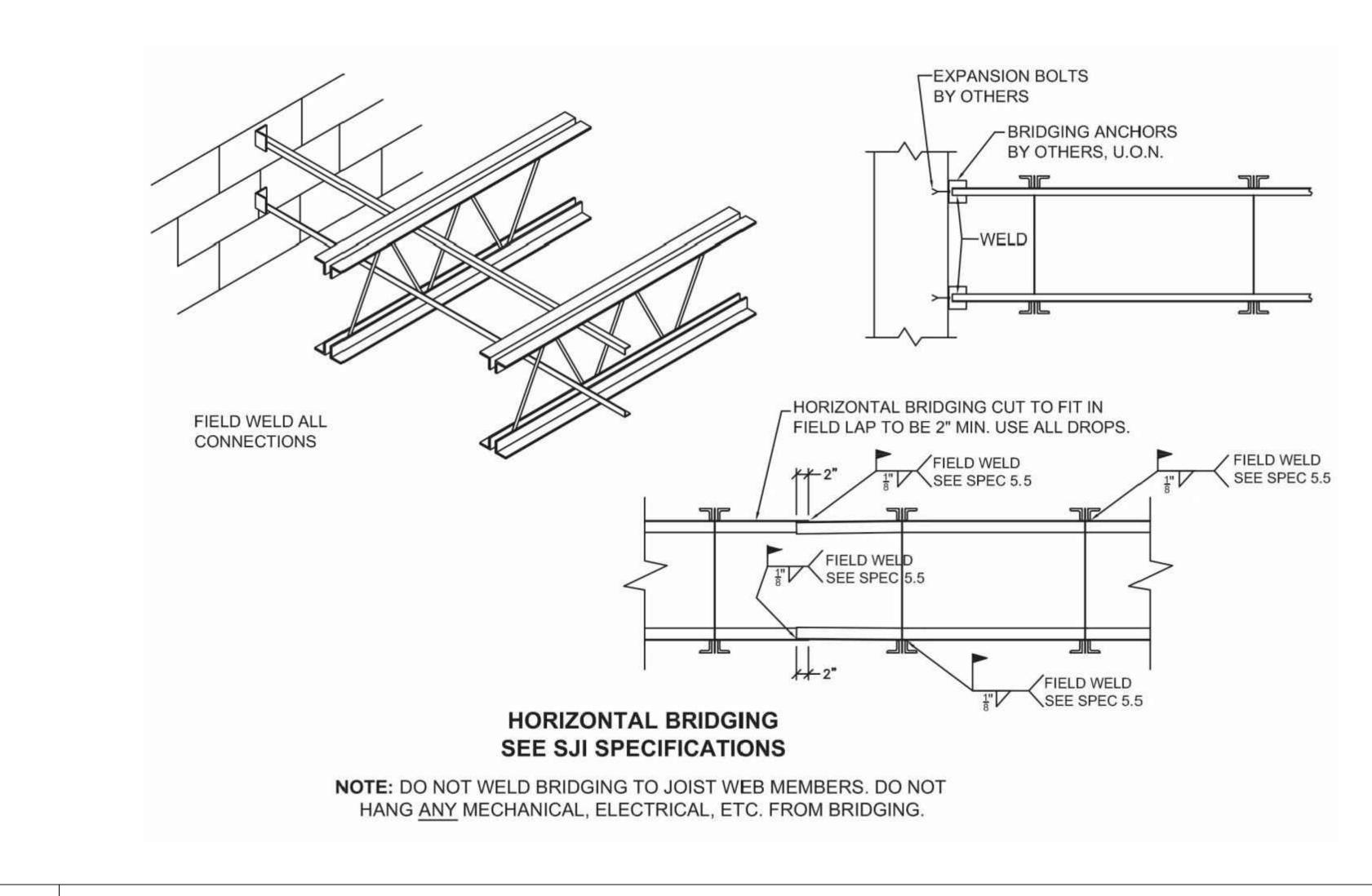
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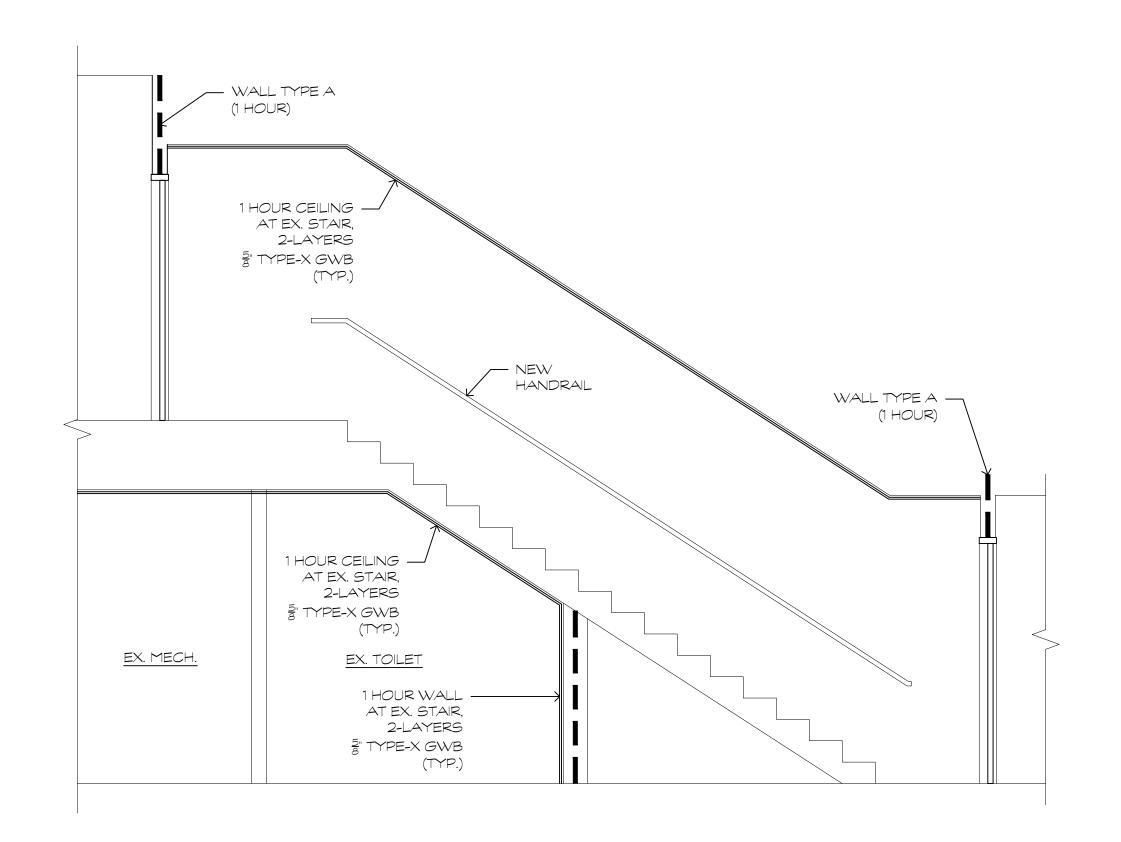
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TYP. UPLIFT BRIDGING ATTACHMENT DETAIL N.T.S.



NEW 18 GA GALV.

STEEL DECK (TYP.)

STEEL DECK INFILL PROFILE TO MATCH EXSTING

G'MN. EX OPENING G'MN.

SYSTEM DECK TO DESTRUCE TO MATCH EXSTING

SKYLIGHT OPENING

NEW DECK TO DESTRUCE TO THE TO MATCH EXSTING

SKYLIGHT OPENING

NEW DECK TO DESTRUCE TO THE TO MATCH EXSTING

EX STEEL

STEEL DECK (TYP.)

STEEL DECK INFILL

PROFILE TO MATCH EXSTING

SKYLIGHT OPENING

EX BAR JOIST

EX BAR JOIST

NEW 18 GA GALV.

STEEL DECK INFILL

PROFILE TO MATCH EXSTING

STEEL DECK INFILL

STEEL DECK INFILL

PROFILE TO MATCH EXSTING

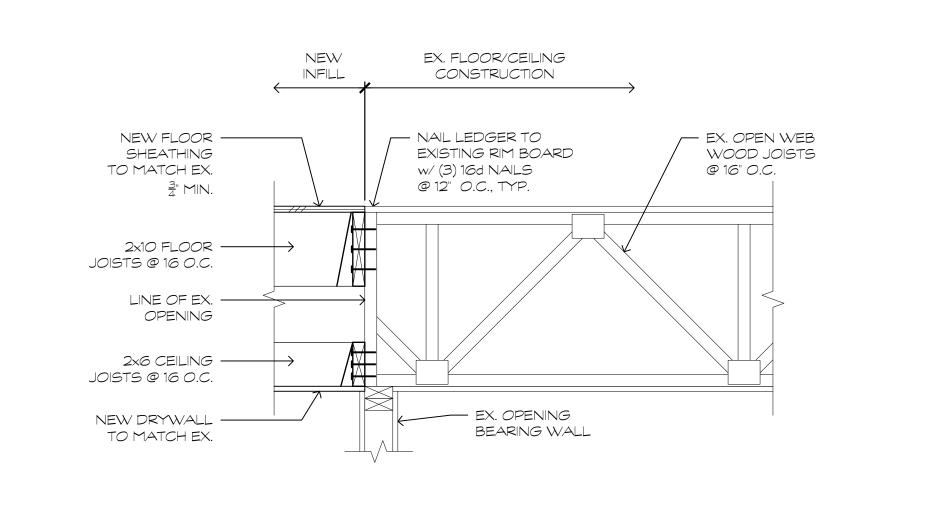
STEEL DECK INFILL

S

1 TYP. ROOF INFILL DETAIL

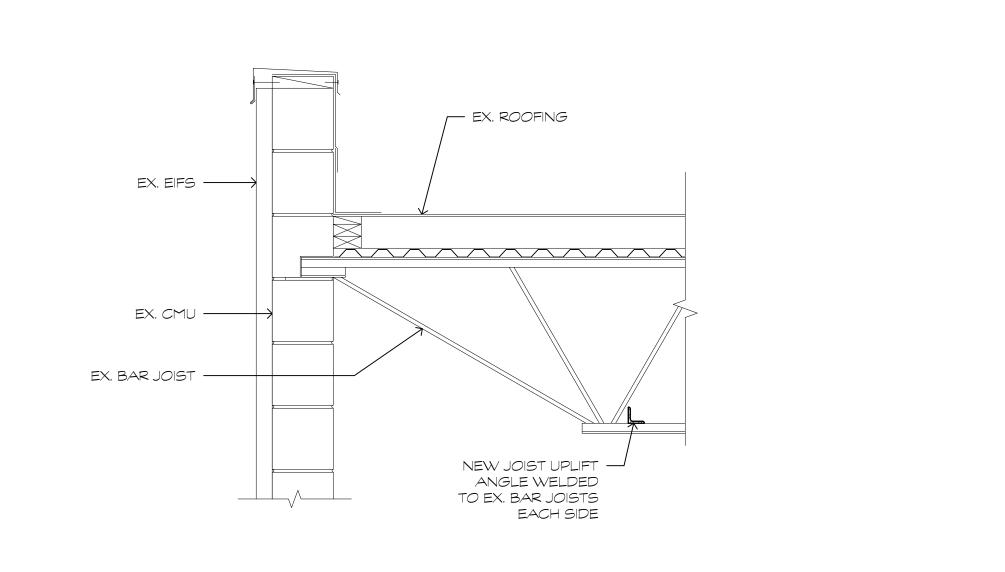
1/2" = 1'-0"

(CHIMNEY INFILL SIMILAR)



2 TYP. FLOOR/CEILING INFILL DETAIL

1" = 1'-0"



TYP. UPLIFT ANGLE DETAIL

1" = 1'-0"

3

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

DESIGN BY : MHH

DRAWN BY : LKW

CHECKED BY : MHH

GMB FILE : 210241

DATE : 12-6-21

RENOY WORCES ROADS BERLIN

A9.1

STAIR SECTION RATING DETAIL

3/8" = 1'-0"

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#### GENERAL MECHANICAL NOTES (ALL DRAWINGS):

- 1. MECHANICAL CONTRACTOR SHALL PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE HVAC SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND REQUIRED BY CODE.
- 2. THE CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC ONLY, AND ARE INTENDED TO CONVEY THE SCOPE AND GENERAL ARRANGEMENT OF WORK.
- 3. ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR BY FIELD INSPECTION PRIOR TO BIDDING. ANY INTERFERENCES TO INSTALLATION SHALL BE NOTED AND THE CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COST TO AVOID OR RELOCATE ALL ITEMS, INCLUDING ITEMS OF OTHER TRADES, THAT INTERFERE. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. ALL OFFSETS, RISES, TRANSITIONS AND DROPS IN DUCTS AND PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- 4. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS OR PIPE ADAPTERS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
- 5. PROVIDE ACCESS IN WALLS & CEILINGS TO ACCESS ALL EQUIPMENT, VALVES, CONTROL DEVICES, VOLUME DAMPERS, AND FIRE/SMOKE DAMPERS.
- 6. FOLLOW MANUFACTURE'S RECOMMENDATIONS FOR INSTALLATION OF EQUIPMENT. ALSO REFER TO TYPICAL DETAILS FOR INSTALLATION OF EQUIPMENT.
- 7. ALL MATERIALS FURNISHED, AND ALL WORK PERFORMED BY THE MECHANICAL CONTRACTOR SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE LATEST APPLICABLE EDITIONS OF NFPA, IEEE, OSHA, SMACNA, INTERNATIONAL MECHANICAL CODE, INTERNATIONAL BUILDING CODE, AND ANY STATE, COUNTY, AND LOCAL CODES.
- 8. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED SUFFICIENTLY AND ANY ADDITIONAL SUPPORT SHALL BE PROVIDED AS REQUIRED TO PROVIDE VIBRATION FREE AND SAFE INSTALLATION. ALL MISCELLANEOUS STEEL REQUIRED AND/OR AS SHOWN IN DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. SUPPORT ALL DUCTWORK, PIPING AND EQUIPMENT MOUNTED ABOVE THE CEILING DIRECTLY FROM THE STRUCTURE. ALL ATTACHMENTS TO BEAMS, TRUSSES, OR JOIST SHALL BE MADE AT PANEL POINTS WITH BEAM CLAMPS MEETING MSS STANDARDS.
- 9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC AND ELECTRICAL SPECIFICATIONS FOR THIS PROJECT.

#### DUCTWORK GENERAL NOTES (ALL DRAWINGS):

- ALL DUCTWORK INDICATED IS SCHEMATIC AND SHOW ONLY RELATIVE POSITIONS. PROVIDE OFFSETS, RISES, TRANSITIONS AND ELBOWS AS NEEDED TO INSTALL PROPERLY.
- 2. PROVIDE ACCESS DOORS IN DUCTWORK FOR OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL HVAC DEVICES, FANS, DAMPERS, (FIRE, SMOKE, BALANCING) COILS, AND TERMINAL EQUIPMENT.
- 3. LOCATIONS OF TERMINAL DEVICES, AIR OUTLETS AND INLETS ARE APPROXIMATE. LOCATE PER THE ARCHITECTURAL DRAWINGS AND TO AVOID OTHER TRADE'S WORK. COORDINATE LOCATIONS WITH OTHER TRADES. CONSULT ARCHITECT/ENGINEER FOR CLARIFICATION IF CONFLICTS OCCUR.
- 4. DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE FACE-TO-FACE DIMENSIONS AND DO NOT INCLUDE DUCT LINER WHERE SPECIFIED. INCREASE DIMENSIONS OF LINED DUCTWORK TO PROVIDE FREE INSIDE AREA EQUAL DIMENSIONS SHOWN. REFER TO THE SPECIFICATIONS FOR LOCATION OF LINED DUCTWORK.
- FINAL CONNECTIONS FROM HIGH VELOCITY MAIN DUCTS TO AIR TERMINAL UNITS SHALL BE MADE WITH FLEXIBLE DUCTWORK NOT EXCEEDING 3 FEET IN LENGTH. CONNECTIONS BETWEEN LOW VELOCITY DUCTWORK AND/OR TERMINAL UNITS TO AIR INLETS AND OUTLETS SHALL BE MADE WITH FLEXIBLE DUCTWORK NOT EXCEEDING 6 FEET IN LENGTH. LONGER DUCT RUN OUTS SHALL BE CONSTRUCTED OF HARD DUCT OF THE SAME MATERIAL SPECIFIED FOR THE SYSTEM SERVED AND INSULATED AS SPECIFIED FOR THAT SYSTEM. FLEXIBLE DUCTWORK SHALL BE OF THE PRESSURE CLASS AND FACTORY INSULATED AS SPECIFIED FOR THE SYSTEM WHERE INSTALLED.
- 6. FLEXIBLE DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITHOUT ANY SAGS, SHARP TURNS OR KINKS. AT THE MINIMUM, THE FLEXIBLE DUCTWORK SHALL BE FASTENED TO THE HARD DUCT BY A NYLON STRAP SECURED BY SHEETMETAL SCREWS TO PREVENT SLIPPING OFF FROM COLLAR.
- 7. PROVIDE VOLUME DAMPERS AT EACH AIR OUTLET, AIR INLET AND TERMINAL DEVICE AND AT EACH BRANCH TAKE-OFF CONNECTION FROM THE MAIN.

XTR EXISTING EQUIPMENT OR DUCTWORK TO REMAIN  RX EXISTING EQUIPMENT OR DUCTWORK TO BE REMOVED  NEW EQUIPMENT OR DUCTWORK  LINED DUCTWORK  SUPPLY DUCT UP  SUPPLY DUCT DOWN  RETURN / EXHAUST DUCT UP  RETURN / EXHAUST DUCT DOWN  ROUND DUCT ELBOW UP  ROUND DUCT ELBOW DOWN  ELBOW WITH TURNING VANES  DUCT OFFSET UP  DUCT OFFSET DOWN  SQUARE / RECTANGULAR DUCT TRANSITION  SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION		ABRV.	DUCTWORK & GENERAL SYMBOLS LEGEND  DESCRIPTION
NEW EQUIPMENT OR DUCTWORK  LINED DUCTWORK  SUPPLY DUCT UP  SUPPLY DUCT DOWN  RETURN / EXHAUST DUCT UP  RETURN / EXHAUST DUCT DOWN  RETURN / EXHAUST DUCT DOWN  RETURN / EXHAUST DUCT DOWN  ROUND DUCT ELBOW UP  CHAUSE   CONTINUE   CON	<b>\</b>		
SUPPLY DUCT UP  SUPPLY DUCT DOWN  RETURN / EXHAUST DUCT UP  ROUND DUCT ELBOW UP  COLOR OR ROUND DUCT ELBOW DOWN  ROUND DUCT ELBOW DOWN  ROUND DUCT ELBOW DOWN  ROUND DUCT GENOW DOWN  ROUND DUCT OFFSET DOWN  SOURRE / RECTANGULAR DUCT TRANSITION  COLOR CELLING DIFFUSER - RECTANGULAR - MULTI-DIRECT.  SOURCE SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER - SEE SCHEDULE FOR INFORMATION.  ROISE RETURN OF RETURN GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  SON TAP WITH VOLUME CONTROL DAMPER  SON TAP WITH VOLUME CONTROL DAMPER  TO VERTICAL FIRE DAMPER (FLOOR)  WO VOLUME CONTROL DAMPER  TO VERTICAL FIRE DAMPER (FLOOR)  HEDISD COMBINATION VERTICAL FIRE & SMOKE DAMPER  RO CELLING RADIATION PIRE DAMPER (FLOOR)  THERMOSTAT  BO DUCT SMOKE DAMPER  OF LING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  COMBINATION VERTICAL FIRE & SMOKE DAMPER  COMBINATION VERTICAL FIRE & SMOKE DAMPER  CELLING RADIATION PIRE DAMPER  COLORINATION PIRE DAMPER  COLORI	<u></u>	RX	EXISTING EQUIPMENT OR DUCTWORK TO BE REMOVED
SUPPLY DUCT UP  SUPPLY DUCT DOWN  RETURN / EXHAUST DUCT UP  ROUND DUCT ELBOW UP  COLOR OR ROUND DUCT ELBOW DOWN  ROUND DUCT ELBOW DOWN  ROUND DUCT ELBOW DOWN  ROUND DUCT GENOW DOWN  ROUND DUCT OFFSET DOWN  SOURRE / RECTANGULAR DUCT TRANSITION  COLOR CELLING DIFFUSER - RECTANGULAR - MULTI-DIRECT.  SOURCE SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER - SEE SCHEDULE FOR INFORMATION.  ROISE RETURN OF RETURN GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  SON TAP WITH VOLUME CONTROL DAMPER  SON TAP WITH VOLUME CONTROL DAMPER  TO VERTICAL FIRE DAMPER (FLOOR)  WO VOLUME CONTROL DAMPER  TO VERTICAL FIRE DAMPER (FLOOR)  HEDISD COMBINATION VERTICAL FIRE & SMOKE DAMPER  RO CELLING RADIATION PIRE DAMPER (FLOOR)  THERMOSTAT  BO DUCT SMOKE DAMPER  OF LING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  CELLING RADIATION PIRE DAMPER  COMBINATION VERTICAL FIRE & SMOKE DAMPER  COMBINATION VERTICAL FIRE & SMOKE DAMPER  CELLING RADIATION PIRE DAMPER  COLORINATION PIRE DAMPER  COLORI	<u> </u>		NEW EQUIPMENT OR DUCTWORK
SUPPLY DUCT UP  SUPPLY DUCT UP  RETURN / EXPAUSET DUCT UP  RETURN / EXPAUSET DUCT DOWN  RETURN / EXPAUSET DUCT DOWN  RETURN / EXPAUSET DUCT DOWN  ROUND DUCT ELBOW UP  ROUND DUCT ELBOW UP  ROUND DUCT ELBOW UP  COMMITTH TURNING VANES  RETURN / CECTANGULAR DUCT TRANSITION  SQUARE / RECTANGULAR DUCT TRANSITION  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  COMMITTH TURNING VANES  RETURN OF RETURN GRILLE - (R - REGISTER)  LD LINEAR DIFFUSER - RECTANGULAR - MULTI-DIRECT.  RETURN OF EXPAUSET GRILLE - (R - REGISTER)  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT  FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  COMMITTED DAMPER  TO VERTICAL SMOKE DAMPER (WALL)  HED HORIZONTAL SMOKE DAMPER (FLOOR)  HEDSD COMBINATION VERTICAL FIRE & SMOKE DAMPER  RO CEILING RADIATION FIRE DAMPER (PLOOR)  THERMOSTAT  RO CEILING RADIATION FIRE DAMPER  DO DUCT SMOKE DETECTOR  THERMOSTAT  THERMOSTA	<u> </u>		
RETURN / EXHAUST DUCT UP  RETURN / EXHAUST DUCT UP  RETURN / EXHAUST DUCT DOWN  RETURN / EXHAUST DUCT DOWN  RETURN / EXHAUST DUCT DOWN  ROUND DUCT ELBOW UP  LEBOW WITH TURNING VANES  RETURN / EXPECTANGULAR DUCT TRANSITION  DUCT OFFSET DOWN  SOLIARE/RECTANGULAR TO ROUND DUCT TRANSITION  CEILING DIFFUSER - RECURSOR - MICRORIATION - MICRO- # THROW DIRECTIONS  SOLIARE/RECTANGULAR TO ROUND DUCT TRANSITION  ROEG  SUPPLY DIFFUSER - ROUND NIECK - # THROW DIRECTIONS  SOLIARE/RECTANGULAR TO ROUND DUCT TRANSITION  ROEG  RETURN OF EXHAUST CRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FOR DUCT ACCESS DOOR  VOLUME CONTROL DAMPER  FOR VOLUME CONTROL DAMPER  FOR VOLUME CONTROL DAMPER  FOR VORTICAL FIRE DAMPER (WALL)  HED HORIZONTAL FIRE DAMPER (FLOOR)  WERTICAL SMOKE DAMPER (WALL)  HED HORIZONTAL SMOKE DAMPER (FLOOR)  WERTICAL SMOKE DAMPER (FLOOR)  FORD  FORD  COMBINATION VERTICAL FIRE & SMOKE DAMPER  DO DUCT SMOKE DETECTOR  THERMOSTAT  FUNDAMENT OF THE RESIDENCY  CONDININATION FIRE DAMPER  COLUMN THE PROSPECTOR  THERMOSTAT  FUNDAMENT OF THE SAMORE DAMPER  COLUMN THE PROSPECTOR  THERMOSTAT  FOR CHING REDIFFUSER RECISTER & GRILLE UNIT DESIGNATION WORN  AND INFUSER RECISTER & GRILLE UNIT DESIGNATION WORN  FORD  CONNECTION POINT, NEW TO EXISTING  FORD  FORD			
RETURN / EXHAUST DUCT UP  RETURN / EXHAUST DUCT DOWN  ROUND DUCT ELBOW UP  ROUND DUCT ELBOW UP  BELBOW WITH TURNING VANES  RETURN / EXHAUST DUCT TOWN  BELBOW WITH TURNING VANES  RETURN / EXECUTION OF STATE OF S			
RETURN / EXHAUST DUCT DOWN  ROUND DUCT ELBOW UP  ROUND DUCT ELBOW DOWN  ELBOW WITH TURNING VANES  R  DUCT OFFSET UP  DUCT OFFSET DOWN  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  SQUARE / RECTANGULAR FOR UND NECK - & THROW DIRECTIONS  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  CC CELLING DIFFUSER - RECTANGULAR - MULTI-DIRECT.  SQUE SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  IN LINEAR DIFFUSER - RECTANGULAR - MULTI-DIRECT.  FLEX SQUEG SIDEWALL SUPPLY OF RETURN GRILLE - (R = REGISTER)  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  FLOX VOLUME CONTROL DAMPER  VOLUME CONTROL DAMPER  FLOX DOUT ACCESS DOOR  VOLUME CONTROL DAMPER  FLOX DOUT ACCESS DOOR  VOLUME CONTROL DAMPER  FLOX DOUT ACCESS DOOR  VERTICAL SMOKE DAMPER (FLOOR)  COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  COMBINATION FIRE DAMPER  COM			
ROUND DUCT ELBOW UP  ROUND DUCT ELBOW DOWN  ELBOW WITH TURNING VANES  BUTTON DUCT OFFSET UP  DUCT OFFSET DOWN  SOURCE, RECTANGULAR TO ROUND DUCT TRANSITION  ROUND SUPPLY DIFFUSER, RECEASEDULE FOR INFORMATION.  ROSEG  RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEX  FLEXIBLE DUCT  FLEX  FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX  SPIN TAP WITH VOLUME CONTROL DAMPER  VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  FD VOLUME CONTROL DAMPER  FD VOLUME CONTROL DAMPER  FD VERTICAL FIRE DAMPER (FLOOR)  VERTICAL FIRE DAMPER (WALL)  HED HORIZONTAL FIRE DAMPER (FLOOR)  VERTICAL SMOKE DAMPER (FLOOR)  VERTICAL FIRE DAMPER (FLOOR)  VERTICAL SMOKE DAMPER (FLOOR)  FD VERTICAL FIRE DAMPER (FLOOR)  VERTICAL FIRE A SMOKE DAMPER  COMBINATION VERTICAL FIRE & SMOKE DAMPER  DD D DUCT SMOKE DETECTOR  THERMOSTAT  HUMDISTAT  SP STATIC PRESSURE SENSOR  COMMINISTATION FIRE DAMPER  CONNECTION POINT INEV TO EXISTING  DIFUSER, REGISTER & GRILLE UNIT DESIGNATION WICHAND  TAKE  CONNECTION POINT, NEW TO EXISTING  DIFUSER, REGISTER & GRILLE UNIT DESIGNATION WICHAND  TO DEMONSTRATE DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT INEW TO EXISTING			
ROUND DUCT ELBOW DOWN  ELBOW WITH TURNING VANES  BLOW WITH TURNING VANES  DUCT OFFSET UP  DUCT OFFSET UP  SQUARE/RECTANGULAR DUCT TRANSITION  SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION  REGISTER  LD LINEAR DIFFUSER. SEE SCHEDULE FOR INFORMATION.  REGISTER  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  SPIN TAP WITH VOLUME CONTROL DAMPER  VOD VOLUME CONTROL DAMPER  VOD VOLUME CONTROL DAMPER  FD VOLUME CONTROL DAMPER  FD VOLUME CONTROL DAMPER  FD VERTICAL FIRE DAMPER (NALL)  HED HORIZONTAL FIRE DAMPER (NALL)  HED HORIZONTAL SIMOKE DAMPER (NALL)  HED HORIZONTAL SIMOKE DAMPER (FLOOR)  VERTICAL FIRE DAMPER (FLOOR)  VERTICAL FIRE SAMOKE DAMPER  FD COMBINATION VERTICAL FIRE & SMOKE DAMPER  DD D DUCT SMOKE DETECTOR  THERMOSTAT  HUMBISTAT  SP STATIC PRESSURE SENSOR  COMBINATION DESIGNATION  CARBON MONOXIDE SENSOR  COARBON MONOXIDE SENSOR  COARBON MONOXIDE SENSOR  COARBON MONOXIDE SENSOR  CONNECTION POINT. NEW TO EXISTING  DIFFUSER. REGISTER & GRILLE UNIT DESIGNATION W/ CPN  TAXO  TO CONNECTION POINT. NEW TO EXISTING  DISCONNECTION POINT. NEW TO EXISTING			
ELBOW WITH TURNING VANES  DUCT OFFSET UP  SQUARE/RECTANGULAR DUCT TRANSITION  SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION  ROUND  RO			
DUCT OFFSET UP  DUCT OFFSET DOWN  SQUARE/RECTANGULAR DUCT TRANSITION  SQUARE/RECTANGULAR DUCT TRANSITION  CD CEILING DIFFUSER - ROUND NECK - # THROW DIRECTIONS  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER. SEE SCHEDULE FOR INFORMATION.  RG/EG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX PLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  DISCONNECTION POINT (TO EXISTING)  DISCONNECTION POINT (NEW TO EXISTING)			
DUCT OFFSET DOWN  SQUARE/RECTANGULAR DUCT TRANSITION  SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION  CD CEILING DIFFUSER - ROUND NECK - # THROW DIRECTIONS  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER - SEE SCHEDULE FOR INFORMATION.  RG'EG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VO VOLUME CONTROL DAMPER  SD BDD BACKDRAFT DAMPER  HDD WERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  HFD HORIZONTAL SMOKE DAMPER (FLOOR)  HFD COMBINATION VERTICAL FIRE & SMOKE DAMPER  DD DD COMBINATION FIRE DAMPER  DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  COMPANDATION FOR THE DAMPER OF THE DESIGNATION WICHAND CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DEMONITION DRAWING KEYNOTE			ELBOW WITH TURNING VANES
DUCT OFFISET DOWN  SQUARE / RECTANGULAR DUCT TRANSITION  SQUARE / RECTANGULAR DUCT TRANSITION  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  SQUARE / RECTANGULAR TO ROUND DUCT TRANSITION  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER - SEE SCHEDULE FOR INFORMATION.  ROSEG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  BDD BADD BACKDRAFT DAMPER  HFD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  VERTICAL SMOKE DAMPER (FLOOR)  HFD HORIZONTAL SMOKE DAMPER (FLOOR)  COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  DD DUCT SMOKE DETECTOR  THERMOSTAT  GP CEILING RADIATION FIRE DAMPER  COLUMN STATIC PRESSURE SENSOR  COLUMN CARBON DIOXIDE SENSOR  COLUMN COUNTROL DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT	<u> </u>		
SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION  CD CEILING DIFFUSER - ROUND NECK - # THROW DIRECTIONS  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER - SEE SCHEDULE FOR INFORMATION.  ROJEG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VOLUME CONTROL DAMPER  BDD BACKDRAFT DAMPER  HDD WERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (WALL)  HFD HORIZONTAL SMOKE DAMPER (FLOOR)  WETTICAL SMOKE DAMPER (FLOOR)  HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  PD DUCT SMOKE DETECTOR  THERMOSTAT  DD DUCT SMOKE DETECTOR  THERMOSTAT  DED DUCT SMOKE DETECTOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  CARBON MONOXIDE SENSOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DEMONITION DRAWING KEYNOTE	<u></u>		DUCT OFFSET DOWN
CD CEILING DIFFUSER ROUND NECK - # THROW DIRECTIONS  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.  LD LINEAR DIFFUSER. SEE SCHEDULE FOR INFORMATION.  RG/EG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  DO BACKDRAFT DAMPER  FD VERTICAL FIRE DAMPER (WALL)  FD VERTICAL FIRE DAMPER (FLOOR)  FD VERTICAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  FD/SD COMBINATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  BP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  CO CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DEMOLITION DRAWING KEYNOTE			SQUARE / RECTANGULAR DUCT TRANSITION
SD SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.    SORIEG   SIDEWALL SUPPLY OF RETURN GRILLE - (R = REGISTER)			SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION
SGIEG SIDEWALL SUPPLY or RETURN GRILLE - (R = REGISTER)  LD LINEAR DIFFUSER. SEE SCHEDULE FOR INFORMATION.  RGIEG RETURN OF EXHAUST GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DO VOLUME CONTROL DAMPER  DO VOLUME CONTROL DAMPER  FD VERTICAL FIRE DAMPER (WALL)  PHED HORIZONTAL FIRE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  PD VERTICAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  CEILING RADIATION FIRE DAMPER  DD DD CT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  FD STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  CO CONNECTION POINT NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION DRAWING KEYNOTE		CD	CEILING DIFFUSER ROUND NECK - # THROW DIRECTIONS
RG/EG RETURN of EXHAUST GRILLE - (R = REGISTER)  HIGHWITH  RG/EG RETURN of EXHAUST GRILLE - (R = REGISTER)  FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  PROPERTY AND DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  DD BDD BACKDRAFT DAMPER  FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (WALL)  HFD HORIZONTAL SIMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  PD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  PD STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  COD CARBON MONOXIDE SENSOR  COD CARBON MONOXIDE SENSOR  COD CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DIAMONO DEMONITY OF TARMONE CONNECTION POINT  DEMONITOR DEMONITOR POINT  DEMONITOR PROPERTOR PROPER  PLEXIBLE PROPERTY PROPERTY PROPERTY PROPERTY  P		SD	SUPPLY DIFFUSER - RECTANGULAR - MULTI-DIRECT.
RG/EG RETURN OF EXHAUST GRILLE - (R = REGISTER)  THANHIH  FLEX FLEXIBLE DUCT  SPIN TAP WITH VOLUME CONTROL DAMPER  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  DEBDD BACKDRAFT DAMPER  HFD WERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (FLOOR)  HFD HORIZONTAL SMOKE DAMPER (FLOOR)  HFD COMBINATION VERTICAL FIRE & SMOKE DAMPER  FD/SD COMBINATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  BP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON DIOXIDE SENSOR  CARBON DIOXIDE SENSOR  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/CFN  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	‡	SG/EG	SIDEWALL SUPPLY or RETURN GRILLE - (R = REGISTER)
FLEXIBLE DUCT  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VOLUME CONTROL DAMPER  DOD BACKDRAFT DAMPER  MD MOTORIZED DAMPER  FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (FLOOR)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  COMBINATION VERTICAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  BP STATIC PRESSURE SENSOR  COMBINATION MONOXIDE SENSOR  COMBINATION DISTRIBUTION  TAG  CFM CARBON MONOXIDE SENSOR  COMBINATION FIRE DAMPER  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DEMOLITION DRAWING KEYNOTE		LD	LINEAR DIFFUSER. SEE SCHEDULE FOR INFORMATION.
FLEX FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)  SPIN TAP WITH VOLUME CONTROL DAMPER  DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  BDD BDD BACKDRAFT DAMPER  FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (FLOOR)  HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  PFD/SD COMBINATION FIRE DAMPER (FLOOR)  CELLING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  BP STATIC PRESSURE SENSOR  COMBINATION DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION WY CFM  TAG  CFM  UNDER CUT DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT, NEW TO EXISTING  DEMOLITION DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE		RG/EG	RETURN or EXHAUST GRILLE - (R = REGISTER)
SPIN TAP WITH VOLUME CONTROL DAMPER  SPIN TAP WITH VOLUME CONTROL DAMPER  VD VOLUME CONTROL DAMPER  BDD BDD BACKDRAFT DAMPER  FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (FLOOR)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  HSD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  TAG  FD/FUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  TO DEMOLITION DRAWING KEYNOTE	<del></del>		FLEXIBLE DUCT
DUCT ACCESS DOOR  VD VOLUME CONTROL DAMPER  BDD BDD BACKDRAFT DAMPER  MD MOTORIZED DAMPER  FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (FLOOR)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  TAG  FTAG  FTAG  FTAG  FTAG  CFM  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFM  UNDER CUT DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  1 DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE		FLEX	FLEXIBLE DUCT CONNECTION (TO EQUIPMENT)
VD VOLUME CONTROL DAMPER  → BDD BDD BACKDRAFT DAMPER  → FD VERTICAL FIRE DAMPER (WALL)  → HFD HORIZONTAL FIRE DAMPER (WALL)  → HSD HORIZONTAL SMOKE DAMPER (FLOOR)  → HSD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  PDD DD DUCT SMOKE DETECTOR  THERMOSTAT  ⊕ HUMIDISTAT  SP STATIC PRESSURE SENSOR  ○ CARBON DIOXIDE SENSOR  ○ CARBON MONOXIDE SENSOR  ○ CARBON MONOXIDE SENSOR  □ DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  □ UNDER CUT DOOR  □ DISCONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  1 DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE	<u></u>		SPIN TAP WITH VOLUME CONTROL DAMPER
### BDD BDD BACKDRAFT DAMPER  ### MD MOTORIZED DAMPER  ### FD VERTICAL FIRE DAMPER (WALL)  ### HFD HORIZONTAL FIRE DAMPER (FLOOR)  ### HSD HORIZONTAL SMOKE DAMPER (FLOOR)  ### HFD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  ### HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  ### CEILING RADIATION FIRE DAMPER  ### DDD DD DUCT SMOKE DETECTOR  ### THERMOSTAT  ### HUMIDISTAT  ### HUMIDISTAT  ### HUMIDISTAT  ### STATIC PRESSURE SENSOR  ### CARBON MONOXIDE SENSOR  ### CARBON MONOXIDE SENSOR  ### CARBON MONOXIDE SENSOR  ### DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  ### UNDER CUT DOOR  ### CONNECTION POINT, NEW TO EXISTING  ### DISCONNECTION POINT  ### DEMOLITION DRAWING KEYNOTE	K 7 AD	AD	DUCT ACCESS DOOR
MD MOTORIZED DAMPER  FD VERTICAL FIRE DAMPER (WALL)  → HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (WALL)  → HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  H HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  TAG: B CUIPMENT UNIT DESIGNATION  TAG: CFM UNDER CUT DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  TO DEMOLITION DRAWING KEYNOTE	<u>-</u>	VD	VOLUME CONTROL DAMPER
FD VERTICAL FIRE DAMPER (WALL)  HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (WALL)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  CARBON MONOXIDE SENSOR  TACC  TACC  TO UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  D DRAWING KEYNOTE  D DEMOLITION DRAWING KEYNOTE	BDD	BDD	BACKDRAFT DAMPER
HFD HORIZONTAL FIRE DAMPER (FLOOR)  SD VERTICAL SMOKE DAMPER (WALL)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  TAG  FM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DEMOLITION DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	v	MD	MOTORIZED DAMPER
SD VERTICAL SMOKE DAMPER (WALL)  HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  (SP) STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG:  CFM UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE		FD	VERTICAL FIRE DAMPER (WALL)
HSD HORIZONTAL SMOKE DAMPER (FLOOR)  FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  FAG  FM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	-	HFD	HORIZONTAL FIRE DAMPER (FLOOR)
FD/SD COMBINATION VERTICAL FIRE & SMOKE DAMPER  HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  H HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  CARBON MONOXIDE SENSOR  TAG  FD/SD  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  1 DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE		SD	VERTICAL SMOKE DAMPER (WALL)
HFD/SD COMBINATION HORIZONTAL FIRE & SMOKE DAMPER  RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  H HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG CFM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE	<b>─</b>	HSD	HORIZONTAL SMOKE DAMPER (FLOOR)
RD CEILING RADIATION FIRE DAMPER  DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  CFM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE	<b>_</b>	FD/SD	COMBINATION VERTICAL FIRE & SMOKE DAMPER
DD DD DUCT SMOKE DETECTOR  THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CO CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  ## DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	*	HFD/SD	COMBINATION HORIZONTAL FIRE & SMOKE DAMPER
THERMOSTAT  HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG CFM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE	<u> </u>	RD	CEILING RADIATION FIRE DAMPER
HUMIDISTAT  SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CO CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  CFM DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1 DEMOLITION DRAWING KEYNOTE	DD	DD	DUCT SMOKE DETECTOR
SP STATIC PRESSURE SENSOR  CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  TAG  CFM  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE			THERMOSTAT
CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  CFM  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1  DEMOLITION DRAWING KEYNOTE	$\mathbb{H}$		HUMIDISTAT
CARBON DIOXIDE SENSOR  CARBON MONOXIDE SENSOR  EQUIPMENT UNIT DESIGNATION  TAG  CFM  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  1  DEMOLITION DRAWING KEYNOTE	(SP)		STATIC PRESSURE SENSOR
CO CARBON MONOXIDE SENSOR  TAG EQUIPMENT UNIT DESIGNATION  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	$\overline{}$		CARBON DIOXIDE SENSOR
EQUIPMENT UNIT DESIGNATION  TAG CFM  DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE			CARBON MONOXIDE SENSOR
DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN  UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	$\sim$		EQUIPMENT UNIT DESIGNATION
UNDER CUT DOOR  LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE		1	• = • •
LOUVERED DOOR  CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	# TAG		
CONNECTION POINT, NEW TO EXISTING  DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	# TAG		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFM
DISCONNECTION POINT  DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	# TAG		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR
DRAWING KEYNOTE  DEMOLITION DRAWING KEYNOTE	# TAG		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR LOUVERED DOOR
DEMOLITION DRAWING KEYNOTE	# TAG		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR LOUVERED DOOR CONNECTION POINT, NEW TO EXISTING
	# TAG CFM  U		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR LOUVERED DOOR CONNECTION POINT, NEW TO EXISTING DISCONNECTION POINT
REVISION NUMBER	# TAG CFM  U  U  1		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR LOUVERED DOOR CONNECTION POINT, NEW TO EXISTING DISCONNECTION POINT DRAWING KEYNOTE
	# TAG CFM  U  U  1		DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFN UNDER CUT DOOR LOUVERED DOOR CONNECTION POINT, NEW TO EXISTING DISCONNECTION POINT DRAWING KEYNOTE

SA or OA SUPPLY OR OUTSIDE AIR

	MEC	HANICAL PIPING SYMBOLS LEGEND
SYMBOL	ABRV.	DESCRIPTION
—HWS—	HWS	HEATING WATER SUPPLY PIPING
——HWR——	HWR	HEATING WATER RETURN PIPING
—-cws—	cws	CONDENSER WATER SUPPLY PIPING
CWR	CWR	CONDENSER WATER RETURN PIPING
—CHWS—	CHWS	CHILLED WATER SUPPLY PIPING
CHWR	CHWR	CHILLED WATER RETURN PIPING
—— G ——	G	NATURAL GAS PIPING
— D —	D	CONDENSATE DRAIN PIPING
—— R — —	R	REFRIGERANT PIPING
—— LPS ——	LPS	LOW PRESSURE STEAM SUPPLY PIPING (0-15 PSIG)
	MPS	MEDIUM PRESSURE STEAM SUPPLY PIPING (16-60 PSIG)
—— HPS ——	HPS	HIGH PRESSURE STEAM SUPPLY PIPING (61 TO 200 PSIG)
—— LPR — —	LPR	LOW PRESSURE STEAM CONDENSATE RETURN
— — MPR — —	MPR	MEDIUM PRESSURE STEAM CONDENSATE RETURN
— — HPR — —	HPR	HIGH PRESSURE STEAM CONDENSATE RETURN
—— PC ——	PC	PUMPED STEAM CONDENSATE
v	V	VENT PIPING
cw	CW	CITY (DOMESTIC) WATER
—FOS—	FOS	FUEL OIL SUPPLY PIPING
——FOR——	FOR	FUEL OIL RETURN PIPING
0		ELBOW TURNED UP
— —		ELBOW TURNED DOWN
<del></del>		BOTTOM PIPE CONNECTION
		TOP PIPE CONNECTION
<u></u>		PIPING CAP
——II——		UNION
		FLANGED CONNECTION
<b>─</b>		CONCENTRIC PIPE REDUCER
		ECCENTRIC PIPE REDUCER
-		FLOW ARROW
<del></del>	BV	BALL VALVE
<u> </u>	BFV	BUTTERFLY VALVE
—14—	PV	PLUG VALVE
_ <del>\</del>	GV	GATE VALVE
<b>─</b>	GBV	GLOBE VALVE
	CV	CHECK VALVE
		2-WAY CONTROL VALVE
		3-WAY CONTROL VALVE
-		CIRCUIT SETTER (BALANCING VALVE)
<del></del>		STRAINER (W/ BALL VALVE AND CAP)
7		BACKFLOW PREVENTER
		PRESSURE REGULATING VALVE
<b>~</b>		PRESSURE RELIEF VALVE
<u>-</u>		TRIPLE DUTY VALVE WITH MEASURING CONNECTIONS
<u> </u>		PRESSURE GAGE W/ SHUT-OFF
		FLEXIBLE CONNECTOR
Φ		AUTOMATIC AIR VENT
<b>—</b>		HOSE BIB
×		PIPE ANCHOR
<u>~</u>		PIPE GUIDE
		STEAM TRAP

	MECHANICAL ABBREVIATIONS
ABRV.	DESCRIPTION
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
MBH	1000 - BRITISH THERMAL UNITS
KW	1000-WATT (1 KW = 3,412 BTUH)
SENS.	SENSIBLE
LAT.	LATENT
E.A.T.	ENTERING AIR TEMPERATURE
L.A.T.	LEAVING AIR TEMPERATURE
E.W.T.	ENTERING WATER TEMPERATURE
L.W.T.	LEAVING WATER TEMPERATURE
DB/WB	DRY BULB / WET BULB
IN. W.G.	INCHES WATER GAUGE (AIR)
FT. W.G.	FEET WATER GAUGE (HYDRONIC)
E.S.P.	EXTERNAL STATIC PRESSURE
T.S.P.	TOTAL STATIC PRESSURE
TG	TRANSFER GRILLE
TR	TOP REGISTER
(E)	EXISTING
R/R	REMOVE EXISTING ITEM & RELOCATE TO NEW LOCATION
UNO	UNLESS NOTED OTHERWISE
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
Ø OR PH	PHASE
Ø	DIAMETER
AFF	ABOVE FINISHED FLOOR
ELEV.	ELEVATION FROM DATUM

# NOTES:

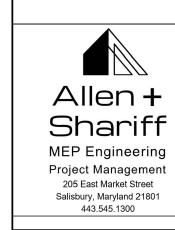
1. NOT ALL SYMBOLS AND ABBREVIATIONS ARE IN USE FOR THIS PROJECT.

	NO.	REVISION	DATE
<u> </u>		M:	4-12-22
EAFORD			









SCALE : NTS

DESIGN BY : JHG

DRAWN BY : AM

CHECKED BY : JHG

GMB FILE : 210241

DATE : 12-06-22

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#### MECHANICAL SPECIFICATIONS

#### **MECHANICAL GENERAL CONDITIONS (230010)**

#### A. GENERAL

- 1. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.
- 2. PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS:
  - 2018 INTERNATIONAL MECHANICAL CODE (IMC)
  - 2018 INTERNATIONAL PLUMBING CODE (IPC)
    2018 INTERNATIONAL ENERGY CONSERVATION CODE
  - 2017 NATIONAL ELECTRIC CODE

#### NFPA

UNDERWRITERS LABORATORY (UL), IRI, FM

- SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" GUIDELINES, DETAILS, & MODEL SPECIFICATION
  ASHRAE
- WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.
- 3. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT
- 4. VISIT SITE, CHECK FACILITIES AND CONDITIONS MAKE ALL NECESSARY OBSERVATIONS, MEASUREMENTS, NOTE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.
- 5. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS. SYSTEMS ARE TO BE COMPLETE AND WORKABLE IN ALL RESPECTS, PLACED IN OPERATION AND PROPERLY ADJUSTED.
- 6. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY. CLEAN-UP, REMOVE AND LEGALLY DISPOSE OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.
- 7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS WORKERS, ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.
- 8. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
- 9. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.
- 11. NO PIPING, DUCTWORK, CONTROLS, ETC., SHALL BE INSTALLED OR ROUTED ABOVE ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR ROOMS.
- 12. THE CONTRACTOR SHALL COORDINATE AND OBTAIN A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT FROM ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.
- 13. DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT EXTRA COST TO THE OWNER, AS THOUGH FULLY DETAILED ON PLANS AND/OR DESCRIBED IN THE SPECIFICATIONS.
- 14. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR PHASING REQUIREMENTS.
- 15. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEM SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.
- 16. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.

## B. BASIS OF DESIGN AND SUBSTITUTIONS

- 1. WHEREVER THE WORDS "APPROVED BY", "APPROVED EQUAL", "AS DIRECTED" OR SIMILAR PHRASES ARE USED IN THE FOLLOWING SPECIFICATIONS, THEY SHALL BE UNDERSTOOD TO REFER TO THE OWNER AS THE APPROVING AGENCY. THE NAME OR MAKE OF ANY EQUIPMENT OR MATERIALS NAMED IN THE SPECIFICATION (WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED) SHALL BE KNOWN AS THE "STANDARD".
- 2. THESE SPECIFICATIONS ESTABLISH QUALITY STANDARDS OF MATERIALS AND EQUIPMENT TO BE PROVIDED. SPECIFIC ITEMS ARE IDENTIFIED BY MANUFACTURER, TRADE NAME OR CATALOG DESIGNATION. THE CONTRACTOR SHALL SUBMIT THE BASE BID PRICE BASED UPON STANDARD SPECIFIED EQUIPMENT DESCRIBED HEREIN AND AS DETAILED ON DRAWINGS AND ASSOCIATED CONTRACT DOCUMENTS. THE CONTRACTOR MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) FOR REVIEW BY THE OWNER, ARCHITECT, AND ENGINEER NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAMPLES OF THE PROPOSED EQUIPMENT MAY BE REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. MANUFACTURERS OF PRODUCTS ACCEPTED BY THE OWNER, ARCHITECT, AND ENGINEER WILL BE LISTED IN AN ADDENDUM TO THE SPECIFICATIONS AS AN ACCEPTABLE SUBSTITUTION. EQUIPMENT ACCEPTED AS DETAILED BELOW SHALL BE SHOWN AS A SEPARATE ADD OR DEDUCT PRICE TO BE FACTORED

INTO THE BASE PRICE BY THE ARCHITECT AND OWNER IF ACCEPTED.

- SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED OR APPROVED BY ADDENDUM, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTION TO THE OWNER, ARCHITECT AND ENGINEER AT BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID; BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR TO SUBMIT THE REQUISITE DOCUMENTATION DETAILED ABOVE SHALL BE UNDERSTOOD BY THE OWNER, ARCHITECT, AND ENGINEER TO INDICATE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRESENTED BY THE CONTRACTOR FOR CONSIDERATION. SUCH SUBSTITUTIONS WILL NOT BE CONSIDERED AFTER THE BID OPENING DATE AND DELAY OF THE PROJECT WILL NOT BE PERMITTED FOR FURTHER INSPECTION AND EVALUATION AFTER THIS DATE.
- 4. WHERE SUCH SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS INDICATED ON THE DRAWINGS, INCLUDE ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COST OF ALL ALLIED TRADES INVOLVED.
- 5. ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE OWNER, ARCHITECT, AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT (AT THEIR COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.
- 6. IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR ANY EXTRA COST OF EVALUATING THE QUALITY OF THE MATERIAL AND EQUIPMENT TO BE PROVIDED.
- 7. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.

#### C. WARRANTY

- 1. FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES ON HVAC EQUIPMENT.
- 2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

#### D. SHOP DRAWING SUBMITTALS

- 1. SUBMIT SHOP DRAWINGS FOR MECHANICAL EQUIPMENT AND DUCTWORK WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS.
- 2. DUCTWORK AND FIRE PROTECTION DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS, AND INDICATE STRUCTURAL, LIGHTING, DUCTWORK AND PIPING AT ALL CRITICAL LOCATIONS.
- 3. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.
- 4. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.
- 5. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.
- 6. REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.
- 7. EACH MANUFACTURER OR HIS REPRESENTATIVE MUST CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS. ADVISE ENGINEER IN WRITING WITH SUBMITTAL DRAWINGS OF ANY POTENTIAL PROBLEMS. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY CHANGES THAT MIGHT BE NECESSARY BECAUSE OF PHYSICAL CHARACTERISTICS OF EQUIPMENT THAT HAVE NOT BEEN CALLED TO THE ENGINEER'S ATTENTION AT THE TIME OF SUBMITTAL.

## E. RECORD DRAWINGS

1. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTORS OFFICE AT THE JOB SITE. PRINTS SHALL INDICATE ADDITIONS, DELETIONS, VARIATIONS IN LOCATION, VARIATIONS IN NUMBERING ETC. ALTERATIONS SHALL BE MARKED IN RED AND DELETIONS ALL BE MARKED IN GREEN AND SHALL BE ON THE LATEST CONTRACT DRAWING ISSUED. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

## DUCTWORK (233113)

1. FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM G90 GALVANIZED STEEL. COMPLY WITH NFPA BULLETIN 90A REQUIREMENTS.

- 2. ALL NEW (INTERIOR) RECTANGULAR DUCTWORK SHALL BE 1 "W.G. CONSTRUCTION, CONSTRUCTED OF LOCK FORMING No. 1 GALVANIZED STEEL. VOLUME DAMPERS SHALL BE PROVIDED IN ALL BRANCH TAKE OFFS, SPIN-INS OR OTHER CONNECTIONS TO INDIVIDUAL AIR DISTRIBUTION DEVICES. ALL 90 DEGREE ELBOWS SHALL BE RADIUS, OR RECTANGULAR WITH TURNING VANES. DUCTWORK SHALL BE HUNG FROM THE BUILDING STRUCTURE WITH HANGER ASSEMBLIES IN ACCORDANCE WITH "SMACNA" REQUIREMENTS. ALL DUCTWORK SHALL BE SEALED USING HARDCAST TAPE AND ADHESIVE (2 PART SYSTEM). IRON GRIP MAY BE USED AS AN ALTERNATE FOR SEALING INDOOR DUCTWORK. TAPES AND MASTICS FOR DUCT SEALING SHALL BE UL-181A RATED AND LABELED AS SUCH. WHERE FLEXIBLE DUCT OR PORTIONS OF SHEET METAL DUCT ARE SHOWN TO BE REMOVED, BUT ADJACENT SHEET METAL DUCT REMAINS, PATCH REMAINING SHEET METAL AIRTIGHT. DUCTWORK SHALL MEET SMACNA LOW PRESSURE CONSTRUCTION 2" STATIC PRESSURE RATING AND SEALED PER SMACNA CLASS "B" REQUIREMENTS. ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS WITH INTEGRAL AIR SCOOPS. BUTT FITTINGS ARE NOT ACCEPTABLE.
- 3. ALL NEW ROUND SHEET METAL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH FIGURES 3-1 THROUGH 3-56 AND TABLE 3-2 OF THE "SMACNA" MANUAL. SNAP LOCK LONGITUDINAL SEAMS AND DRAW BAND JOINT CONNECTIONS ARE NOT ACCEPTABLE.
- 4. INCLUDE ALL ACOUSTIC, DOUBLE RADIUS AIRFOIL SHAPED PERFORATED ALUMINUM TURNING VANES, MANUAL DAMPERS, FLEXIBLE CONNECTORS, GRILLES AND DIFFUSERS, ACOUSTIC LINING, AND OTHER SHEET METAL ACCESSORIES FOR THE PROJECT. VOLUME DAMPERS TO BE OF OPPOSED BLADE TYPE CONSTRUCTED IN ACCORDANCE WITH "SMACNA" STANDARDS.
- 5. ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS. BUTT FITTINGS ARE NOT ACCEPTABLE.

## DUCTWORK EXTERNAL INSULATION & PIPE INSULATION (230713, 230719)

1. INSULATE DUCTWORK AS DESCRIBED IN DUCTWORK INSULATION SCHEDULE. FIBERGLASS DUCT WRAP SHALL BE FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS.

## 2. DO NOT INSULATE:

- 2.1. MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS.

  2.2. RETURN AND EXHAUST AIR DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE. (I
- 2.2. RETURN AND EXHAUST AIR DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE. (DOES NOT INCLUDE BUILDING SHAFTS.)

- 2.3. EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
- 3. ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION SHALL COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.
- 4. PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE; INCLUDE METAL VESSEL COVERS, FASTENERS, FLANGES, CHILLED WATER PUMPS, FRAMES AND ACCESSORIES.
- 5. REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.
- 6. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.
- 7. INSULATE REFRIGERANT PIPING LINES WITH 1" THICK ELASTOMERIC FOAM INSULATION WITH SELF-SEALING SEAM. ARMACELL AP ARMAFLEX SS INSULATION. PAINT CLOSED CELL INSULATION OUTDOORS WITH TWO COATS OF UV RESISTANT PAINT PER MANUFACTURER'S RECOMMENDATIONS. USE PRE-MOLDED COVERS OVER FITTINGS, VALVES, ELBOWS AND CONTROL DEVICES SEALED VAPOR TIGHT.

#### **EQUIPMENT** (235000)

- 1. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM.
- 2. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES; LUBRICATE AND ADJUST AS REQUIRED. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.
- 3. THE CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT PRIOR TO ORDERING OF EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTRACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.
- 4. ALL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.
- 5. ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.

#### HVAC CONDENSATE PIPING (232113)

- 1. PIPE AND FITTINGS -- HVAC CONDENSATE PIPING SHALL BE:
- 1.1. INTERIOR: TYPE "L" HARD COPPER TUBING ASTM B 88-832 WITH SWEATED JOINTS PER ASTM B 16.22 USING 95/5 OR ANTIMONY SOLDER OR "PRESS-FIT" MECHANICAL JOINTING. ALL FITTINGS SHALL BE MADE FROM WROUGHT COPPER.
- 1.2. EXTERIOR: SOLVENT WELDED PVC.
- 2. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING UNIONS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT PIPING.
- 3. PROVIDE CONDENSATE DRAIN FOR ALL COOLING COILS. ALL CONDENSATE DRAINS SHALL BE TRAPPED PER THE COOLING COIL TRAP DETAIL OR MANUFACTURERS RECOMMENDATIONS, WHICH EVER IS MORE STRINGENT/DEEPER. PROVIDE CLEANOUT.
- UNIFORM SLOPE OF 1" IN 10 FEET DOWNWARD IN THE DIRECTION OF FLOW. MAKE REDUCTIONS IN PIPE SIZES USING ECCENTRIC REDUCER FITTING INSTALLED WITH THE LEVEL SIDE UP.

4. INSTALL PIPING TO ALLOW CLEARANCE FOR EXPANSION AND CONTRACTION, INSTALL PIPING AT A

- 5. CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.
- 6. WHERE DAMAGE TO ANY BUILDING COMPONENT COULD OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN SYSTEM, PROVIDE UL 508 WATER-LEVEL DETECTION DEVICE IN THE PRIMARY DRAIN PAN, OVERFLOW OUTLET OR IN A SECONDARY DRAIN PAN PER IMC REQUIREMENTS. COOLING SYSTEM SHALL DISABLE UPON DETECTION OF WATER AND GENERATE A BAS ALARM(IF APPLICABLE).

## REFRIGERANT PIPING (232300)

SCALE.

- 1. REFRIGERANT PIPING SHALL BE NITROGENIZED ACR HARD DRAWN COPPER TUBE ASTM B280 WITH WROUGHT COPPER, SOLDER JOINT FITTINGS MADE WITH SILVER-COPPER-CADMIUM-ZINC BRAZING ALLOY (45-15-24-16) TYPE SOLDER.
- 2. INSTALL REFRIGERANT PIPING BETWEEN CONDENSING UNIT AND DX COILS. PIPE PER MANUFACTURER'S PIPING DIAGRAMS AND RECOMMENDATIONS.
- 3. ISOLATE PIPING FROM STRUCTURE WITH ONE (1) INCH INSULATION BETWEEN ALL PIPING AND SUPPORT POINTS.
- 4. AFTER COMPLETION, PRESSURE TEST PIPING, PURGE AND EVACUATE SYSTEM TWICE AND CHARGE SYSTEM WITH REFRIGERANT AND OIL.

5. INSTALL PIPING IN AS SHORT AND DIRECT ARRANGEMENT AS POSSIBLE TO MINIMIZE PRESSURE

- DROP. PROVIDE OIL TRAP AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

  6. INSTALL UNIONS TO ALLOW REMOVAL OF SOLENOID VALVES, PRESSURE REDUCING VALVES,
- 7. FILL THE PIPE AND FITTINGS DURING BRAZING, WITH NITROGEN TO PREVENT FORMATION OF

EXPANSION VALVES, AND AT CONNECTIONS TO COMPRESSORS AND EVAPORATORS.

# DISCONNECT SWITCHES (230514)

- 1. THIS CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES (FUSED AND NON-FUSED) REQUIRED FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. IN ADDITION, THIS CONTRACTOR SHALL FURNISH A SAFETY DISCONNECT SWITCH FOR ALL MOTORS AND EQUIPMENT WHICH DO NOT HAVE COMBINATION STARTERS OR INTEGRAL DISCONNECTING MEANS. FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED FOR ALL EQUIPMENT RATED FOR USE ONLY WITH FUSES (SUCH AS CONDENSING UNITS, COMPRESSORS, ETC.). SUCH SWITCHES SHALL BE ONE, TWO OR THREE POLE TYPE, WITH SOLID NEUTRAL FOR 4 WIRE SERVICE, AND SHALL HAVE THE PROPER CURRENT AND VOLTAGE RATING AS REQUIRED. INSTALLATION OF ALL DISCONNECT SWITCHES SHALL BE BY THE ELECTRICAL CONTRACTOR.
- 2. ALL SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND SHALL CARRY THE UNDERWRITERS' LABORATORIES LABEL. FUSIBLE SWITCHES SHALL INCORPORATE CLASS "R" FUSE REJECTION FEATURE AND SHALL BE BRACED TO WITHSTAND 200,000 AMPERE RMS SYMMETRICAL FAULT CURRENT. SAFETY SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATION W-S-865.
- 3. PROVIDE HEAVY-DUTY TYPE, SHEET ENCLOSED, SAFETY SWITCHES. THE TYPE, SIZE, AND RATING SHALL BE AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MOTOR OR EQUIPMENT SERVED. THE ENCLOSURE FOR DISCONNECT SWITCHES SHALL BE NEMA TYPE 1 FOR INDOOR USE, NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE. DISCONNECTS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, GENERAL ELECTRIC, CUTLER-HAMMER APPROVED EQUAL.

- 4. SWITCHES SHALL INCORPORATE QUICK-MAKE, QUICK-BREAK OPERATING HANDLES. THE MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER, AND SWITCHES SHALL HAVE A COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE ON POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. CURRENT CARRYING PARTS SHALL BE CONSTRUCTED OF HIGH-CONDUCTIVITY COPPER WITH SILVER-TUNGSTEN TYPE SWITCH CONTACT.
- 5. FUSE CLIPS SHALL BE POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS.
- 6. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL POWER WIRING TO ALL MECHANICAL CONTRACTOR FURNISHED EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL CONTROL WIRING TO ALL FURNISHED EQUIPMENT, INCLUDING CONTROL DEVICES, STARTERS AND INTEGRAL DISCONNECT SWITCHES OF CONTRACTOR FURNISHED EQUIPMENT.

#### IDENTIFICATION (230593)

1. CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC. AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.THE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1. PRESSURE SENSITIVE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT. PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

#### CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS (230593)

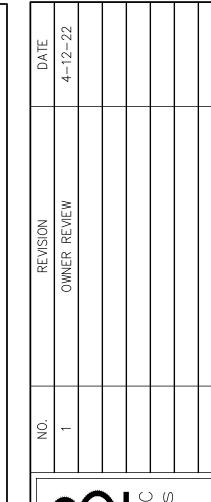
- 1. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 2. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED, BUT IF CONSTRUCTION SCHEDULE REQUIRES IT, ARRANGE FOR PRIOR TESTS ON PARTS OF SYSTEM AS APPROVED BY THE TENANT.
- 3. BALANCE ALL SYSTEMS, CALIBRATE CONTROLS, CHECK FOR PROPER OPERATION AND SEQUENCE UNDER ALL CONDITIONS AND MAKE ALL NECESSARY ADJUSTMENTS.
- 4. AFTER INSTALLATION AND EQUIPMENT IS PLACED IN OPERATION, HVAC CONTRACTOR IS RESPONSIBLE FOR BALANCING SYSTEMS. BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AABC CERTIFIED CONTRACTOR.
- 5. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPMS AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. ALL ZONES OR PORTIONS THEREOF SERVING OTHER SPACES AND WHICH MAY BE AFFECTED BY THE PROJECT SHALL BE TRAVERSED PRIOR TO CONSTRUCTION. THE FINAL AIR BALANCE SHALL RESTORE THESE AIR QUANTITIES. BEFORE AND AFTER AIR QUANTITIES SHALL BE LISTED IN THE AIR BALANCE REPORT
- 6. START UP AND PLACE ALL SYSTEMS IN OPERATION AND TAG ALL SWITCHES AND CONTROLS WITH PERMANENT LABELS.
- 7. 5. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS.

#### MISCELLANEOUS EQUIPMENT SPECIFICATIONS

PERFORATED FACE CEILING EXHAUST AIR GRILLES - TITUS MODEL PXP OR APPROVED EQUAL. 12"X12" FACE, STEEL CONSTRUCTION, WHITE FINISH, FLUSH FACE, LAY-IN BORDER (TYPICAL). SEE SCHEDULE FOR REQUIRED NECK SIZE ON DUCTED APPLICATIONS.

DOUBLE DEFLECTION SUPPLY GRILL: - TITUS MODEL 300FL OR APPROVED EQUAL. EXTRUDED ALUMINUM CONSTRUCTION, FRONT BLADES PARALLEL TO LONG DIMENSION. PROVIDE WITH ALUMINUM OPPOSED BLADE DAMPER AND ALL MOUNTING HARDWARE, CLIPS, MOUNTING ANGLES, BLANK OF PANELS. COLOR TO BE SELECTED BY THE ARCHITECT. SEE SCHEDULE FOR FACE SIZE ON DUCTED APPLICATIONS.

RETURN LOUVER: - TITUS MODEL 350FL OR APPROVED EQUAL. EXTRUDED ALUMINUM CONSTRUCTION, WITH BLADES PARALLEL TO LONG DIMENSION. PROVIDE WITH ALL MOUNTING HARDWARE, CLIPS, MOUNTING ANGLES, BLANK OF PANELS. COLOR TO BE SELECTED BY THE ARCHITECT.





VORCESTER COUN ROADS BUILDING

> MECHANICAL SPECIFICATIONS



SCALE : NTS

DESIGN BY : JHG

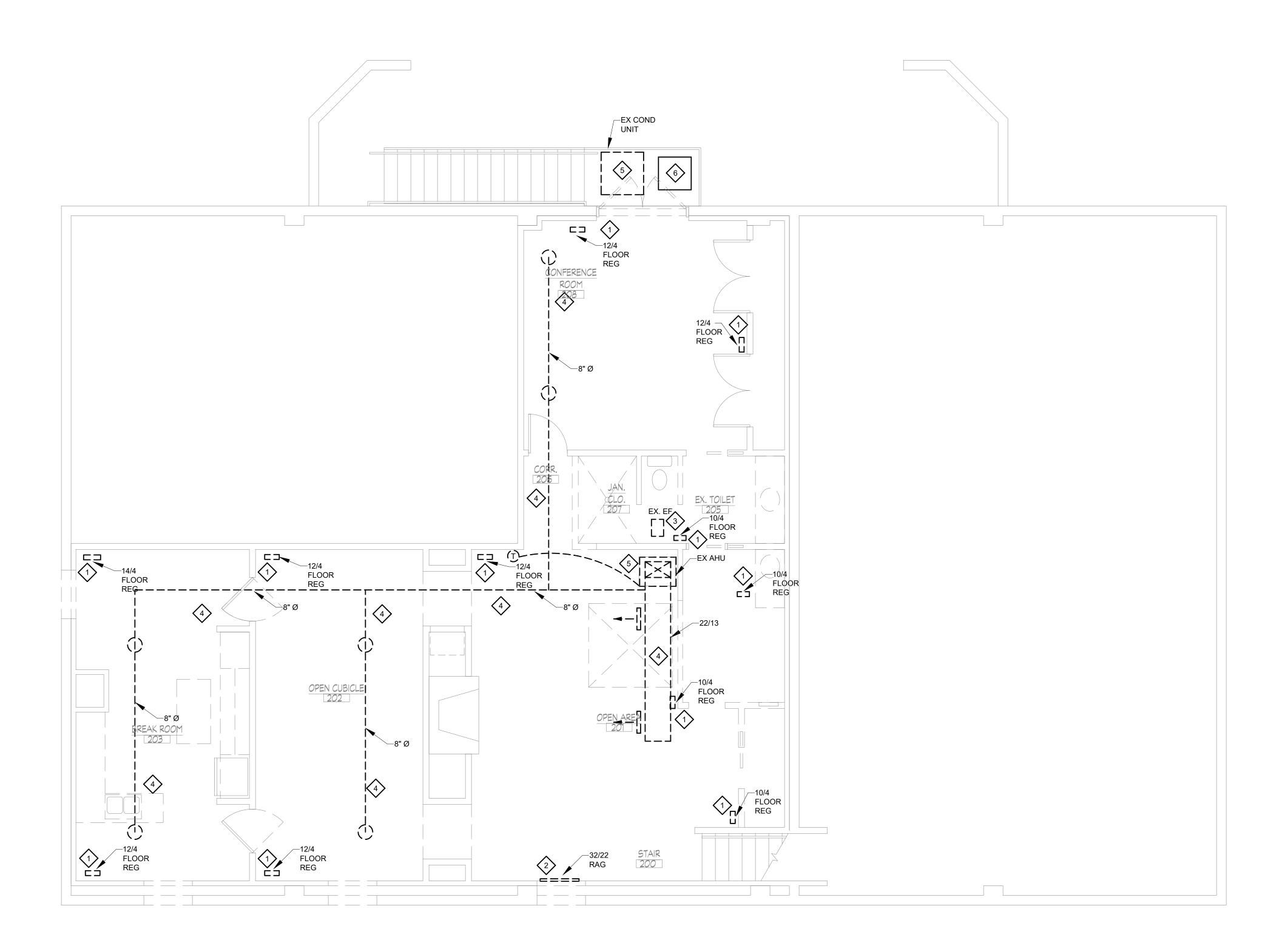
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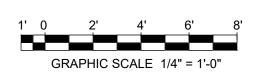
DATE : 12-06-22

M0.2



MECHANICAL SECOND FLOOR DEMO PLAN

1/4" = 1'0"



#### MECHANICAL GENERAL NOTES:

- 1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM FIELD OBSERVATIONS AND PHOTOS, AND MAY NOT INDICATE ALL ACTUAL EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
- 2. EXISTING EQUIPMENT AND DUCTWORK OUTSIDE OF SCOPE OF WORK AREA IS EXISTING TO REMAIN UNLESS OTHERWISE
- 3. PATCH ALL WALL, FLOOR, AND CEILING SURFACES SCHEDULED TO REMAIN, WHERE MEP ELEMENTS ARE BEING REMOVED, TO MATCH EXISTING CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 4. OWNER HAS FIRST RIGHT OF REFUSAL FOR ALL REMOVED EQUIPMENT.
- 5. RECLAIM REFRIGERANT ON DEMOLISHED UNITS. 6. CONDENSING UNITS ARE INSTALLED UNDER THE STAIRWELL.

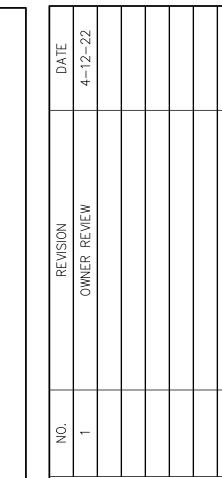
# MECHANICAL KEY NOTES: (#>



- 1. REMOVE ALL FLOOR REGISTERS. PATCH FLOOR TO MATCH EXISTING.
- 2. REMOVE RETURN AIR GRILLE. PATCH WALL TO MATCH EXISTING. 3. REMOVE EXISTING EXHAUST FAN, DUCTS, WIRING, CONTROLS,
- ETC. AND DISCARD. PATCH PENETRATION TO MATCH EXISTING. 4. REMOVE EXISTING DUCTS, SUPPORTS, AND AIR DEVICES AND DISCARD. 5. REMOVE EXISTING UNITS, REFRIGERANT PIPING, CONDENSATE

PUMP, CONDENSATE PIPING, CONTROLS, POWER WIRING. TURN

OVER UNIT TO OWNER. 6. EXISTING CONDENSING UNIT TO REMAIN.





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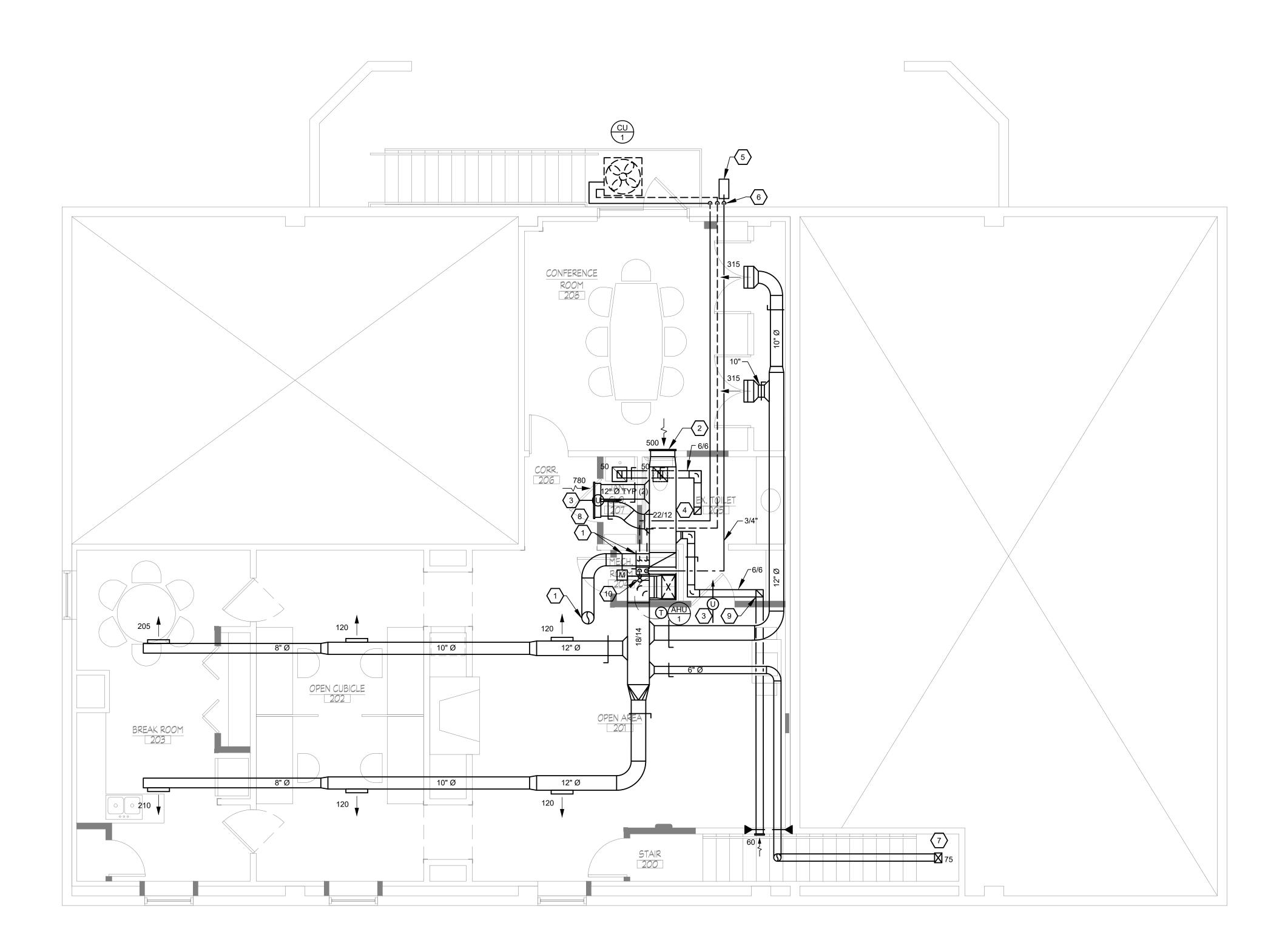
MECHANICAL SECOND FLOOR DEMO PLAN



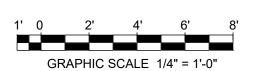
:1/4" = 1'0" DESIGN BY : JHG drawn by : AM CHECKED BY : JHG

GMB FILE : 210241

:12-06-22



1 MECHANICAL SECOND FLOOR PLAN M2.1 1/4" = 1'0"



#### MECHANCIAL GENERAL NOTES:

- 1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM FIELD OBSERVATIONS AND PHOTOS, AND MAY NOT INDICATE ALL ACTUAL EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
- 2. EXISTING EQUIPMENT AND DUCTWORK OUTSIDE OF SCOPE OF WORK AREA IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED. 3. PATCH ALL WALL, FLOOR, AND CEILING SURFACES SCHEDULED TO REMAIN, WHERE MEP ELEMENTS ARE BEING REMOVED, TO
- MATCH EXISTING CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 4. OWNER HAS FIRST RIGHT OF REFUSAL FOR ALL REMOVED EQUIPMENT.
- 5. RECLAIM REFRIGERANT ON DEMOLISHED UNITS. 6. PATCH/FIRE STOP ALL WALL AND CEILING PENETRATIONS WHERE ALL MEP ITEMS ARE INSTALLED. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 7. MOUNT ALL THERMOSTATS 48" AFF, EQUAL TO HONEYWELL CG511A1000/C. PROGRAM THERMOSTATS TO OPERATE DURING OWNERS SCHEDULED HOURS OF OPERATION.
- 8. COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT, DUCTS, ETC. WITH LIGHTING AND LIGHTING
- CONTROLS. 9. ALL REFRIGERANT PIPING SHALL BE KEPT TIGHT TO BEAMS AND
- 10. SUPPORT ALL DUCTS, PIPING, EQUIPMENT, ETC. FROM STRUCTURE ABOVE. PROVIDE ALL STEEL SUPPORTS TO ADEQUATELY SUPPORT THESE ITEMS.
- 11. ALL SUPPLY AIR AND RETURN AIR DUCT SHALL BE INSTALLED WITHIN BAR JOIST SPACE UNLESS OTHERWISE NOTED. 12. PROVIDE SOUND LINED DUCT FROM UNIT TO CONFERENCE ROOM, AND RETURN TO HALL WAY. RA DUCT TO STAIRS SHALL
- NOT BE SOUNDLINED. 13. PROVIDE ADEQUATE SPACE IN MECHANICAL CLOSET FOR FUTURE DEHUMIDIFICATION EQUIPMENT. CONSULT WITH OWNER FOR FUTURE REQUIREMENTS.

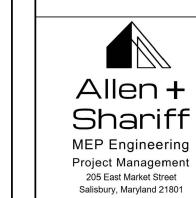
# MECHANICAL KEY NOTES: (#)



- 1. 12" Ø FRESH AIR DUCT UP THROUGH ROOF. TERMINATE VIA GOOSENECK. INSTALL MANUAL VOLUME DAMPER IN DUCT FOR BALANCING (290 CFM). INTERLOCK MOD WITH THE OPERATION OF THE UNIT. MOD SHALL OPERATE DURING OCCUPIED HOURS OF OPERATION ONLY.
- 2. 16/20 RETURN AIR DEVICE INSTALLED HIGH ON WALL. 3. COORDINATE WITH ARCHITECT TO PROVIDE UNDERCUT OF 1".
- 4. INSTALL AND CONNECT TO ROOF-TOP EXHAUST FAN AS PER
- SCHEDULES & DETAILS. 5. CONDENSATE TO SPILL ON SPLASH BLOCK SET ON GRADE.
- 6. INSTALL EXTERIOR REFRIGERANT AND CONDENSATE PIPING IN HIDE A LINE SET COVER KIT OR APPROVED EQUAL. PAINT TO MATCH EXTERIOR COLOR SCHEME.
- 7. INSTALL SUPPLY AIR DEVICE AT LOWER LANDING.
- 8. 16/28 RETURN AIR DEVICE INSTALLED ABOVE DOOR. 9. PROVIDE RA OFFSET DOWN TO BULKHEAD. SEE ARCHITECTURAL DRAWINGS FOR BULKHEAD LOCATIONS.
- 10. ROUTE 3/4" CONDENSATE FROM AHU INTO CONDENSATE PUMP. ROUTE PUMPED CONDENSATE UP IN CEILING THROUGH CONFERENCE ROOM TO EXTERIOR OF BUILDING.

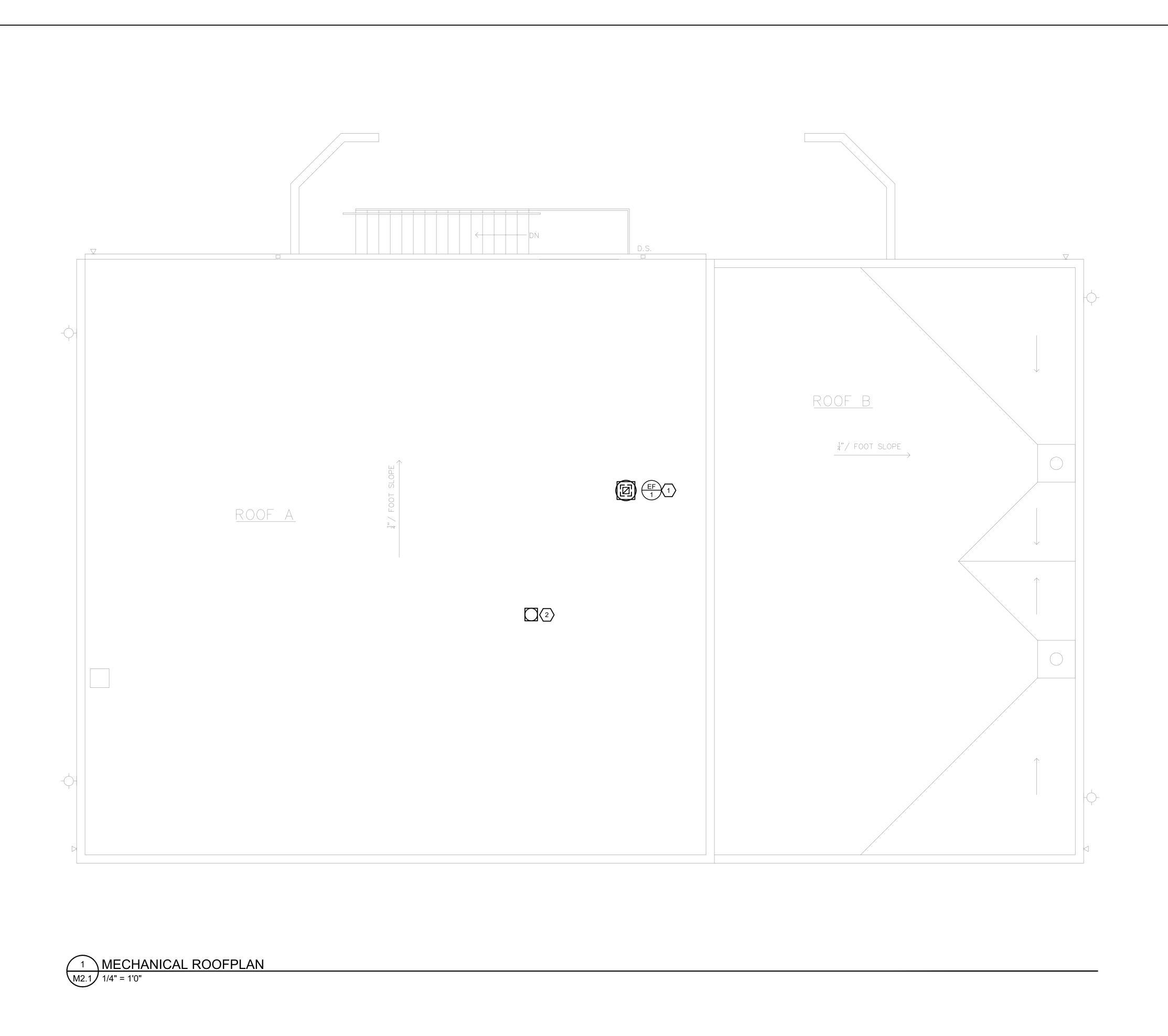


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: 1/4" = 1'0"DESIGN BY : JHG drawn by : AM CHECKED BY : JHG GMB FILE : 210241

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#### MECHANICAL GENERAL NOTES:

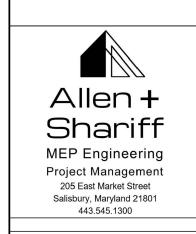
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- 2. EXISTING EQUIPMENT AND DUCTWORK OUTSIDE OF SCOPE OF WORK AREA IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED

# MECHANICAL KEY NOTES: (#)

- FASTEN CURB TO ROOF AND FAN TO CURB. COORDINATE
   ROOF CUTTING AND PATCHING WITH ROOFING
   CONTRACTOR
- CONTRACTOR.

  2. 12/12 FRESH AIR INTAKE GOOSE NECK FITTING. SEE DETAIL 2/M301.

ROOF PLAN



MECHANICA SECOND FLO PLAN

SCALE : 1/4" = 1'0"

DESIGN BY : JHG

DRAWN BY : AM

CHECKED BY: JHG

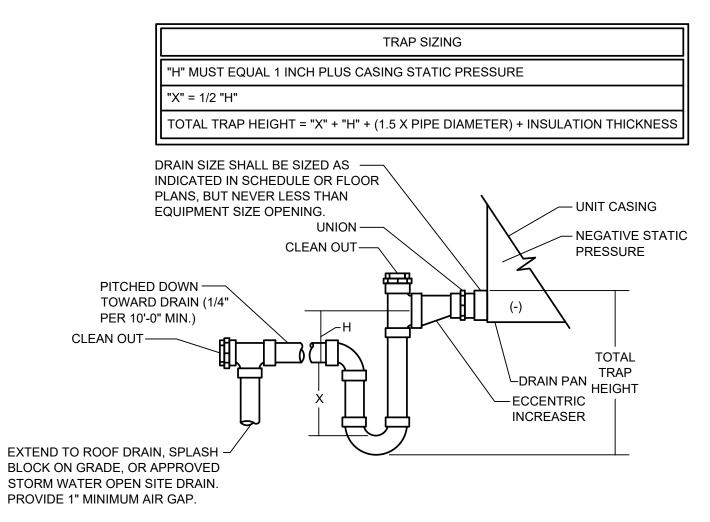
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DATE : 12-06-22

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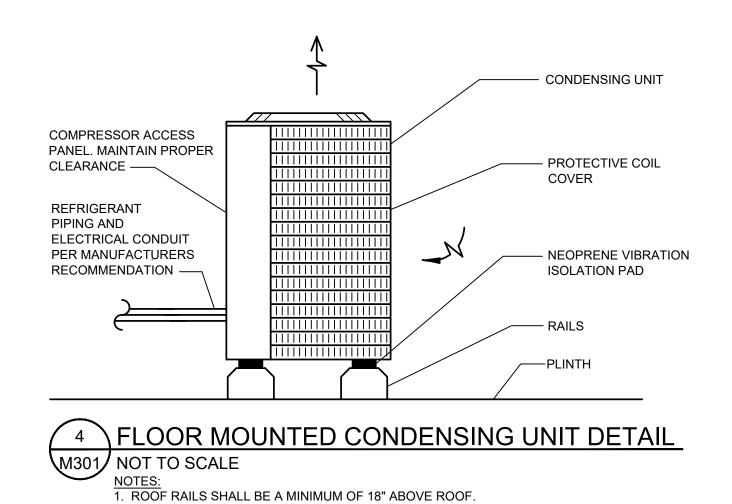
1' 0 2' 4' 6' 8

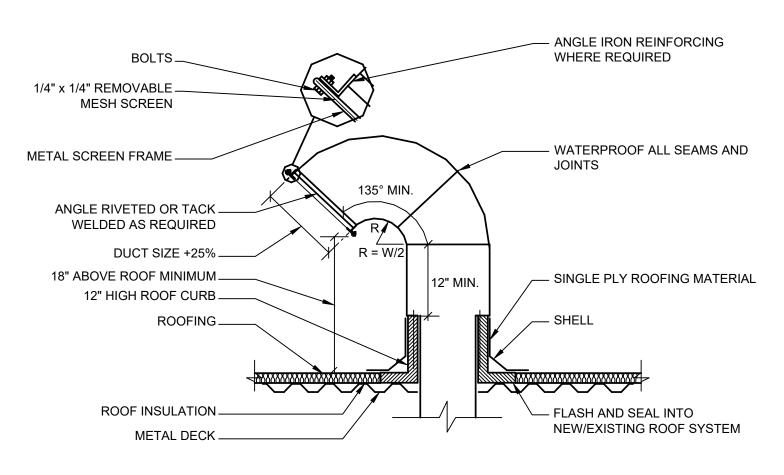
GRAPHIC SCALE 1/4" = 1'-0"



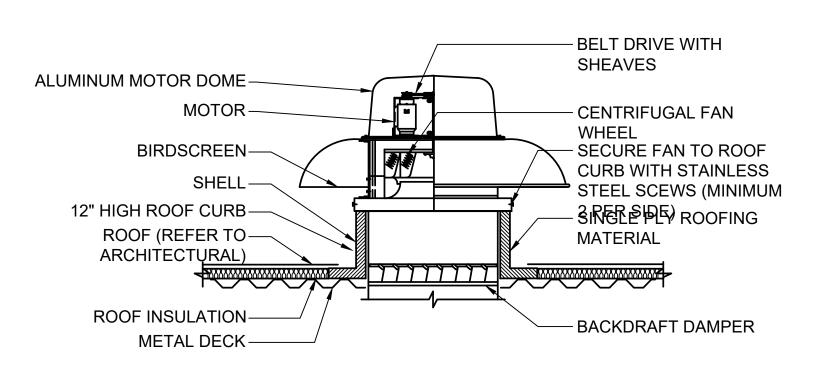
NOT TO SCALE

1 A/C CONDENSATE DRAIN TRAP ASSEMBLY DETAIL 
M301 TYPICAL DRAW-THROUGH OR NEGATIVE PRESSURE

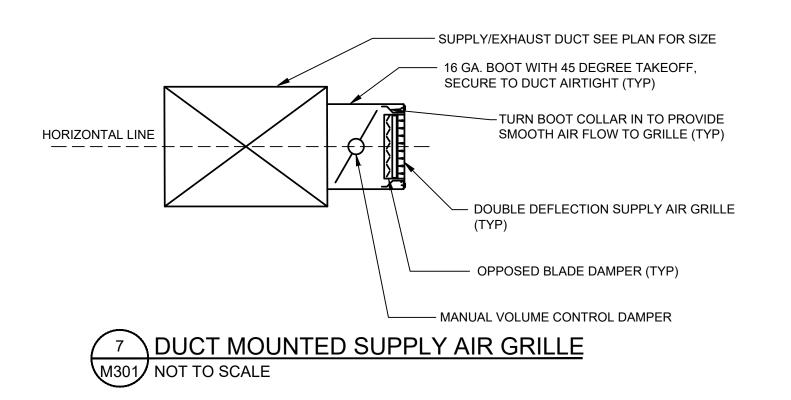


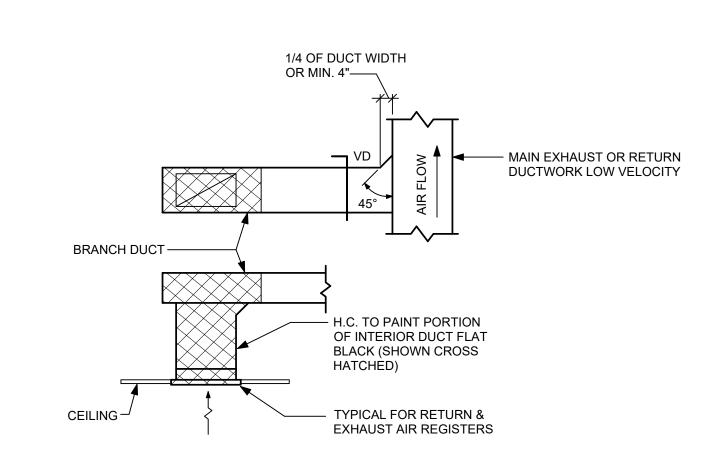




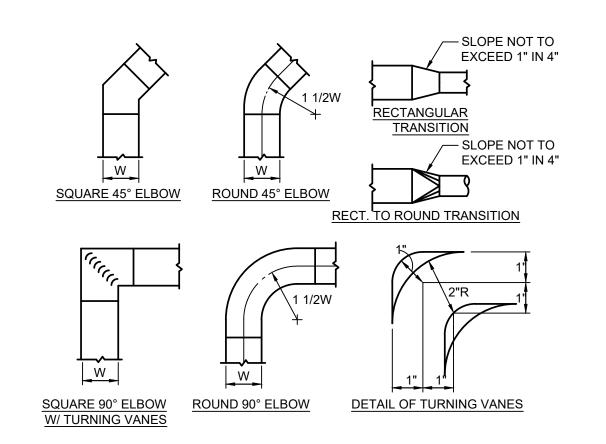


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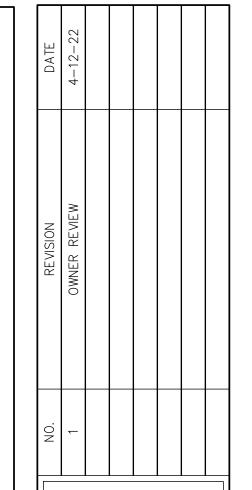


3 LOW VELOCITY BRANCH DUCT CONNECTION DETAIL
M301 NOT TO SCALE



6 LOW VELOCITY DUCTWORK DIAGRAMS
NO SCALE

NOTE:
PROVIDE RADIUS ELBOWS, 18" AND LARGER WITH TURNING
BLADES AT 1/3 AND 1/2 THE WIDTH OF THE DUCT FROM THE
INSIDE RADIUS. TURNING BLADES SHALL BE PROVIDED WITH
HEMMED ENDS. (SEE SECTION 15840 OF MECHANICAL
SPECIFICATIONS FOR ADDITIONAL DUCT CONSTRUCTION
INFORMATION AND RESTRICTIONS.)



GEORGE, MILES & BUHR, LI Architects & engineer salsbury baltimore · seaford

NORCESTER COUN ROADS BUILDING BERLIN, MARYLAND

> MECHANICAL DETAILS



SCALE : NTS

DESIGN BY : JHG

DRAWN BY : AM

CHECKED BY : JHG

GMB FILE : 210241

DATE : 12-06-22

	SPLIT SYSTEM SCHEDULE - HEAT PUMP																	
									INDOOR	UNIT				(	OUTDOO	R UNIT		
UNIT DES.	SERVICE	SENS. CAP MBH	TOTAL CAP MBH	E.A.T. DB / WB	REVERSE CYCLE HEAT CAP. MBH @ 17' O.A.T.	CFM	O.A. CFM	E.S.P. IN. W.G.	HP	HEATER KW@208V	BASIS OF DESIGN CARRIER MODEL	ELEC. VOLTS / PHASE	UNIT. DES.	NOM. TONS	SEER	HSPF	BASIS OF DESIGN CARRIER MODEL	ELEC. VOLTS / PHASE
AHU-1	BLDG 1	32.3	48.3	80/67	28.2	1600	290	0.3	3/4	10	FB4CNF048010	208/230/1φ	CU-1	4	15	8.2 BTUH	25HCE54830	208/230/1φ

- 1. PIPE 3/4" INSULATED CONDENSATE DRAIN PIPING TO SPILL ON SPLASH BLOCK LOCATED ON GRADE OUTSIDE. SEAL EXTERIOR WALL PENETRATION.
- 2. PROVIDE ELECTRIC HEAT WITH 24° HEAT RISE, 208230V/1ø, SINGLE POINT WIRING KIT, CIRCUIT BREAKER, AND DISCONNECT SWITCH FOR AHU.
- 3. SIZE AND INSTALL INSULATED R-410A REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS.
- 5. PROVIDE STANDARD 1" RETURN AIR FILTER IN AHU.
- 6. PROVIDE 7-DAY, REMOTE, PROGRAMMABLE, WALL MOUNTED THERMOSTAT WITH AUTOMATIC CHANGEOVER. MOUNT 48" AFF. W/ OPAQUE ENCLOSURE. INTERLOCK AHU WITH ASSOCIATED HP.
- 7. PROVIDE CONDENSATE OVERFLOW SENSOR IN PRIMARY CONNECTION OF THE COOLING COIL TO SHUT SOWN THE UNIT UPON SENSING CONDENSATE.
- 8. PROVIDE FLEXIBLE CONNECTION AT INLET AND DISCHARGE OF AHU TO ISOLATE FAN. USE HEAT RESISTANT MATERIAL.
- 9. PROVIDE TXV, VARIABLE SPEED ECM MOTOR, TIME DELAY RELAY AND LOW AMBIENT COOLING TO 14°F.
- 10. PROVIDE VIBRATION ISOLATION FOR AHU AND CU. SECURE CU TO PAD USING VANDAL RESISTANT ANCHORS AND SCREWS.
- 11. PROVIDE NIGHT SET BACK CONTROL, MORNING WARM UP CONTROL, COMPRESSOR SUMP HEATER, AND DEFROST CONTROL. PROGRAM TO OWNERS SCHEDULE.
- 12. PROGRAM THERMOSTATS TO OPERATE AT 75°/70° CLG/HTG.
- 13. PROVIDE CONDENSATE PUMP IN UNIT.

EXHAUST FAN SCHEDULE										
				SP IN	FAN	WT.	МОТО	)R	BASIS OF	DESIGN
TAG	SERVES	TYPE	CFM	W.C.	RPM	LB.S	HP	VOLTS/ PH	MFG.	MODEL
EF-1	RESTROOM /JANITOR	ROOF MOUNTED	100	0.18	1050	22	1/100	115V/1¢	GREENHECK	G-070-E

- REMARKS:
  1. PROVIDE DISCONNECT SWITCH.
  2. PROVIDE SOLID STATE SPEED CONTROLLER, MOUNTED IN THE MOTOR COMPARTMENT, FOR BALANCING.
- 3. PROVIDE W/ROOF CURB (NON-INSULATED, 14" TALL)
- 4. PROVIDE TIME CLOCK AND COORDINATE WITH OWNER FOR OPERATION HOURS.

VENTILA	ATION SCHEDULE																		
ROOM#	ROOM	DESCRIPTION	AREA FT2 AZ	AREA OA RATE	AREA OA RaAz	OCCUPANT DENSITY PEOPLE/1000 FT2	OCCUPANCY PZ	OCCUPANT OA RATE RP	OCCUPANT OA RATE RpPz	BREATHING ZONE OA VBZ	ZA DIST EFFECTIV NESS Ez	ZONE OA Voz	SA DESIGN Vpz	OA FRACTION Zp	VENT PROVIDED CFM	TOTAL ACPH	OA ACPH	OA NEEDE D CFM	TOTAL NEEDED CFM
201	OPEN AREA	OFFICE	433	0.06	26.0	5	2	5	10	36.0	0.8	45.0	240	0.19	46.00	NA	NA	45.0	232.0
202	OPEN CUBICLE	OFFICE	274	0.06	16.4	5	4	5	20	36.4	0.8	45.6	240	0.22	46.00	NA	NA	45.6	211.0
203	BREAK ROOM	BREAK	271	0.12	32.5	50	6	5	30	62.5	0.8	78.2	415	0.40	79.00	NA	NA	78.2	193.0
208	CONFERENCE ROOM	CONFERENCE	281	0.06	16.9	50	8	5	40	56.9	0.8	71.1	630	0.11	120.00	NA	NA	71.1	626.0

ITEM	MECH/ DIV 22 AND 23	ELEC/ DIV 26
AUTOMATIC TEMPERATURE CONTROLS	FURNISH, INSTALL & WIRE	POWER WIRE
CONTROL PANELS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
LOW VOLTAGE CONTROL WIRING FOR MECH EQUIP.	FURNISH & INSTALL	
LINE VOLTAGE CONTROL WIRING FOR MECH. EQUIP.	FURNISH, INSTALL & WIRE	
MECHANICAL FLOW SWITCHES	FURNISH, INSTALL & WIRE	
THERMOSTATS/ SENSORS	FURNISH, INSTALL & WIRE	
P/E & E/P SWITCHES	FURNISH, INSTALL & WIRE	
DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MECHANICAL EQUIPMENT MONITORS	FURNISH & INSTALL	POWER WIRE
MANUAL STARTERS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MAGNETIC STARTERS FOR MECHANICAL EQUIPMENT	FURNISH	INSTALL & POWER WIRE
MOTOR CONTROL CENTERS	CONTROL WIRING	FURNISH, INSTALL, & POWER WIRE
VARIABLE SPEED CONTROLLERS	FURNISH & INSTALL	POWER WIRE
MOTORIZED DAMPERS & VALVES	FURNISH, INSTALL & WIRE	
DUCT SMOKE DETECTORS	INSTALL	FURNISH & WIRE
HEAT TRACE CABLE FOR PIPING	FURNISH & INSTALL	POWER WIRE
OIL/ GAS EMERGENCY SHUT-OFF SWITCHES		FURNISH, INSTALL, & POWER WIRE
SPRINKLER FLOW & TAMPER SWITCHES	BY SPRINKLER CONTRACTOR	WIRE

EXHAUST REGIS	STER SCHEDULE
CFM RANGE	DUCT / NECK SIZE
0 - 75	6 X 6
76 - 150	8 X 8
151 - 225	10 X 10
226 - 350	12 X 12
351 - 450	14 X 14
451 - 650	16 X 20
651 - 850	16 X 28
851 - 1025	22 X 22
1026-1850	24 X 24

NOTE: INSTALL AT SIZES ABOVE UNLESS NOTED OTHERWISE ON FLOOR PLANS.

SUPPLY REGISTER SCHEDULE						
CFM RANGE	DIMENSIONS					
0 - 150	8" x 6"					
151 - 240	12" x 6"					
241 - 330	12" x 8"					
331 - 500	18" x 8"					
DEMADKS:	·					

REMARKS: INSTALL AT SIZES ABOVE UNLESS NOTED OTHERWISE ON FLOOR PLAN.

<u> </u>	GEORGE, MILES & BUHR, LLC	ARCHITECTS & ENGINEERS	SALISBURY • BALTIMORE • SEAFORD	www cmbnet com





DESIGN BY : JHG drawn by : AM CHECKED BY : JHG GMB FILE : 210241 DATE : 12-06-22



PIPE HANGER SPACING <sup>C,D</sup>					
PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)			
CAST-IRON PIPE	5 <sup>A</sup>	10			
CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE AND TUBING, 1 INCH AND SMALLER	3	10 <sup>B</sup>			
CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE AND TUBING, 1-1/4 INCH AND LARGER	4	10 <sup>B</sup>			
COPPER OR COPPER-ALLOY TUBING, 1-1/4 INCH AND SMALLER	6	10			
COPPER OR COPPER-ALLOY TUBING, 1-1/2 INCH AND LARGER	10	10			
CROSS-LINKED POLYETHYLENE (PEX) PIPE 1 INCH AND SMALLER	2.67 (32 INCHES)	10 <sup>B</sup>			
CROSS-LINKED POLYETHYLENE (PEX) PIPE 1-1/4 INCH AND LARGER	4	10 <sup>B</sup>			
CROSS-LINKED POLYETHYLENE/ALUMINUM/CROSS- LINKED POLYETHYLENE (PEX-AL-PEX) PIPE	2.67 (32 INCHES)	4			
POLYVINYL CHLORIDE (PVC) PIPE	4	10 <sup>B</sup>			

A. THE MAXIMUM HORIZONTAL SPACING OF CAST-IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10-FOOT LENGTHS OF PIPE ARE INSTALLED.

B. FOR SIZES 2 INCHES AND SMALLER, A GUIDE SHALL BE INSTALLED MIDWAY BETWEEN REQUIRED VERTICAL SUPPORTS. SUCH GUIDES SHALL PREVENT PIPE MOVEMENT IN A DIRECTION PERPENDICULAR TO THE AXIS OF THE PIPE.

C. THIS SCHEDULE IS BASED UPON 2018 INTERNATIONAL PLUMBING CODE TABLE 308.5. NOT ALL PIPE TYPES LISTED ARE USED IN PROJECT. PIPE MANUFACTURER'S SPACING RECOMMENDATIONS SHALL BE TAKEN INTO ACCOUNT WHEN INSTALLING HANGERS AND WHERE CONFLICTS BETWEEN THE CODE AND MANUFACTURER'S RECOMMENDATIONS OCCUR THE MOST STRINGENT SHALL BE APPLIED.

D. HANGERS/SUPPORTS SHALL BE PROVIDED IN ADDITIONAL AREAS NOT NOTED ABOVE. AREAS INCLUDE BUT NOT LIMITED TO THE FOLLOWING: EACH SIDE OF WALL/FLOOR PENETRATION, EACH SIDE OF JOINT, AT A CHANGE IN DIRECTION, AND EACH SIDE OF A VALVE.

DIVISION OF MECH	HANICAL/ ELECTRICAL WO	<u>DRK</u>
ITEM	MECH/ DIV 22 AND 23	ELEC/ DIV 26
AUTOMATIC TEMPERATURE CONTROLS	FURNISH, INSTALL & WIRE	POWER WIRE
CONTROL PANELS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
LOW VOLTAGE CONTROL WIRING FOR MECH EQUIP.	FURNISH & INSTALL	
LINE VOLTAGE CONTROL WIRING FOR MECH. EQUIP.	FURNISH, INSTALL & WIRE	
MECHANICAL FLOW SWITCHES	FURNISH, INSTALL & WIRE	
THERMOSTATS/ SENSORS	FURNISH, INSTALL & WIRE	
P/E & E/P SWITCHES	FURNISH, INSTALL & WIRE	
DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MECHANICAL EQUIPMENT MONITORS	FURNISH & INSTALL	POWER WIRE
MANUAL STARTERS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MAGNETIC STARTERS FOR MECHANICAL EQUIPMENT	FURNISH	INSTALL & POWER WIRE
MOTOR CONTROL CENTERS	CONTROL WIRING	FURNISH, INSTALL & POWER WIRE
VARIABLE SPEED CONTROLLERS	FURNISH & INSTALL	POWER WIRE
MOTORIZED DAMPERS & VALVES	FURNISH, INSTALL & WIRE	
DUCT SMOKE DETECTORS	INSTALL	FURNISH & WIRE
HEAT TRACE CABLE FOR PIPING	FURNISH & INSTALL	POWER WIRE
OIL/ GAS EMERGENCY SHUT-OFF SWITCHES		FURNISH, INSTALL & POWER WIRE
SPRINKLER FLOW & TAMPER SWITCHES	BY SPRINKLER CONTRACTOR	WIRE

						PLUMBING FIXTURI	E SCHEDULE (BAS	SIS OF DESIGN)				
DESIGNATION	FIXTURE TYPE	C.W.	H.W.	WASTE	MANUFACTURER	MODEL NO.	TRIM	DRAIN	TRAP	SUPPLY	ACCESSORIES	REMARKS
<u>P-1</u>	LAVATORY - COUNTERTOP; ADA	1/2"	1/2"	1-1/4"	SEE ARCHITEC	TURAL DRAWINGS	SLOAN / OPTIMA SENSOR FAUCET ETF-600-PLG	GRID DRAIN W/ OVERFLOW	CHROME PLATE W/ CLEAN OUT PLUG	BRASSCRAFT B-1**A SUPPLIES W/ WHEEL HANDLE STOPS	TMV-1	1, 2, 3, 4
<u>P-2</u>	WATER CLOSET - TANK TYPE; ADA	1/2"	-	3"	AMERICAN STANDARD	AMERICAN STANDARD / CADET ELONGATED PRESSURE ASSISTED MN: 2467.016	-	-	INTEGRAL	BRASSCRAFT B-3**DL SUPPLY W/ WHEEL HANDLE STOP	BEMIS / 1955SSTFR SEAT	1, 2, 4, 5, 6
<u>P-3</u>	MOP SINK	1/2"	1/2"	3"	FIAT	MSB2424	830AA / 832AA	GRID DRAIN	SAME SIZE AS OUTLET	CONCEALED	889CC / MSG2424	1, 4
P-4	BREAK ROOM SINK	1/2"	1/2"	1-1/4"	EXISTING	G TO REMAIN	AMERICAN STANDARD CORALAIS K-15171	-	CHROME PLATE W/ CLEAN OUT PLUG	BRASSCRAFT B-1**A SUPPLIES W/ WHEEL HANDLE STOPS	-	1

1. PROVIDE ALL REQUIRED COMPONENTS FOR COMPLETE FIXTURE ROUGH-IN, I.E., SUPPLIES, STOPS, TRAPS, CARRIERS, GRID DRAINS, TAILPIECES, ETC. NOT ALL REQUIRED COMPONENTS ARE SPECIFIED ABOVE. CARRIERS FOR LAVATORIES AND WATER CLOSETS SHALL COMPLY WITH ANSI STANDARD A112.6.1M AND PLUMBING DRAIN INSTITUTE (PDI) ARTICLE "MINIMUM SPACE REQUIREMENTS FOR ENCLOSED PLUMBING FIXTURE SUPPORTS."

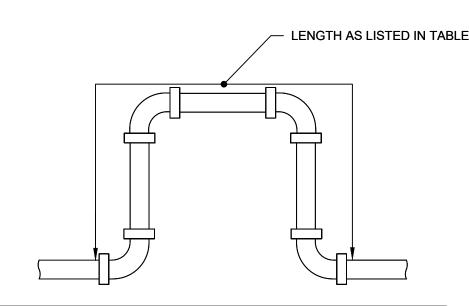
2. FIXTURES SHALL BE ADA COMPLIANT. PROVIDED WITH ADA COMPLIANT ACCESSORIES. MOUNT ADA COMPLIANT. SEE ARCHITECTURAL PLANS FOR ELEVATIONS.

- 3. PROVIDE SKAL+GUARD INSULATING DEVICES ON EXPOSED UNDER-COUNTER PLUMBING.
- 4. REFER TO RISER DIAGRAM FOR VENT PIPE SIZES AND CONNECTIONS.
- 5. COORDINATE ADA GRAB BAR INSTALLATION WITH WATER CLOSET. GRAB BARS SHALL NOT INTERFERE WITH USE AND MAINTENANCE OF TANK. PROVIDE EXTENSIONS AS REQUIRED.
- 6. COORDINATE SCHEDULED WATER CLOSET MODEL NUMBERS WITH INSTALLED ORIENTATION OF FIXTURE. FIXTURE FLUSH LEVER SHALL BE ACCESSIBLE FROM THE OPEN / APPROACH SIDE OF FIXTURE.

DOMESTIC AND STORM PIPING INSULATION SCHEDULE							
			INSULATION THICKNESS (INCHES) PIPE SIZE (INCHES)				
SYSTEM OR	FLUID TEMPERATURE	INSULATION TYPE					
SERVICE	RANGE (DEG F)		1/2" TO <1-1/2"	1-1/2" TO <4"	4" TO <8"	≥8"	
DOMESTIC HOT WATER AND HOT WATER CIRCULATION	105 TO 140	MINERAL FIBER	1"	1-1/2"	1-1/2"	1-1/2"	
DOMESTIC COLD WATER	40 TO 60	MINERAL FIBER	1/2"	1/2"	1"	1"	
ROOF DRAIN BODIES & HORIZONTAL STORM DRAIN PIPING	-	MINERAL FIBER	1"	1"	1"	1"	

# NOTES:

- 1. NOT ALL PIPE SIZES LISTED ARE USED ON PROJECT.
- 2. SIZES LISTED ARE BASED UPON 2021 IECC TABLE C403.12.3.
- 3. ALL PIPING INSULATION SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY FACTOR (K) OF 0.27 BTU\*IN/HR\*FT2°F.
- 4. OTHER INSULATION MATERIAL THAT MEETS OR EXCEEDS THE PERFORMANCE CHARACTERISTICS OF THE LISTED MATERIAL MAY BE USED. CONTRACTOR SHALL PROVIDE INSULATION PERFORMANCE CUT SHEET PRIOR TO INSTALLATION.



DEV	DEVELOPED LENGTH OF EXPANSION LOOP TO ACCOMMODATE 1-1/2" MOVEMENT								
NOMINAL	LENGTH PIPING IN FEET								
PIPE DIA.	STEEL PIPE	COPPER PIPE	SCH. 40 CPVC						
1/2"	4.7'	5.3'	1.7'						
3/4"	5.2'	6.2'	1.9'						
1"	5.9'	7.1'	2.1'						
1-1/4"	6.6'	7.8'	2.3'						
1-1/2"	7.0'	8.5'	2.5'						
2"	7.9'	9.7'	2.8'						
2-1/2"	8.7'	10.8'	3.1'						
3"	9.6'	11.8'	3.4'						
4"	10.8'	13.5'	3.8'						

# NOTES:

- 1. EXPANSION LOOPS SHALL BE IN STALLED AT INTERVALS AS RECOMMENDED BY PIPE MANUFACTURER.
- 2. PRE-MANUFACTURED EXPANSION JOINTS MAY BE USED IN-LIEU OF EXPANSION LOOPS.
- 3. NOT ALL SIZES AND MATERIALS ARE USED ON PROJECT.

#### PLUMBING GENERAL NOTES:

#### A. GENERAL

- 1. CONFORM TO GENERAL AND SPECIAL CONDITIONS OF CONTRACT.
- 2. SPECIFICATIONS ARE APPLICABLE TO CONTRACTORS AND/OR SUBCONTRACTORS.
- 3. THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND EQUIPMENT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED INTO, AND BECOME A PART OF THIS DIVISION. THIS CONTRACTOR SHALL EXAMINE SUCH DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS CONTAINED THEREIN. THE SUBMISSION OF THE BID SHALL INDICATE SUCH KNOWLEDGE.
- 4. VISIT SITE, CHECK FACILITIES AND CONDITIONS.
- 5. SYSTEMS SHALL BE COMPLETE AND PLACED IN OPERATION.
- 6. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.
- 7. CONTRACTORS SHALL CONFIRM AND COMPLY WITH UTILITY COMPANY REQUIREMENTS, COORDINATE CONNECTION POINTS IN FIELD.
- 8. ARRANGE FOR AND OBTAIN OWNER'S AND INSURANCE REPRESENTATIVE'S PERMISSION FOR ANY SERVICE SHUTDOWNS.
- 9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.
- 10. PIPING, CONTROLS, ETC., SHALL NOT BE INSTALLED, OR ROUTED ABOVE, ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR MACHINE ROOMS.
- 11. THE CONTRACTOR SHALL COORDINATE AND PROVIDE A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF PLUMBING EQUIPMENT TO ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. ADDITIONAL COMPENSATION WILL NOT BE MADE FOR LACK OF CONTRACTOR COORDINATION OF EQUIPMENT'S ELECTRICAL CHARACTERISTICS.
- 12. DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
- 13. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR PHASING REQUIREMENTS.
- 14. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING CONDITIONS THAT MAY AFFECT THE BID. ADDITIONAL COMPENSATION WILL NOT BE PROVIDED FOR FAILURE TO REVIEW EXISTING CONDITIONS PRIOR TO BIDDING.

#### B. CODES, PERMITS, STANDARDS AND REGULATIONS

- 1. CONFORM TO APPLICABLE CODES (LOCAL, STATE, NATIONAL CODES, NFPA, OSHA, ETC.), GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, AND APPLICABLE
- 2. OBTAIN PERMITS AND PAY FEES. ARRANGE FOR REQUIRED TESTS, INSPECTIONS AND APPROVALS. PROVIDE COPIES OF INSPECTIONS, AND APPROVALS TO THE ARCHITECT-ENGINEER.

#### C. RELATED WORK SPECIFIED ELSEWHERE

- 1. OPENINGS AND CHASES, WHEN SHOWN ON ARCHITECTURAL DRAWINGS.
- 2. TEMPORARY WATER SERVICE, SANITARY FACILITIES, FIRE PROTECTION AND HEATING DURING CONSTRUCTION.
- POURED-IN-PLACE CONCRETE.
- 4. FINISH PAINTING.
- 5. ELECTRIC POWER WIRING.

## D. DRAWINGS

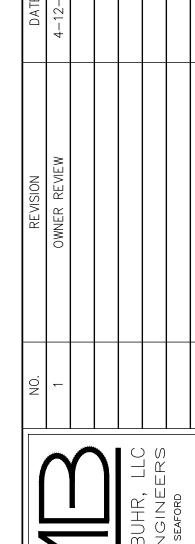
- 1. THE SYSTEMS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. CONFIRM DIMENSIONS BY FIELD MEASUREMENT.
- 2. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.
- 3. DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT ONE ANOTHER. ANY MATERIALS OR LABOR CALLED FOR IN ONE BUT NOT THE OTHER SHALL BE PROVIDED.

## E. DEMOLITION AND REMOVAL

- 1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE PIPING, DUCTS AND EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR THE PROJECT.
- 2. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO THE OWNER'S ON SITE.
- 3. DEMOLITION SHALL BE DONE IN A MANNER NOT TO DAMAGE ADJACENT WORK AND NOT AFFECT THE OPERATION OF SYSTEMS TO REMAIN IN USE. ANY ITEM TO REMAIN THAT IS DAMAGED BY THE CONTRACTOR OR THAT REQUIRES DAMAGE DUE TO THE ABSOLUTE NECESSITY FOR DEMOLITION REQUIREMENTS SHALL BE REPLACED AND/OR REPAIRED AT HIS EXPENSE.
- 4. OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED.
- 5. ASBESTOS REMOVAL WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK.
- 6. EXAMINE AREAS AND CONDITIONS UNDER WHICH DEMOLITION WORK SHALL BE PERFORMED. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES PERFORMING DEMOLITION
- 7. REMOVE SUPPORTS, HANGERS, AND ACCESSORIES FROM EQUIPMENT AND MATERIAL INDICATED TO BE REMOVED.

	PLUMBING LEGEND							
SYMBOL	ABRV.	DESCRIPTION						
<b>SAN</b>	SAN., W.	SANITARY PIPING						
<b>\$</b> V <b>\$</b>	V	VENT PIPING						
<b>⊱</b> —CW—- <b>\$</b>	CW	COLD WATER PIPING						
<b>5</b> ──HW── <b>5</b>	HW	HOT WATER PIPING						
7//////		EXISTING EQUIPMENT OR PIPING TO BE REMOVED (LINE TYPE INDICATES PIPE TYPE UNO.)						
<b></b> 0		PIPE UP						
<del>}</del>		PIPE DOWN						
<del>\$ = \$</del>		PIPE TEE DOWN						
<b>├</b> ──  <b>├</b> ── <b></b>		PIPE UNION						
<b>5</b>		BALL VALVE OR SHUTOFF VALVE						
₹		BALL VALVE OR SHUTOFF VALVE IN RISE						
HŽH.	MV	MIXING VALVE						
#		DRAWING NOTE						
XX		REVISION NUMBER						
X #		RISER DESIGNATION						
#		-PART PLAN NUMBER						
X-###		_SHEET NUMBER WHERE PART PLAN IS FOUND						
	DN.	DOWN						
	VTR	VENT THROUGH ROOF TERMINATION						

EMOVED		
.)		
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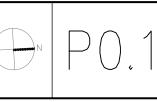








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#### PLUMBING SPECIFICATIONS

PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS:

2018 INTERNATIONAL PLUMBING CODE (IPC) 2018 INTERNATIONAL MECHANICAL CODE (IMC) 2018 INTERNATIONAL ENERGY CONSERVATION CODE 2017 NATIONAL ELECTRIC CODE 2018 INTERNATIONAL FUEL GAS CODE 2018 INTERNATIONAL BUILDING CODE 2018 INTERNATIONAL EXISTING BUILDING CODE

COMAR 05.02.02 & ADAAG, 2010 ED. UNDERWRITERS LABORATORY (UL), IRI, FM

WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, OBTAIN PERMITS AND PAY ALL FEES, ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.

2. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.

3. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS. SYSTEMS ARE TO BE COMPLETE AND WORKABLE IN ALL RESPECTS, PLACED IN OPERATION AND PROPERLY ADJUSTED.

4. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY. CLEAN-UP, REMOVE AND LEGALLY DISPOSE OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES; LUBRICATE AND ADJUST AS REQUIRED. IT IS THIS

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS WORKERS, ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.

6. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO RESPONSIBILITIES. BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

7. ALL PRODUCTS LOCATED WITHIN PLENUM AREAS, INCLUDING BUT NOT LIMITED TO INSULATION AND ADHESIVE SYSTEMS, SHALL HAVE A COMPOSITE FIRE HAZARD RATING NOT TO EXCEED 25 FLAME SPREAD AND 50 VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE. SMOKE DEVELOPED PER ASTM E-84, NFPA 255 AND UL 723.

8. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE PLUMBING SYSTEM SO AS TO OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS' RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.

#### WORK IN EXISTING BUILDINGS

1. EXISTING BUILDING IS TO REMAIN OCCUPIED AND ACCESSIBLE AT ALL TIMES. PROTECT THE BUILDING PREMISES AND ALL OCCUPANTS ON THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES CAUSED BY IMPROPER PROTECTION AND SHALL MAKE ALL NECESSARY REPLACEMENTS OR REPAIRS WITHOUT ANY ADDITIONAL COST. MAKE ALL ARRANGEMENTS, MAINTAIN AND PAY ALL COSTS FOR TEMPORARY WATER, PLUMBING, POWER, LIGHTING, AND HEATING OR VENTILATION AS REQUIRED TO PROPERLY CONDUCT THE WORK OF THIS CONTRACT AND MAINTAIN SERVICES. PROVIDE AND MAINTAIN FOR THE ENTIRE LENGTH OF THIS CONTRACT ALL EXITS, EXIT LIGHTING, FIRE PROTECTION DEVICES AND ALARMS TO CONFORM TO LOCAL BUILDING CODE REQUIREMENTS.

2. CONFORM WITH THE CURRENT EDITION OF THE SMACNA "IAQ GUIDELINES FOR OCCUPIED BUILDINGS UNDER PIPING SYSTEMS CONSTRUCTION."

3. CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION BEFORE COMMENCING WORK. CONTRACTOR SHALL COORDINATE WORK WITH EXISTING WORK AND OTHER TRADES. ALL UNUSED EQUIPMENT SERVING THIS AREA SHALL BE REMOVED AND RETURNED TO THE OWNER.

4. EXISTING EQUIPMENT, MATERIALS OR WORK TO REMAIN, BE REUSED, OR RELOCATED WITHIN OR SERVING 2. PROVIDE INSULATION HANGER WITH PROTECTIVE SHIELDS ON SYSTEMS REQUIRING A VAPOR BARRIER. THE SPACE, WHICH IS DAMAGED OR DOES NOT COMPLY WITH THE SPECIFICATIONS, SHALL BE RESTORED TO LIKE HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION. HANGERS AND SUPPORTS SHALL BE SPACED AT NEW CONDITION SUBJECT TO REVIEW BY THE ARCHITECT AND ENGINEER, OR SHALL BE REPLACED WITH NEW MATERIALS MEETING THE SPECIFICATION REQUIREMENTS.

5. SOME WORK SHOWN MAY REQUIRE PREMIUM TIME INCLUDING NOISE PRODUCING ACTIVITIES, ACCESS INTO ADJOINING SPACES & ACTIVITIES DISRUPTING MEP SERVICES. CONFIRM THE REQUIREMENTS FOR PREMIUM TIME OR SPECIAL PROCEDURES WITH THE OWNER/LANDLORD AND INCLUDE THE COST IN BID PROPOSAL. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF BELOW FLOOR LEVEL, WITH HANGER RODS AND INSERTS, WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR ANY PHASING REQUIREMENTS.

6. THE CONTRACTOR, BY SUBMITTING HIS BID PROPOSAL AGREES TO ACCEPT ALL EXISTING SITE CONDITIONS NOT SPECIFICALLY EXCEPTED. ALL EXCEPTIONS SHALL BE PROVIDED IN WRITING TO THE ARCHITECT AND

ARRANGE FOR AND OBTAIN OWNER'S PERMISSION FOR ANY SERVICE SHUTDOWNS.

## DEMOLITION

1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL MEP ELEMENTS (PIPING, DUCTS, ELECTRICAL DEVICES, WIRING, CONDUIT, EQUIPMENT, HANGERS, SUPPORTS, ETC) INDICATED ON THE DRAWINGS OR NOT OTHERWISE REQUIRED FOR COMPLETED PRODUCT. NO MEP ELEMENTS ARE TO BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED. NOT ALL ITEMS TO BE REMOVED ARE INDICATED ON DRAWING.

2. ALL OPENINGS ON PIPING THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED. WIRING SHALL BE DISCONNECTED AT CIRCUIT BREAKERS AND REMOVED AND BREAKERS MARKED "SPARE."

3. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO AN OWNER DESIGNATED AREA ON SITE.

4. ALL ASBESTOS REMOVAL (IF REQUIRED) WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK. DOMESTIC WATER SYSTEMS IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY ARCHITECT AND OWNER IMMEDIATELY.

## BASIS OF DESIGN AND SUBSTITUTIONS

MANUFACTURERS LISTED ARE BASIS OF DESIGN. SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER, ARCHITECT & ENGINEER. IF SUBSTITUTION IS SUBMITTED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE IT AND CERTIFY THAT THE SUBSTITUTION IS EQUIVALENT IN ALL RESPECTS TO THE BASIS OF DESIGN. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS. IF SUBSTITUTIONS AND FULLY COORDINATE. ANY COSTS RESULTING FROM SUBSTITUTION, WHETHER BY CONTRACTOR OR OTHERS. SMALLER, COPPER PIPE FITTINGS MAY BE PRESS-CONNECT CAST-BRONZE OR WROUGHT-COPPER FITTING WITH SHALL BE RESPONSIBILITY OF AND PAID FOR BY SUBSTITUTING CONTRACTOR. APPROVED SHOP DRAWINGS DOES EPDM-RUBBER, O-RING SEAL IN EACH END. PRESS-CONNECT FITTINGS SHALL CONFORM TO ASME B16.51 NOT ABSOLVE THIS CONTRACTOR FROM THIS RESPONSIBILITY. APPROVAL OF SUBSTITUTIONS IS AT THE DISCRETION OF THE ARCHITECT & ENGINEER AND IF SUBMITTED AFTER THE BID, AT THE RISK OF THE CONTRACTOR.

## SHOP DRAWING SUBMITTALS

 COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR REVIEW. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT ORDER, START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR. SHOP DRAWINGS TO BE SUBMITTED INCLUDE BUT NOT LIMITED TO:

ALL DRAINS AND ACCESSORIES PLUMBING FIXTURES AND ACCESSORIES

VALVES & PIPING INSULATION

PUMPS, WATER HEATERS, TANKS AND ALL EQUIPMENT

2. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. PROVIDE ADEQUATE DETAILS AND

SCALES TO CLEARLY SHOW CONSTRUCTION. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE. USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS, ELECTRONIC SUBMITTALS SHALL BE PRESENTED WITH ALL SHEETS IN ALPHANUMERIC ORDER AND ALL SHEETS ORIENTED WITH TOP OF SHEET UP.

3. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.

#### **RECORD DRAWINGS**

1. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTORS OFFICE AT THE JOB SITE, PRINTS SHALL INDICATE ADDITIONS, DELETIONS, VARIATIONS IN LOCATION, VARIATIONS IN NUMBERING ETC. ALTERATIONS SHALL BE MARKED IN RED AND DELETIONS SHALL BE MARKED IN GREEN AND SHALL BE ON THE LATEST CONTRACT DRAWING ISSUED. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING 6. DOMESTIC WATER SHUT-OFF VALVES INSTALLED ON CPVC PIPING SHALL BE THREE PIECE, FULL PORT, TRUE STANDARD PRODUCT. DRAWINGS. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

#### **EQUIPMENT & FIXTURES**

1. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, AND THE NATIONAL ELECTRICAL CODE (NEC), ARTICLE 90-7.

MAKE ALL FINAL EQUIPMENT AND FIXTURE CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS. FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES, PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOR REPAIRS. PLUMBING CONNECTIONS SHOWN ARE NOMINAL. VERIFY EXACT CONNECTION SIZE WITH EACH PIECE OF EQUIPMENT SUPPLIED. FOLLOW FIXTURE MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS, AND ROUGH-IN DIMENSIONS. REFER TO CONSULTANT AND ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION. COORDINATE WITH THE EQUIPMENT SUPPLIER FOR ADDITIONAL INFORMATION.

3. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.

4. THE CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS OF ALL PLUMBING EQUIPMENT PRIOR CODE AND SHALL BE VALVED OFF FROM THE MAIN WATER SUPPLY AND ALLOWED TO STAND FOR A MINIMUM OF TO ORDERING OF EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS. REFER TO DIVISION OF WORK SCHEDULE FOR COMPLETE LIST OF

ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE NOMINAL 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE THIS GENERAL CONTRACTOR.

6. ALL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF

7. ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, ENSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.

> 8. ALL CONDENSATE DRAINS SHALL BE TRAPPED PER DETAIL ON MECHANICAL DRAWINGS. PROVIDE CLEANOUT(S). PROVIDE AUXILIARY DRAIN PANS AT ALL EQUIPMENT WHERE DAMAGE TO ANY BUILDING COMPONENT COULD OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY SYSTEM. WATER LEVEL DETECTION SHALL BE PROVIDED IN AUXILIARY PAN TO PROVIDE SHUT DOWN OF EQUIPMENT.

9. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT, CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY PLUMBING CONTRACTOR.

10. SEAL JOINTS BETWEEN PLUMBING FIXTURES AND THE SURFACE TO WHICH THEY ARE MOUNTED USING SANITARY-TYPE, ONE-PART, MILDEW RESISTANT SILICONE SEALANT, MATCH SEALANT COLOR TO FIXTURE COLOR,

INSTALL PIPING SYSTEMS TO PERMIT FREE MOVEMENT FOR EXPANSION. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1, MSS SP-69, AND PIPE MANUFACTURER'S RECOMMENDED SPACING REQUIREMENTS.

INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES; ALL PIPING SUPPORTS AND RESTRAINTS SHALL BE IN STRICT ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDELINES. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION.

RISER CLAMPS SHALL BE INSTALLED ABOVE THE FLOOR AT EACH LEVEL. RISER CLAMPS MAY BE SUSPENDED BE ACCEPTABLE.

FOR REPAIRS. MAKE CONNECTIONS TO EQUIPMENT WITH SHUT-OFF VALVES ON SUPPLY AND BALANCE VALVES ON RETURNS. INSTALL UNIONS IN PIPES 2" AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTIONS EACH PIECE OF EQUIPMENT AND ELSEWHERE AS INDICATED. UNIONS ARE NOT REQUIRED ON FLANGED DEVICES.

5. LEVER TYPE HANDLE OPERATORS SHALL BE PROVIDED ON VALVES UP TO 4". GEAR OPERATORS SHALL BE PROVIDED ON VALVES OVER 4", AND ON VALVES REQUIRING CHAIN OPERATION. VALVES USED FOR BALANCING SHALL HAVE INFINITE POSITION LEVER OR GEAR OPERATORS WITH ADJUSTABLE, OPEN POSITION "MEMORY" STOP. PROVIDE 2" EXTENSION NECKS ON ALL VALVES INSTALLED IN INSULATED LINES.

6. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING FITTINGS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT

ALL PIPING SHALL RUN CONCEALED ABOVE CEILING OR IN WALL CHASE, UNLESS OTHERWISE NOTED. ON THE DRAWINGS, PIPING IS SHOWN ON THE FLOOR WHERE IT ACTUALLY OCCURS IN THE BUILDING.

 POTABLE WATER PIPING AND COMPONENTS SHALL COMPLY WITH NSF 14, NSF 372, AND NSF 61 ANNEX G. PLASTIC PIPING COMPONENTS SHALL BE MARKED WITH "NSF-PW." GASKETS, JOINTS, CONNECTORS, SPECIALTIES, AND PIPE SHALL BE MANUFACTURED AND PROVIDED BY THE SAME MANUFACTURER. ALL PIPING SHALL BE SUPPORTED DIRECTLY ON EACH SIDE OF A JOINT. ALL PIPING SUPPORTS AND RESTRAINTS SHALL BE IN STRICT ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDELINES.

2. ALL DOMESTIC WATER PIPING SHALL BE TYPE L HARD DRAWN SEAMLESS COPPER WATER TUBE OR CPVC PIPE (ASTM D2846) WITH CPVC FITTINGS AND SOLVENT WELD JOINTS. COPPER TUBE FITTINGS SHALL BE WROUGHT COPPER JOINT FITTINGS CONFORMING TO ASTM B88. SOLDERED COPPER JOINTS SHALL BE SOLDERED PANEL WITH CLEARANCE FOR RODDING. THE FLOOR CLEAN-OUTS SHALL BE ZURN MODEL ZN-1400-T OR ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS OR TRADES AFFECTED BY SUBSTITUTION WITH LEAD FREE ASTM B32 GRADE 95T TIN-ANTIMONY SOLDER. AS AN OPTION FOR ABOVE GRADE PIPING 2"Ø AND APPROVED EQUAL WITH BRONZE PLUG, SQUARE NICKEL BRONZE FRAME AND COVER. THE WALL CLEAN-OUTS STANDARD. CONTRACTOR SHALL BE CERTIFIED BY THE PRESS CONNECT MANUFACTURER AS A CERTIFIED INSTALLER; PROOF OF CERTIFICATION SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AS PART OF THE SUBMITTAL PROCESS. CPVC PIPING SHALL NOT BE INSTALLED IN AREAS CLASSIFIED AS "PLENUM RATED" (WHICH TYPICALLY ENCOMPASSES CEILING PLENUMS UTILIZED AS A RETURN AIR PATH); REFER TO MECHANICAL DRAWINGS FOR LOCATION OF PLENUM RATED AREAS. IN EXISTING BUILDINGS, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CEILING SPACES TO DETERMINE IF THERE ARE ANY EXISTING PLENUM SPACES WHICH ARE NOT IDENTIFIED ON THE MECHANICAL DRAWINGS PRIOR TO BIDDING THIS OPTION.

> REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SHALL BE WATTS NO# LF909-S SERIES OR APPROVED EQUAL. IF IT COMPLIES WITH THESE SPECIFICATIONS EQUIPMENT MANUFACTURED BY CLA-VAL COMPANY, FEBCO, HERSEY PRODUCTS, INC., OR WATTS REGULATION COMPANY WILL BE ACCEPTABLE. ASSEMBLY SHALL BE COMPLETE WITH STRAINER, DRAIN LINES, INLET AND OUTLET SHUT-OFF VALVES AND WATTS 1. REFER TO INSULATION SCHEDULE FOR MORE INFORMATION. SERIES 'AG' AIR GAP. THE PRESSURE LOSS OVER THE ENTIRE ASSEMBLY SHALL NOT EXCEED 10 PSI AT THE DESIGN FLOW. THE SIZE OF THE ASSEMBLY SHALL NOT BE SMALLER THAN THE LINE SIZE IN WHICH IT IS INSTALLED. BACKFLOW PREVENTER ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. RELIEF OUTLET PIPE SHALL DISCHARGE TO NEAREST FLOOR DRAIN OR OTHER APPROVED LOCATION OF DISCHARGE. DO NOT INSTALL ABOVE FINISHED CEILINGS, UNLESS NOTED OR INDICATED OTHERWISE.

4. DOMESTIC WATER GATE VALVES FOR COPPER PIPING UP TO AND INCLUDING 2-1/2 INCHES SHALL BE NIBCO

NO. S-111 OR APPROVED EQUAL, CLASS 125, 200 PSIG WOG, BRONZE BODY WITH SOLDERED ENDS, RISING STEM SOLID WEDGE AND SCREWED BONNET. DOMESTIC WATER GATE VALVES FOR COPPER PIPING 3 INCHES AND 4 INCHES SHALL BE CRANE NO. 465-1/2 OR APPROVED EQUAL, 200# WOG CAST IRON OS&Y VALVE WITH CLASS 125 ANSI B16.1 FLAT FACED FLANGED ENDS AND BRONZE TRIM: STEMS, DISC FACES, SEAT FACES, SEAT RINGS AND BONNET BUSHINGS CONSTRUCTED OF BRONZE. ALL OF THE ABOVE GATE VALVES SHALL BE USED FOR STOP OR ISOLATION VALVE APPLICATIONS. IN LIEU OF GATE VALVES FOR PIPING 2 INCHES AND SMALLER, NIBCO 585-70 BALL VALVES MAY BE USED.

5. GLOBE VALVES FOR COPPER PIPING UP TO AND INCLUDING 2-1/2 INCHES SHALL BE NIBCO NO. S-235 OR APPROVED EQUAL, CLASS 150, 300# WOG, BRONZE BODY, BRONZE RISING STEM, UNION BONNET, RENEWABLE SEAT AND SOLDERED ENDS. DOMESTIC WATER GLOBE VALVES FOR COPPER PIPING 3 INCHES AND 4 INCHES SHALL BE CRANE NO. 351 OR APPROVED EQUAL, CLASS 125, 200# WOG CAST IRON OS&Y VALVES WITH ANSI B16.1 FLANGED ENDS, YOKE BONNET, RENEWABLE SEAT AND BRONZE TRIM: STEMS, DISC FACES, SEAT FACES AND BUSHINGS CONSTRUCTED OF BRONZE. ALL OF THE ABOVE GLOBE VALVES SHALL BE USED FOR BALANCING OR THROTTLING VALVE APPLICATIONS.

UNION TYPE, WITH PLASTIC BODY, BLOW-OUT PROOF STEM DESIGN AND O-RING STEM SEAL. PLASTIC PARTS SHALL BE CPVC. DOMESTIC WATER SHUT-OFF VALVES INSTALLED ON COPPER PIPING SHALL BE TWO PIECE, FULL 3. PORT, WITH BRASS BODY, STAINLESS STEEL BALL AND TRIM, BLOW-OUT PROOF STEM, AND REPLACEABLE "TEFLON OR TFE" SEATS AND SEALS. VALVES SHALL BE NIBCO OR EQUAL. PROVIDE VALVE HANDLE EXTENSIONS FOR ALL INSULATED BALL VALVES.

DOMESTIC WATER PRESSURE REDUCING VALVE ASSEMBLIES SHALL BE SELECTED TO PROVIDE STABLE FLOW CONDITIONS WITHOUT CAVITATION OR VALVE CHATTER.

8. SHOCK ARRESTORS SHALL BE LOCATED DOWNSTREAM OF THE DOMESTIC WATER SERVICE VALVE, AT EACH SERVICE TO A GROUP OF FIXTURES, OR AS INDICATED ON THE DRAWINGS. SHOCK ARRESTORS SHALL BE AS MANUFACTURED BY PRECISION PLUMBING PRODUCTS OR APPROVED EQUAL AND CONFORM TO THE REQUIREMENTS OF THE PLUMBING AND DRAINAGE INSTITUTE

PROVIDE STOP VALVES AT ALL FIXTURE AND EQUIPMENT SUPPLIES. ALL EXPOSED FIXTURE CONNECTIONS SHALL BE CHROME PLATED, STAINLESS STEEL OR FITTED WITH CHROME PLATED SLEEVES. PROVIDE VACUUM BREAKERS WHERE REQUIRED BY CODE.

10. ALL COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING THAT IS PART OF A NEW SYSTEM OR AN ADDITION OF AN EXISTING SYSTEM SHALL BE THOROUGHLY CLEANED AND DISINFECTED AS PER AWWA C651 OR AWWA C652 GUIDELINES. THE DISINFECTION PROCESS SHALL BE PERFORMED AFTER ALL PIPES, COMPONENTS, VALVES, AND FIXTURES ARE INSTALLED AND THE REQUIRED LEAK/PRESSURE TESTS HAVE BEEN COMPLETED. THE SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL THE SYSTEM IS COMPLETELY CLEAR OF ALL DIRT, SEDIMENT, AND DEBRIS. THE SYSTEM SHALL BE FILLED WITH A WATER/CHLORINE SOLUTION AS PER 24 HOURS. AFTER THE REQUIRED STANDING TIME, THE SYSTEM SHALL BE FLUSHED WITH CLEAN POTABLE WATER REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER, ARCHITECT AND UNTIL THE DISINFECTANT SOLUTION IS COMPLETELY PURGED FROM THE SYSTEM, FIXTURES, AND COMPONENTS. THE OWNER. REPEAT DISINFECTION PROCEDURE AS NEEDED IF BACTERIOLOGICAL EXAMINATION INDICATES THAT CONTAMINATES ARE STILL PRESENT IN THE SYSTEM. CONTRACTOR SHALL PROVIDE FINAL STERILIZATION TESTING REPORT TO THE ENGINEER FOR REVIEW.

11. IF CONTRACTOR CHOOSES PRESS-CONNECT OPTION: AFTER PRESS-CONNECT FITTINGS HAVE BEEN INSTALLED A "TWO STEP TEST" SHALL BE FOLLOWED. PRESSURIZE THE SYSTEM WITH APPLICATION APPROPRIATE TEST MEDIUM, WATER BETWEEN 15 AND 85 PSI, OR AIR/DRY NITROGEN BETWEEN .5 AND 45 PSI. CHECK THE PRESSURE GAUGE FOR PRESSURE LOSS. IF THE SYSTEM DOES NOT HOLD PRESSURE, WALK THE SYSTEM AND CHECK FOR UN-PRESSED FITTINGS. SHOULD ANY UNPRESSED FITTINGS BE IDENTIFIED FOLLOWING TEST, ENSURE THE TUBE IS FULLY INSERTED INTO THE FITTING AND PROPERLY MARKED PRIOR TO PRESSING THE JOINT. AFTER APPROPRIATE REPAIRS HAVE BEEN MADE, RETEST THE SYSTEM PER LOCAL CODE AND SPECIFICATION REQUIREMENTS, NOT TO EXCEED 600 PSI WITH WATER OR, 200 PSI WHEN USING AIR.

#### BALANCING DOMESTIC WATER SYSTEMS

TESTING AND BALANCING (TAB) AGENCY SHALL BE ASSOCIATED AIR BALANCE COUNCIL (AABC) CERTIFIED. UPON COMPLETION OF DOMESTIC HOT WATER RE-CIRCULATION TAB CONTRACTOR SHALL SUBMIT AABC NATIONAL PERFORMANCE GUARANTEE. TAB CONTRACTOR SHALL ADJUST WATER SYSTEMS TO PROVIDE REQUIRED FLOW AS INDICATED ON DRAWINGS AND RECORD FLOW AT EACH LOCATION FOR THE DOMESTIC HOT WATER RE-CIRCULATION BALANCING VALVE. TAB CONTRACTOR SHALL USE CALIBRATED VENTURI TUBES OR OTHER METERED FITTINGS AND PRESSURE GAUGES TO DETERMINE FLOW RATES FOR SYSTEM BALANCE. SHUT-OFF VALVES SHALL NOT BE USED FOR BALANCING OF SYSTEM. TAB CONTRACTOR SHALL ALSO INCLUDE

IDENTIFICATION/ NUMBER MANUFACTURER SIZE / MODEL **DESIGN FLOW RATE ACTUAL FLOW RATE** DISCHARGE PRESSURE SUCTION PRESSURE TOTAL OPERATING HEAD PRESSURE

SHUT OFF; TOTAL HEAD PRESSURE

GASKETS, JOINTS, CONNECTORS, SPECIALTIES AND PIPE SHALL BE MANUFACTURED AND PROVIDED BY THE FOR ACCESS PANELS. PROVIDE ACCESS PANELS TO GENERAL CONTRACTOR FOR INSTALLATION. SAME MANUFACTURER. ALL PIPING SUPPORTS AND RESTRAINTS SHALL BE IN STRICT ACCORDANCE WITH THE DRAINAGE PIPE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDELINES.

2. ALL NEW BELOW GRADE SANITARY, SOIL, WASTE, AND VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON, BELL AND SPIGOT, PIPE AND FITTINGS CONFORMING TO ASTM A74 AND AS MANUFACTURED BY TYLER PIPE AND FOUNDRY CO., U.S. PIPE AND FOUNDRY CO., CENTRAL FOUNDRY OR APPROVED EQUAL. TYLER "TY-SEAL" OR APPROVED EQUAL. NEOPRENE POSITIVE SEAL ELASTOMERIC COMPRESSION TYPE GASKETS SHALL BE USED AT ALL JOINTS. AS AN OPTION, ALL NEW BELOW GRADE SANITARY, SOIL, WASTE, AND VENT PIPING SHALL BE PVC PIPE, ASTM D3034, SCHEDULE 40 OR HEAVIER, WITH SOLVENT WELD JOINTS. FOAM CORE PVC PIPING SHALL NOT

ALL NEW ABOVE GROUND SANITARY, SOIL, WASTE, AND VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON BELL AND SPIGOT, PIPE AND FITTINGS, CONFORMING TO ASTM A74 AND AS MANUFACTURED BY TYLER PIPE AND 4. PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOUNDRY CO., U.S. PIPE AND FOUNDRY CO., CENTRAL FOUNDRY OR APPROVED EQUAL. TYLER "TY-SEAL" OR APPROVED EQUAL, NEOPRENE POSITIVE SEAL ELASTOMERIC COMPRESSION TYPE GASKETS SHALL BE USED AT ALL JOINTS. IN ADDITION, ALL VENT PIPING MAY BE DWV COPPER PIPE AND FITTINGS WITH SOLDERED JOINTS. (OPTION #1) ALL NEW ABOVE GROUND SANITARY, SOIL, WASTE, AND VENT PIPING 6 INCHES AND SMALLER MAY USE HUBLESS, SERVICE WEIGHT SCHEDULE 40, CAST IRON PIPE, FITTINGS AND JOINTS WITH TYLER "NO-HUB" STAINLESS STEEL CONNECTORS. HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A74, ASTM A888, AND CISPI STANDARDS. • (OPTION #2) ALL NEW ABOVE GRADE SANITARY, SOIL, WASTE, AND VENT PIPING SHALL BE PVC PIPE, ASTM D2665 WITH SOLVENT WELD JOINTS. PVC PIPING SHALL NOT BE INSTALLED IN AREAS CLASSIFIED AS "PLENUM RATED" (WHICH TYPICALLY ENCOMPASSES CEILING PLENUMS UTILIZED AS A RETURN AIR PATH); REFER TO MECHANICAL DRAWINGS FOR LOCATION OF PLENUM RATED AREAS. IN EXISTING BUILDINGS, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CEILING SPACES TO DETERMINE IF THERE ARE ANY EXISTING PLENUM SPACES WHICH ARE NOT IDENTIFIED ON THE MECHANICAL DRAWINGS PRIOR TO BIDDING THIS OPTION. FOAM CORE PVC PIPING SHALL NOT BE ACCEPTABLE.

EXPOSED PIPING SHALL BE 3/4 INCH MINIMUM FROM ANY WALL SURFACE. EXCEPT WHERE OTHERWISE INDICATED 4. EXCEPT WHERE OTHERWISE INDICATED, HORIZONTAL SANITARY, SEWAGE AND WASTE PIPING SHALL SLOPE AT 1/4 INCH PER FOOT FOR PIPES 2 INCHES AND SMALLER, PIPES 3 INCHES AND LARGER SHALL SLOPE AT 1/8 INCH PER FOOT. ALL VERTICAL SANITARY SEWER PIPING, WHICH TURN 90° AFTER PASSING THROUGH A FLOOR, SHALL BE INSTALLED AS TIGHT AS POSSIBLE TO THE UNDERSIDE OF THE STRUCTURE.

> CLEAN-OUTS SHALL BE PROVIDED IN PIPING AT EACH CHANGE IN DIRECTION, IN ALL HORIZONTAL STRAIGHT RUNS MORE THAN 50 FEET LONG OR AS ALLOWED BY CODE, AND AT ALL OTHER LOCATIONS AS NOTED ON THE DRAWINGS. ALL CLEAN-OUTS SHALL BE THE SAME SIZE AS THE PIPE DIAMETER UP TO AND INCLUDING PIPE 4 INCHES IN DIAMETER. FOUR INCH CLEAN-OUTS SHALL BE USED FOR ALL PIPE LARGER THAN 4 INCHES, UNLESS NOTED OTHERWISE. ALL CLEAN-OUT LOCATIONS SHALL BE NO MORE THAN 5 FEET ABOVE THE BASE OF THE HORIZONTAL OFFSET AND BE APPROVED BY THE ARCHITECT. FOR CARPETED AREAS, PROVIDE A PERMANENT IDENTIFYING MARK IN THE CARPET DIRECTLY ABOVE THE CLEAN-OUT. THE CLEAN-OUT SHALL HAVE A SMOOTH POLISHED BRONZE FINISH WITH THE LETTERS "C.O." CAST IN THE COVER. FOR WALLS, PROVIDE AN ACCESS SHALL BE ZURN MODEL ZN-1443-BP OR APPROVED EQUAL WITH BRONZE PLUG AND 7 INCHES X 7 INCHES NICKEL BRONZE COVER. NO SANITARY, SOIL OR WASTE PIPE SHALL EXTEND GREATER THAN 2'-0" TO A DEAD-END.

PROVIDE ONE TRAP PRIMER VALVE FOR EACH FLOOR DRAIN WITHOUT A CONSTANT SOURCE OF WATER SUPPLY TO MAINTAIN TRAP SEAL. PRIMER VALVE SHALL BE LOCATED IN AN ACCESSIBLE AREA AND CONNECTED TO THE NEAREST 3/4 INCH COLD WATER LINE SERVING A FIXTURE. TRAP PRIMER VALVE SHALL CONFORM TO ASSE 1018 AND 1044. BARRIER TYPE TRAP SEAL PROTECTION DEVICES COMPLYING WITH ASSE 1072 MAY BE USED IN LIEU OF TRAP PRIMER VALVES AS ALLOWED BY LOCAL CODE AND AHJ. PROVIDE FLOAT TYPE BACKWATER VALVE (SIZED FOR ANTICIPATED FLOW RATE) IN ALL OPEN SITE DRAINS AND FLOOR RECEPTORS RECEIVING A/C UNIT CONDENSATE, AND/OR CLEAR WATER WASTE, SUCH AS SPRINKLER FLOW TESTING.

## INSULATION

CONDENSATE PIPING SHALL BE INSULATED WITH 1 INCH THICK FIBERGLASS INSULATION WITH STANDARD VAPOR BARRIER JACKET OR WITH 1" THICK FLEXIBLE UNICELLULAR ("ARMAFLEX").

FIBERGLASS PIPE INSULATION SHALL BE PROVIDED WITH STANDARD VAPOR BARRIER JACKET AND HAVE A MAXIMUM CONDUCTIVITY OF 0.27 BTU PER "/HR-FT2-°F. ALL INSULATION SHALL BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

4. INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATION OF LIKE MATERIAL AND THICKNESS AS ADJOINING PIPE. PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE. FINISH WITH GLASS CLOTH OR PVC FITTING COVERS.

5. ALL PRODUCTS LOCATED WITHIN PLENUM AREAS, INCLUDING BUT NOT LIMITED TO INSULATION AND ADHESIVE SYSTEMS, SHALL HAVE A COMPOSITE FIRE HAZARD RATING NOT TO EXCEED 25 FLAME SPREAD AND 50 SMOKE DEVELOPED PER ASTM E-84, NFPA 255 AND UL 723.

#### IDENTIFICATION

1. ALL PIPING SYSTEMS, VALVES AND EQUIPMENT SHALL BE PROPERLY IDENTIFIED. ALL VALVES SHALL HAVE THEIR NORMAL (IN OPERATION) POSITION IDENTIFIED, SUCH AS "NORMALLY OPEN" OR "NORMALLY CLOSED".

IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1. PRESSURE SENSITIVE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. MARKERS SHALL BE MANUFACTURER'S

PIPE LABEL LOCATIONS: LOCATE PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS IN FINISHED SPACES; MACHINE ROOMS; ACCESSIBLE MAINTENANCE SPACES SUCH AS SHAFTS, TUNNELS, AND PLENUMS; AND EXTERIOR EXPOSED LOCATIONS AS FOLLOWS:

 NEAR EACH VALVE AND CONTROL DEVICE. NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKEOFFS FOR FIXTURES AND TERMINAL UNITS. WHERE FLOW PATTERN IS NOT OBVIOUS, MARK EACH PIPE AT BRANCH.

 NEAR PENETRATIONS AND ON BOTH SIDES OF THROUGH WALLS, FLOORS, CEILINGS, AND INACCESSIBLE ENCLOSURES.

 AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCEALED PIPING. • NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION. • SPACED AT MAXIMUM INTERVALS OF 50 FEET (15 m) ALONG EACH RUN. REDUCE INTERVALS TO 25 FEET (7.6 m)

#### CUTTING, PATCHING AND DRILLING

IN AREAS OF CONGESTED PIPING AND EQUIPMENT.

ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER.

NEATLY SAW CUT ALL RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING. CORE DRILL AND SLEEVE ALL ROUND OPENINGS.

DO NOT CORE DRILL OR CUT ANY CONCRETE SLABS OR OTHER STRUCTURAL COMPONENTS FOR ANY

4. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT.

#### FIRESTOPPING

ALL PENETRATIONS OF SLAB-TO-SLAB PARTITIONS SHALL BE SEALED AIRTIGHT.

WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, DUCT, OR PIPE PASSAGE, SEAL PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE. ALL FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814,UL 1479, AND BE FACTORY MUTUAL APPROVED. ALL FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

#### **ACCESS DOORS**

ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.

ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3" WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE, WET AREAS, OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS. ACCESS PANELS SHALL BE 16" X 16" OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE

3. ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED

## START UP AND INSTRUCTIONS

PERFORM A HYDROSTATIC PRESSURE TEST ON ALL PIPING, AT THE PIPING SYSTEM WORKING PRESSURE, FOR A MINIMUM PERIOD OF 24-HOURS. REPAIR ANY LEAKS AND RETEST TO DEMONSTRATE TIGHTNESS. STOP-LEAK COMPOUNDS WILL NOT BE ALLOWED. ALL PIPING FOR PRESSURIZED WATER SYSTEMS SHALL HAVE A MINIMUM PRESSURE RATING OF 150 PSI.

AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PLACE ALL SYSTEMS INTO OPERATION.

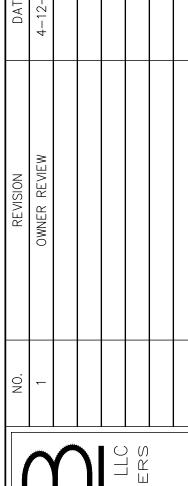
3. CLEAN ALL PLUMBING EQUIPMENT AND PIPING OF ALL CONSTRUCTION DUST AT PROJECT COMPLETION.

PROVIDE OWNER TRAINING AND DEMONSTRATION OF ALL PLUMBING SYSTEMS AND EQUIPMENT. INSTRUCT OWNER ON PROPER OPERATION AND PREVENTATIVE MAINTENANCE OF SYSTEM. SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS.

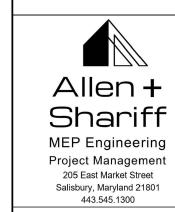
## WARRANTY

1. FULLY WARRANT ALL MATERIALS. EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE. EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES.

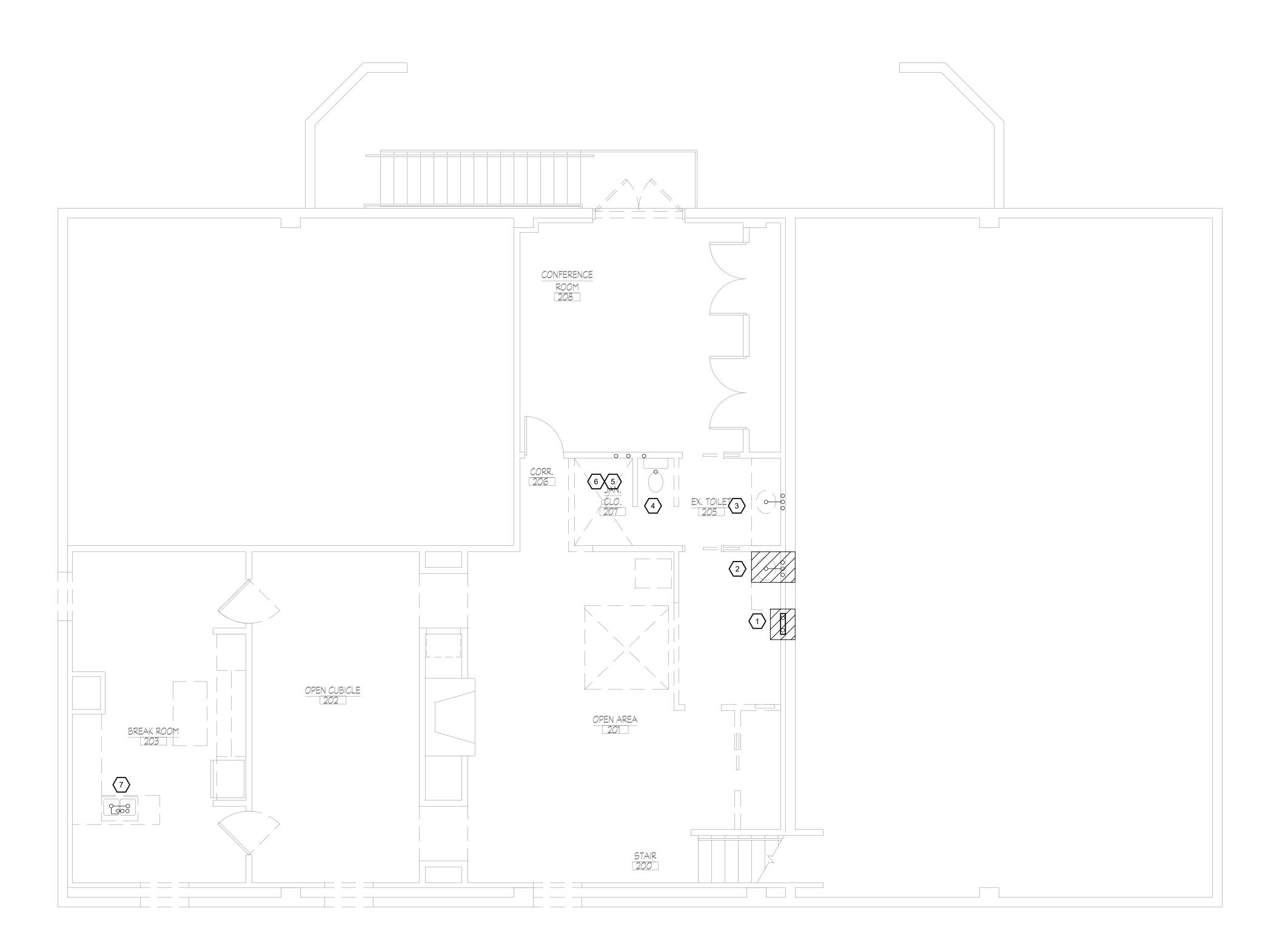
REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD. THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.



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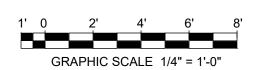


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PLUMBING SECOND FLOOR DEMO PLAN

1/4" = 1'0"



#### PLUMBING DEMOLITION GENERAL NOTES:

- 1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM EXISTING DRAWINGS, FIELD OBSERVATIONS AND PHOTOS, AND MAY NOT INDICATE ALL ACTUAL EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
- PATCH ALL WALL, FLOOR, AND CEILING SURFACES SCHEDULED TO REMAIN, WHERE MEP ELEMENTS ARE BEING REMOVED, TO MATCH EXISTING CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

# PLUMBING DEMOLITION KEY NOTES: (#)

- EXISTING WASHING MACHINE BOX CONNECTIONS LOCATED IN WALL TO BE DEMOLISHED BACK TO POINT IN WALL AND CAPPED.
   EXISTING SINK TO BE REMOVED. EXISTING SANITARY AND VENT
- TO BE DEMOLISHED BACK TO POINT IN WALL AND CAPPED.
  EXISTING HW/CW TO BE DEMOLISHED BACK TO POINT IN WALL
  AND CAPPED.
- 3. EXISTING SINK TO BE REPLACED. EXISTING HW/CW/SAN. SERVING FIXTURE TO REMAIN FOR REPLACEMENT SINK.
- EXISTING WATER CLOSET TO BE REPLACED. EXISTING CW/SAN. SERVING FIXTURE TO REMAIN FOR REPLACEMENT WATER CLOSET.
- 5. EXISTING SHOWER TO BE REMOVED. EXISTING HW/CW SERVING FIXTURE TO REMAIN FOR CONNECTION OF NEW MOP SINK.
- EXISTING SAN. SERVING EXISTING SHOWER TO BE DEMOLISHED BACK TO POINT BELOW FLOOR AND CAPPED.
- EXISTING SINK TO BE REMOVED AND REUSED. EXISTING HW/CW/SAN. CONNECTIONS TO REMAIN.

NO. REVISION DATE
1 OWNER REVIEW 4–12–22



RENOVATION OF:

ORCESTER COUNT
ROADS BUILDING
BERLIN, MARYLAND

PLUMBING SECOND FLOOR DEMO



SCALE : 1/4" = 1'0"

DESIGN BY : BKW

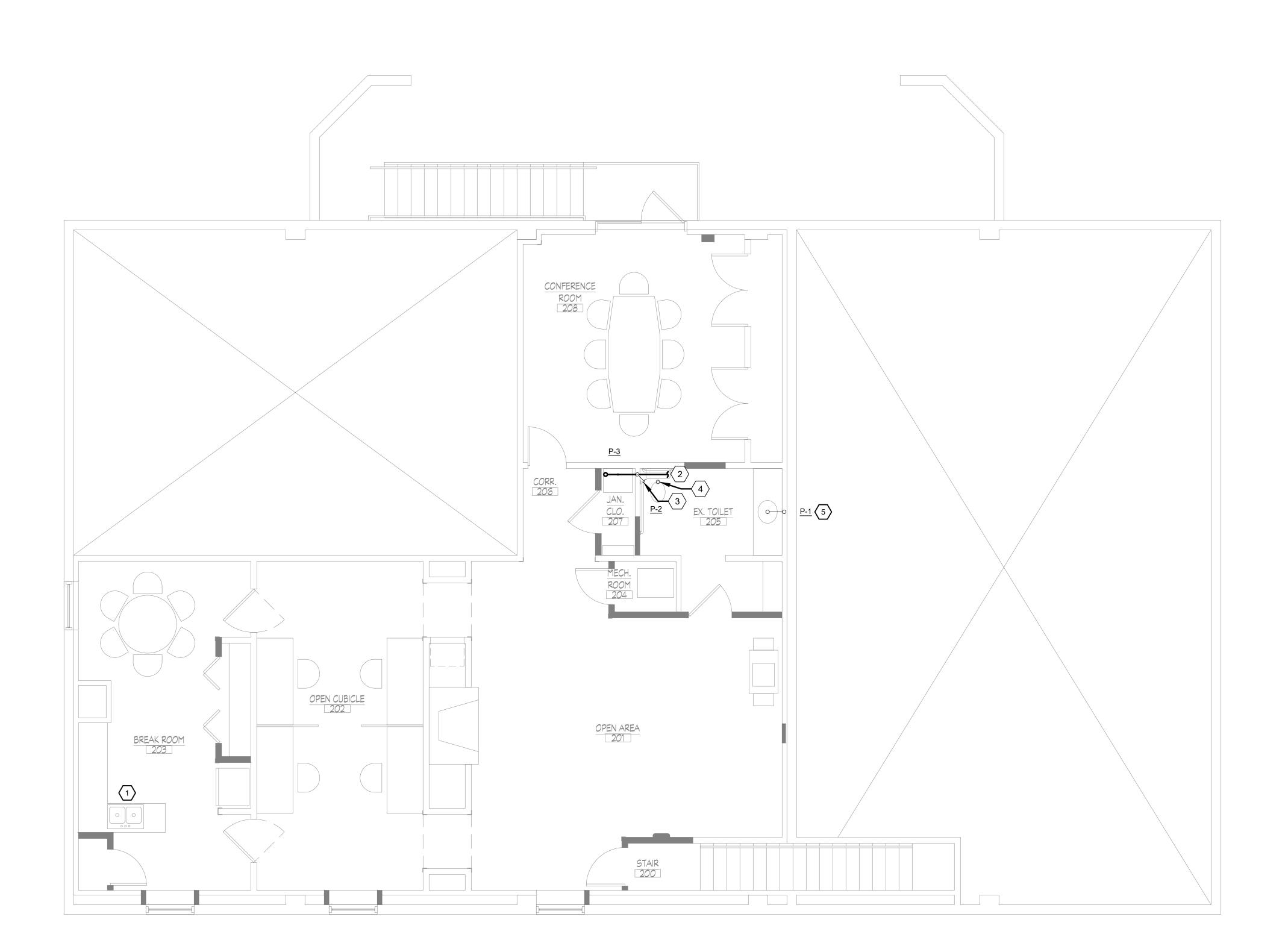
DRAWN BY : BKW

CHECKED BY: PLG

GMB FILE : 210241

DATE : 12-06-22

P1.1



DRAINAGE SECOND FLOOR PLAN - NEW WORK
P2.2 1/4" = 1'0"

1' 0 2' 4' 6' 8' GRAPHIC SCALE 1/4" = 1'-0"

#### PLUMBING GENERAL NOTES:

- 1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM EXISTING DRAWINGS, FIELD OBSERVATIONS AND PHOTOS, AND MAY NOT INDICATE ALL ACTUAL EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
- PATCH ALL WALL, FLOOR, AND CEILING SURFACES SCHEDULED TO REMAIN, WHERE MEP ELEMENTS ARE BEING REMOVED, TO MATCH EXISTING CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

# PLUMBING KEY NOTES: (#)

- REINSTALL EXISTING SINK REMOVED DURING DEMOLITION. CONNECT TO EXISTING PLUMBING SERVICES.
- EXTEND NEW 3" SAN. TO CONNECT TO EXISTING SANITARY SYSTEM. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING SANITARY SYSTEM.
- EXTEND NEW 2" V. TO CONNECT TO EXISTING VENT SYSTEM. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING VENT SYSTEM.
- 4. CONNECT NEW WATER CLOSET TO EXISTING SANITARY CONNECTION.
- CONNECT NEW LAVATORY TO EXISTING SANITARY/VENT CONNECTION.

NO. REVISION DATE
1 OWNER REVIEW 4–12–22



VORCESTER COUNT ROADS BUILDING BERLIN, MARYLAND

DRAINAGE SECOND FLOOR PLAN -NEW WORK



SCALE : 1/4" = 1'0"

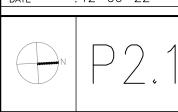
DESIGN BY : BKW

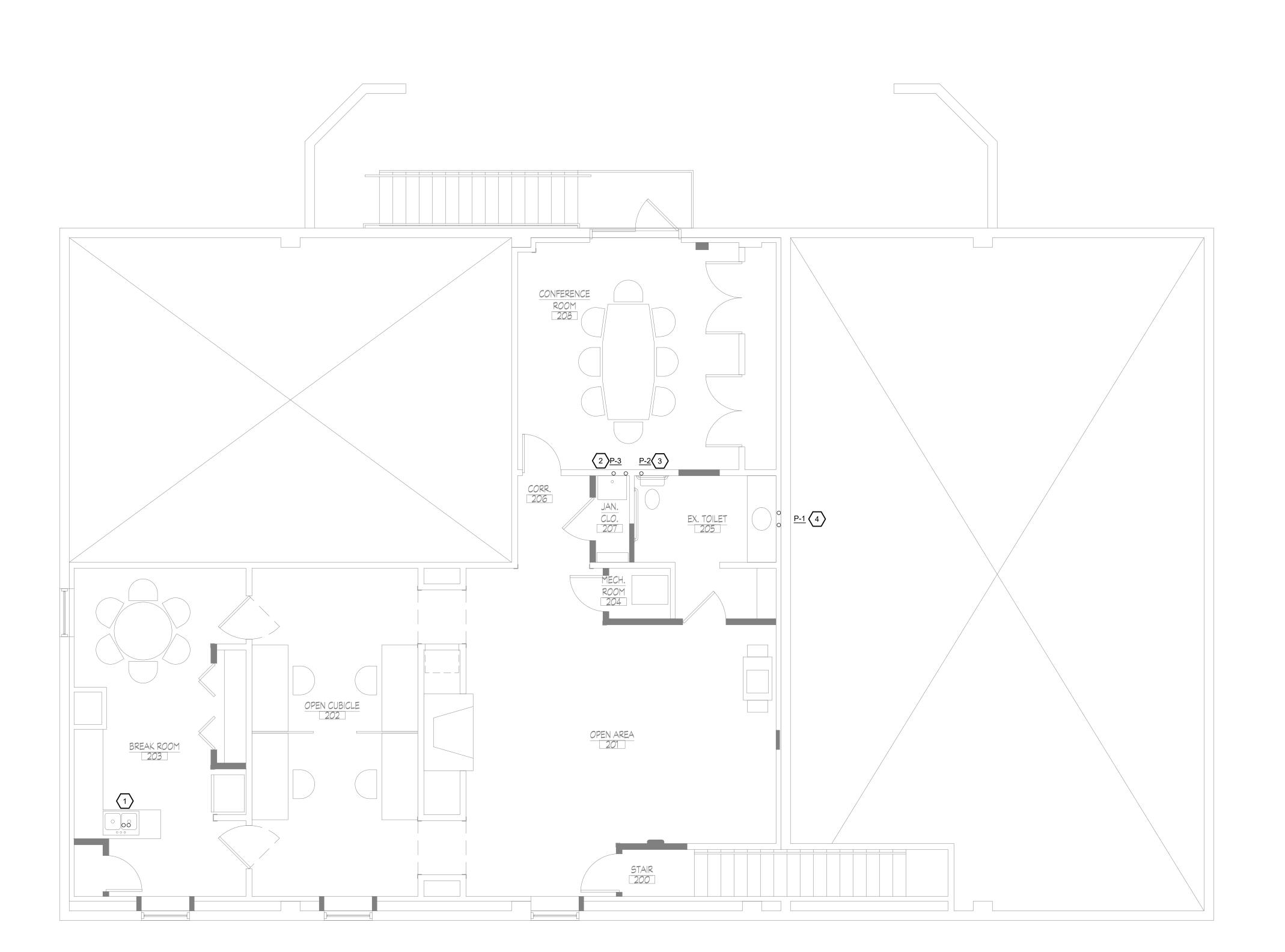
DRAWN BY : BKW

CHECKED BY : PLG

GMB FILE : 210241

DATE : 12-06-22





1 SUPPLY SECOND FLOOR PLAN - NEW WORK
P3.2 1/4" = 1'0"

# GRAPHIC SCALE 1/4" = 1'-0"

#### PLUMBING GENERAL NOTES:

- 1. EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM EXISTING DRAWINGS, FIELD OBSERVATIONS AND PHOTOS, AND MAY NOT INDICATE ALL ACTUAL EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE
- 2. PATCH ALL WALL, FLOOR, AND CEILING SURFACES SCHEDULED
  TO REMAIN, WHERE MEP ELEMENTS ARE BEING REMOVED, TO MATCH EXISTING CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

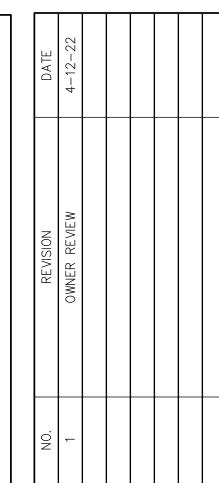
# PLUMBING KEY NOTES: (#)

- 1. REINSTALL EXISTING SINK REMOVED DURING DEMOLITION. CONNECT TO EXISTING PLUMBING SERVICES. RECONFIGURE
- PIPING AS REQUIRED TO ACCOMMODATE NEW FIXTURE.

  2. RELOCATE AND CONNECT NEW P-3 TO EXISTING HW/CW FROM
- REMOVED SHOWER.

  3. CONNECT NEW P-2 TO EXISTING CW.

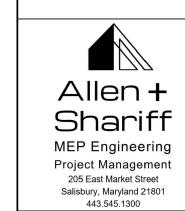
  4. CONNECT NEW P-1 TO EXISTING HW/CW.





VORCESTER COURON OF:
ROADS BUILDIN
BERLIN, MARYLAND

SECOND PLAN -WORK SUPPLY FLOOR NEW



:1/4" = 1'0" DESIGN BY : BKW DRAWN BY : BKW CHECKED BY : PLG GMB FILE : 210241 :12-06-22

Α	ELECTRICAL ABBREVIATIONS			POWER
-	AMPERE		Φ	SINGLE RECEPTACLE, 20A, 120V, 18"AFF, UON.
AFF	ABOVE FINISHED FLOOR		<u> </u>	
AFG	ABOVE FINISHED GRADE		Ф <sub>Е</sub>	DUPLEX RECEPTACLE, 20A, 120V, 18"AFF, UON.  DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V,
AHU	AIR HANDLING UNIT	ANDLING UNIT 18"AFF, UON.		
AIC	120V, 18"AFF, UON.		DUPLEX RECEPTACLE WITH ADDITIONAL ISOLATED GROUND WIRE, 20A, 120V, 18"AFF, UON.	
ATS	AUDIOA/ISLIAL		———— Ж	DUPLEX RECEPTACLE, 20A, 120V, 40"AFF OR 4" ABOVE COUNTER TOP OR
AV BFG	AUDIO/VISUAL BELOW FINISHED GRADE		<b></b>	IN CASEWORK (AS APPLICABLE), OR IN CASEWORK, AS APPLICABLE, UON.
С	CONDUIT		<b>♦</b>	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V, 40" AFF TO 4" ABOVE COUNTER TOP OR IN CASEWORK (AS APPLICABLE),
CATV	CABLE ANTENNA TELEVISION	-		OR IN CASEWORK, AS APPLICABLE, UON.
СВ	CIRCUIT BREAKER		<del></del>	QUADRUPLEX RECEPTACLES IN COMMON BOX, 20A, 120V, 18"AFF, UON.
CCTV	CLOSED CIRCUIT TELEVISION		$lackbox{WP}$	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V, WITH COOPER MODEL WIU-1D (OR EQUAL) "WHILE-IN-USE"
CFL	COMPACT FLUORESCENT	-		WEATHERPROOF COVER, 18"AFG UON.  ELECTRIC WATER COOLER CONNECTION, PROVIDE 20A, 120V GROUND
CKT	CIRCUIT		<b>∯</b> EWC	FAULT INTERRUPTING TYPE DUPLEX RECEPTACLE. COORDINATE WITH EWC MANUFACTURER'S ROUGH-IN REQUIREMENTS. RECEPTACLE SHALL
EBU	EMERGENCT BATTERY UNIT			BE ACCESSIBLE THROUGH REMOVAL OF EWC COVER.
EC	EMPTY CONDUIT		Ф	DUPLEX RECEPTACLE, 20A, 120V, 18"AFF, UON. TOP RECEPTACLE SHALL BE CONNECTED TO LOCAL SWITCH.
EC ECB	ELECTRICAL CONTRACTOR  ENCLOSED CIRCUIT BREAKER		Ф	FLOORBOX WITH DUPLEX RECEPTACLE. COORDINATE EXACT LOCATION IN FIELD WITH IN-FLOOR DISTRIBUTION SYSTEM.
EF EF	EXHAUST FAN	-	Φ <b>7</b>	FLOORBOX WITH DUPLEX RECEPTACLE AND TELE/DATA. COORDINATE
ERU	ENERGY RECOVERY UNIT	-	<u>₩</u>	EXACT LOCATION IN FIELD WITH IN-FLOOR DISTRIBUTION SYSTEM.  CABLE TELEVISION OUTLET WITH DUPLEX RECEPTACLE, EQUAL TO
QUIP	EQUIPMENT			ARLINGTON TVBS505 BOX. PROVIDE DUPLEX RECEPTACLE AND 3/4"C WITH PULL STRING STUBBED ABOVE ACCESSIBLE CEILING AND TERMINATED
ETR	EXISTING TO REMAIN		.=	WITH BUSHING.
EWC	ELECTRIC WATER COOLER		<u> </u>	FLOOR BOX. REFER TO FLOOR BOX SCHEDULE SHEET EX.X FOR DETAILS.
EWH	ELECTRIC WATER HEATER			SURFACE METAL RACEWAY WITH 20A, 120V SINGLE RECEPTACLES MOUNTED AT 12" ON CENTER. MOUNT 1" ABOVE COUNTERTOP
XIST	EXISTING		<u> </u>	BACKSPLASH.  SPECIAL RECEPTACLE. NEMA CONFIGURATION AS NOTED. MOUNT
FLA	FULL LOAD AMPS	_	$\bigcirc$	18"AFF UON.
FPC PVAV	FIRE PROTECTION CONTRACTOR  FAN POWERED VARIABLE AIR VOLUME			JUNCTION BOX - ABOVE CEILINGS OR FLUSH IN WALLS.
GC	GENERAL CONTRACTOR		MGB	MAIN GROUND BAR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	-	GB	GROUND BAR
GND	GROUND	-		
HID	HIGH INTENSITY DISCHARGE		Γì	DISCONNECT SWITCH - SIZE AS INDICATED ON PLANS  30/2/20/3R —— NEMA RATING (IF OTHER THAN 1)      Lead
HP	HORSE POWER/HEAT PUMP			No. OF POLES
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	-	<u> </u>	SIZE (AMPS)
IG	ISOLATED GROUND	_	\$ <sub>M</sub>	HORSEPOWER RATED MOTOR SWITCH
JB	JUNCTION BOX		<b>/</b> /	MOTOR CONNECTION.
KVA KW	KILO-VOLT AMPERE KILO-WATT		PP	POWER POLE
LC	LIGHTING CONTACTOR	-	(CR)	DROP CORD/REEL, 20A, 120V, MOUNTED TO CEILING WITH (3)
LC I				SINGLE RECEPTACLES AT CORD END.
	LIGHTING			
LTG	MAKE UP AIR UNIT		$\bigcirc$	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.
LTG MAU			₩ VFD	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL
LTG MAU	MAKE UP AIR UNIT	-	VFD	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.
LTG MAU MCA	MAKE UP AIR UNIT MINIMUM CIRUIT AMPS	-		EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL
MAU MCA MC MC MC	MAKE UP AIR UNIT MINIMUM CIRUIT AMPS MECHANICAL CONTRACTOR		VFD	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.
MAU MCA MC MC MC MC MCB MFR	MAKE UP AIR UNIT MINIMUM CIRUIT AMPS MECHANICAL CONTRACTOR METAL CLAD MAIN CIRCUIT BREAKER MANUFACTURER		VFD SPD	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE
MAU MCA MC MC MC MCB MFR MLO	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).
MAU MCA MC MC MCB MFR MLO MTD	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.
MAU MCA MC MC MC MC MCB MFR	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO
MAU MCA MC MC MCB MFR MLO MTD NEC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD
MAU MCA MC MC MCB MFR MLO MTD NEC NF	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NL	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE
MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NL NTS OC OFCI	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NL NTS OC OFCI P	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NL NTS OC OFCI P PC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC OC OFCI P PC PCP	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTROL PANEL		VFD SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NL NTS OC OFCI P PC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTROL PANEL  POWER FACTOR	TVSS	SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUCTOR, AND 1 #12 LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.
LTG MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC OC OFCI P PC PCP PF	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTROL PANEL	TVSS	SPD FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  INTVOLTAGE SURGE SUPPRESSER  AUTOMATIC TEMPERATURE
MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE		FCU FCU FCU TRANSIE TYPICAL	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED.
MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL	TYP	FCU FCU FCU TRANSIE TYPICAL	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  AUTOMATIC TEMPERATURE CONTROL PANELS FOR METERS AND
MAU MCA MC MC MCB MFR MLO MTD NEC NF NIC NC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANELBOARD	TYP	FCU FCU FCU FCU FCU VICAL UNLESS VOLTS	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED  OTHERWISE NOTED
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PC PCP PF PL PNL NLBD Ø PRI	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANEL  PANEL  PHASE	TYP UON V	FCU FCU FCU FCU FCU VICAL VOLTS A	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  INT VOLTAGE SURGE SUPPRESSER  AUTOMATIC TEMPERATURE CONTROL LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PC PCP PF PL PNL NLBD Ø PRI RECP	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANEL  PRIMARY	TYP UON V VAC	FCU FCU FCU FCU FCU VICAL VOLTS A VARIABL	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  INT VOLTAGE SURGE SUPPRESSER  AUTOMATIC TEMPERATURE CONTROL LINE VOLTAGE CONTROL MECHANICAL FLOW SWITCH LINE VOLTAGE CONTROL LINE VOLTAGE CONTROL MECHANICAL FLOW SWITCH LINE VICE VICE VICE VICE VICE VICE VICE VIC
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PC PCP PF PL PNL NLBD Ø PRI RECP RTU SE	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANEL  PANEL  PRIMARY  RECEPTACLE  ROOF TOP UNIT  SERVICE ENTRANCE	TYP UON V VAC VAV VDC VFD	FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 34" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE PINASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED  AUTOMATIC TEMPERATURE CONTROL LINE VOLTAGE CONTROL SITCHES LINE VOLTAG
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PC PCP PF PL PNL NLBD Ø PRI RECP RTU SE SEC	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANEL  PANELBOARD  PHASE  PRIMARY  RECEPTACLE  ROOF TOP UNIT  SERVICE ENTRANCE  SECONDARY	TYP UON V VAC VAV VDC VFD	FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL SWITCH LEG' CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED  LITERNATING CURRENT  E AIR VOLUME  DISCONNECT SWITCHES  MECHANICAL FLOW SWITCHES  DISCONNECT SWITCHES  DISCONNECT SWITCHES  MECHANICAL EQUIPMENT
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PCP PF PL PNL NLBD Ø PRI RECP RTU SE SEC TBB	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANELBOARD  PHASE  PRIMARY  RECEPTACLE  ROOF TOP UNIT  SERVICE ENTRANCE  SECONDARY  TELEPHONE BACKBOARD	TYP UON V VAC VAV VDC VFD W WG	FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGEL PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTOR'S SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTOR'S LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  INT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED  AUTOMATIC TEMPERATURE CONTROL LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  LINE VOLTAGE CONTROL  MECHANICAL FLOW SWITCHES IN A COMMON CONDUIT THERMOSTATS/ SENSORS  P/E & E/P SWITCHES  DISCONNECT SWITCHES IN ANNUAL STARTERS FOR INTERPRETARY FOR
MAU MCA MC MCB MFR MLO MTD NEC NF NIC NTS OC OFCI P PC PCP PF PL PNL PNL PNL PRI RECP RTU	MAKE UP AIR UNIT  MINIMUM CIRUIT AMPS  MECHANICAL CONTRACTOR  METAL CLAD  MAIN CIRCUIT BREAKER  MANUFACTURER  MAIN LUGS ONLY  MOUNTED  NATIONAL ELECTRICAL CODE  NON-FUSED  NOT IN CONTRACT  NIGHT LIGHT  NOT TO SCALE  ON CENTER  OWNER FURNISHED CONTRACTOR INSTALLED  POLE  PLUMBING CONTRACTOR  PUMP CONTROL PANEL  POWER FACTOR  PROPERTY LINE  PANEL  PANEL  PANEL  PANELBOARD  PHASE  PRIMARY  RECEPTACLE  ROOF TOP UNIT  SERVICE ENTRANCE  SECONDARY	TYP UON V VAC VAV VDC VFD	FCU	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.  VARIABLE FREQUENCY DRIVE (FURNISHED WITH ASSOCIATED MECHANICAL EQUIPMENT, INSTALLED BY EC), WITH INTEGRAL DISCONNECT SWITCH.  SURGE PROTECTIVE DEVICE  FAN COIL UNIT.  ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).  ELECTRICAL PANELBOARD  ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 34" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.  RICAL ABBREVIATIONS  ENT VOLTAGE SURGE SUPPRESSER  OTHERWISE NOTED  LITERNATING CURRENT  E AIR VOLUME  HECHANICAL FLOW SWIT:  E REQUENCY DRIVE  WIRE  MECHANICAL EQUIPMENT  MANUAL STARTERS FOR MANUAL START

	LIGHTING
00	LIGHTING FIXTURE.
	LIGHTING FIXTURE ON EMERGENCY CIRCUIT. SUBSCRIPT "NL" WHERE USED, INDICATES NIGHT LIGHT CONNECTED AHEAD OF LIGHTING CONTROLS. TYPICAL ALL FIXTURE TYPES.
0	DOWNLIGHT FIXTURE.
•	PENDANT LIGHTING FIXTURE.
•	DOWNLIGHT FIXTURE ON EMERGENCY CIRCUIT. SUBSCRIPT "NL" WHEF USED, INDICATES NIGHT LIGHT CONNECTED AHEAD OF LIGHTING CONTROLS.
오	WALL MOUNTED LIGHTING FIXTURE.
•	WALL MOUNTED LIGHTING FIXTURE ON EMERGENCY CIRCUIT. SUBSCRIPT "NL" WHERE USED, INDICATES NIGHT LIGHT CONNECTED AHEAD OF LIGHTING CONTROLS.
$\nabla$ $\nabla$ $\nabla$	TRACK LIGHTING FIXTURE. INDICATES AN INDIVIDUAL FIXTURE ON THE TRACK.
Y	EMERGENCY LIGHTING REMOTE UNIT.
$\Box$	EMERGENCY BATTERY LIGHTING UNIT, CONNECT AHEAD OF LOCAL SWITCH.
፟	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED ON DRAWINGS. CONNECT TO DEDICATED EMERGENCY BRANCH CIRCUIT. SHADED AREA DENOTES LIGHTED FACE.
\$\$ <sub>a</sub>	DUAL SWITCH (SINGLE POLE OR AS INDICATED BY SUBSCRIPT). 20A, 120/277V, 44"AFF, UON. CONNECT EACH TO SEPARATELY CONTROL INBOARD AND OUTBOARD LAMPS OF EACH FIXTURE INDICATED. CONTROL INBOARD AND OUTBOARD LAMPS CONSISTENTLY. SUBSCRIF "a" INDICATES ASSOCIATED FIXTURES TO BE CONTROLLED.
\$ <sub>a</sub>	SINGLE POLE SWITCH, 20A, 120/277V, 44"AFF UON. SUBSCRIPT "a" INDICATES ASSOCIATED FIXTURES TO BE CONTROLLED.
\$ <sub>4a</sub>	FOUR-WAY SWITCH, 20A, 120/277V, 44"AFF UON. SUBSCRIPT "a" INDICATES ASSOCIATED FIXTURES TO BE CONTROLLED.
\$ <sub>3a</sub>	THREE-WAY SWITCH, 20A, 120/277V, 44"AFF UON. SUBSCRIPT "a" INDICATES ASSOCIATED FIXTURES TO BE CONTROLLED.
\$ <sub>Da</sub>	DIMMER SWITCH, 44" AFF UON. SUBSCRIPT "a", WHERE USED, INDICATE ASSOCIATED FIXTURES TO BE CONTROLLED.
\$ <sub>OC</sub>	WALL SWITCH OCCUPANCY SENSOR, 44" AFF UON.
\$ <sub>VS</sub>	WALL SWITCH VACANCY SENSOR, 44" AFF UON.
O#	OCCUPANCY SENSOR. "#" DENOTES OCCUPANCY SENSOR TYPE. SUBSCRIPT "a", WHERE USED, INDICATES ASSOCIATED FIXTURES TO B CONTROLLED.
V#	VACANCY SENSOR. "#" DENOTES VACANCY SENSOR TYPE. SUBSCRIPT "a", WHERE USED, INDICATES ASSOCIATED FIXTURES TO BE CONTROLLED.
<b>©</b>	PHOTOCELL FOR EXTERIOR LIGHTING CONTROL. MOUNT ON ROOF OF BUILDING AND AIM NORTH.
	LIGHTING FIXTURE KEY
A O LP-B-3a	1. LETTER "A" DENOTES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE. 2. SUBSCRIPT "LP-B" INDICATES NAME OF PANELBOARD FROM WHICH FIXTURE IS FED. ASSOCIATED NUMBER "3" INDICATES CIRCUIT NUMBE IN PANELBOARD FROM WHICH FIXTURE IS FED. ASSOCIATED LETTER "8 WHERE USED, INDICATES LIGHTING FIXTURE CONTROL DEVICE DESIGNATION.

			REMOVE EXISTING	
·				
			GENERAL	
	1	KEYNO	TE.	
		LIMIT O	F DEMOLITION WORK.	
	•	POINT	OF CONNECTION, NEW TO EXISTING.	

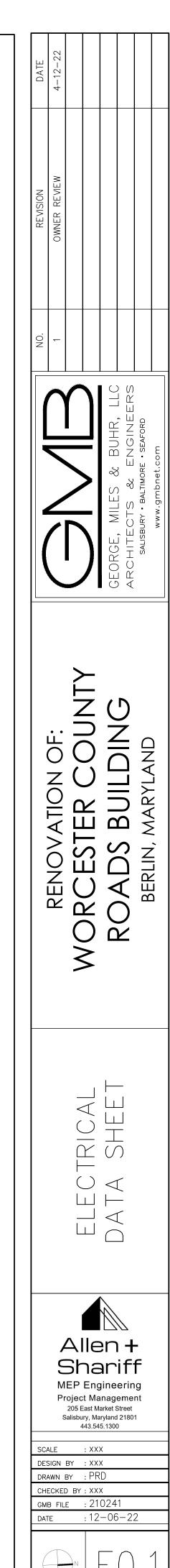
EXISTING

9	POINT OF CONNECTION, NEW TO EXISTING.
-	DETAIL OR SECTION NOTATION: ENUMERATION: A = DETAIL, 1 = SECTION
X	ENUMERATION NUMBER OR LETTER
X.X	SHEET WHERE DETAIL OR SECTION IS SHOWN

DIVISION OF MECH	ANICAL/ ELECTRICAL	WORK
ITEM	MECH/ DIV 22 AND 23	ELEC/ DIV 26
AUTOMATIC TEMPERATURE CONTROLS	FURNISH, INSTALL & WIRE	POWER WIRE
CONTROL PANELS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
LOW VOLTAGE CONTROL WIRING FOR MECH EQUIP.	FURNISH & INSTALL	
LINE VOLTAGE CONTROL WIRING FOR MECH. EQUIP.	FURNISH, INSTALL & WIRE	
MECHANICAL FLOW SWITCHES	FURNISH, INSTALL & WIRE	
THERMOSTATS/ SENSORS	FURNISH, INSTALL & WIRE	
P/E & E/P SWITCHES	FURNISH, INSTALL & WIRE	
DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MECHANICAL EQUIPMENT MONITORS	FURNISH & INSTALL	POWER WIRE
MANUAL STARTERS FOR MECHANICAL EQUIPMENT	FURNISH & INSTALL	POWER WIRE
MAGNETIC STARTERS FOR MECHANICAL EQUIPMENT	FURNISH	INSTALL & POWER WIRE
MOTOR CONTROL CENTERS	CONTROL WIRING	FURNISH, INSTALL, & POWER WIRE
VARIABLE SPEED CONTROLLERS	FURNISH & INSTALL	POWER WIRE
MOTORIZED DAMPERS & VALVES	FURNISH, INSTALL & WIRE	
DUCT SMOKE DETECTORS	INSTALL	FURNISH & WIRE
HEAT TRACE CABLE FOR PIPING	FURNISH & INSTALL	POWER WIRE
OIL/ GAS EMERGENCY SHUT-OFF SWITCHES		FURNISH, INSTALL, & POWER WIRE
SPRINKLER FLOW & TAMPER SWITCHES	BY SPRINKLER CONTRACTOR	WIRE

	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL, SURFACE MOUNTED, TOP 5'-9" AFF.
FAAP	FIRE ALARM ANNUNCIATOR PANEL, RECESSED, TOP 5'-0" AFF.
NACP	FIRE ALARM NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL, SURFACE MOUNTED, TOP, 5'-9" AFF.
FATP	FIRE ALARM TRANSPONDER PANEL, SURFACE MOUNTED, TOP 5'-9" AFF.
F	FIRE ALARM MANUAL PULL STATION, 44"AFF TO ACTUATING ARM, UON.
SD	ADDRESSABLE FIRE ALARM SYSTEM PHOTO-ELECTRIC SMOKE DETECTOR, CEILING MOUNTED.
DD	DUCT MOUNTED ADDRESSABLE FIRE ALARM SYSTEM PHOTO-ELECTRIC SMOKE DETECTOR.
HD	ADDRESSABLE FIRE ALARM SYSTEM HEAT DETECTOR, FIXED TEMPERATURE/RATE OF RISE TYPE. CEILING MOUNTED.
<u></u>	FIRE ALARM VISUAL (STROBE) APPLIANCE, MOUNT 80"AFF, OR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER, UON. SUBSCRIPT INDICATES MINIMUM CANDELA RATING, WHERE GREATER THAN 15.
Ţ	FIRE ALARM SYSTEM VISUAL (STROBE) APPLIANCE, WALL MOUNTED AT 80" AFF TO BOTTOM OF LENS, OR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER, UON. SUBSCRIPT INDICATES MINIMUM CANDELA RATING.
AV) 30	FIRE ALARM AUDIO/VISUAL (HORN/STROBE) APPLIANCE, 80"AFF, OR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER, UON. SUBSCRIPT INDICATES MINIMUM CANDELA RATING, WHERE GREATER THAN 15.
<u>AV</u>	FIRE ALARM SYSTEM HORN/STROBE, WALL MOUNTED AT 80" AFF TO BOTTOM OF LENS, OR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER, UON. SUBSCRIPT INDICATES MINIMUM CANDELA RATING. SUBSCRIPT "WP" INDICATES WEATHERPROOF DEVICE.
TS	SPRINKLER SYSTEM SUPERVISORY VALVE TAMPER SWITCH CONNECTION.
FS	SPRINKLER SYSTEM SUPERVISORY FLOW SWITCH CONNECTION.
PS	SPRINKLER SYSTEM PRESSURE SWITCH CONNECTION.
DH	FIRE ALARM MAGNETIC DOOR HOLDER CONNECTION POWERED THROUGH FIRE ALARM SYSTEM. COORDINATE MOUNTING HEIGHT WITH ASSOCIATED DOOR MOUNTED DEVICE.
OB	SPRINKLER SYSTEM BELL ALARM APPLIANCE, WEATHERPROOF. MOUNT 80" AFG.
PIV	POST INDICATOR VALVE CONNECTION, COORDINATE EXACT LOCATION WITH SITE DRAWINGS.
MEOD	SMOKE DAMPER CONNECTION, 120V.
MFSD	

	COMMUNICATIONS
<b>T</b>	TELE/DATA BOX, 4"X4"X2 1/4"D BOX WITH SINGLE GANG PLASTER RING 18"AFF, UON, WITH 3/4"C WITH PULL STRING STUBBED ABOVE ACCESSIBLE CEILING AND TERMINATED WITH PLASTIC BUSHING.
$\nabla$	TELE/DATA BOX, 4"X4"X2 1/4"D BOX WITH SINGLE GANG PLASTER RING 40"AFF OR 4" ABOVE COUNTER TOP OR BACKSPLASH (WHICHEVER IS HIGHER) OR IN CASEWORK AS APPLICABLE, UON, WITH 3/4"C WITH PULL STRING STUBBED ABOVE ACCESSIBLE CEILING AND TERMINATED WITH PLASTIC BUSHING.
	TELEPHONE PLYWOOD BACKBOARD 3/4"x8'x4', FIRE RETARDANT. BOTTOM AT 0'-4" AFF.
₩	CABLE TELEVISION OUTLET WITH DUPLEX RECEPTACLE, PROVIDE DUPLEX RECEPTACLE AND ADDITIONAL 4"X4"X2 1/4"D BOX WITH SINGLE GANG PLASTER RING, WITH 3/4"C WITH PULL STRING STUBBED ABOVE ACCESSIBLE CEILING AND TERMINATED WITH BUSHING. MOUNT 18"AFF UON.



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#### **ELECTRICAL SPECIFICATIONS**

1. PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS:

2017 NATIONAL ELECTRIC CODE (NEC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL PLUMBING CODE (IPC)
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL BUILDING CODE W/ LOCAL AMENDMENTS

UNDERWRITERS LABORATORY (UL), IRI, FM

WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.

2. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THEY ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND CONDUIT. THE ELECTRICAL CONTRACTOR SHALL LAYOUT ALL EQUIPMENT ROOMS TO MAKE SURE THE EQUIPMENT FITS IN THE ROOM OR SPACE SHOWN AND HAS ALL CLEARANCES REQUIRED BY THE NEC, PRIOR TO ORDER. EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD AND ROUTING OF CONDUITS SHALL SUIT FIELD CONDITIONS.

3. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS. SYSTEMS ARE TO BE COMPLETE AND WORKABLE IN ALL RESPECTS, PLACED IN OPERATION AND PROPERLY ADJUSTED.

4. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY. CLEAN UP, REMOVE AND LEGALLY DISPOSE OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS WORKERS, ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.

6. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

7. ALL PRODUCTS SHALL COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.

8. CONTRACTOR TO PROVIDE FIRE ALARM NOTIFICATION APPLIANCE CIRCUIT(NAC) WHERE THE WHERE THE EXISTING NAC PANEL(S) IS(ARE) FULL.

9. PROVIDE NEW NOTIFICATION CIRCUIT WHEN THE EXISTING CIRCUITS ARE FULL OR CIRCUIT VOLTAGE DROP IS ALREADY MAXED OUT.

10. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL ALL ELECTRICAL FIXTURES AND EQUIPMENT AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY FIXTURES OR EQUIPMENT AS REQUIRED.

## WORK IN EXISTING BUILDINGS

1. EXISTING BUILDING IS TO REMAIN OCCUPIED AND ACCESSIBLE AT ALL TIMES. PROTECT THE BUILDING PREMISES AND ALL OCCUPANTS ON THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES CAUSED BY IMPROPER PROTECTION AND SHALL MAKE ALL NECESSARY REPLACEMENTS OR REPAIRS AT NO ADDITIONAL COST. MAKE ALL ARRANGEMENTS, MAINTAIN AND PAY ALL COSTS FOR TEMPORARY WATER, PLUMBING, POWER, LIGHTING, AND HEATING OR VENTILATION AS REQUIRED TO PROPERLY CONDUCT THE WORK OF THIS CONTRACT AND MAINTAIN SERVICES. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FOR THE ENTIRE LENGTH OF THIS CONTRACT ALL EXITS, EXIT LIGHTING, FIRE PROTECTION DEVICES AND ALARMS TO CONFORM TO LOCAL BUILDING CODE REQUIREMENTS.

2. VERIFY POINTS OF CONNECTION BEFORE COMMENCING WORK. COORDINATE WORK WITH EXISTING WORK AND OTHER TRADES. REMOVE WASTE MATERIALS, DEBRIS, AND RUBBISH FROM SITE AND LEGALLY DISPOSE OF IT. THE OWNER HAS THE RIGHT OF FIRST REFUSAL ON EQUIPMENT, FIXTURES, DEVICES, ETC., REMOVED AND NOT REINSTALLED. DELIVER TO THE OWNER, AT THE OWNER'S DESIGNATED LOCATION, ITEMS ACCEPTED BY THE OWNER. DISPOSE OF IN A LEGAL MANNER ITEMS REJECTED BY THE OWNER.

3. EXISTING EQUIPMENT TO REMAIN OR TO BE RELOCATED WITHIN OR SERVING THE RENOVATED SPACE, WHICH IS DAMAGED OR DOES NOT COMPLY WITH THE SPECIFICATIONS, SHALL BE RESTORED TO LIKE NEW CONDITION SUBJECT TO REVIEW BY THE ARCHITECT AND ENGINEER. EQUIPMENT THAT CANNOT BE REPAIRED SHALL BE REPLACED WITH NEW MATERIALS MEETING THE SPECIFICATION REQUIREMENTS. CLEAN, REPAIR, AND RE-LAMP LIGHT FIXTURES THAT ARE TO BE REUSED. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

4. SOME WORK SHOWN MAY REQUIRE PREMIUM TIME INCLUDING NOISE PRODUCING ACTIVITIES, ACCESS INTO ADJOINING SPACES & ACTIVITIES DISRUPTING MEP SERVICES. CONFIRM THE REQUIREMENTS FOR PREMIUM TIME OR SPECIAL PROCEDURES WITH THE OWNER/LANDLORD AND INCLUDE THE COST IN BID PROPOSAL. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR ANY PHASING REQUIREMENTS. ARRANGE FOR AND OBTAIN OWNER'S PERMISSION FOR ANY SERVICE SHUTDOWNS.

5. THE CONTRACTOR, BY SUBMITTING THEIR BID PROPOSAL AGREES TO ACCEPT ALL EXISTING SITE CONDITIONS NOT SPECIFICALLY EXPECTED. ALL EXCEPTIONS SHALL BE PROVIDED IN WRITING TO THE ARCHITECT AND ENGINEER.

6. WHERE EXISTING PANELBOARDS ARE INDICATED TO BE REUSED, PROVIDE NEW CB'S AS REQUIRED FOR NEW BRANCH CIRCUITING SHOWN. PROVIDE TYPED PANEL DIRECTORIES IN ALL PANELS. CIRCUIT BREAKERS SHALL BE MOLDED CASE, THERMAL MAGNETIC, QUICK-MAKE, QUICK-BREAK, BOLT-ON TYPE. CIRCUIT BREAKER SHALL BE RATED AT OR ABOVE EXISTING PANELBOARD FAULT CURRENT (AIC) RATING.

7. FIRE ALARM SYSTEM EQUIPMENT AND WIRING SHALL MATCH EXISTING FIRE ALARM SYSTEM. VERIFY EXISTING EQUIPMENT CAPACITY AND PROVIDE REQUIRED EXTENSIONS TO THE EXISTING SYSTEM. VERIFY EXISTING BATTERY CAPACITY FOR ADDITIONAL FIRE ALARM SIGNAL DEVICES. COORDINATE WITH SPRINKLER CONTRACTOR AND PROVIDE REQUIRED ALARM AND POWER CONNECTIONS.

8. COORDINATE ALL CONNECTIONS TO EXISTING SYSTEMS WITH BUILDING ENGINEER/LANDLORD AND PROVIDE COMPATIBLE EQUIPMENT AS REQUIRED FOR PROPER OPERATION.

## DEMOLITION

1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL MEP ELEMENTS (PIPING, DUCTS, ELECTRICAL DEVICES, WIRING, CONDUIT, EQUIPMENT, HANGERS, SUPPORTS, ETC) INDICATED ON THE DRAWINGS OR NOT OTHERWISE REQUIRED FOR COMPLETED PRODUCT. REROUTE AND RECONNECT ANY CIRCUITS THAT REMAIN IN USE OR ARE RELOCATED. NO MEP ELEMENTS ARE TO BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED. NOT ALL ITEMS TO BE REMOVED ARE INDICATED ON DRAWING.

2. WIRING SHALL BE DISCONNECTED AT CIRCUIT BREAKERS AND REMOVED AND BREAKERS MARKED "SPARE." REMOVE ALL ABANDONED COMMUNICATION WIRING INCLUDING WIRING ABANDONED UDER PREVIOUS PROJECTS.

3. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO AN OWNER DESIGNATED AREA ON SITE.

4. ALL ASBESTOS REMOVAL (IF REQUIRED) WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY ARCHITECT AND OWNER IMMEDIATELY.

5. WHERE EXISTING ELECTRICAL WORK INTERFERES WITH NEW WORK AND WHERE SUCH INSTALLATIONS ARE TO REMAIN IN USE, THE INSTALLATIONS SHALL BE RELOCATED AND/OR RECONNECTED TO COORDINATE WITH THE WORK INDICATED ON THE CONTRACT DRAWINGS AND AS SPECIFIED. FOR EXISTING INSTALLATION WHICH INVOLVE BASE BUILDING SYSTEMS, OBTAIN APPROVAL OF OWNER'S REPRESENTATIVE PRIOR TO MAKING ANY MODIFICATIONS.

6. MAINTAIN CONTINUITY OF THOSE FEEDERS AND/OR BRANCH CIRCUITS SERVING MULTIPLE ITEMS OF WHICH ONE OR MORE ARE BEING REMOVED.

#### BASIS OF DESIGN AND SUBSTITUTIONS

1. MANUFACTURERS LISTED ARE BASIS OF DESIGN. SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER, ARCHITECT & ENGINEER. IF SUBSTITUTION IS SUBMITTED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE IT AND CERTIFY THAT THE SUBSTITUTION IS EQUIVALENT IN ALL RESPECTS TO THE BASIS OF DESIGN. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS. IF SUBSTITUTIONS ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS OR TRADES AFFECTED BY SUBSTITUTION AND FULLY COORDINATE. ANY COSTS RESULTING FROM SUBSTITUTION, WHETHER BY CONTRACTOR OR OTHERS, SHALL BE RESPONSIBILITY OF AND PAID FOR BY SUBSTITUTING CONTRACTOR. APPROVED SHOP DRAWINGS DOES NOT ABSOLVE THIS CONTRACTOR FROM THIS RESPONSIBILITY. APPROVAL OF SUBSTITUTIONS IS AT THE DISCRETION OF THE ARCHITECT & ENGINEER AND IF SUBMITTED AFTER THE BID, AT THE RISK OF THE CONTRACTOR.

#### SHOP DRAWING SUBMITTALS

1. COORDINATES, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR REVIEW. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT ORDER, START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR. SHOP DRAWINGS TO BE SUBMITTED INCLUDE, BUT NOT LIMITED TO:

WIRING DEVICES
PANEL BOARD BREAKERS, SAFETY SWITCHES
LIGHTING SYSTEMS, FIXTURES AND EQUIPMENT

2. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS. ELECTRONIC SUBMITTALS SHALL BE PRESENTED WITH ALL SHEETS IN ALPHANUMERIC ORDER AND ALL SHEETS ORIENTED WITH TOP OF SHEET UP.

3. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.

#### RECORD DRAWINGS

FIRE ALARM DEVICES

1. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTORS OFFICE AT THE JOB SITE. PRINTS SHALL INDICATE ADDITIONS, DELETIONS, VARIATIONS IN LOCATION, VARIATIONS IN NUMBERING ETC. ALTERATIONS SHALL BE MARKED IN RED AND DELETIONS ALL BE MARKED IN GREEN AND SHALL BE ON THE LATEST CONTRACT DRAWING ISSUED. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

#### **EQUIPMENT**

1. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, AND THE NATIONAL ELECTRICAL CODE (NEC), ARTICLE 90.7

2. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.

3. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK.

4. THE CONTRACTOR SHALL COORDINATE WITH THE OTHER TRADES FOR ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM.

# IDENTIFICATION

1. FURNISH AND MOUNT ON EACH PANELBOARD, SWITCHBOARD (INCLUDING BRANCH SWITCHES), LARGE JUNCTION BOX, SAFETY SWITCH, STARTER, REMOTE CONTROL, PUSH BUTTON STATION, AND ALL SIMILAR CONTROLS, A NAMEPLATE DESCRIPTIVE OF THE EQUIPMENT OR EQUIPMENT CONTROLLED.

2. PROVIDE BLACK AND WHITE NAMEPLATES CONSTRUCTED FROM LAMINATED PHENOLIC WITH A WHITE CENTER CORE. LETTERS SHALL BE ENGRAVED IN THE PHENOLIC TO FORM WHITE LETTERS 3/8" HIGH.

## CUTTING, PATCHING AND DRILLING

1. ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER.

2. DO NOT CORE DRILL OR CUT ANY CONCRETE SLABS OR OTHER STRUCTURAL COMPONENTS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER, ARCHITECT AND THE OWNER.

3. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT.

## MOUNTING ACCESSORIES

1. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL ANGLE IRON, CHANNEL IRON, RODS, SUPPORTS, HANGERS, CONCRETE OR PLYWOOD REQUIRED TO INSTALL, MOUNT AND SUPPORT ANY ELECTRICAL EQUIPMENT OR DEVICE CALLED FOR ON THE PLANS.

2. SUPPORTING MATERIAL SHALL BE COMPLETE WITH HANGERS, CONNECTORS, BOLTS, CLAMPS AND NECESSARY ACCESSORIES TO MAKE A COMPLETE INSTALLATION. SUPPORTING MATERIAL SHALL BE GALVANIZED, PAINTED OR OTHERWISE SUITABLY FINISHED.

## FIRESTOPPING/FIREDAMPERS

1. ALL PENETRATIONS OF SLAB-TO-SLAB PARTITIONS SHALL BE SEALED AIRTIGHT.

2. WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, DUCT, OR PIPE PASSAGE, SEAL PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE. ALL FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814,UL 1479, AND BE FACTORY MUTUAL APPROVED. ALL FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

3. INSTALLATION OF LIGHT FIXTURES, AND OUTLETS IN RATED CEILINGS OR WALLS SHALL HAVE RATED BOXES OR BE PROVIDED WITH PREMANUFACTURED TENTS MATCHING THE RATING OF THE CEILING OR WALL ASSEMBLY.

# ACCESS DOORS

1. ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO EQUIPMENT AND OTHER DEVICES WHICH REQUIRE

MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.

2. ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 "WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS. ACCESS PANELS SHALL BE 16" X 16" OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.

3. ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANELS. PROVIDE ACCESS PANELS TO GENERAL CONTRACTOR FOR INSTALLATION.

#### RACEWAYS

AND APPROPRIATE COVER PLATES.

1. ALL WIRE SHALL BE RUN IN ACCORDANCE WITH CODE IN INTERMEDIATE METAL CONDUIT (IMC) OR ELECTRICAL METALLIC TUBING (EMT) OR METAL CLAD (MC) CABLING UNLESS OTHERWISE SPECIFICALLY STATED HEREIN. CONDUIT SIZE SHALL BE 3/4" MINIMUM UNLESS NOTED OTHERWISE

2. ALL CONDUIT SHALL BE CONCEALED IN WALLS, FLOORS AND CEILINGS WHEREVER POSSIBLE. EXPOSED CONDUIT IN FINISHED AREAS WILL NOT BE PERMITTED. EXPOSED CONDUIT WILL BE PERMITTED IN UNFINISHED AREAS WITH THE SPECIFIC APPROVAL OF THE ARCHITECT

3. USE FLEXIBLE CONDUIT FOR THE CONNECTION TO THE RECESSED OR SEMI-RECESSED LIGHTING FIXTURES (6' LENGTH MAXIMUM). USE LIQUID TIGHT METAL CONDUIT FOR ALL CONNECTIONS TO MOTORS AND OTHER EQUIPMENT SUBJECT TO VIBRATION AND IN AREAS SUBJECT TO MOISTURE.

4. CONDUIT SHALL BE SECURELY FASTENED IN PLACE. SUPPORT RUNS OF CONDUIT AS DETAILED IN THE APPROPRIATE TABLE OF THE NATIONAL ELECTRICAL CODE.

5. INSTALL EXPOSED RUNS OF CONDUIT AND CONDUIT ABOVE LAY-IN CEILINGS PARALLEL OR PERPENDICULAR TO THE WALLS, STRUCTURAL MEMBERS OF INTERSECTIONS OF VERTICAL PLANES AND CEILINGS. PROVIDE RIGHT ANGLE TURNS USING FITTINGS OR SYMMETRICAL BENDS. SUPPORT CONDUITS WITHIN 1' OF ALL CHANGES INDIRECTION.

6. IF A CONDUIT IS SUSPENDED, IT SHALL BE SUPPORTED ON TRAPEZE HANGERS, WHICH USE "ALL-THREAD" RODS FROM THE STRUCTURAL STEEL. THE USE OF CEILING SUPPORT WIRE OR SIMILAR MATERIAL WILL NOT BE ACCEPTED.

7. INSTALL EMPTY CONDUIT FOR FUTURE USE AS INDICATED ON THE DRAWINGS. CONDUIT SHALL BE COMPLETE WITH JETLINE OR PULL ROPE, JUNCTION/OUTLET BOXES, TILE RINGS

8. COORDINATE CONDUIT RUNS WITH OTHER TRADES AND ADJUST ROUTING TO AVOID

9. RACEWAYS SHALL BE PROVIDED WITH EXPANSION FITTINGS WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION.

1. INSTALL PULL AND JUNCTION BOXES WHERE SHOWN ON THE DRAWINGS, AND WHERE REQUIRED FOR CHANGES IN DIRECTION, AT JUNCTION POINTS AND TO FACILITATE WIRE PULLING. FURNISH BOX SIZES IN ACCORDANCE WITH NEC UNLESS LARGER BOXES ARE INDICATED ON THE DRAWINGS.

2. INTERIOR CONCEALED - USE SHEET STEEL BOXES, ZINC COATED OR CADMIUM PLATED.

3. PROVIDE REMOVABLE COVERS OF CODE GAUGE, HOT ROLLED SHEET STEEL, HOT

DIPPED GALVANIZED FOR ALL BOXES, UNO.

4. WALL BOX SIZES SHALL BE MINIMUM 4" SQUARE X 2-1/2" DEEP WHERE WALL CONSTRUCTION PERMITS. FIXTURE OUTLETS IN CEILING SHALL BE MINIMUM 4" OCTAGONAL X 1-1/2" DEEP (4-11/16 OCTAGONAL X 2-1/2" DEEP WHERE REQUIRED TO ACCOMMODATE

LARGER CONDUIT OR LARGER NUMBER OF WIRES). GANG BOXES SHALL BE ONE PIECE MINIMUM 2-1/8" DEEP.

5. FLUSH MOUNT BOXES IN ALL FINISHED WALLS, INSTALL THE PLASTER RINGS IN DRYWALLED PLASTERED WALLS AND RAISED COVERS AS REQUIRED IN WALLS WITH OTHER FINISHES SO THAT THE COVER PLATES FIT TIGHTLY AGAINST BOXES OR RINGS. 3/16"

MAXIMUM GAPS ARE ALLOWED FOR NONCOMBUSTIBLE WALLS. SUPPORT ALL BOXES TO

MAINTAIN PROPER ALIGNMENT AND RIGIDITY. CLEAN BOXES OF ALL FOREIGN MATTER

PRIOR TO THE INSTALLATION OR WIRING OR DEVICES.

6. MOUNTING HEIGHTS ON THE DRAWING ARE TO THE CENTERLINE OF THE BOXES UNLESS OTHERWISE NOTED. ADJUST LOCATIONS OF OUTLETS IN MASONRY OR TILE CONSTRUCTION TO OCCUR IN THE NEAREST JOINT TO THE HEIGHT SPECIFIED. HEIGHTS

## CONDUCTORS

SHALL MEET ADA REQUIREMENTS.

1. COLOR CODE CONDUCTORS (EXCEPT CONTROL AND INSTRUMENTATION CONDUCTORS)

AS FOLLOWS:		
	208/120 VOLT SYSTEM	480/277 VOLT SYSTEM
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GREY
GROUND	GREEN	GREEN

CONDUCTORS SHALL HAVE CONTINUOUS INSULATION COLOR, AS LISTED ABOVE. COLOR CODE CONDUCTORS WHICH DO NOT HAVE CONTINUOUS INSULATION COLOR BY APPLICATION OF AT LEAST TWO LAPS OF COLORED TAPE ON EACH CONDUCTOR AT ALL POINTS OF ACCESS INCLUDING JUNCTION BOXES. CONDUCTORS SHALL BE SOFT ANNEALED COPPER INSULATED FOR 600 VOLTS UNLESS SPECIFICALLY INDICATED OTHERWISE.

DRAWINGS INDICATE SIZES BASED ON COPPER CONDUCTORS. COPPER CONDUCTORS SHALL BE PROVIDED WITHIN THE PROJECT.

2. INSULATION TYPE SHALL BE TYPE THHW FOR WIRE SIZES #8 AWG AND LARGER AND THWN FOR #10 AWG AND SMALLER. THHN SHALL NOT BE USED IN WET OR DAMP LOCATIONS.

3. FLEXIBLE CORD SHALL BE HEAVY DUTY TYPE SO WITH AN EQUIPMENT GROUND CONDUCTOR IN ADDITION TO THE CURRENT CARRYING CONDUCTORS.

4. PROVIDE #12 CONDUCTORS, UNLESS OTHERWISE INDICATED. CONTROL CONDUCTORS SHALL BE #14 MINIMUM FOR NEC CLASS 1 AND #16 FOR NEC CLASS 11. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID.

5. CONNECT #10 AND SMALLER WIRES WITH CONSTANT PRESSURE EXPANDABLE SPRING TYPE CONNECTORS. CONNECT #8 AND LARGER WIRES WITH COMPRESSION CONNECTORS OR SPLICES.

6. INSTALL WIRING IN CONDUIT. PULL CONDUCTORS USING RECOGNIZED METHODS AND EQUIPMENT LEAVING AT LEAST 6" WIRE AT ALL JUNCTION BOXES FOR CONNECTIONS. CLEANOUT EACH CONDUIT SYSTEM TO ELIMINATE OBSTRUCTIONS OVER FULL LENGTH BEFORE PULLING WIRE.

7. FORM AND TIE ALL WIRING IN PANELBOARDS. THERE SHALL BE NO WIRENUT JOINTS OR SPLICES MADE INSIDE SWITCHBOARDS/PANELBOARDS.

8. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED LIMIT OF 1.5%, PER 2012 IGCC 608.1.3.

9. WIRE SIZES SHALL BE BASED ON THE 60°C. AMPACITIES FOR WIRE SIZES #14-1 AWG AND 75°C AMPACITIES FOR WIRE SIZES #1/0 AWG AND LARGER.

10. CIRCUITS MAY BE MULTI-PLEXED IN CONDUIT PROVIDED WIRE IS PROPERLY DERATED AND CONDUIT SIZED PER NEC. UNDER NO CIRCUMSTANCES SHALL MORE THAN NINE (9) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT. WIREMOLD SERVED BY MULTIPLE CIRCUITS SHALL BE WIRED WITH INDIVIDUAL SEPARATE NEUTRALS FOR EACH CIRCUIT.

11. METAL-CLAD (MC) OR ARMORED CABLE (AC) MAY BE USED FOR BRANCH CIRCUITS WHERE ALLOWED BY CODE. ARMORED CABLE SHALL NOT BE USED IN ASSEMBLY AREAS OR WHERE PROHIBITED BY CODE. CABLES SHALL BE CONCEALED IN FINISHED SPACES.

TEST CABLES FOR CONTINUITY AND GROUNDS. INSTALL CABLES PARALLEL AND PERPENDICULAR TO BUILDING SURFACES. COORDINATE CABLE RUNS WITH OTHER TRADES AND ADJUST ROUTING TO AVOID INTERFERENCE. LOW VOLTAGE WIRING INSTALLED ABOVE CEILINGS SHALL BE BUNDLED AND SUPPORTED FROM THE BUILDING STRUCTURE. DO NOT LAY CABLE ON CEILINGS.

#### DEVICES

1. WIRING DEVICE COLOR SHALL BE WHITE OR AS SELECTED BY ARCHITECT, UNLESS OTHERWISE INDICATED.

2. PROVIDE TOTALLY ENCLOSED, SPECIFICATION GRADE, 20 AMPERE, 120/277 VOLT QUIET A/C GENERAL USE SNAP SWITCHES MANUFACTURED BY HUBBELL, P&S OR LEVITON.

3. PROVIDE SPECIFICATION GRADE NEMA CONFIGURATION 5-20R DUPLEX 125-VOLT GROUNDING TYPE RECEPTACLES UNLESS OTHERWISE NOTED ON THE DRAWINGS.

4. RECEPTACLES REQUIRING AMPERAGES, VOLTAGES OR CONFIGURATIONS DIFFERENT FROM THE DUPLEX CONVENIENCE RECEPTACLES ABOVE SHALL BE AS INDICATED ON THE DRAWINGS AND OF A QUALITY, MATERIAL AND CONSTRUCTION EQUAL TO THAT SPECIFIED FOR DUPLEX CONVENIENCE RECEPTACLES.

5. PROVIDE COVER OR DEVICE PLATES FOR OUTLET BOXES AS FOLLOWS UNLESS OTHERWISE NOTED:

FINISHED AREAS: THERMOPLASTIC- COLOR TO MATCH DEVICE TELEPHONE, COMMUNICATION, AND SIGNAL OUTLET PLATES, SHALL MATCH THOSE USED FOR RECEPTACLES AND SWITCHES.

ALL OUTLET AND/OR JUNCTION BOXES SHALL BE COMPLETE WITH A COVER PLATE BY THIS CONTRACTOR.
WHERE DEVICES ARE GANGED, THEY SHALL BE INSTALLED UNDER A COMMON

COVERPLATE.

LOCATE THE SWITCHES APPROXIMATELY 4'-0" ABOVE THE FINISHED FLOOR

ELEVATION OR NEAREST BLOCK COURSE (WITH IN ADA REQUIREMENTS) UNLESS

OTHERWISE NOTED. THE LONG DIMENSION OF THE SWITCHES SHALL BE

6. REFER TO ARCHITECTURAL DRAWINGS FOR DEVICE MOUNTING HEIGHTS (WITH IN ADA REQUIREMENTS), UNLESS OTHERWISE NOTED. THE LONG DIMENSION OF THE RECEPTACLE SHALL BE VERTICAL. ALL DEVICES SHALL BE FLUSH MOUNTED U.N.O.

7. RECEPTACLES WITHIN 6' OF SINKS SHALL BE GFCI TYPE.

MANUFACTURED BY HUBBELL, P&S OR LEVITON.

8. RECEPTACLE IN KITCHEN AREA OR BATHROOM SHALL BE GFCI PROTECTED.

#### SAFETY SWITCHES

1. PROVIDE DISCONNECT SWITCHES FOR ALL EQUIPMENT, WHERE REQUIRED BY CODE. MANUFACTURER SHALL BE SQUARE D, SIEMENS, G.E., OR CUTLER-HAMMER. ALL SAFETY SWITCHES SHALL BE BY ONE MANUFACTURER.

2. SAFETY SWITCHES SHALL BE THE ENCLOSED HEAVY-DUTY TYPE (TYPE HD) WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PAD LOCKABLE OPERATING

3. SAFETY SWITCHES SHALL BE RATED FOR 240 OR 600 VOLTS AS APPLICABLE. THEY SHALL BE HORSEPOWER RATED WHEN USED IN MOTOR CIRCUITS. SAFETY SWITCHES SHALL BE FUSIBLE OR NONFUSIBLE 2, 3 OR 4 POLE AS INDICATED ON THE DRAWINGS. SAFETY SWITCHES SHALL BE SINGLE THROW, UNO. ENCLOSURES SHALL BE NEMA 1 INDOORS AND NEMA 3R OUTDOORS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

4. MOUNT THE SAFETY SWITCHES SECURELY BETWEEN 3' X 6' LEVELS ABOVE THE FLOOR UNLESS OTHERWISE NOTED IN THE DRAWINGS. SWITCHES ON BLOCK WALLS SHALL BE MOUNTED ON A 3/4" PLYWOOD BACKBOARD, WHERE LOCATED INDOORS.

5. THIS CONTRACTOR SHALL REPLACE ALL FUSES BLOWN DURING CONSTRUCTION.

#### PANELBOARDS

1. EXISTING PANELBOARDS SHALL BE UTILIZED FOR PROJECT.

2. PANELBOARDS SHALL BE ENCLOSED DEAD FRONT SAFETY TYPE WITH FEATURES AND RATINGS AS SCHEDULED ON DRAWINGS. ALL BUS BARS SHALL BE RECTANGULAR SOLID COPPER. SPACE, WHERE SHOWN IN PANEL SCHEDULES, DESIGNATES SPACE FOR FUTURE PROTECTIVE DEVICES AND SHALL INCLUDE BUS AND SUPPORT. PANELS KNOWN AS "LOAD CENTERS" ARE UNACCEPTABLE. MANUFACTURER SHALL BE SQUARE D, SIEMENS, GE OR CUTLER-HAMMER.

3. ELECTRICAL CONTRACTOR SHALL ARRANGE CIRCUITS AS NEAR AS POSSIBLE TO CIRCUIT NUMBERS ON THE DRAWINGS. AT COMPLETION OF JOB, ELECTRICAL CONTRACTOR SHALL TAKE CURRENT READING CHECKS OF RESPECTIVE PHASES. A MINIMUM OF CIRCUIT CONNECTIONS SHALL BE REARRANGED TO BALANCE, AS CLOSELY AS POSSIBLE, THE LOAD IN THE PANEL. ENTRIES ON DIRECTORY CARDS SHALL BE TYPED, COMPLETE AND ACCURATE. FINAL ROOM NAMES/NUMBERS MAY BE DIFFERENT FROM THOSE USED ON PLANS AND SHOULD BE USED TO CREATE DIRECTORIES.

4. PROVIDE NEW PRINTED PANELBOARD CIRCUIT DIRECTORIES FOR PANELS THAT HAVE HAD EXISTING CIRCUIT DIRECTORIES CHANGE THEIR CIRCUIT IDENTIFICATION.

# GROUNDING

LOCAL AUTHORITY.

1. GROUND ALL EQUIPMENT PER NEC 250.

2. ALL CONDUITS SHALL CONTAIN A CODE SIZED GROUND WIRE SIZE PER NEC IN ADDITION TO THE CONDUCTORS SHOWN ON THE PLANS. WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE THE GROUND WIRE SIZE SHALL BE INCREASED PROPORTIONALLY.

# COMMUNICATION SYSTEMS

1. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUITS WITH PULL WIRES, OUTLET BOXES, METAL CABINETS AND PULL BOXES. PROVIDE A COMPLETE CONDUIT SYSTEM WITH PULL WIRES AS INDICATED ON THE DRAWINGS. ALL CONDUIT RUN SHALL HAVE NOT MORE THAN THREE (3) BENDS IN A RUN BETWEEN OUTLET BOXES OR BETWEEN OUTLET BOX AND A METAL CABINET OR PULL BOX. WHEN A RUN REQUIRES MORE THAN THREE (3) BENDS, A PULL BOX OF SUITABLE SIZE SHALL BE PLACED IN A SUITABLE LOCATION TO MEET THE ABOVE CONDITIONS.

2. COORDINATE TELEPHONE AND DATA OUTLET LOCATIONS WITH OWNER. PROVIDE OUTLET BOX AND EMPTY RACEWAY WITH PULL WIRE IN INSULATED OR SOLID OR INACCESSIBLE AREAS. ALL PLATES SHALL BE STANDARD TELEPHONE TYPE WITH JACK. PROVIDE PLATES OF SAME MATERIAL AND FINISH AS SPECIFIED FOR RECEPTACLES. WALL PHONE PLATES SHALL HAVE MOUNTING STUDS.

# FIRE ALARM AND DETECTION SYSTEMS

1. ALL DEVICES, COMBINATIONS OF DEVICES, APPLIANCES AND EQUIPMENT SHALL BE INTEGRATED IN TO THE EXISTING BUILDING FIRE ALARM SYSTEM. FINAL CABLING TIE-IN TO THE BUILDING FIRE ALARM SYSTEM TO BE DONE BY THE BUILDING'S FIRE ALARM VENDOR.

2. ALL DEVICES, COMBINATIONS OF DEVICES, APPLIANCES AND EQUIPMENT SHALL BE UL LISTED FOR THE PURPOSE, WHICH THEY ARE USED AND SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72, AS WELL AS ALL APPLICABLE LOCAL CODES, AUTHORITIES HAVING JURISDICTION AND MANUFACTURER'S REQUIREMENTS.

3. THE INSTALLATION OF THIS SYSTEM SHALL BE BY A COMPANY THAT SPECIALIZES IN

INSTALLATION OF THIS EQUIPMENT AND HAS A SUCCESSFUL RECORD OF SYSTEM

INSTALLATIONS DATING BACK A MINIMUM OF 5 YEARS ON SIMILAR TYPES OF INSTALLATIONS.

4. THE CONTRACTOR SHALL MAINTAIN AN UP-TO-DATE SET OF DESIGN DOCUMENTS, APPROVED PERMIT DOCUMENTS AND SHOP DRAWINGS ON-SITE AND SHALL TURN THESE

DOCUMENTS OVER TO THE OWNER UPON PROJECT COMPLETION AND APPROVAL BY THE

5. RECORD DRAWINGS SHALL INCLUDE A CAD GENERATED SET OF DOCUMENTS, WHICH INDICATE LOCATION OF ALL DEVICES, CONTROL PANELS, ANNUNCIATORS, INTERFACE ADDRESSABLE MODULES, AND END-OF-LINE DEVICES.

6. ALL FIRE ALARM EQUIPMENT PROVIDED SHALL BE COMPATIBLE WITH EXISTING BUILDING CORE EQUIPMENT.

7. SUBMIT BATTERY CALCULATIONS AND VOLTAGE DROP CALCULATIONS TO SUBSTANTIATE COMPLIANCE WITH REQUIREMENTS.

8. DEVICES TO BE PROVIDED FOR THIS PROJECT INCLUDE; NFPA 72 AND ADA COMPLIANT FLASHING STROBE LIGHTS (MINIMUM 15/75 CANDELA, UNO) AND COMBINATION STROBE / HORNS, WALL AND CEILING MOUNT TYPE AS INDICATED; PHOTOELECTRIC SMOKE DETECTORS, AND DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS SHALL HAVE A

BASE WITH AN AUXILIARY RELAY (FOR HVAC UNIT SHUTDOWN) AND A PHOTOELECTRIC DETECTOR WITH SAMPLING TUBE (LENGTH AS REQUIRED.

9. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL CONSTRUCTION AND FINAL CLEANUP OF ALL TRADES IS COMPLETE. SMOKE DETECTOR BASES SHALL BE BAGGED

10. WHERE BASE BUILDING SPRINKLER SYSTEM IS MODIFIED, AND IF NEW DEVICES ARE REQUIRED, WATERFLOW AND TAMPER SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE SPRINKLER CONTRACTOR. VERIFY QUANTITY OF WATER FLOW, TAMPER DEVICES, ETC. WITH SPRINKLER CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL CONNECT EACH DEVICE TO THE FIRE ALARM SYSTEM.

11. WHERE MULTIPLE STROBE DEVICES ARE INSTALLED IN A COMMON AREA, PROVIDE SYNCHRONIZED STROBES TO ALLOW FLASH TO OCCUR SIMULTANEOUSLY.

12. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN MINIMUM OF 3/4" CONDUIT, EXCEPT USE UL RATED "MC" FIRE ALARM CABLE FROM JUNCTION BOX LOCATED ABOVE CEILING SPACE OVER THE STROBE, DOWN INSIDE THE WALL TO STROBE JUNCTION BOX. FIRE ALARM JUNCTION BOX COVERS SHALL BE PAINTED RED. WHERE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION (AHJ), THE CONTRACTOR MAY USE UL LISTED, MC FIRE

13. ALL WIRING TO DEVICES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS

14. FIRE ALARM WIRING SHALL NOT BE INSTALLED IN THE SAME CONDUIT OR JUNCTION BOXES AS POWER AND LIGHTING WIRING.

15. ALL WIRE SPLICING SHALL BE PERFORMED IN JUNCTION BOXES SIZED TO ACCOMMODATE TERMINAL BLOCKS (NUMBER AS REQUIRED). ALL CONNECTIONS SHALL BE MADE WITH APPROVED CRIMP-ON TERMINAL SPADE LUGS, PRESSURE-TYPE TERMINAL BLOCKS OR PLUG CONNECTORS. CABLE TAPS OR T-TAPS WILL NOT BE PERMITTED.

16. THE COMPLETED FIRE ALARM SYSTEM SHALL BE FULLY TESTED IN ACCORDANCE WITH NFPA 72, AND LOCAL FIRE DEPARTMENT REQUIREMENTS, BY THE INSTALLER, AND IN THE PRESENCE OF THE OWNERS REPRESENTATIVE AND THE LOCAL FIRE MARSHALL. UPON COMPLETION OF A SUCCESSFUL TEST, THE INSTALLER SHALL SO CERTIFY IN WRITING TO THE OWNER AND GENERAL CONTRACTOR.

17. TEST CONDUCTORS FOR SHORT CIRCUITS USING AN INSULATION-TESTING DEVICE, INDICATING AND INITIATING CIRCUITS FOR PROPER SIGNAL TRANSMISSION UNDER OPEN CIRCUIT CONDITIONS, INDICATING AND INITIATING CIRCUITS FOR PROPER ALARM OPERATION AND RESPONSE AND ANNUNCIATION AT THE MAIN FIRE ALARM CONTROL PANEL, AND NEW SYSTEMS FOR SPECIFIED FUNCTIONS ACCORDING TO THIS SPECIFICATION AND THE FIRE ALARM MATRIX INDICATED ON THE DRAWINGS.

18. CORRECT DEFICIENCIES INDICATED BY TESTING AND COMPLETELY RETEST WORK AFFECTED BY SUCH DEFICIENCIES. VERIFY BY THE SYSTEM TEST THAT THE TOTAL SYSTEM MEETS THE EXISTING BASE BUILDING SYSTEM OPERATION STANDARD.

19. PROVIDE INTERFACE WITH SECURITY SYSTEM, IF PROVIDED, TO UNLOCK ALL EGRESS DOORS IN THE EVENT OF AN ALARM BY AN INITIATING DEVICE. ACTIVATION OF FLOOR FIRE ALARM PULL STATION, SMOKE DETECTORS, HEAT DETECTORS AND WATERFLOW SWITCH AND ETC., SHALL CAUSE THE RELEASE OF ALL SECURITY DOOR LOCKS/ELECTRIC DOOR STRIKE.

20. INCLUDE ON-SITE SERVICES OF A CERTIFIED FACTORY TECHNICIAN TO PROVIDE TECHNICAL INSTALLATION SUPPORT FOR PANEL START UP, PROGRAMMING AND PROGRAM EDITING BASED ON LOCAL AUTHORITY COMMENTS, ASSIST CONTRACTORS WITH TROUBLESHOOTING AND ASSIST INSTALLER FOR ONE COMPLETE FINAL SYSTEM CHECKOLIT

21. THE CONTRACTOR SHALL WARRANTY THE INSTALLATION OF THIS SYSTEM FOR A PERIOD OF NOT LESS THAN 18 MONTHS, AND THAT SHALL INCLUDE ALL DEFECTIVE PARTS, TROUBLESHOOTING OF NUISANCE ALARMS DUE TO SHORTS OR OTHER ANOMALIES. THE STANDARD MANUFACTURER WARRANTY SHALL APPLY TO ALL DEVICES, POWER SUPPLIES

22. CONTRACTOR SHALL PROVIDE COORDINATION WITH BUILDING ENGINEER.

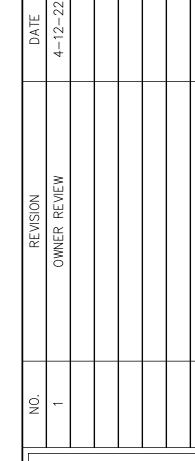
23. CONTRACTOR SHALL GET APPROVAL FROM FIRE MARSHAL AND INCORPORATE ALL COMMENTS.

#### WARRANTY

SUCH REPLACEMENT OR REPAIR.

1. FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE. EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES.

2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF



GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
SALISBURY BALTIMORF SFAFORD

RENOVATION OF:
ORCESTER COUNT
ROADS BUILDING

ELECTRICAL SPECIFICATIONS



SCALE : XXX

DESIGN BY : XXX

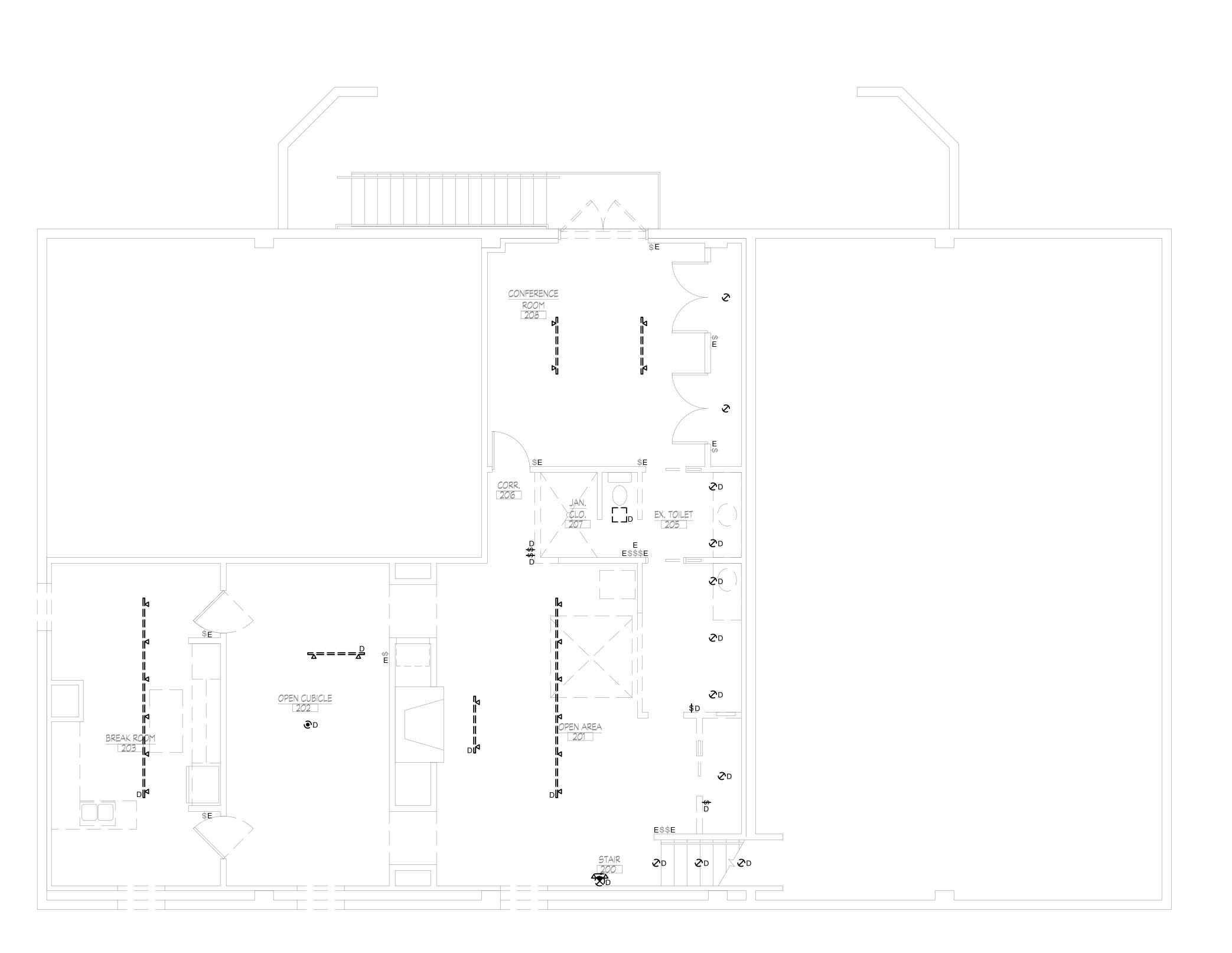
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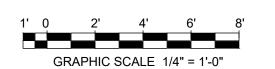
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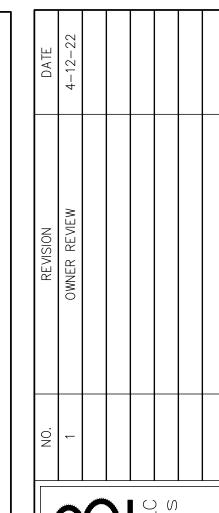


1 LIGHTING SECOND FLOOR PLAN DEMO



#### GENERAL LIGHTING DEMOLITION NOTES:

- EXISTING CONDITIONS CAPTURED THROUGH SITE WALK AND OWNER PROVIDED AS-BUILT NOTES, AND MAY NOT BE AN ACCURATE DEPICTION OF ALL EXISTING CONDITIONS. DETERMINE EXISTING CONDITIONS PRIOR TO DEMOLITION WORK, AND INCLUDE ALL SCOPE WHETHER SHOWN OR NOT. DEVICES LOCATED OUTSIDE OF THE SOW TENANT SPACE ARE NOT SHOWN.
- 2. FIXTURES AND DEVICES INDICATED BY 'D' ARE SCHEDULED FOR DEMOLITION. GIVE OWNER FIRST RIGHT OF REFUSAL OF DEMOLISHED FIXTURES AND DEVICES. ALSO COORDINATE WITH ARCHITECTURAL PLANS FOR EXISTING FIXTURES AND DEVICES SCHEDULED FOR DEMOLITION. UTILIZE EXISTING DEVICE WHERE NEW DEVICES ARE SHOWN AT DEMOLISHED LOCATION, UON. MAINTAIN LIGHTING BRANCH CIRCUIT FOR NEW LIGHT FIXTURES, UON. ALL ITEMS SHOWN WITH AN "R#" SHALL BE RELOCATED, REFER TO NEW WORK PLAN FOR NEW LOCATION, EXTEND CIRCUITS AS REQUIRED.
- 3. FIXTURES AND DEVICES INDICATED BY 'E' ARE EXISTING TO REMAIN. ALSO COORDINATE WITH ARCHITECTURAL PLANS FOR EXISTING FIXTURES AND DEVICES TO REMAIN.
- 4. FIXTURES AND DEVICES INDICATED BY 'R' ARE EXISTING TO BE RELOCATED. CONTRACTOR SHALL DISCONNECT, REMOVE, CLEAN, STORE, AND RELAMP EXISTING FIXTURES. REFER TO NEW WORK DRAWINGS FOR NEW LOCATIONS OF FIXTURES WITH LABEL 'NR'. ALSO COORDINATE WITH ARCHITECTURAL PLANS FOR EXISTING FIXTURES AND DEVICES TO BE RELOCATED.
- 5. HATCHED AREAS ARE NOT IN SCOPE OF WORK. REFER TO ARCHITECTURAL DRAWINGS FOR AREAS INCLUDED IN THE SCOPE OF WORK.
- 6. CIRCUITING TO REMAIN: WHERE AFFECTED BY NEW WORK, EXISTING CIRCUITING TO REMAIN SHALL BE REROUTED OR RECONNECTED AS REQUIRED, IN ORDER TO MAINTAIN CONTINUITY OF CIRCUIT.
- 7. REUSE OF EXISTING CIRCUITRY: EXISTING CIRCUITS SHALL BE REUSED WHERE CONVENIENT TO SERVE THE NEW LAYOUT. PROVIDE CIRCUIT MODIFICATIONS INDICATED OR REQUIRED TO MAINTAIN CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.





A CORCESTER COUNTY ROADS BUILDING

LIGHTING DEMO



SCALE : 1/4" = 1'0"

DESIGN BY : JTH

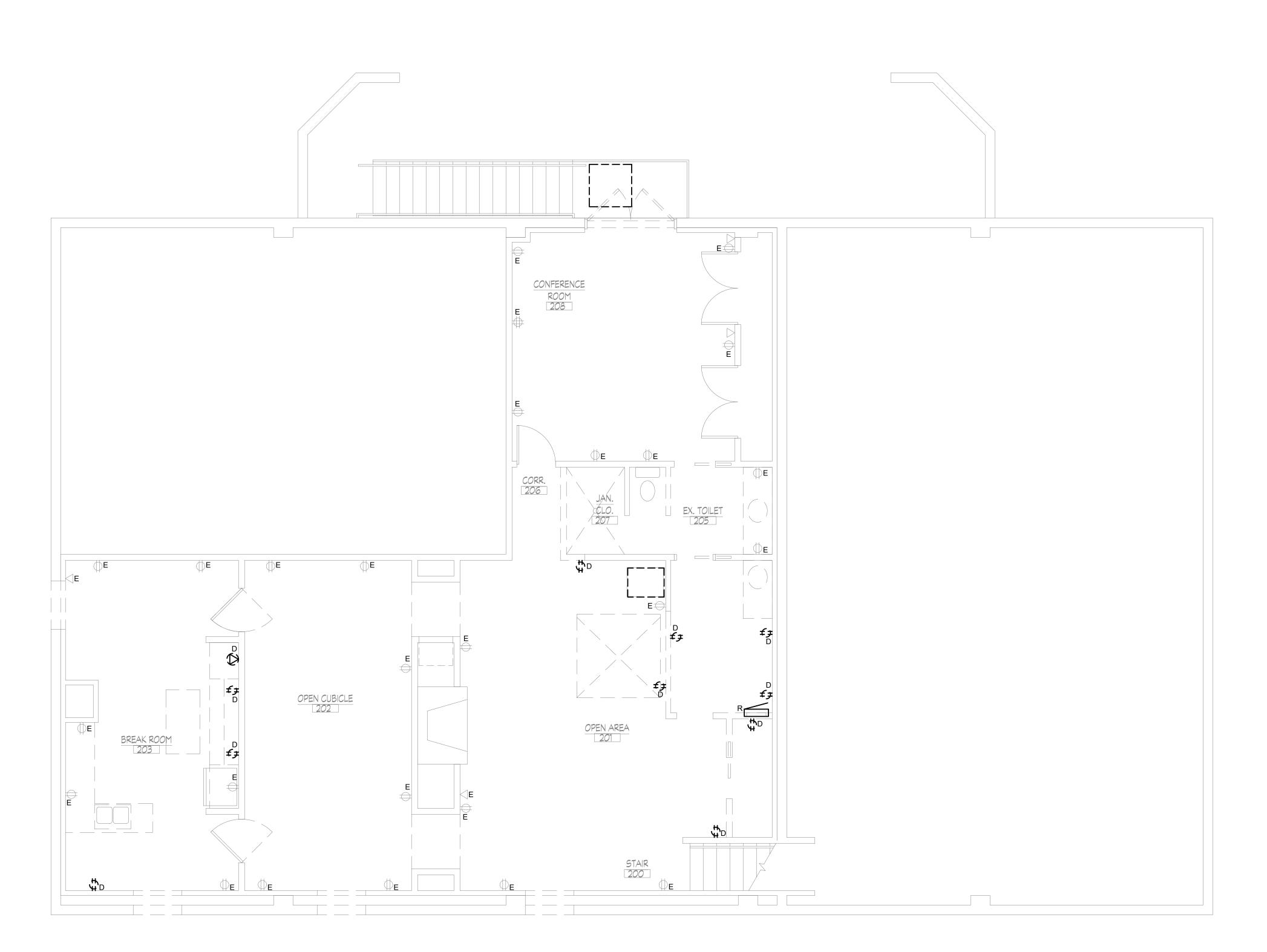
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GENERAL POWER DEMOLITION NOTES:

- GENERAL: DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION. VISIT THE EXISTING BUILDING PRIOR TO BID IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND IN ORDER TO AVOID CONFLICTS.
- 2. EXISTING ITEMS: ALL ITEMS SHOWN WITH AN "D" ON THE DEMOLITION PLANS ARE EXISTING AND SHALL BE REMOVED COMPLETE INCLUDING BOXES, CONDUIT, WIRE, FASTENERS, AND ASSOCIATED APPURTENANCES UON. ALL ITEMS SHOWN WITH AN "E" ON THE DEMOLITION PLANS ARE EXISTING TO REMAIN AS-IS. ALL ITEMS SHOWN WITH AN "R" SHALL BE RELOCATED, EXTEND CIRCUITS AS REQUIRED.
- 3. CIRCUITING TO REMAIN: WHERE AFFECTED BY NEW WORK, EXISTING CIRCUITING TO REMAIN SHALL BE REROUTED OR RECONNECTED AS REQUIRED, IN ORDER TO MAINTAIN CONTINUITY OF CIRCUIT.
- 4. REUSE OF EXISTING CIRCUITRY: EXISTING CIRCUITS SHALL BE REUSED WHERE CONVENIENT TO SERVE THE NEW LAYOUT. PROVIDE CIRCUIT MODIFICATIONS INDICATED OR REQUIRED TO MAINTAIN CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.
- 5. EXISTING CONDUIT: ALL EXISTING CONDUITS AND WIRING THAT WILL NOT BE REUSED SHALL BE REMOVED. EXISTING CONDUIT TO REMAIN CONCEALED IN WALLS SHALL BE ABANDONED. EXISTING CONDUIT TO REMAIN BELOW FLOOR SLAB SHALL BE CUT OFF ONE INCH BELOW ROUGH FLOOR AND GROUTED FLUSH. ALL EXISTING WIRING IN CONDUITS TO BE ABANDONED SHALL BE DISCONNECTED FROM POWER SOURCE AND REMOVED.
- 6. REPAIR DAMAGE: EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.
- 7. ASSOCIATED APPURTENANCES: REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, ETC.) ASSOCIATED WITH EQUIPMENT TO BE REMOVED BY OTHERS.
- 8. KNOCKOUT PLUGS AND COVERS: ALL CONDUIT REMOVED SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, ETC. PROVIDE CONDUIT PLUGS AND BLANKS FOR ALL OPENINGS CREATED BY THE REMOVAL OF CONDUIT. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF THE EQUIPMENT AND/OR DEVICES.
- 9. DEMOLISHED MATERIALS: ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.
- 10. SCHEDULE OUTAGES: ALL WORK AND ALL POWER OUTAGES SHALL BE SCHEDULED AT TIMES CONVENIENT TO THE OWNER.
- 11.NOTIFICATION: NOTIFY THE OWNER PRIOR TO TURNING OFF ANY CIRCUITS.
- 12.EXISTING CIRCUITS: IF DURING THE COURSE OF CONSTRUCTION, IT IS DETERMINED BY THE CONTRACTOR THAT AN EXISTING CIRCUIT BECOMES SPARE, THE CONTRACTOR SHALL UPDATE THE PANELBOARD DIRECTORY TO INDICATE SUCH, EVEN IF IT IS NOT EXPLICITLY MARKED ON THE ELECTRICAL PLANS.

POWER SECOND FLOOR PLAN DEMO



RENO YORCES ROADS BERLIN  $\geq$  $\cap$  Z Allen + Shariff MEP Engineering

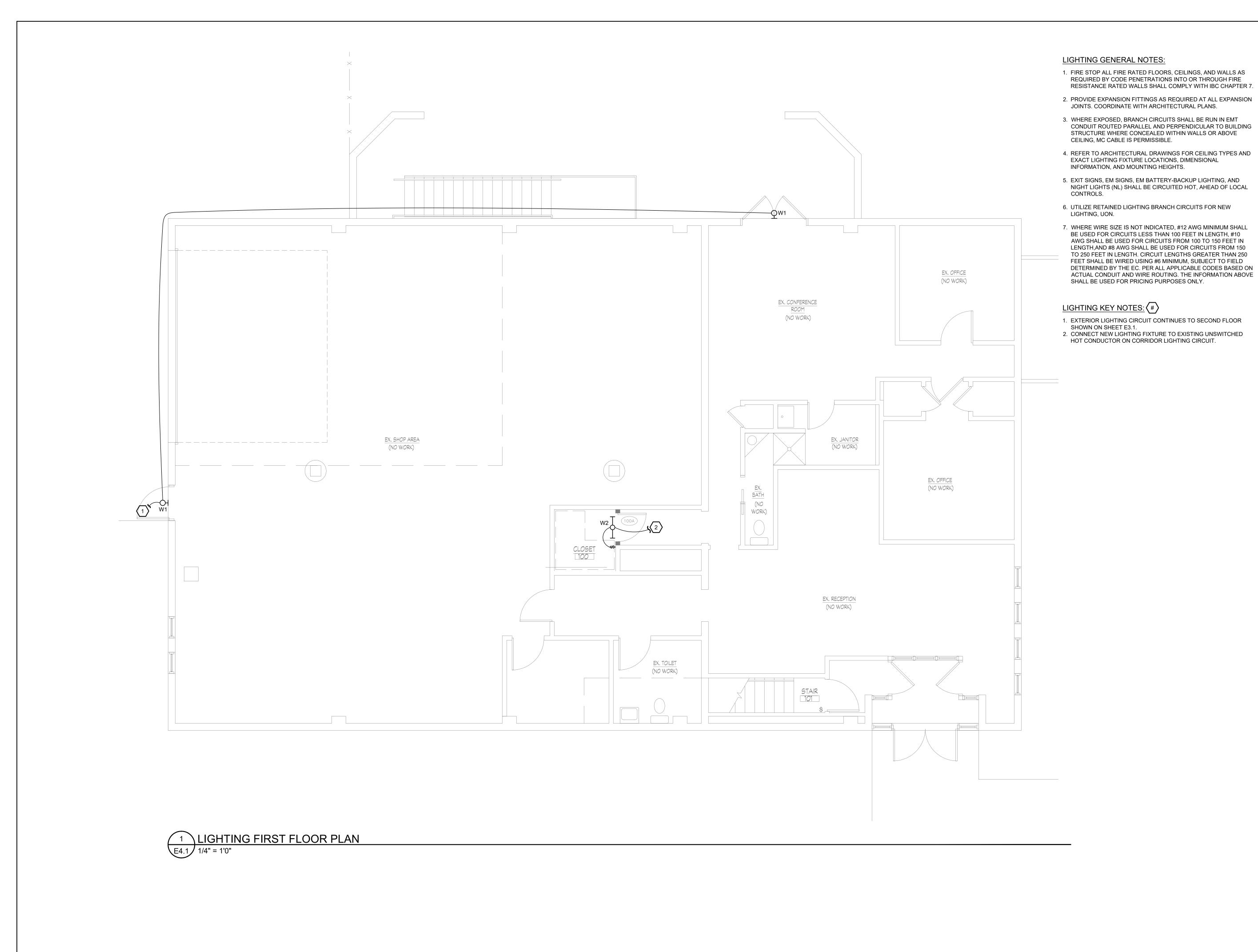
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Project Management 205 East Market Street Salisbury, Maryland 21801

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DRAWN BY : PRD
CHECKED BY : JTH
GMB FILE : 210241

: 1/4" = 1'0"

:12-06-22



RENOVATION OF:
WORCESTER COUNTY
ROADS BUILDING
ARCHITECTS
ARCHITECTS
SAUSBURY-BA
SAUSBURY-BA

FIRS -

LIGHTING FLOOR

Allen +

Shariff

MEP Engineering
Project Management
205 East Market Street
Salisbury, Maryland 21801
443.545.1300

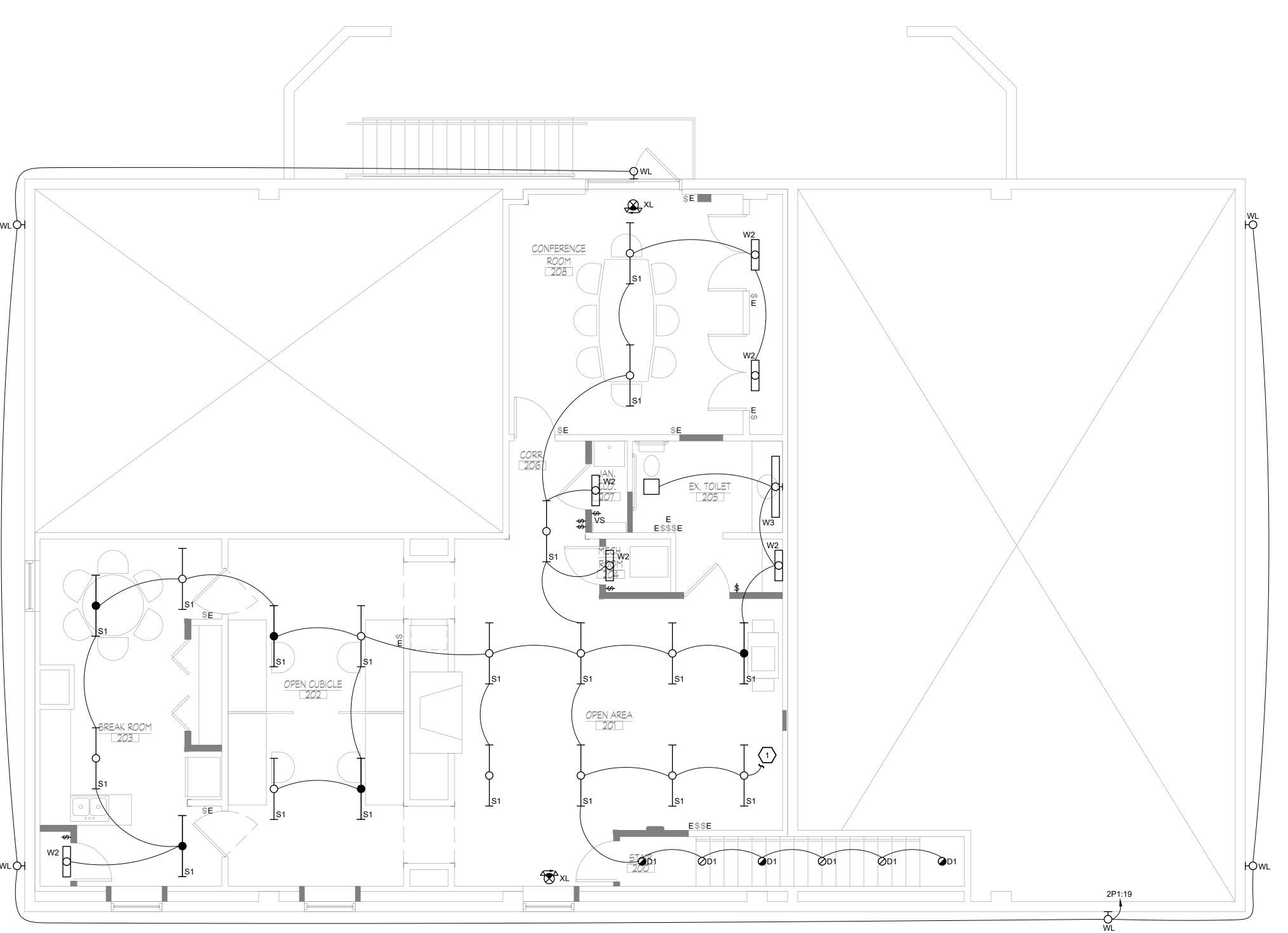
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:1/4" = 1'0"

:12-06-22



#### LIGHTING GENERAL NOTES:

- 1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
- 2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL PLANS.
- 3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE.
- 4. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND EXACT LIGHTING FIXTURE LOCATIONS, DIMENSIONAL INFORMATION, AND MOUNTING HEIGHTS.
- 5. EXIT SIGNS, EM SIGNS, EM BATTERY-BACKUP LIGHTING, AND NIGHT LIGHTS (NL) SHALL BE CIRCUITED HOT, AHEAD OF LOCAL CONTROLS.
- 6. UTILIZE RETAINED LIGHTING BRANCH CIRCUITS FOR NEW LIGHTING, UON.
- 7. WHERE WIRE SIZE IS NOT INDICATED, #12 AWG MINIMUM SHALL BE USED FOR CIRCUITS LESS THAN 100 FEET IN LENGTH, #10 AWG SHALL BE USED FOR CIRCUITS FROM 100 TO 150 FEET IN LENGTH,AND #8 AWG SHALL BE USED FOR CIRCUITS FROM 150 TO 250 FEET IN LENGTH. CIRCUIT LENGTHS GREATER THAN 250 FEET SHALL BE WIRED USING #6 MINIMUM, SUBJECT TO FIELD DETERMINED BY THE EC. PER ALL APPLICABLE CODES BASED ON ACTUAL CONDUIT AND WIRE ROUTING. THE INFORMATION ABOVE SHALL BE USED FOR PRICING PURPOSES ONLY.

# LIGHTING KEY NOTES: (#)

1. CONNECT LIGHTING TO EXISTING SWITCHED LOCAL LIGHTING CIRCUIT.

LIGHTING SECOND FLOOR PLAN

1/4" = 1'0"

			LIGHTING FIXTURE	SCHE	DULI	E		
TYPE FIXTURE DESCRIPTION MANUFACTURER MODEL			INPUT WATTS	VOLTS	MOUNTING	NOTES		
D1	6" LED DOWNLIGHT	LITHONIA	LDN6 07LM 35K LO6 MVOLT UGZ	0-10V	9	MVOLT	RECESSED	
S1	HIGH PERFORMANCE 2" SURFACE MOUNT LED	FINELITE	HP 2 SM D V 835 120 FC-10%	0-10V	19.6	120	SURFACE	MOUNT FIXTURE TO BOTTOM OF JOISTS, IN AREAS WHERE FIXTURES DO NOT LINE UP WITH JOIST, MOUNT UNISTRUT BETWEEN JOIST.
W1	WEDGE1 LED	LITHONIA	WDGE1 LED P1 35K 80CRI MVOLT	0-10V	10	120	WALL	
W2	CLOSET LIGHT	LITHONIA	WL2 12L MVOLT GZ10 LP835	N/A	12	120	WALL	
W3	CLOSET LIGHT	LITHONIA	WL4 30L MVOLT GZ10 LP835	N/A	29	120	WALL	
XL	EMERGENCY EXIT LIGHT COMBO	LITHONIA	LHQMLED	4.3	1.5	120	CEILING	

. ARCHITECT SHALL SPECIFY /  $\ensuremath{\mathsf{VERIFY}}$  ALL FINISH SELECTIONS. . REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

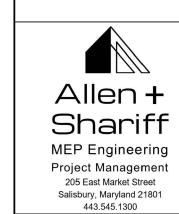
3. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MOUNTING ACCESSORIES.

4. LIGHTING FIXTURE SUBSTITUTIONS THAT ARE CONSIDERED EQUAL TO THE SPECIFIED PRODUCTS MAY BE SUBMITTED AND WILL BE REVIEWED BY ARCHITECT AND ELECTRICAL ENGINEER. ACCEPTANCE WILL BE EVALUATED BASED ON AESTHETICS, PERFORMANCE, AND QUALITY. DO NOT PROVIDE VALUE ENGINEERING OPTIONS UNLESS SPECIFICALLY DIRECTED BY THE OWNER,

5. THE STANDARD DRIVER OPTION FOR MOST FIXTURES IS 0-10V DIM. THE CONTRACTOR IS ONLY REQUIRED TO PROVIDE 0-10V WIRING WHERE DIMMING CONTROLS ARE SHOWN ON THE LIGHTING PLAN.
6. FIXTURES WITH HALF FILLED OR FILLED CENTERS SHALL BE PROVIDED WITH A 1100 LUMEN MIN EMERGENCY BATTERY BACKUP.

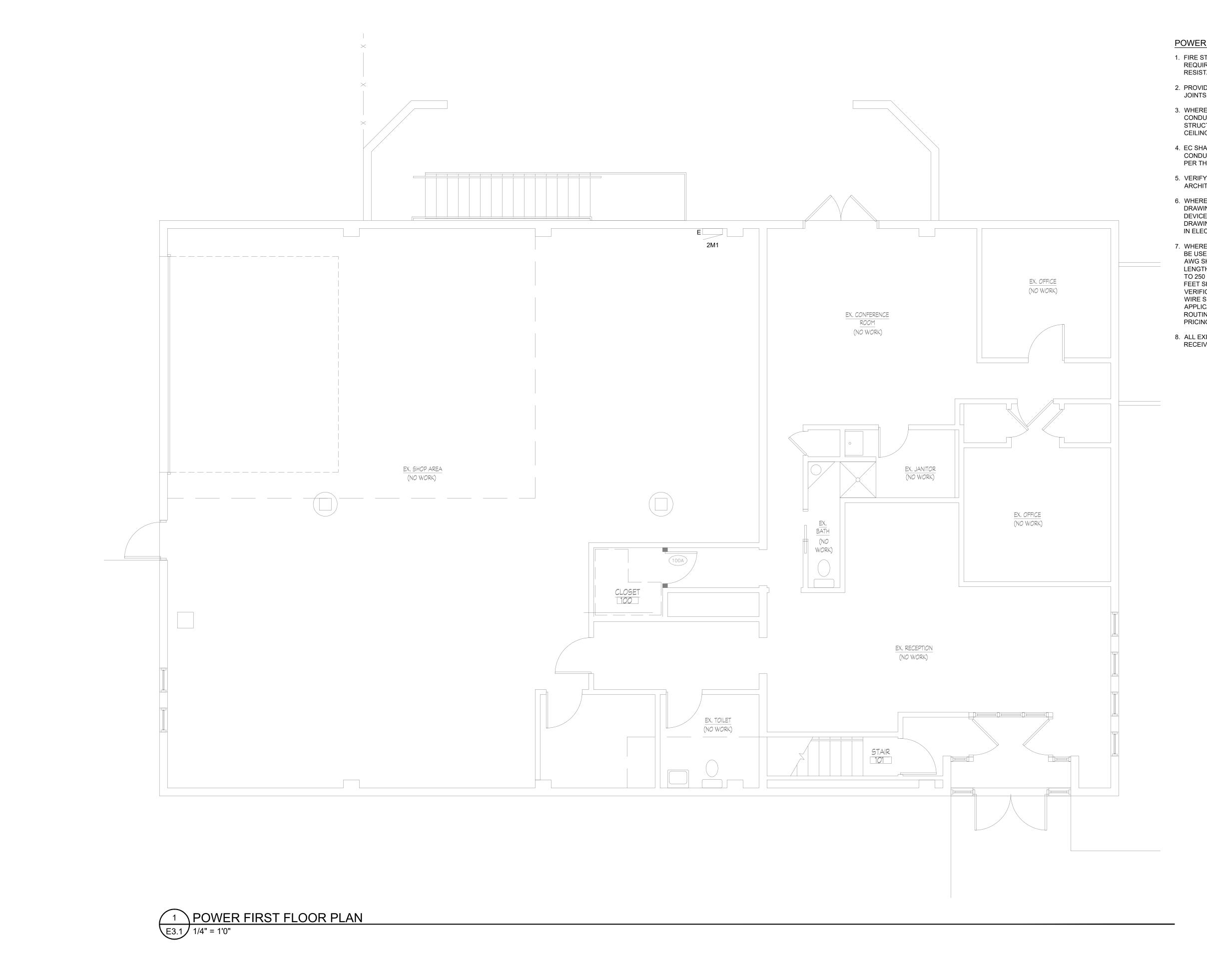
GRAPHIC SCALE 1/4" = 1'-0"

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SCALE	1/4" = 1'0"
DESIGN BY	: JTH
DRAWN BY	: PRD
CHECKED BY	: JTH
GMB FILE	: 210241
DATE	:12-06-22





**POWER GENERAL NOTES:** 

- FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
- PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL PLANS.
- 3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE.
- EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.
- VERIFY EXACT LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN.
- 6. WHERE DEVICES ARE DIMENSIONED ON ARCHITECTURAL DRAWINGS, INSTALL DEVICES PER THOSE DIMENSIONS. WHERE DEVICE LOCATIONS ARE NOT DIMENSIONED ON ARCHITECTURAL DRAWINGS, INSTALL IN ACCORDANCE WITH DEFAULT LOCATIONS IN ELECTRICAL SPECIFICATIONS.
- 7. WHERE WIRE SIZE IS NOT INDICATED, #12 AWG MINIMUM SHALL BE USED FOR CIRCUITS LESS THAN 100 FEET IN LENGTH, #10 AWG SHALL BE USED FOR CIRCUITS FROM 100 TO 150 FEET IN LENGTH, AND #8 AWG SHALL BE USED FOR CIRCUITS FROM 150 TO 250 FEET IN LENGTH. CIRCUIT LENGTHS GREATER THAN 250 FEET SHALL BE WIRED USING #6 MINIMUM, SUBJECT TO FIELD VERIFICATION. ALL EXACT CONDUIT FOOTINGS, LENGTHS, AND WIRE SIZES SHALL BE FIELD DETERMINED BY THE E.C. PER ALL APPLICABLE CODES BASED ON ACTUAL CONDUIT AND WIRE ROUTING. THE INFORMATION ABOVE SHALL BE USED FOR PRICING PURPOSES ONLY.
- ALL EXISTING RECEPTACLES THAT ARE TO REMAIN SHALL RECEIVE NEW DEVICES AND COVERPLATES.

1' 0 2' 4' 6' 8'

GRAPHIC SCALE 1/4" = 1'-0"

SCOUNTY

GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINE REVIEW

ARCHITECTS & ENGINEERS
SAUSBURY BALTIMORE : SEAFORD

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1 OWNER REVIEW

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MORCESTER COUN
ROADS BUILDING
BERLIN, MARYLAND

POWER FIRST FLOOR PLAN



SCALE : 1/4" = 1'0"

DESIGN BY : JTH

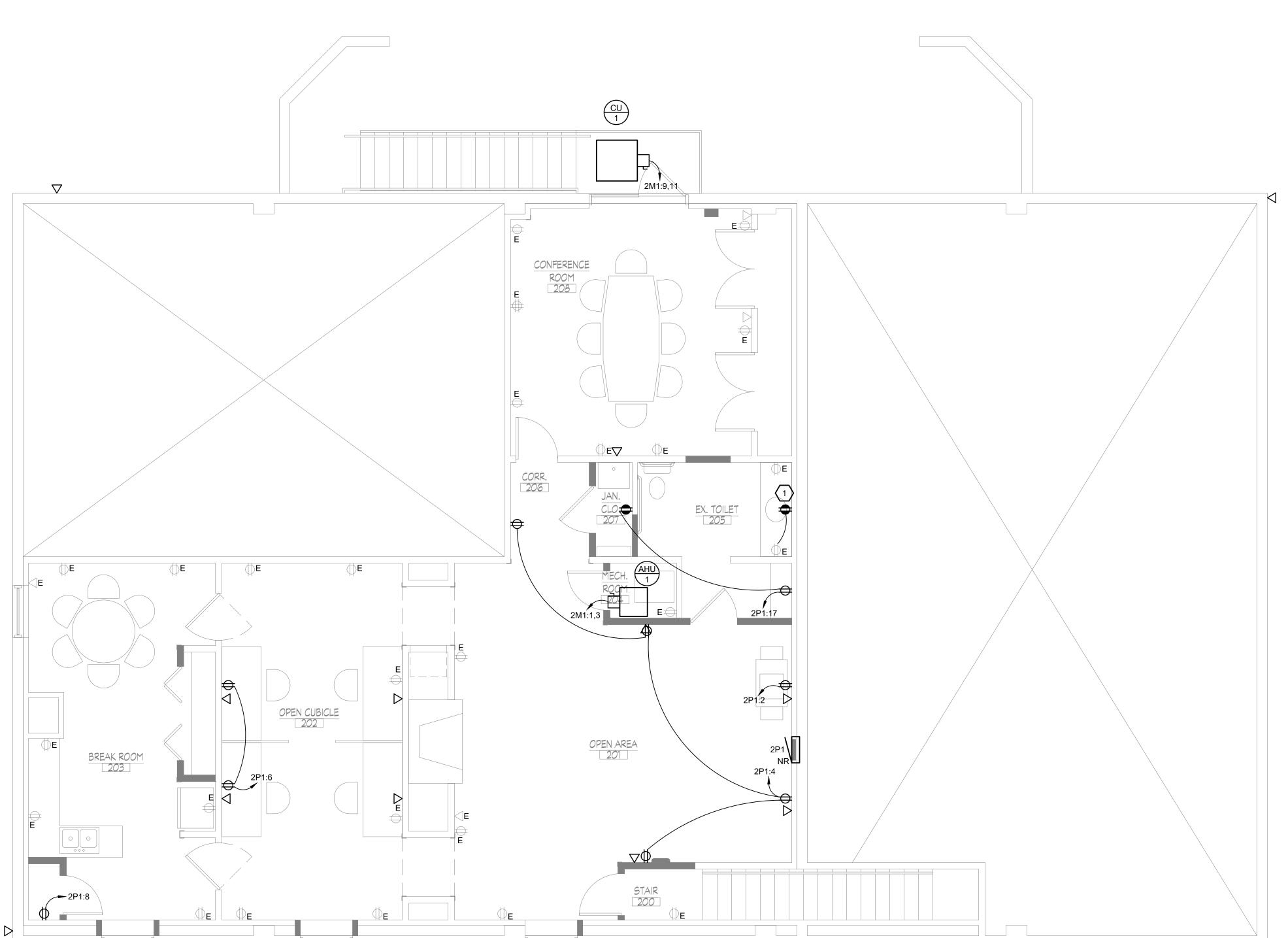
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8. ALL EXISTING RECEPTACLES THAT ARE TO REMAIN SHALL RECEIVE NEW DEVICES AND COVERPLATES.

POWER KEY NOTES: (#)

 PROVIDE LISTED GFCI RECEPTACLE FOR CONNECTION TO SENSOR FAUCET. COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.

	Location: Supply From: Mounting: Enclosure:	SURFACE				Volts: Phases: Wires:		240/120V 1 3			A.I.C. Rating Mains Type Mains Rating MCB Rating	: MLO : 0	
CKT	Circuit Description	Wire Size	Trip	Pde	,	LOAD	O(VA)	В	Pole	Trip	Wire Size	Circuit Description	СКТ
1	DRYER	EXISTING	30	2	-	1000			1	20	2#12,1#12G,3/4"C	COPIER	2
3	DRIER	ENSTING	30	2			-	720	1	20	2#12,1#12G,3/4"C	REC OPENAREA 201	4
5	BEDROOM	EXISTING	15	1	-	360			1	20	2#12,1#12G,3/4"C	REC OPEN CUBICLE 202	6
7	BATH GFI REC	EXISTING	20	1			-	180	1	20	2#12,1#12G,3/4"C	REC IT CLOSET	8
9	FAN LITE HEAT BATH	EXISTING	20	1	l=1	-			1	15	EXISTING	DISHWASHER	10
11	LIVING BATH UTILITY LTG	EXISTING	15	1			-	-	1	20	EXISTING	KITCHEN DINING REC	12
13	WASHER	EXISTING	20	1	-	-			1	20	EXISTING	KITCHEN DINING REC	14
15	KIT DINING LTG	EXISTING	15	1			-	-	1	20	EXISTING	KITCHEN DINING REC	16
17	REC JAN CLO 207	2#12,1#12G,3/4"C	20	1	360	-			1	15	EXISTING	LIVING RM STAIRWAY REC	18
19	LTG EXTERIOR	2#12,1#12G,3/4"C	20	1			80	-	-		-	SPACE	20
21	SPACE	I.E.	-	-	1-1	-			-	-	=	SPACE	22
22	SPACE	1-		-			_	l _		_	_	SPACE	24

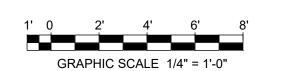
CONTRACTOR SHALL VARIFY ALL SPARE CIRCUIT BREAKERS ONCE DEMOLITION IS COMPLETE

E	Supply From	n: SHOP AREA n: EXISTING g: SURFACE	21	<b>VI</b> 1		Volts: Phases: Wires:		40/120V 1 3			A.I.C. Rati Mains Ty Mains Rati MCB Rati	pe: MCB ng: 200	
CKT	Circuit Description	n Wire Size		Pole	,	LOAD A		(VA)		Trip	Wire Size	Circuit Description	
1	AHU-1	2#4,1#10G,1"C	60	2	5069	-	5069	-	2	60	EXISTING	AHU FIRST FLOOR	1
5	AHU FIRST FLOOR	EXISTING	25	2	-	-	-	-	2	25	EXISTING	AHU FIRST FLOOR	1
9	CU-1	2#8,1#10G,3/4"C	40	2	2419	-	2419	-	2	40	EXISTING	CU FIRST FLOOR	
	EXISTING LOAD	EXISTING	20	1	-	-			2	100	EXISTING	SUB FEED EQUIP SHED	1
	SPACE SPACE	-	-	-	-	-	-	-	-	-		SPACE	$\dashv$
	SPACE	( <del>-</del>	-	-			-	-	-	-	l-	SPACE	$\neg$
NOT			Total L A	.oad: mps:		188 62	74 2.4	188					

NOTES:
CONTRACTOR SHALL VARIFY ALL SPARE CIRCUIT BREAKERS ONCE DEMOLITION IS COMPLETE

POWER SECOND FLOOR PLAN

1/4" = 1'0"



NO. REVISION

1 OWNER REVIEW

JHR, LLC

GINEERS

AFORD

GEORGE, MILES & BUHR, L Architects & engineef salisbury baltimore seaford

RENOVATION OF:
ORCESTER COUNT
ROADS BUILDING

OWER SECOND FLOOR PLAN



SCALE : 1/4" = 1'0"

DESIGN BY : JTH

DRAWN BY : PRD

CHECKED BY: JTH

GMB FILE : 210241

DATE : 12-06-22

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