UNC Wilmington Alderman and King Hall Renovation

SCO ID#: 22-24639-01A

Addendum Number 1: June 29, 2023

Project: UNCW King Hall Renovation
601 Hamilton Drive
Wilmington, NC 28403

CMaR Contractor: Muter Construction, LLC.
Preconstruction Contact: Brad Milne
Office: 919-404-8330
Mobile: 919-397-6971
Email: bmilne@muterconstruction.com

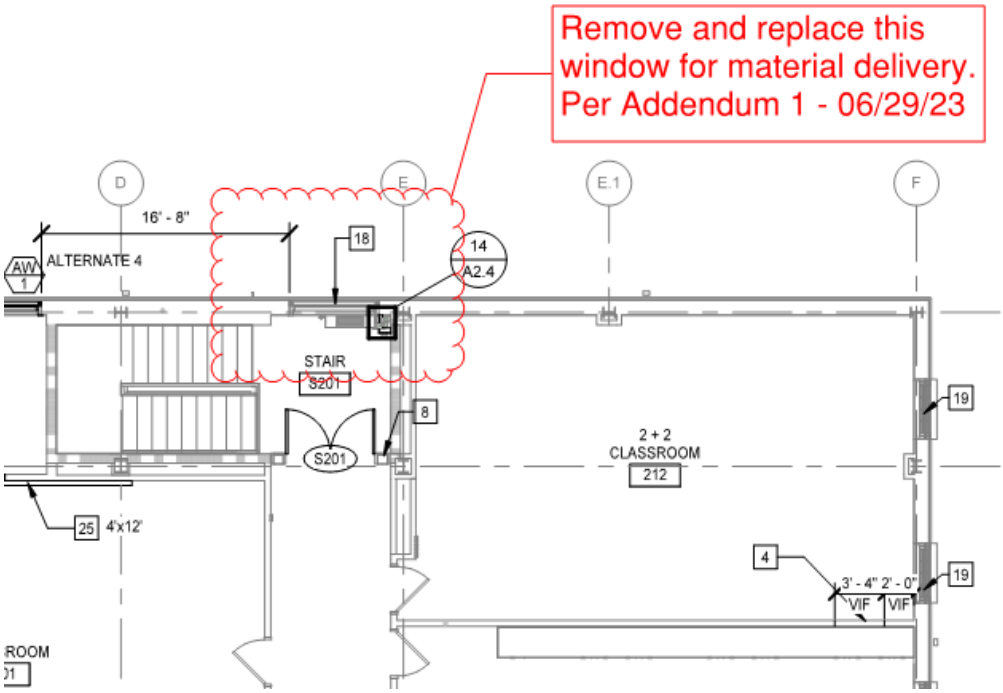
Addendum One has been issued for your review. The following items are included in this document.

1) Bid Date and time are now as follows:
    a. Bid Date: July 25th, 2023. Bids are due by 2:00pm. Bid will be opened starting at 2:00pm.
    b. Bid delivery:
        i. **Hand-delivered to UNCW Veterans Hall (Room 1032) 1040 Walton Dr., Wilmington, NC, between 1:00 - 2:00 PM on July 25, 2023.** Paid Parking is available in East Parking Deck (971 Reynolds Dr.), or free parking is available at Visitor Lot (4941 Riegel Rd., Wilmington).
        ii. **Mailed/shipped to Muter Construction (c/o Brad Milne) 111 E. Vance Street, Zebulon, NC 27597. Mailed or shipped bids to Muter must be received by 5:00 pm on July 24, 2023.**
    c. Bid opening location:
        i. **UNCW Veterans Hall (Room 1032) 1040 Walton Dr., Wilmington, NC**
2) Please place your sealed bid inside an envelope if mailing. On the cover of your sealed bid envelope please clearly state the following:

    Proposal for UNCW King Hall Renovation
    SCO ID# 22-24639-01A
    Your Company Name
    Bid Package Number(s) and Description(s)
3) It is the bidder's responsibility that bids be received on time and at the proper location prior to the closing time.
4) If bidding multiple packages, you must submit separate envelopes for each package.
5) Please do not visit the project site any other time without first notifying and coordinating with Brad Milne at Muter Construction. Contact information is at the top of this addendum.
6) Bidders are reminded to review all drawings, specifications and bid manual documents so they provide a complete bid. Exclusions or qualifications are grounds for disqualification.
7) **Bids MUST INCLUDE** the following or they may be considered non-responsive and not opened:
    a. Form of Proposal
    b. Minority Business Participation Forms - Bid must include:
        i. Identification of HUB Certified / Minority Business Participation

ii. Either Affidavit A or Affidavit B
iii. Bid Bond of 5% (if bids are equal to or greater than $500,000)

8) The HUB and Minority Business Participation goal for this project is 10%.
9) Payment and Performance Bonds are required to be included in your bid price if your bid price is equal to or greater than $300,000.00.
10) Specification Section 000102 – Supplementary General Conditions Article 23 – Time of Completion, Delays, Extensions, section "i" Liquidated Damages shall be changed to $500/day.
11) BP23 – HVAC Installation shall include the following in their base bid:
    a. $9,000 for AHU storage
    b. $5,000 for extended AHU warranty.
12) During demolition or abatement, if removal of items includes removing supports for items that are connected to materials to be removed, ie. pipe supports or j-boxes, as shown in the attached photos of the chimney in the Mechanical room, those items shall be temporarily supported by the demo contractor during their work and provisions made for adjustments and permanent support or connections upon completion of their work and shall be accounted for and included in their pricing. This shall be the same for all floors.
13) The current construction schedule is as follows (10 months):
    a. Anticipated NTP – August 14th, 2023
    b. Anticipated Substantial Completion Date – June 14th, 2024
14) Plan sheet E2.1.1 Attic Plan – Lighting is old and does not apply. This was replaced with sheet E2.3 – Attic & Roof Plans dated Feb. 10, 2023.
15) Bid questions have been asked are listed here below with responses:
    a. **Question**: Can we remove a window for material delivery?
    Answer: The window shown below at Stair 201 shall be removed, stored on site in Room 104 and wrapped in plastic by BP02 – Selective Demolition and Abatement. The window shall be replaced by BP08A – Aluminum Storefront-Windows-Glazing and BP09E – Paint-Wall Coverings shall carry an allowance of $2,500 for paint and repair work. A temporary removable plywood partition shall be installed by BP01-General Trades and Site Labor. The window to be removed is shown here.



b. **Question**: Are the early AHU's for King Hall only.
Answer: Yes. The early AHU package was for King Hall only. The approved material submittal is attached for reference. The contact for this equipment is John Blakeney, TRS-Sesco. (919) 618-5779 or john.blakeney@coolsys.com if there are any questions regarding material specifications.

c. **Question**: Can we park in the adjacent parking lots.
Answer: Parking in adjacent lots is not acceptable and any tickets received for parking in unapproved areas shall be paid for by the contractor receiving the parking tickets. There will be parking provided in designated fenced areas per the logistics plan. There is also parking available at the "Cinema Lot" across College Road if needed and will be coordinated with UNCW at that time for no charge.

d. **Question:** At the second floor of King Hall there is a new janitor's closet. Will FRP be installed behind the sink 4' in each direction and 4' high? If FRP will be added, please confirm which bid package it will be added to.
Answer: See updated A2.1 sheet indicating FRP locations. This shall be included in BP09A – Drywall-Metal Stud-Insulation bid package.

e. **Question:** Will a combination bid package for drywall and ACT be allowed to provide savings to UNCW?
Answer: Revised Bid Form is attached for BP09A – Drywall-Metal Stud-Insulation which includes an Add Alternate Line for ACT Ceilings.

f. **Question:** Confirm that all drywall ceilings will remain and only be patched.
Answer: The only drywall ceilings to remain are in the Theater and the elevator equipment room on the second floor. The drawings indicate that it is anticipated one corner of the ceilings in the auditorium needing to be removed an patched to do work. The diagonal hatch pattern on the demo drawings describes these locations as well.

g. **Question:** Please clarify the floor patching allowance in BP09B – Ceramic Tiling and BP09D – Flooring.

Answer: The floor patching allowance is for excessive floor patching that may be found after removal of the existing floor finishes and prior to installing new floor finishes. The base bid shall include a normal amount of floor patching.

h. **Question:** Who provides and who installs the putty pads for inwall utility boxes.
Answer: Specification Section 09 29 00 Gypsum Board includes Putty Pads. These shall be provided and installed by BP09A – Drywall-Metal Stud-Insulation package.

i. **Question:** When will plans be released for Alderman?
Answer: Plans are being designed currently for Alderman Hall renovations and are expected to be released for pricing this fall.

j. **Question:** Clarify abatement/demo schedule and number of mobilizations for window removal if Alternate 1 is accepted. Will all windows be allowed to be removed at one time and who protects openings?
Answer: The Abatement/Demo contractor, BP02 – Selective Demolition and Abatement, shall removal all windows in one mobilization. General Trades, BP01-General Trades and Site Labor shall install protection immediately upon window removal to consist of plywood sheeting to create wind/water resistant protection at all window openings. General Trades shall also remove and prepare the openings for the window installation in a manner consistent and acceptable to the installation schedule. All blocking, trim, drywall repair, paint, etc. required upon new window installation shall be by the individual packages assigned to those scopes of work as indicated on their respective bid forms.

k. **Question:** Can you clarify the base bid for abatement and demo for areas that are not to be touched vs. alternates, such as Alt. 3A - Classroom 104 or Alt. 3 - First Floor Offices?
Answer: If alternates are accepted, demo/abatement in those areas is to take place as indicated on the bid forms for alternates. If the alternates are not taken, the demo/abatement shall not take place in those areas.

l. **Question:** Can you clarify who cuts roof openings for new equipment, penetrations, etc.
Answer: Openings in the roof for equipment or penetrations shall be cut by the demo contractor, BP02 – Selective Demolition and Abatement, locations and sizes to be provided by the Mechanical Contractor, BP23 – HVAC Installation. Roofing contractor, BP07 – Roofing, to provide temporary protection of roof openings for watertightness. Equipment curbs to be provided by Mechanical Contractor and set by Roofing Contractor in coordination with each other. Multiple mobilizations may be required by each subcontractor based on schedule of equipment and material delivery. At no time shall the roof openings be unprotected by any trade.

m. **Question:** Can you confirm which trades demo MEP items?
Answer: Electrical contractor, BP26 – Electrical-Communications-Fire Alarm, shall make safe all electrical items. Each trade is responsible for demolition of their items, ie. electrical = Electrical Contractor, plumbing = Plumbing Contractor, mechanical = Mechanical Contractor.

Attachments included in this Addendum:

1. Prebid Sign-in Sheet from 06/22/23
2. Prebid Agenda from 06/22/23
3. Mechanical room pictures indicating items to be supported at completion of demolition.
4. Early Equipment Package Submittal 237313 Modular Indoor AHU's for reference
5. 1963 King Hall Original Drawings
6. A2.1 revised
7. A3.2.1 revised
8. Bid Form BP09A – Drywall-Metal Stud-Insulation-FRP (revised)
9. Bid Form BP09E – Painting-Wall Coverings (revised)
10. Bid Form BP23 – HVAC Installation (revised)

Larry Crickmore | Trifecta | lcrickmore@trifectainc.com | 919-524-5216
Bryan Hammonds | Workhorse Industries | Bryan@wh-ind.com | 843 593 2528

Project: UNCW King & Alderman Hall Renovations
SCO ID#: 22-24639-01A
Description: Pre-bid Meeting
Date/Time: 06/22/2023 @ 10:00am
Location: King Hall, 601 Hamilton Dr., Wilmington, NC

Spencer Clark | DH Griffin | Saclark@dhgriffin.com | 336-707-8268
Glenn Collins | DARI | dgcollins@daricorp.com | 919-772-4711
Tim Merritt | Tim's HVAC, Inc | timmerritt@timshvac.com | 910-604-1485

Name (Print)	Company	Email	Phone Number
Brad Milne	Muter	bmilne@muterconstruction.com	919-397-1971
Nic Troutman	UNCW	troutmann@uncw.edu	910-617-4318
Matthew Himes	Macsons	mhimes@macsons.com	910 747 9417
Barak Quesada	Grey Interiors	bquesada@greyintllc.com	669-205-2479
Greg Philligin	Pitt Electric	GPhilligin@PittElectric.com	910-530-0561
Jim Porch	Floor Coverings Intl	jim.porch@fciflooors.com	910-575-5245
Mitch McRae	Flooring Solutions	MMcRae@FlooringSolutions.com	843-206-9596
Derek Johnson	Foss Demolition	Djohnson@Fossdemolition.com	910-409-7607
Jim Wallace	Gung Ho Demo	jim@gunghodemolition.com	910-880-2701
Aaron Assad	Melton Electric	aaron.assad@meltonelectric-sc.com	704-974-9584
Tim Dupree	Carolina Comm. floor covering	tim@ccfloorcovering.com	910-777-3223 910 343-3350
Matt Marzeo	Hanover Coatings inc	matt@Hanovercoatingsinc.com	910-457-6910
Jill Edmonds	Hanover Coatings	Jill@hanovercoatingsinc.com	910-313-0866
Michael Garrison	Div 9	MGARRISON@DIV9INC.COM	910-392-0882
Phillip James	BFPE Int	pjames@bfpe.com	910-409-8809
Jake Smith	Rhino Demolition	JSmith@RhinoDemolition.com	(843) 340-7568
Tom Lewallen	Hampstead Elec	hampsteadelectric@att.net	910-471-2038

Brooke Perkinson | Hanover Interiors Inc | brooke@hanoverinteriorsinc.com | 910-262-1895
John Wirsen | jcwirsen@hanoverinteriorsinc.com | 910-352-4451
Brian Sanders | EHG/Alloy | bsanders@alloygroup.com | 919-201-7451
Nick Dial | Enpuricon | ndial@enpuricon.com | 919-500-8037

PRE-BID CONFERENCE AGENDA 06.22.23

University of North Carolina Wilmington – King and Alderman Hall Renovations

601 Hamilton Drive
Wilmington, NC

MEETING DATE/LOCATION/TIME:	**June 22, 2023 AT 10:00AM** UNCW King Hall 601 Hamilton Drive, Wilmington, NC

1. **INTRODUCTIONS**
   - Sign In Sheet
   - Introduction of Project Personnel and Review of Roles and Responsibilities

2. **GENERAL INFORMATION**
   - The purpose of the meeting is to provide general information to bidders. Bids should be based on the plans and specifications and not on oral information that was provided at the meeting or at any other time by any of the project participants.
   - This Meeting is non-mandatory for all interested Subcontractors.
   - Plans are available via Building Connected. If you have not already received the plans and specifications, contact Brad Milne with Muter Construction (bmilne@muterconstruction.com) for the online file sharing link to the PDF copies of the documents. No plan deposit is required.

3. **CRITICAL ITEMS FOR BIDDERS**
   - Time and Date for Bids: **Tuesday, July 18, 2023, at 2:00** PM (this is a revised bid date that will be published in Addendum No. 1).
   - Bid Delivery:
     - **Hand-delivered to UNCW** Veterans Hall (Room 1032) 1040 Walton Dr., Wilmington, NC, **between 1:00 - 2:00 PM on July 18, 2023**. Paid Parking is available in East Parking Deck (971 Reynolds Dr.), or free parking is available at Visitor Lot (4941 Riegel Rd., Wilmington).
     - **Mailed/shipped to Muter Construction** (c/o Brad Milne) 111 E. Vance Street, Zebulon, NC 27597. Mailed or shipped bids to Muter must be received **by 5:00 pm on July 17, 2023.**

- Bid Opening Location: UNCW Veterans Hall (Room 1032)
  1040 Walton Drive
  Wilmington, NC 28403

  NOTE: Be sure to allow enough time for parking and for entering the building.

- Bid Bonds will be required for bids equal to or greater than $500,000. P&P bonds will be required for successful bidders if their bid price equal to or greater than $300,000.
- Deadline for Contractor Questions:
  - All questions, substitution requests, and clarification requests shall be submitted to the Construction Manager in writing via email. Neither the Designers nor the Owner shall be responsible for oral instructions.
  - Questions should be emailed to Brad Milne at bmilne@muterconstruction.com. Bidders are asked not to contact the Owner or Design Team consultants directly.
  - All questions, substitution requests, and/or clarifications must be submitted by June 23rd, at COB.

4. **BID OPENING:**
   Sealed proposals will only be received from prequalified, invited Subcontractors and are to be received no later than 2:00 pm on July 18th, 2023, and will be opened and read aloud at 2:00pm starting with the lowest bid package number. Participants may view the formal bid opening in person at the address listed above. Bids that arrive late will not be accepted. It is the bidder's responsibility to make sure the bids are delivered and received on time. Bids must be in a sealed envelope clearly identified on the front as:

   Proposal for UNCW King Hall Renovations
   SCO ID# 22-24639-01A
   Your Company Name
   Bid Package Number and Description

   Prequalification: Bids will be accepted from prequalified bidders only. Please go to www.muterconstruction.com for a list of prequalified bidders for these bid packages.

5. **PROJECT DESCRIPTION:** This project encompasses the renovation of both Alderman Hall and King Hall. Alderman Hall, a two-story 26,108 SF building: envelope repairs, code deficiency corrections (ADA, egress, and restroom improvements), mechanical/electrical replacements, and new finishes in individual suites and corridors. King Hall, a two-story 22,298 SF building: code deficiency corrections (ADA, egress, and restroom improvements), new fire alarm system, mechanical/electrical replacements, programmatic renovations of the second floor to accommodate the Honors College, and new finishes in the public spaces on the first floor.

6. **BID PACKAGES INCLUDED:** (01) General Trades; (02) Selective Demolition and Abatement; (05) Misc. Metals; (06) Architectural Woodwork/Cabinets/Millwork; (07) Roofing; (08A) Aluminum Storefront/Glazing; (08B) Door, Frames & Hardware; (09A) Drywall/Metal Stud Framing/Thermal Insulation; (09B) Tile; (09C) Acoustic Ceilings ;(09D) Flooring; (09E) Painting and Wall Coverings; (10B) Interior Signage; (22) Plumbing; (23) HVAC; (26) Electrical/Communications/Fire Alarm

7. **ADDENDUM:** No addendum has been issued to date.
    - All questions are requested by COB Friday, June 23rd.
    - All bidding RFI's shall be submitted to bmilne@muterconstruction.com only. Emails sent to any other person or email address will not receive a response.
    - All addendums will be issued through Building Connected. If needed via email, please contact Brad Milne.
    - Addendum No. 1 is scheduled to be sent out by Thursday, June 29th. If you do not receive an addendum, please submit a request to bmilne@muterconstruction.com

8. **CONSTRUCTION DURATION**:
    - The work for this project will be between July 2023 and May 2024 (10 months).

9. **SCHEDULE OF ALLOWANCES (spec. section 01 21 00 – Allowances)**
    - Allowance No. 1 – 200 lf of Cat 6 ethernet cable.

10. **UNIT PRICES (spec. section 01 22 00 – Unit Prices)**
    - Unit Price No. 1 – Furnish and install Cat 6 ethernet cable per lf.

11. **ALTERNATES (spec. section 01 23 00 - Alternates)**
    - Alternate No. 1 – Replace existing windows
    - Alternate No. 2 – Recoat flat roof
    - Alternate No. 3 – Carpet, paint, base in first floor offices
    - Alternate No. 3A – Carpet, paint, base in Classroom 104
    - Alternate No. 4 – Install 2 new windows and window shades in exterior wall
    - Alternate No. 5 – Scrape and paint exterior wood trim
    - Alternate No. 6 – Replace door frames with new rate frames w/ rated glass
    - Alternate No. 7 – Wayfinding signage
    - Alternate No. 8 – Remodel and reconfigure first floor men's toilet room
    - Alternate No. 9 – Heat pump water heater

SCHEDULE OF PROPRIETARY ALTERNATES

- Alternate No. 10 – Door hardware
- Alternate No. 11 – Building automation controller and flow meters
- Alternate No. 12 – Communications horizontal cabling system
- Alternate No. 13 – Two-way communication system
- Alternate No. 14 – Fire Alarm System

12. **Minority/HUB Participation:** The goal for this project for minority/HUB participation is ten percent (10%). Please reference the bid package manual for minority forms and additional information regarding minority/HUB requirements. Contact Brad Milne at bmilne@muterconstruction.com or by phone at (919) 397-6971 (cell) or (919) 404-8330 (office) for inquiries regarding minority/HUB participation or other questions and requirements.
13. Thank you for coming. Questions?

MOSELEYARCHITECTS

SUBMITTAL REVIEW COMMENTS

Project		Project No.	Date
UNCW – Alderman Hall and King Hall Renovations		620589	02/27/2023
Submittal Title	**Section**	**Reviewed By**	**Submittal No.**
Modular Indoor AHU's - Early Equipment Package	237313	SJL	237313-2.0

NOTES

IF THIS SUBMITTAL CONTAINS DEVIATIONS FROM THE CONTRACT DOCUMENTS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SPECIFICALLY INFORM THE ARCHITECT IN WRITING OF ALL SUCH DEVIATIONS; AND ALL SUCH DEVIATIONS SHALL BE INCORPORATED INTO THE CONTRACT DOCUMENTS BY THE ISSUANCE OF ONE OF THE FOLLOWING AUTHORIZING SUCH DEVIATIONS, PRIOR TO PROCEEDING WITH FABRICATION, MANUFACTURE AND/OR CONSTRUCTION:

1) Field Clarification (or other form used to convey minor changes to the Work);
2) Change Order; or
3) Construction Change Directive

This review and these comments are subject to the limitations indicated in the *General Conditions of the Contract for Construction*, and as follows:

1) Architect's review is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents;
2) Architect's review is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which shall remain the responsibility of the Contractor as required by the Contract Documents;
3) Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures; and
4) Architect's approval as noted of a specific item shall not indicate approval as noted of an assembly of which the item is a component.

Notations indicated on this submittal do not relieve the Contractor from complying with the requirements of the Contract Documents.

The Contractor shall verify that all necessary approvals as noted are obtained prior to proceeding with the fabrication, manufacturing, purchasing, and/or construction of any item, component, system, or assembly.

The Contractor's responsibilities include, but are not limited to, the following:

1) Correlation and confirmation of dimensions and quantities;
2) Means, methods, techniques, sequences, and procedures of construction;
3) Coordination of the Work of all trades; and
4) Performance of all Work in a safe and satisfactory manner

ACTION TAKEN:

X	Approved as Noted		Revise and Resubmit
	Rejected/Resubmit		Not Reviewed / No Action Taken
	Not Submitted		Color Selection Required

REMARKS

Response (Approved as Noted) From: Seth Lehman (Moseley Architects)
Remarks:

AAN, no exceptions taken.

Notes regarding Submittal Review Action Taken:

Approved as Noted: The Contractor is advised that fabrication, manufacturing, purchasing, and/or construction may proceed based on this submittal provided that the work is in full compliance with the Contract Documents.

Revise and Resubmit: The Contractor is advised that fabrication, manufacturing, purchasing, and/or construction may **not** proceed based on this submittal. Provide revised submittal until such time **Approved as Noted** is received from the Architect.

Rejected / Resubmit: The Contractor is advised that fabrication, manufacturing, purchasing, and/or construction may **not** proceed based on this submittal. Provide new submittal which is in full compliance with the Contract Documents until such time **Approved as Noted** is received from the Architect.

Color Selection Required: The Contractor is advised that color selections for the entire project, or portion thereof, will be provided after receipt of **all** color charts / samples required for the Project.

Not Reviewed / No Action Taken: Contractor is advised that this submittal has not been reviewed.

Not Submitted: Contractor is advised that the Contract Documents require a submittal for this Work. Provide a submittal which is in full compliance with the Contract Documents until such time **Approved as Noted** is received from the Architect.

2202 - UNCW - Alderman Hall and King Hall Renovations

910-962-4169
601 South College Road
Wilmington, North Carolina 28403
United States

Muter Construction
111 East Vance Street
Zebulon, North Carolina 27597
United States
(919)404-8330

Title
Modular Indoor AHU's - Early Equipment Package

Submittal Manager
Declan Murphy

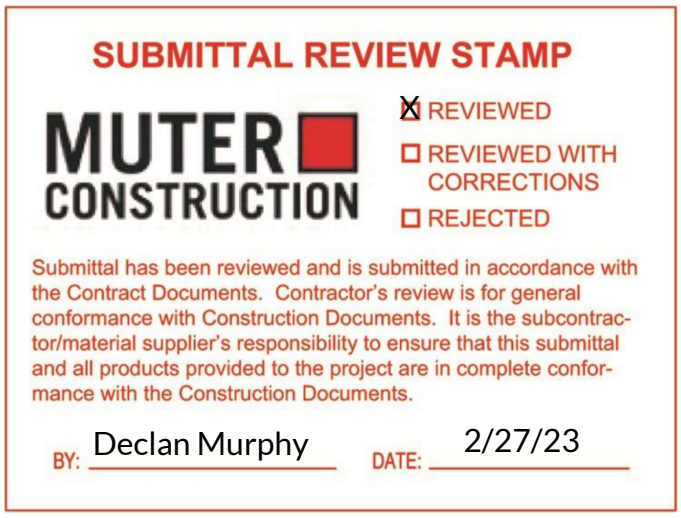
Spec Section
233713 - Diffusers, Registers, and Grilles

Type
Product Information

Number
233713-1

Rev
0

Description
product Data: For each air-handling unit.



Thermal Resource Solutions

7215 Ogden Business Lane, Suite 109
Wilmington, NC 28411
Phone: (910) 686-2487 Fax: (910) 686-2488

RE-SUBMITTAL DATA
AIR HANDLING UNITS
Drawings Dated 10/10/22

Date:	February 24, 2023
Project:	UNCW King Hall Furnish Air Handling Units
Location:	Wilmington, NC
Contractor:	Muter Construction
Engineer:	Moseley Architects
Manufacturer:	VTS

NOTES:

1. See pages 2 thru 16 for new fan performances.
2. Coil connections to be verified prior to release.
3. Contractor to review section splits and advise if changes need to be made.
4. Contractor to coordinate quantities, horsepower & voltage with VFD Supplier.

CURRENT LEAD TIME IS 18 WEEKS

Sales Contact: John Blakeney
john.blakeney@trshvac.com

TRS PO#: 20-01512

THE FOLLOWING SUBMITTAL IS PROVIDED FOR APPROVAL

TAG: AHU-01 TOP SECTION

VTS America Inc.

3535 Gravel Springs Rd. Extension, Suite 201; Buford, GA 30519; United States of America

+1 470 809 6811; +1 470 809 6815

darrin.winecoff@vtsgroup.com

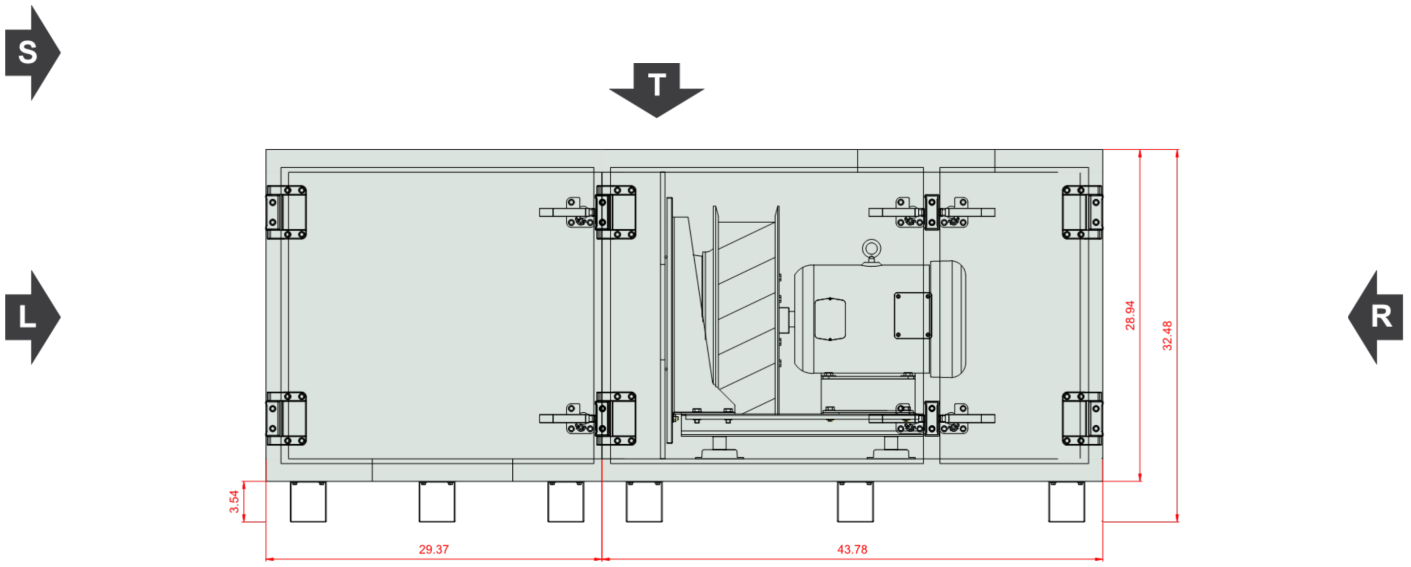
Technical data for item 1

Offer number **11C.3/LIVE.USA/DW/2023-23**

Project name UNCW King Hall – TRS NC; John Blakeney

Type	SingleSupply	**Supply airflow 2**	3300.00 CFM
Unit Type:	Indoor	**External pressure**	3.80 in wg
Project Tag	AHU-01 Top Section		
Size	AVS030		
Set	AVS030-R-EV		
Insulation thickness	2.0 in	**SFP Winter**	1.03 HP/kcfm
Insulation	Polyurethane Foam	**SFP Summer**	1.19 HP/kcfm
Weight of the set (+/- 10%)*	409 lb		

Inspection Panels

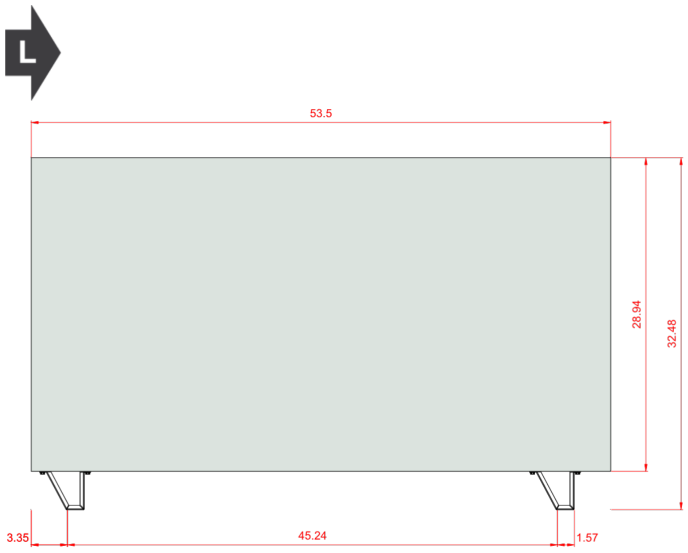


Comment 1:

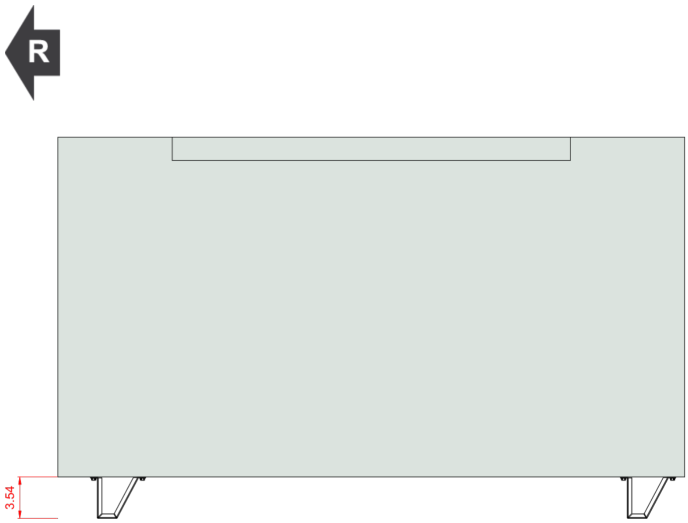
VTS America Inc.
3535 Gravel Springs Rd. Extension, Suite 201; Buford, GA 30519; United States of America
+1 470 809 6811; +1 470 809 6815
darrin.winecoff@vtsgroup.com

Technical data for item 1 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

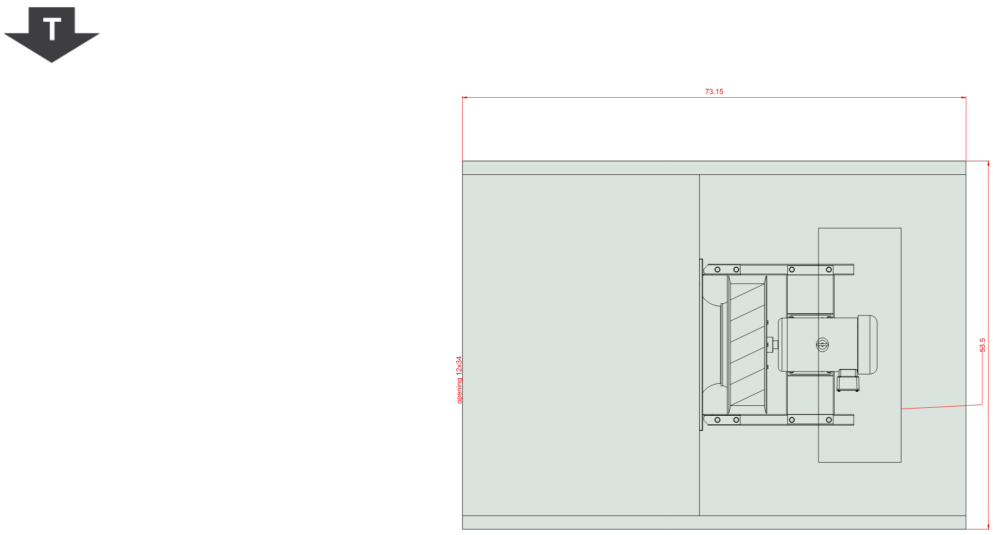
Front View (left)



Front View (right)



Top View



Sizes [in]

Air intake Supply	DS	34,3x12,3	**Lt**	73.1	**Hid**	25.0	**Wi**	49.6
Air outlet Supply	US	34x12	**LtA**	73.1	**Hiu**	25.0	**W**	53.5
					Hi	25.0		
					H	32.5		
					Hf	3.5		

Unit design

Concealed Skeleton Design – all framework is inside the unit, unexposed to ambient air and secure against thermal-bridging and condensation.

Casing mechanical strength (deflection): -10 in WC to +10 in WC: L=1/300 (model box EN 1886)

VTS America Inc.
3535 Gravel Springs Rd. Extension, Suite 201; Buford, GA 30519; United States of America
+1 470 809 6811; +1 470 809 6815
darrin.winecoff@vtsgroup.com

Technical data for item 1 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

Casing Air Leakage: -1.6 in WC: 0.009 CFM/ft²; +2.8 in WC: 0.026 CFM/ft²

Casing Thermal Resistance: R = 13.1 Hr×ft²xF / BTU

Thermal bridges coefficient Kb = 0.52 (Class TB3, EN 1886: 2007)

Temperature Conditions

Reference atmospheric pressure 760 mmHg **Winter outdoor reference temperature 16.3 °F**

	External air			Return air		
	DBT	WBT	DA	DBT	WBT	DA
Summer	94.3 °F	80.6 °F	0.0708 lb/ft³	68.0 °F	63.0 °F	0.0746 lb/ft³
Winter	16.3 °F	13.5 °F	0.0833 lb/ft³	71.6 °F	56.2 °F	0.0744 lb/ft³

Supply

Empty section

Type EMP.SEC AVS030 Standard

Winter operation		**Summer operation**	
Air velocity	456 FPM	Air velocity	539 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_450_5,00_4

		Qty in section	x 1
Air Standard	Calculations made for real air density		

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_450_AF_Px 1

Total Static Pressure	3.95 in wg	Impeller efficiency: Static / Total	65 %/68 %
Dynamic pressure	0.20 in wg	Shaft power	3.40 HP x 1
External pressure	3.80 in wg	Working revolutions	2185 rpm
Total Pressure	4.15 in wg		
Winter operation		**Summer operation**	
Air Volume Flow	2947.48 CFM	Air Volume Flow	3481.30 CFM

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 450 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_184T_TEFC_4p_5_60x 1

460V 60Hz

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Technical data for item 1

Offer number 11C.3/LIVE.USA/DW/2023-23

FLA	6.7 A	MCA	8.4 A
MCB	15.0 A	Maximum Overcurrent Protection (MOP)	15.1 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	6.7 A x 1
IEC Size	184T	Rated revolutions	1750 rpm
Operational Voltage	460 V/3 ph	Rated Power	5.00 HP x 1
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD

	_AC		_AC
VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	1	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	75 Hz	VFD Rated Power	5.00 HP x 1
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No
Winter operation		**Summer operation**	
Air Pressure	760 mmHg	Air Pressure	760 mmHg
Air Density	0.0833 lb/ft³	Air Density	0.0708 lb/ft³

Acoustic data

Acoustic power level [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB]
Inlet	[dB]	74.3	79.2	85.7	86.3	83.1	79.9	75.1	71.2	91.0
Outlet	[dB]	76.3	81.2	87.7	88.3	85.1	81.9	77.1	73.2	93.0
Environment	[dB]	54.5	69.7	74.3	74.3	71.4	68.4	47.6	34.7	79.3

Acoustic pressure level at 1 meter distance [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB]
	[dB]	41.2	62.7	67.3	67.3	64.4	61.4	40.6	27.7	72.3

AHU Discharge and Intake Opening Sizes &Unit Accessories — Supply

Controls Selection Mode: No controls

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Down 34,3x12,3
Air Outlet	Top 34x12

Unit Another Accessories

Internal Marine Light	INT.LHT_1	2 Accessories Quantity
Hinged Access	HNG_1	1 Accessories Quantity

Control application

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Technical data for item 1 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

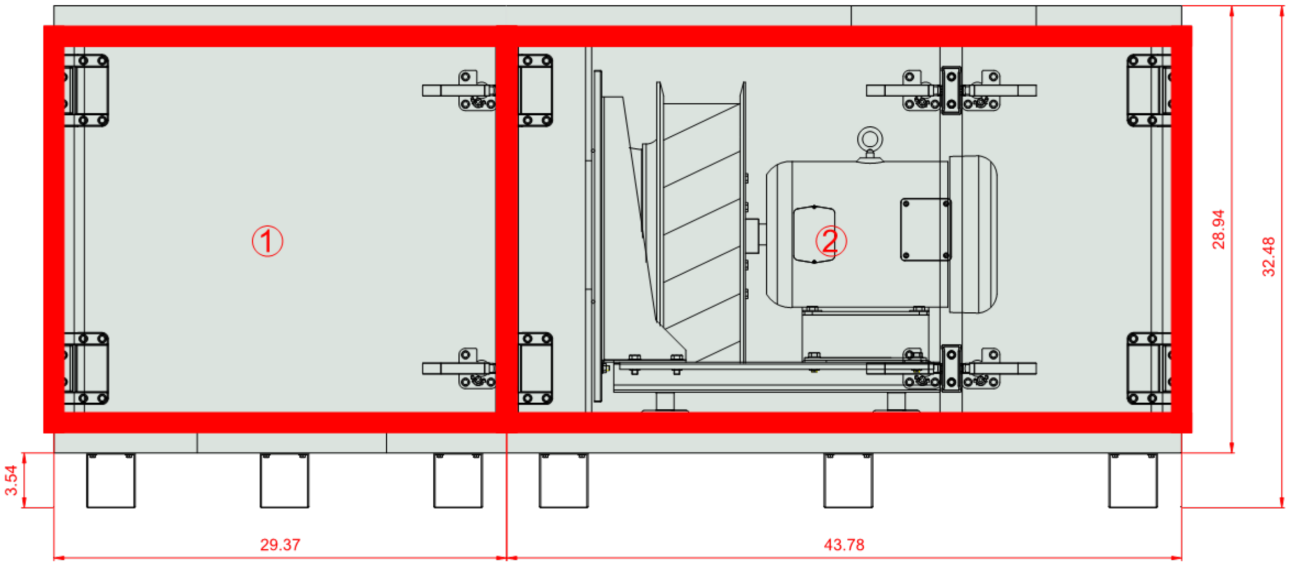
Functional Code AS|0|0|0|0|0|0|6|0|0|0|0|0|1

Section splits

Transport Sections	Mass [lb]	LENGTH [in]	WIDTH [in]	HEIGHT [in]
1	110	29.4	53.5	32.5
2	280	43.8	53.5	32.5

Transport Sections Dims

Resp_TransportSections_SectionsLengthMODRangeChanged



TAG: AHU-02 TOP SECTION

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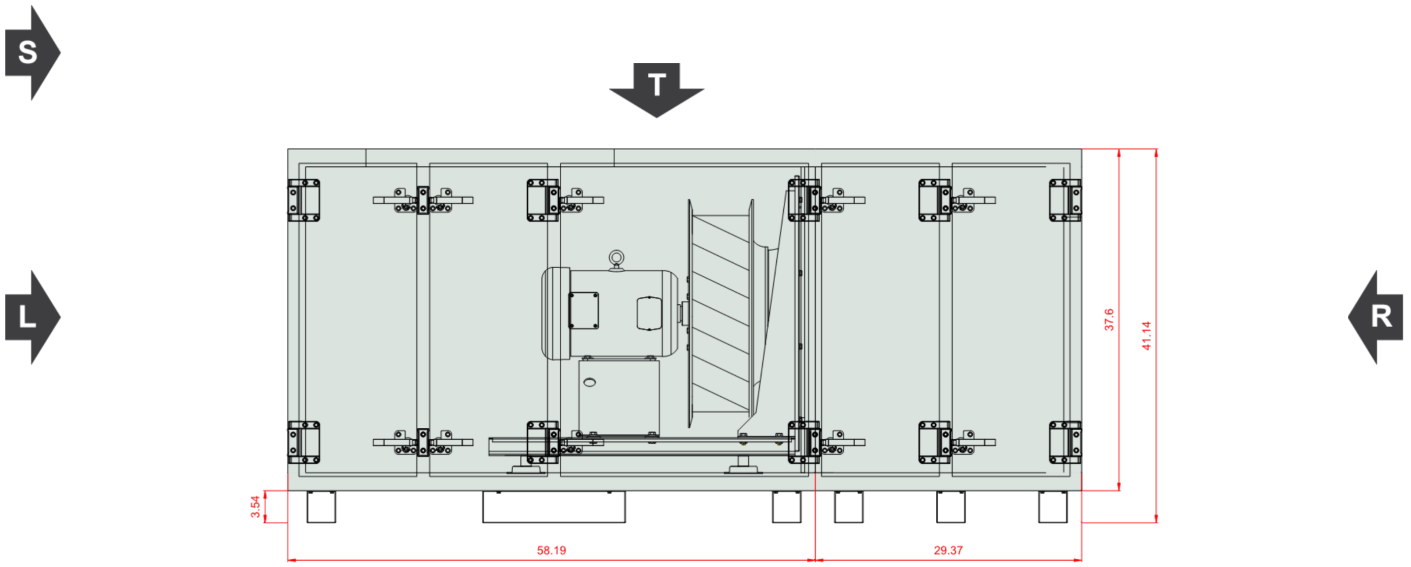
Technical data for item 3

Offer number **11C.3/LIVE.USA/DW/2023-23**

Project name UNCW King Hall – TRS NC; John Blakeney

Type	SingleSupply	**Supply airflow 2**	5500.00 CFM
Unit Type:	Indoor	**External pressure**	3.92 in wg
Project Tag	AHU-02 Top Section		
Size	AVS055		
Set	AVS055-L-EV		
Insulation thickness	2.0 in	**SFP Winter**	0.92 HP/kcfm
Insulation	Polyurethane Foam	**SFP Summer**	1.08 HP/kcfm
Weight of the set (+/- 10%)*	668 lb		

Inspection Panels



Comment 1:

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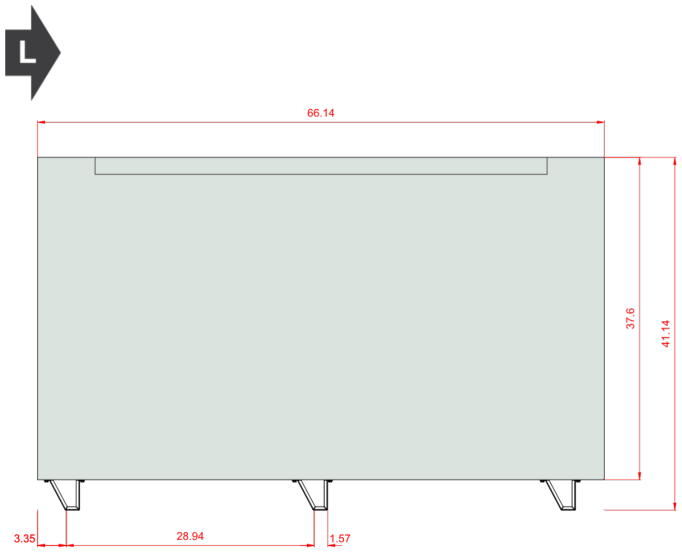
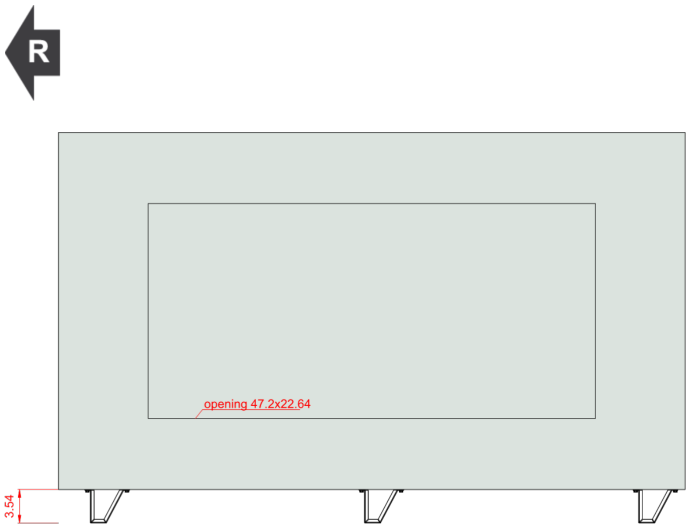
Technical data for item 3 **Offer number** 11C.3/LIVE.USA/DW/2023-23

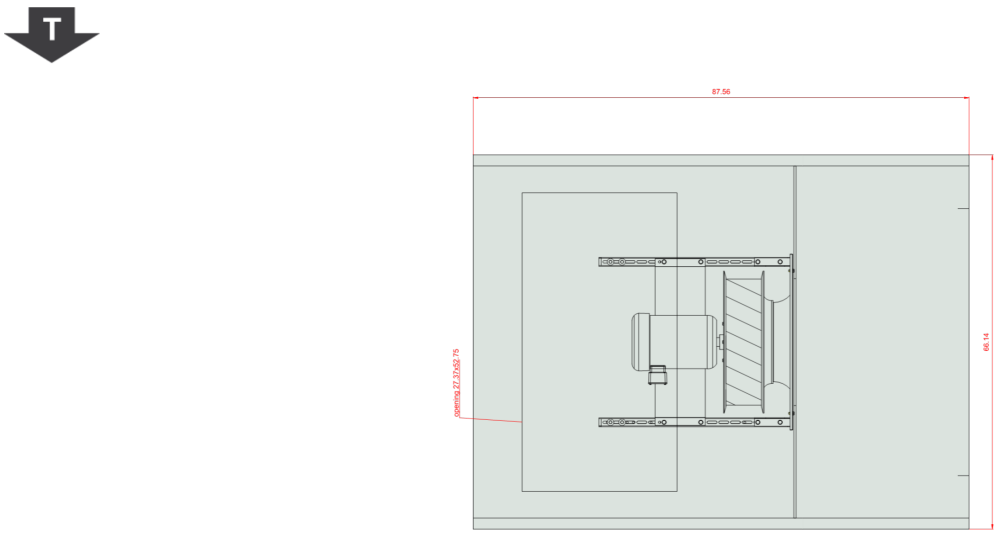
Front View (left)



Front View (right)



Top View



Sizes [in]

Air intake Supply	FS	47,2x22,6	**Lt**	87.6	**Hid**	33.7	**Wi**	62.2
Air outlet Supply	US	52,8x27,4	**LtA**	87.6	**Hiu**	33.7	**W**	66.1
					Hi	33.7		
					H	41.1		
					Hf	3.5		

Unit design

Concealed Skeleton Design – all framework is inside the unit, unexposed to ambient air and secure against thermal-bridging and condensation.

Casing mechanical strength (deflection): -10 in WC to +10 in WC: L=1/300 (model box EN 1886)

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Technical data for item 3 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

Casing Air Leakage: -1.6 in WC: 0.009 CFM/ft²; +2.8 in WC: 0.026 CFM/ft²

Casing Thermal Resistance: R = 13.1 Hr×ft²xF / BTU

Thermal bridges coefficient Kb = 0.52 (Class TB3, EN 1886: 2007)

Temperature Conditions

Reference atmospheric pressure 760 mmHg **Winter outdoor reference temperature 16.3 °F**

	External air			Return air		
	DBT	WBT	DA	DBT	WBT	DA
Summer	94.3 °F	80.6 °F	0.0708 lb/ft³	68.0 °F	63.0 °F	0.0746 lb/ft³
Winter	16.3 °F	13.5 °F	0.0833 lb/ft³	71.6 °F	56.2 °F	0.0744 lb/ft³

Supply

Empty section

Type EMP.SEC AVS055 Medium

Winter operation		**Summer operation**	
Air velocity	476 FPM	Air velocity	562 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_560_7,50_4

		Qty in section	x 1
Air Standard	Calculations made for real air density		

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_560_AF_Px 1

Total Static Pressure	3.98 in wg	Impeller efficiency: Static / Total	71 %/75 %
Dynamic pressure	0.22 in wg	Shaft power	5.23 HP x 1
External pressure	3.92 in wg	Working revolutions	1713 rpm
Total Pressure	4.20 in wg		
Winter operation		**Summer operation**	
Air Volume Flow	4912.47 CFM	Air Volume Flow	5802.17 CFM

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 560 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_213T_TEFC_4p_7.5_60x 1

460V 60Hz

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Technical data for item 3 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

FLA	9.5 A	MCA	11.9 A
MCB	15.0 A	Maximum Overcurrent Protection (MOP)	21.4 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	9.5 A x 1
IEC Size	213T	Rated revolutions	1770 rpm
Operational Voltage	460 V/3 ph	Rated Power	7.50 HP x 1
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD

	_AC		_AC
VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	1	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	58 Hz	VFD Rated Power	7.50 HP x 1
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No
Winter operation		**Summer operation**	
Air Pressure	760 mmHg	Air Pressure	760 mmHg
Air Density	0.0833 lb/ft³	Air Density	0.0708 lb/ft³

Acoustic data

Acoustic power level [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB]
Inlet	[dB]	74.4	79.3	85.8	86.4	83.2	80.0	75.2	71.3	91.1
Outlet	[dB]	76.4	81.3	87.8	88.4	85.2	82.0	77.2	73.3	93.1
Environment	[dB]	54.6	69.8	74.4	74.4	71.5	68.5	47.7	34.8	79.4

Acoustic pressure level at 1 meter distance [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB]
	[dB]	41.3	62.8	67.4	67.4	64.5	61.5	40.7	27.8	72.4

AHU Discharge and Intake Opening Sizes &Unit Accessories — Supply

Controls Selection Mode: No controls

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Front (Small) 47,2x22,6
Air Outlet	Top 52,8x27,4

Unit Another Accessories

Internal Marine Light	INT.LHT_1	2 Accessories Quantity
Hinged Access	HNG_1	1 Accessories Quantity

Control application

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Technical data for item 3 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

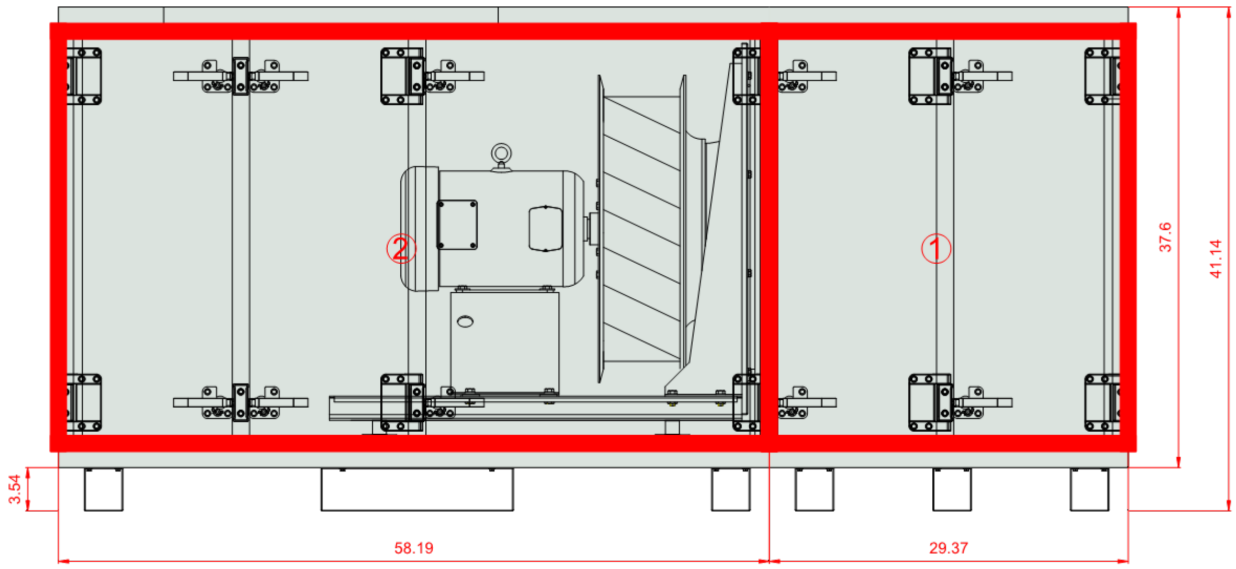
Functional Code AS|0|0|0|0|0|0|0|6|0|0|0|0|0|0|1

Section splits

Transport Sections	Mass [lb]	LENGTH [in]	WIDTH [in]	HEIGHT [in]
1	165	29.4	66.1	41.1
2	481	58.2	66.1	41.1

Transport Sections Dims

Resp_TransportSections_SectionsLengthMODRangeChanged



TAG: AHU-03 TOP SECTION

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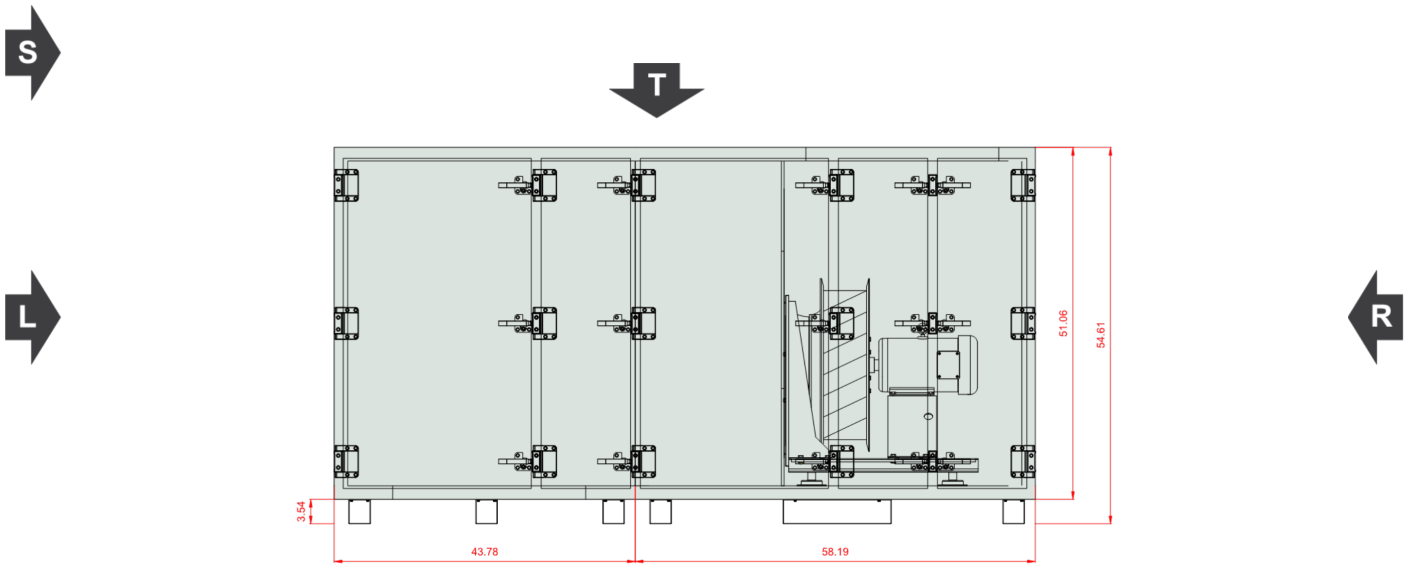
Technical data for item 5

Offer number **11C.3/LIVE.USA/DW/2023-23**

Project name UNCW King Hall – TRS NC; John Blakeney

Type	SingleSupply	**Supply airflow 2**	10500.00 CFM
Unit Type:	Indoor	**External pressure**	3.99 in wg
Project Tag	AHU-03 Top Section		
Size	AVS100		
Set	AVS100-R-EV		
Insulation thickness	2.0 in	**SFP Winter**	0.95 HP/kcfm
Insulation	Polyurethane Foam	**SFP Summer**	1.11 HP/kcfm
Weight of the set (+/- 10%)*	1092 lb		

Inspection Panels



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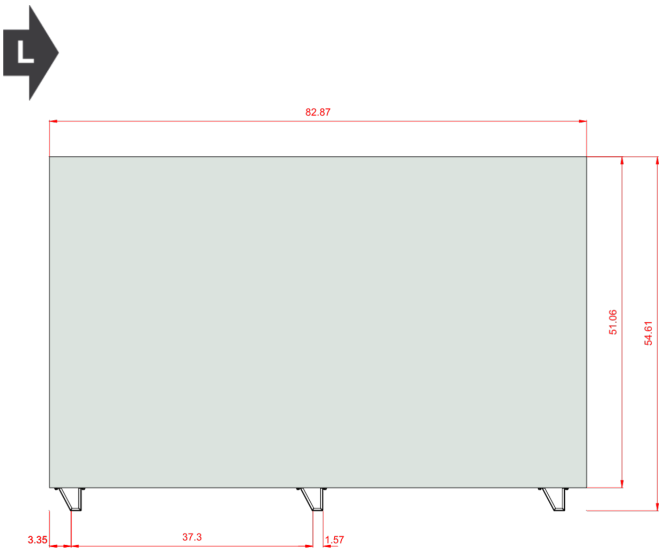
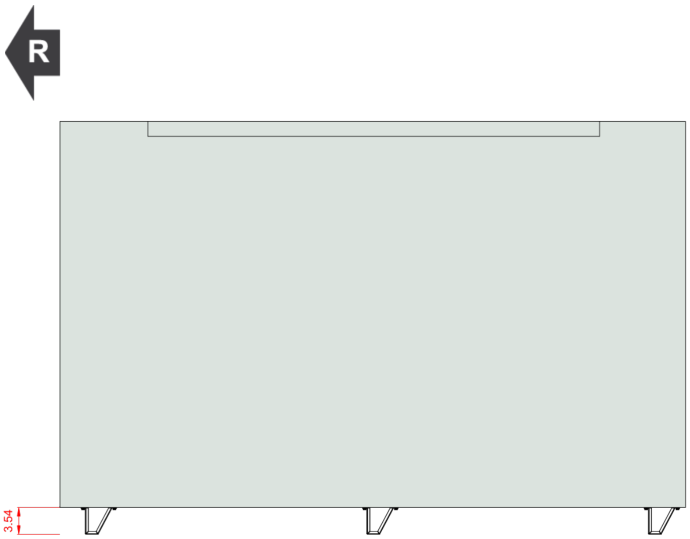
Technical data for item 5 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

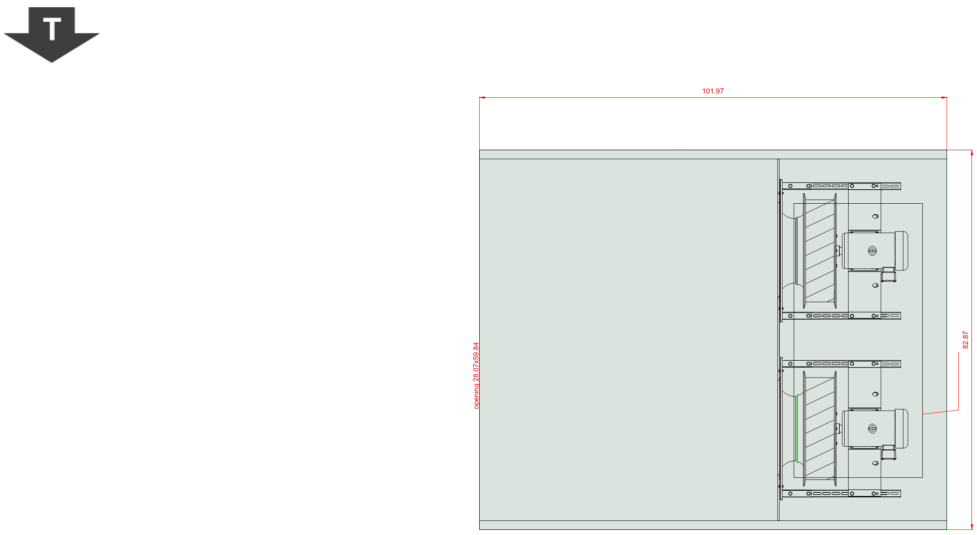
Front View (left)



Front View (right)



Top View



Sizes [in]

Air intake Supply	DS	59,8x28,1	**Lt**	102.0	**Hid**	47.1	**Wi**	78.9
Air outlet Supply	US	59,8x28,1	**LtA**	102.0	**Hiu**	47.1	**W**	82.9
					Hi	47.1		
					H	54.6		
					Hf	3.5		

Unit design

Concealed Skeleton Design – all framework is inside the unit, unexposed to ambient air and secure against thermal-bridging and condensation.

Casing mechanical strength (deflection): -10 in WC to +10 in WC: L=1/300 (model box EN 1886)

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Technical data for item 5 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

Casing Air Leakage: -1.6 in WC: 0.009 CFM/ft²; +2.8 in WC: 0.026 CFM/ft²

Casing Thermal Resistance: R = 13.1 Hr×ft²xF / BTU

Thermal bridges coefficient Kb = 0.52 (Class TB3, EN 1886: 2007)

Temperature Conditions

Reference atmospheric pressure 760 mmHg **Winter outdoor reference temperature 16.3 °F**

	External air			Return air		
	DBT	WBT	DA	DBT	WBT	DA
Summer	94.3 °F	80.6 °F	0.0708 lb/ft³	68.0 °F	63.0 °F	0.0746 lb/ft³
Winter	16.3 °F	13.5 °F	0.0833 lb/ft³	71.6 °F	56.2 °F	0.0744 lb/ft³

Supply

Empty section

Type EMP.SEC AVS100 Long

Winter operation		**Summer operation**	
Air velocity	438 FPM	Air velocity	517 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_560_7,50_4

		Qty in section	x 2
Air Standard	Calculations made for real air density		

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_560_AF_Px 2

Total Static Pressure	4.09 in wg	Impeller efficiency: Static / Total	71 %/75 %
Dynamic pressure	0.20 in wg	Shaft power	5.13 HP x 2
External pressure	3.99 in wg	Working revolutions	1703 rpm
Total Pressure	4.29 in wg		
Winter operation		**Summer operation**	
Air Volume Flow	9378.35 CFM	Air Volume Flow	11076.87 CFM

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 560 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_213T_TEFC_4p_7.5_60x 2

460V 60Hz

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Technical data for item 5

Offer number 11C.3/LIVE.USA/DW/2023-23

FLA	19.0 A	MCA	23.8 A
MCB	30.0 A	Maximum Overcurrent Protection (MOP)	30.9 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	9.5 A x 2
IEC Size	213T	Rated revolutions	1770 rpm
Operational Voltage	460 V/3 ph	Rated Power	7.50 HP x 2
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD

	_AC		_AC
VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	2	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	58 Hz	VFD Rated Power	7.50 HP x 2
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No
Winter operation		**Summer operation**	
Air Pressure	760 mmHg	Air Pressure	760 mmHg
Air Density	0.0833 lb/ft³	Air Density	0.0708 lb/ft³

Acoustic data

Acoustic power level [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB]
Inlet	[dB]	74.4	79.3	85.8	86.4	83.2	80.0	75.2	71.3	91.1
Outlet	[dB]	76.4	81.3	87.8	88.4	85.2	82.0	77.2	73.3	93.1
Environment	[dB]	54.6	69.8	74.4	74.4	71.5	68.5	47.7	34.8	79.4

Acoustic pressure level at 1 meter distance [dB]	Frequency	63 [Hz]	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB]
	[dB]	41.3	62.8	67.4	67.4	64.5	61.5	40.7	27.8	72.4

AHU Discharge and Intake Opening Sizes &Unit Accessories — Supply

Controls Selection Mode: No controls

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Down 59,8x28,1
Air Outlet	Top 59,8x28,1

Unit Another Accessories

Internal Marine Light	INT.LHT_1	2 Accessories Quantity
Hinged Access	HNG_1	1 Accessories Quantity

Control application

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Technical data for item 5 **Offer number** **11C.3/LIVE.USA/DW/2023-23**

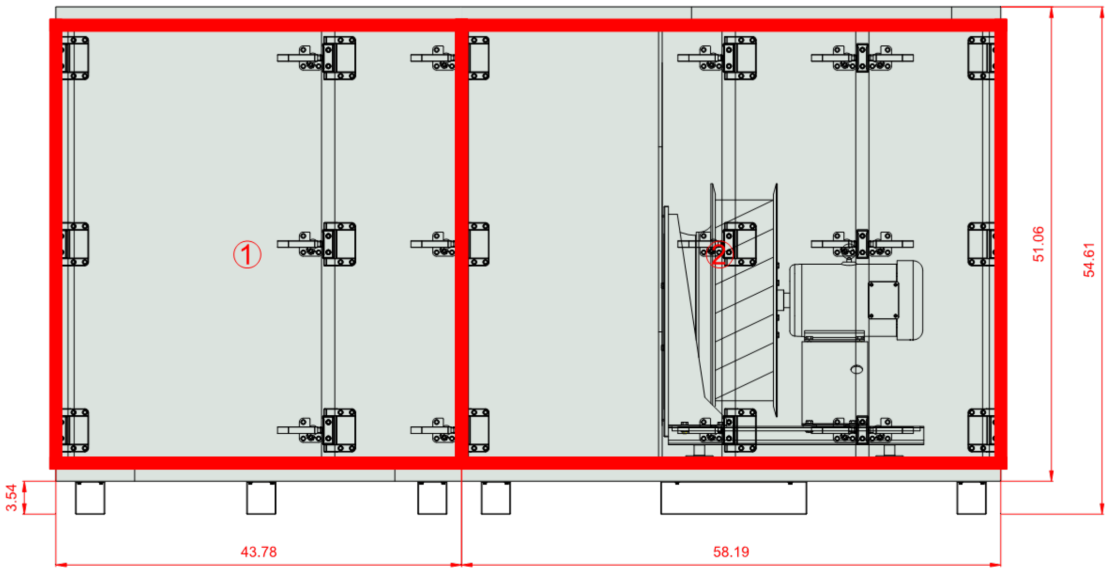
Functional Code AS|0|0|0|0|0|0|6|0|0|0|0|0|1

Section splits

Transport Sections	Mass [lb]	LENGTH [in]	WIDTH [in]	HEIGHT [in]
1	282	43.8	82.9	54.6
2	793	58.2	82.9	54.6

Transport Sections Dims

Resp_TransportSections_SectionsLengthMODRangeChanged



RESPONSES TO SUBMITTAL COMMENTS DATED 1/25/23:

1. Cooling coil cabinet construction is specified to be stainless steel. Provide stainless steel casing or provide corrosion resistant coating. Provide additional details for coating for review.

The factory will apply “Blygold CasingGuard” in the cooling coil sections only. See attached data sheet.

2. Provide 5 hp motor for AHU-01 supply fan. Static is low as submitted. Component pressure drops are 0.58,0.62, 0.09, 0.76 for filters and coils, which results with a 3.8” total static pressure (assuming 50% dirty filters). No pressure drop data is provided for outside air or return air dampers, these should be included in the internal static pressure calculation. The 1.75” ESP scheduled is all losses outside of the unit.

Unit was updated for 5HP motor, 3.8” TSP, and float ESP.

3. Provide 7.5 hp motor for AHU-02 supply fan. Static is low as submitted. Component pressure drops are 0.59,0.64, 0.16, 0.78 for filters and coils, which results with a 3.92” total static pressure (assuming 50% dirty filters). No pressure drop data is provided for outside air or return air dampers, these should be included in the internal static pressure calculation. The 1.75” ESP scheduled is all losses outside of the unit.

Unit was updated for 7.5HP, 3.92” TSP and float ESP.

4. Provide 7.5 hp motors for AHU-03 supply fans. Static is low as submitted. Component pressure drops are 0.59, 0.64, 0.09, 0.92 for filters and coils, which results with a 3.99” total static pressure (assuming 50% dirty filters). No pressure drop data is provided for outside air or return air dampers, these should be included in the internal static pressure calculation. The 1.75” ESP scheduled is all losses outside of the unit.

Unit was updated for 7.5HP, 3.99” TSP and float ESP.

5. Revise acoustic calculations at higher fan speeds and horsepower for all units.

Revised accordingly.

6. 460 and 480 V can be used interchangeably. The motor voltages are acceptable.

7. Condensate traps shall be Trent technologies traps as indicated on drawings and specifications.

Per the spec, contractor shall provide kit and field install condensate drain in accordance with Trent Technologies installation instructions. Units now have 8” base rail to accommodate the Trent Trap.

8. Motors sections indicates that all motors 7.5 hp and greater use shaft grounding rings. Provide shaft grounding rings for all motors.

Shaft grounding rings provided on all motors.

9. Provide the cooling coil water flow velocity and/or Reynolds number at design water flow.

AHU-01

HWC 0.38 FPS
CHWC 1.36 FPS

AHU-02

HWC 1.05 FPS
CHWC 3.51 FPS

AHU-03

HWC 2.23 FPS
CHWC 7.69 FPS

10. Round view windows are indicated as an accessory. Please confirm these are on the cooling coil access door and have a UV protective coating.

Viewing windows will be provided in the sections with UV lamps and include a protective coating.

11. Wire each fan individually for AHU-3. Each fan will be powered by its own independent VFD.

All VTS fans are wired separately to a junction box. VFD's by others.

12. UVC lights shall have door interlock switch as scheduled to disable UVC light upon opening the AHU access door.

This is standard on units with UV.

13. AHU-3 access doors and coil connections are reversed. Access doors and coils should be on the opposite side of the unit.

This has been updated.

14. No wiring diagram included for marine lights. Confirm these are factory wired and provided with unit mounted switch.

Yes, these are factory wired and include a mounted switch.

15. AHU's designed with 6" base rail. 3.5" base rail submitted. Confirm that condensate drain discharge height is high enough for use with Trent Technologies condensate trap. Drain discharge height not indicate in unit drawings.

Bottom units now provided with 8" rails to accommodate Trent Trap.

Project Name:		
UNCW King Hall – TRS NC; John Blakeney	VTS America Inc. 3535 Gravel Springs Rd. Extension, Suite 201, Buford, GA 30519	
Offer Code 11B.3/LIVE.USA/DW/2023-23	Prepared for: THERMAL RESOURCE SALES - WILMINGTON 7215 OGDEN BUSINESS LANE, WILMINGTON,NC, 28411	
Prepared by: Darrin Winecoff - VTS America Inc.	Page: 1 of 73	Date: February 09, 2023

AHRI CERTIFIED www.ahridirectory.org Central Station Air-Handling Units AHRI Standard 430

amca MEMBER

Conforms to UL Std 1995 Certified to CSA Std C22.2 No. 236 Intertek 4009808

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1 The AVS Standard range Air Handling Units General Specifications

1.1 General

The VENTUS AVS range consists of 15 unit sizes: AVS 8, AVS 12, AVS 16, AVS 20, AVS 30, AVS 40, AVS 55, AVS 65, AVS 85, AVS 100, AVS 130, AVS 170, AVS 230, AVS 300 and AVS 380.. The number following the AVS indicates the airflow of each unit at cooling coil air velocity ≈ 500 FPM. For example, a AVS 170 has a maximum airflow of ≈ 17000 CFM. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications no. 211, no. 311, and no. 511 and comply with the requirements of the AMCA Certified Ratings Program.

1.2 Components and specifications

The following chapter shows general information about all components of VENTUS AVS Air Handling Units. Information included below is common for the entire range of AVS units and is adequate for all units selected for the (UNCW King Hall – TRS NC; John Blakeney) project.

1.2.1 Unit construction - Casing

General Casing Characteristics:

- Concealed Skeleton Design – all framework is inside the unit, unexposed to ambient air and secure against thermal-bridging and condensation.
- Shipping sections, have both double tounge-and-groove and joint sections available.
- Panel thickness: 2.0 in Double Wall
- Insulation material: Rigid Close-Cell Polyurethane Foam
- External skin: 22 gauge steel, AluZinc Coating, exceeding 2,000 hours on the Salt Spray Test (ASTM B117) + thin organic coating
- Internal skin: Hot-dip galvanized 25 gauge steel + thin organic coating
- Color: Metallic Silver
- Panel operation temperature: -40 to +190 °F
- Panel moisture absorption: 0.04%
- PPU density: 2.62 lb/ft³
- Linear Density: 2 lb/ft²
- Casing mechanical strength (deflection): -10 in WC to +10 in WC: L=1/300
- Casing Air Leakage: -1.6 in WC: 0.009 CFM/ft²; +2.8 in WC: 0.026 CFM/ft²
- Casing Thermal Resistance: R = 13.1 Hr×ft²xF / BTU
- Casing Thermal bridging: Kb = 0.69 (Class TB2, EN 1886: 2007)
- Designed for indoor and outdoor installation
- Casing fire rating: Non-fire spreading (ASTM E84).

1.2.2 Fans sets

Each component of fan sets has been described in individual paragraphs, as per below.

1.2.2.1 General Description

All fans installed in VENTUS AVS Air Handling Units are certified according to the AMCA 210 and AMCA 310: Laboratory Methods for Testing Fans. All units shall be equipped with direct driven plenum Fans, with air foil backward-curved impellers with 7 blades made of a polymer composite material; the impellers are installed directly on the motor shafts. All power and sound ratings have been certified by AMCA. All Fan Assemblies are belt-less + AMCA Arrangement 4.

1.2.2.2 Fan impeller mechanical and thermal specifications:

Impellers are featured with the following mechanical specification

- Number of blades: 7
- Composite Material made of SAN (AS) +20 GF
- Density: (ASTM-D792] 74.5 lb/ft³
- Tensile strength: 15.2 PSI [ASTM D-638]
- Impeller balancing: Statically and dynamically balanced to the grade of G=6.3, in accordance to ISO 1940-1 and ANSI D 2.19

- Operating temperature range: -22 °F to 140 °F
- Heat deflection temperature: 215 °F [ASTM D-648]
- Flammability according to UL: HB

1.2.2.3 Motors

Fans are driven by TEFC (Totally Enclosed Fan Cooled) foot mounted motors with double shielded bearings and range from 3 to 15 HP, all motors from 7.5 HP up to 15 HP includes shaft grounding rings as standard. All of the motors used are 3 phase. Nominal frequency: 60 Hz. Insulation class: F. Efficiency class: Premium. Bearing life: L10 = 150,000 h. Motors used in submitted air handling units are (Motor HP, Number of Poles, Approx. Rated Revolutions at 60Hz, and Motor Physical size).

1.2.2.4 Fan Power Supply Point

Connecting Points Features:

- Single power supply connection for each fan section
- Built in short circuit protection (circuit breakers) and main disconnect switch
- Enclosure class: NEMA 4

1.2.3 Filters

Available filters are (depending on selection):

1.2.4 Hydronic Heating Coils

Hydronic heating coils are featured with the following specifications

- Coil casing: Hot-dip Galvanized steel
- Type: Cu-Al: Copper tubes, Aluminum fins
- Fins: Aluminum, mechanically bonded to the pipes, spacing: 10 fins per Inch, 0.006” thick, Corrugated
- Tube wall thickness: 0.020”
- Tube spacing: 1¼”
- Tube diameter: ½ O.D.
- Operational
- Row spacing: 1.08”
- Tube diameter: ½” O.D.
- Maximum operating pressure: 300 PSI
- Entering medium maximum temperature: 285 °F
- Maximum glycol content: 50%
- Tube wall thickness: 0.020”
- Tube spacing: 1¼”
- Row spacing: 1.08”
- Tube diameter: ½” O.D.
- Number of rows available: 1, 2, 3, 4
- Maximum operating pressure: 300 PSI
- Entering medium maximum temperature: 285 °F
- Maximum glycol content: 50%

1.2.5 Hydronic Cooling Coils

Hydronic cooling coils are featured with the following specification

- Coil casing: Galvanized steel or optional Stainless Steel
- Type: Cu-Al: Copper tubes, Aluminum fins
- Fin: Aluminum, mechanically bonded to the pipes
- Spacing: 10 fins per Inch, 0.006” thick
- Tube wall thickness: 0.020”
- Tube diameter: ½ ”O.D.
- Operational
- Tube spacing: 1¼”
- Tube diameter: ½” O.D.
- Maximum operating pressure: 300 PSI
- Entering medium maximum temperature: 285 °F
- Maximum glycol content: 50%
- Tube wall thickness: 0.020”
- Tube spacing: 1¼”
- Row spacing: 1.08”
- Tube diameter: ½” O.D.
- Number of rows available: 4, 6, 8
- Maximum operating pressure: 300 PSI

1.2.6 Air Dampers

TAMCO 9000 SW Series per Spec

All air dampers installed in VTS Air Handling Units are certified according to AMCA 511: Laboratory Methods for Testing Fans for Ratings

- Aluminum blades protected with rubber seals on the edges
- Damper Frame material: Aluminum
- Damper Length: 4.92"
- Damper tightness class according to AMCA: Low Leak
- Damper shaft: square: 0.6x0.6"
- Damper shaft: square: 0.6x0.6"

2 Selections for the UNCW King Hall – TRS NC; John Blakeney

The following Air Handling Units are included in this submittal. Detailed information is listed on further pages.

No.	Project Tag	Model name	Quantity	Page
1	AHU-01 Top Section, Supply	AVS030-R-EV	1	8
2	AHU-01 Bottom Section, Supply	AVS030-L-MFHEC	1	19
3	AHU-02 Top Section, Supply	AVS055-L-EV	1	30
4	AHU-02 Bottom Section, Supply	AVS055-R-MFHEC	1	41
5	AHU-03 Top Section, Supply	AVS100-R-EV	1	52
6	AHU-03 Bottom Section, Supply	AVS100-L-MFHEC	1	63

For each Air Handling Unit detailed information includes:

- Detailed Drawings (CAD version available on request)
- Connecting point - Fan Power Supply and VFD Communication connections
- Air Handling Unit performance data
- Fan curves with operational point marked and motor limit

2.1 AHU-01 Top Section, Supply

2.1.1 General AHU Data

AHU Tag	**AHU-01 Top Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS030**
AHU Type	**Supply unit**	**AHU Set**	**AVS030-R-EV**
Insulation Thickness	2.0 in	Width	53.5 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	409 lb	AHU Support Height	3.5 in
Elevation	0 ft	Shipping Sections	2
Total length	73.1 in		
Fan Section Voltage	460/3/60 V/ph/Hz	Coil Connection Side	Right Hand Side (RHS)
Unit Execution Side	Right Hand Side (RHS)		

Supply

AirFlow	3300.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Fan Section

Motor Rated Power	5 HP	Impeller	VS 450

Empty Section

EMP.SEC AVS030 Standard	EMP.SEC AVS030 Standard

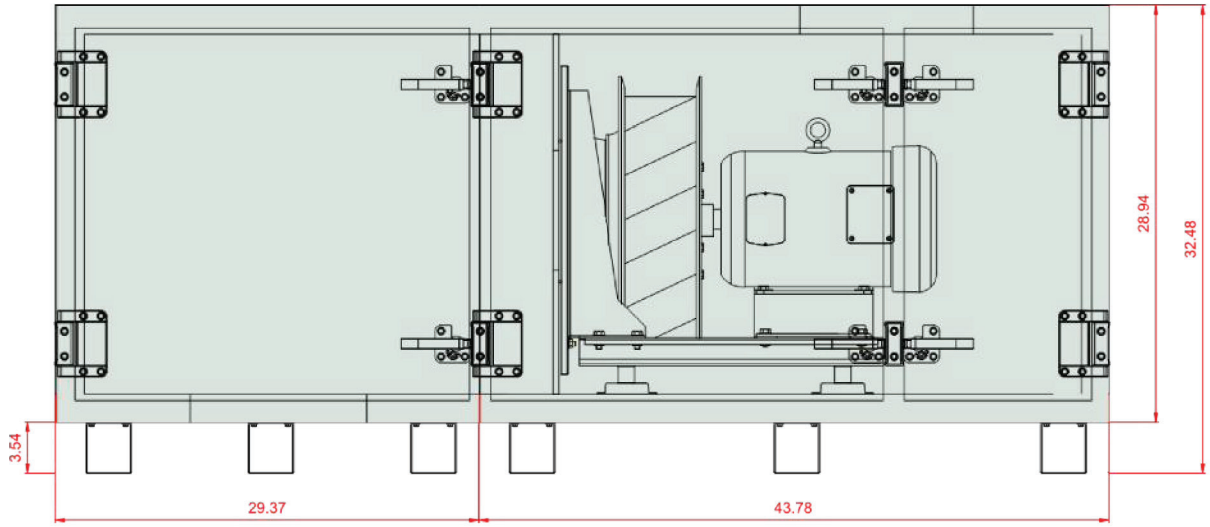
AHU Discharge and Intake Opening Sizes &Unit Accessories

Controls Selection Mode : No controls

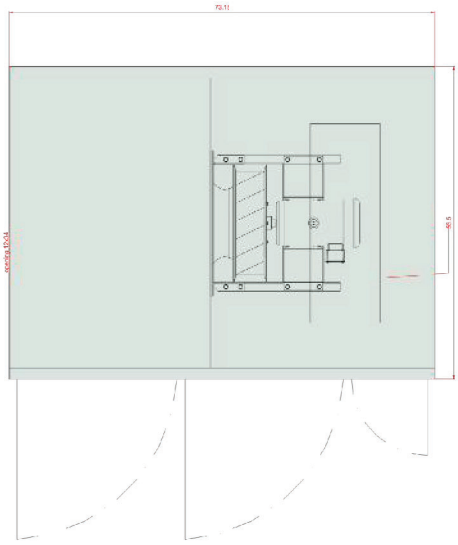
AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Down 34.3x12.3
Air Outlet	Top 34x12
Unit Another Accessories	
Internal Marine Light	Quantity 2
Hinged Access	Quantity 1

2.1.2 AHU-01 Top Section, Supply - Dimensions, media connection points

Inspection side

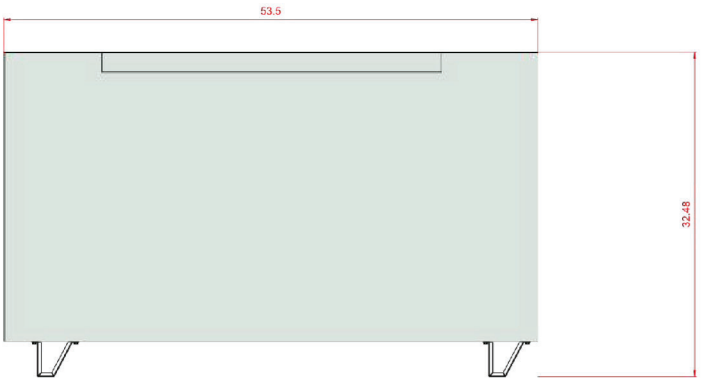


Top View

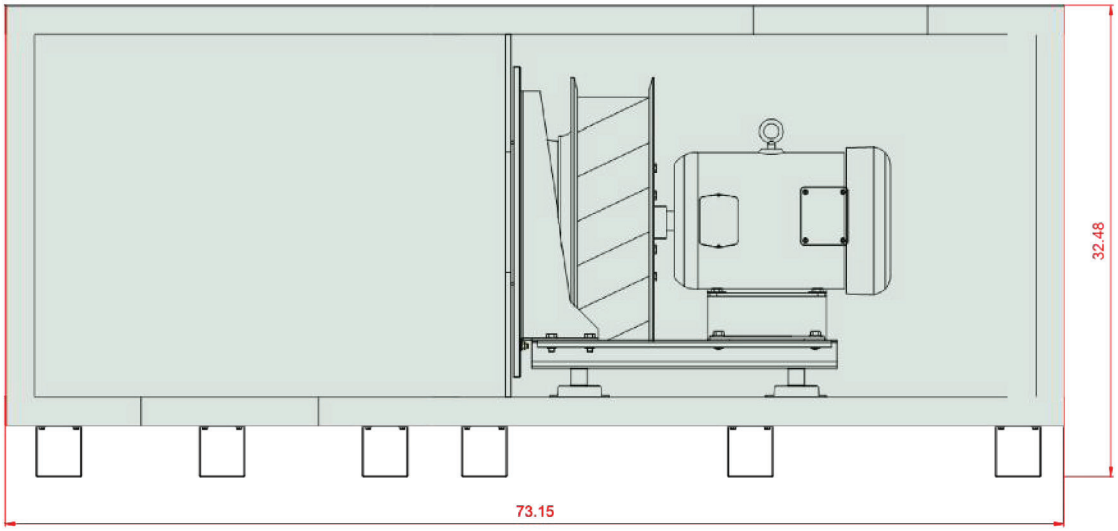


End - Front Openings

End - Back Openings



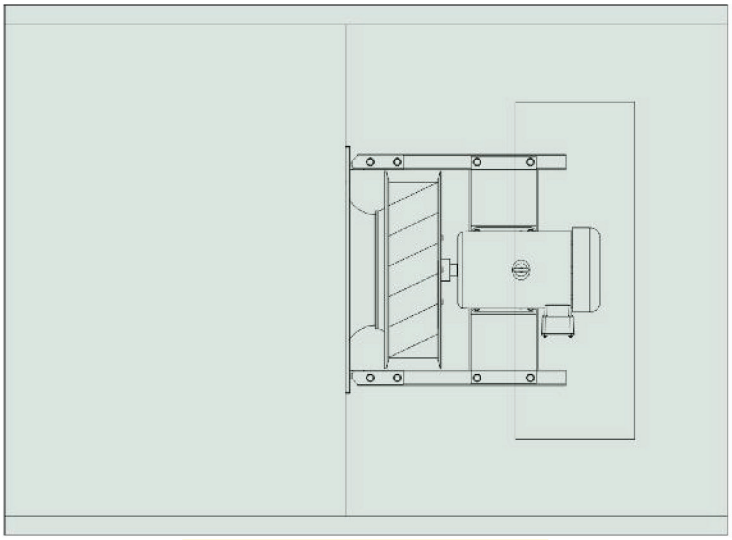
Coil Connections - Inspection side view



Coil connection rules

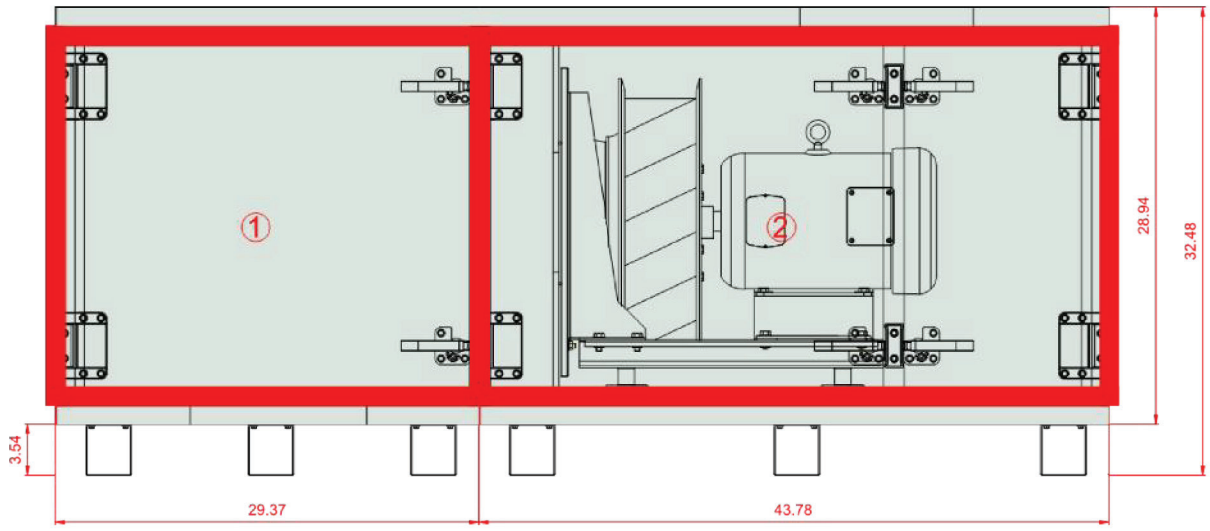
Coil dimensions

Coil Connections - Top View

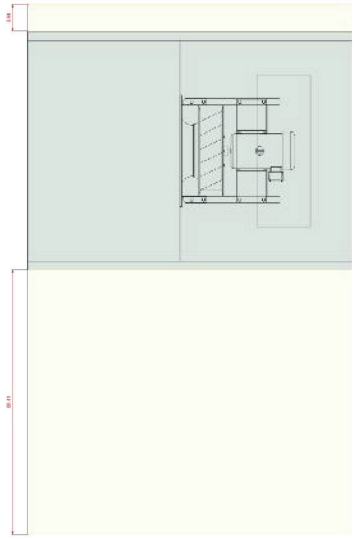


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	110	29.4	53.5	32.5
2	280	43.8	53.5	32.5



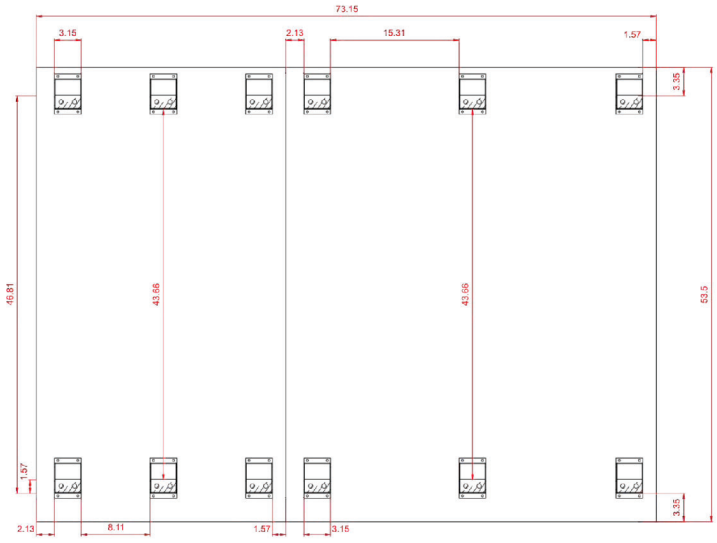
Top view - Service space



The AHU installation clearance is defined by:

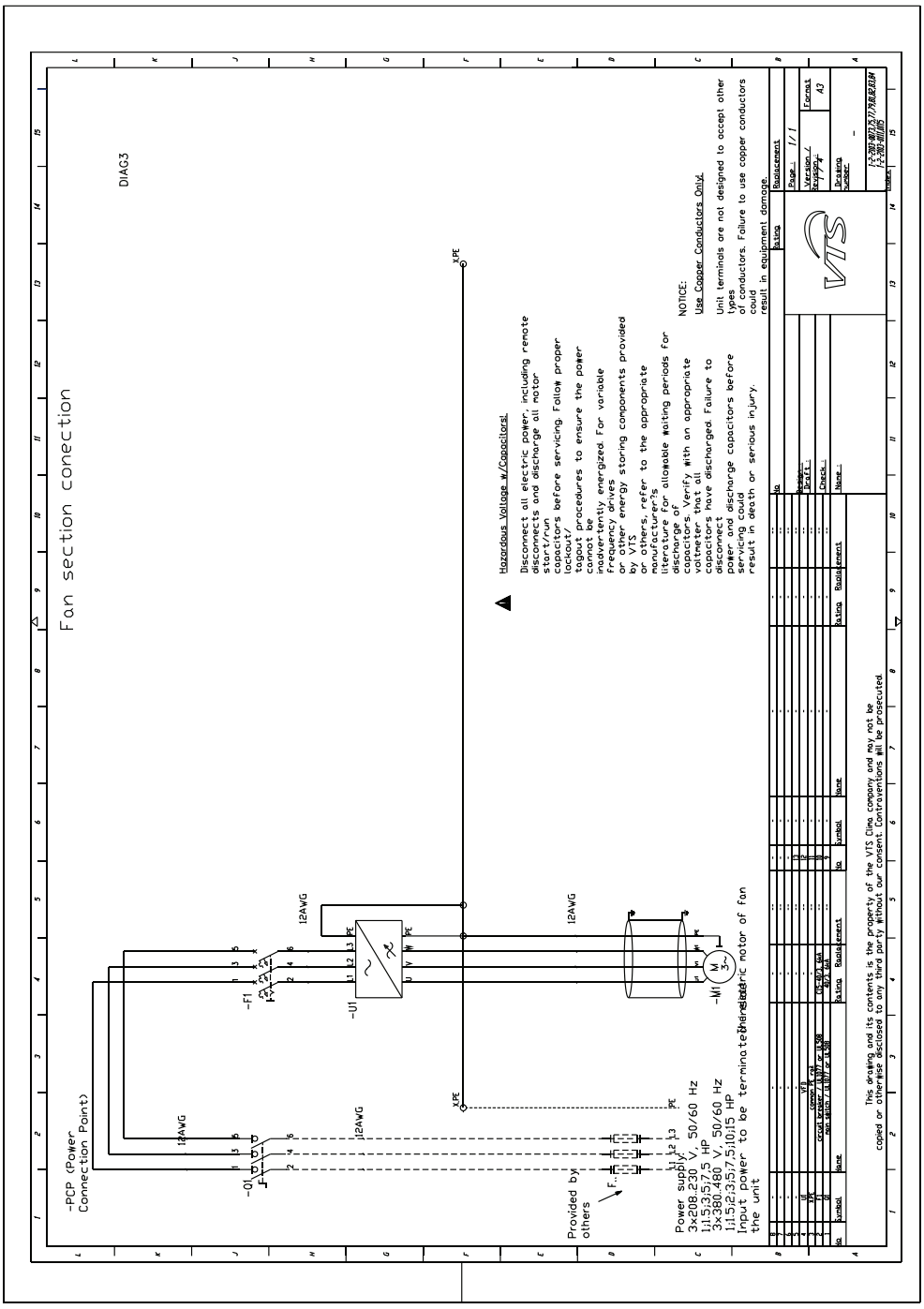
- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

Frame Top View, within the AHU outline contour



2.1.3 AHU-01 Top Section, Supply - Drawings – AHU Sections Shipping Details , Supply

Fan Section Electric Connections



2.1.4 AHU-01 Top Section, Supply - Performance Data

Supply tier

Empty section

Type EMP.SEC AVS030 Standard

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	456 FPM	Air velocity	539 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_450_5,00_4

		Qty in section	x 1
Fan Set Assembly Type	FLX1 (Gasket)	Air Standard	Calculations made for real air density

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_450_AF_Px 1

Total Static Pressure	5.70 in wg	Impeller efficiency: Static / Total	64 %/67 %
Dynamic pressure	0.20 in wg	Shaft power	4.96 HP x 1
External pressure	5.55 in wg	Working revolutions	2509 rpm
Total Pressure	5.90 in wg		

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 450 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_184T_TEFC_4p_5_60x 1

460V 60Hz

FLA	6.7 A	MCA	8.4 A
MCB	15.0 A	Maximum Overcurrent Protection (MOP)	15.1 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	6.7 A x 1
IEC Size	184T	Rated revolutions	1750 rpm

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Operational Voltage	460 V/3 ph	Rated Power	5.00 HP x 1
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD BY OTHERS

VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	1	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	86 Hz	VFD Rated Power	5.00 HP x 1
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No

Acoustic data

Frequency		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lw dB(A)
Intake	dB	77,8	82,7	89,2	89,8	86,6	83,4	78,6	74,7	94,5
Outlet	dB	79,8	84,7	91,2	91,8	88,6	85,4	80,6	76,7	96,5
Environment	dB	58	73,2	77,8	77,8	74,9	71,9	51,1	38,2	82,8
Sound Pressure*	dB	44,7	66,2	70,8	70,8	67,9	64,9	44,1	31,2	75,8

(*) Approximate data of sound pressure

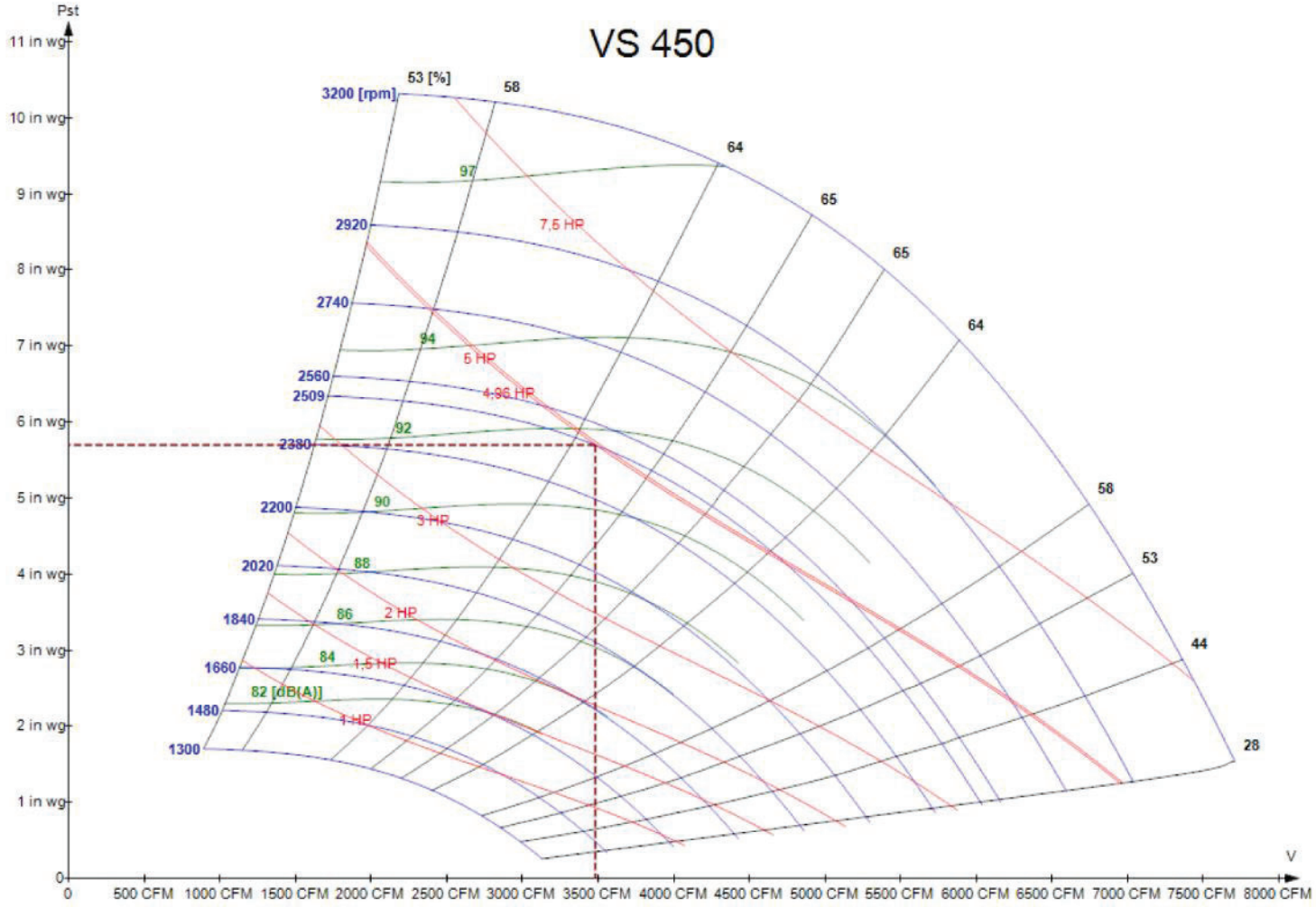
2.1.5 AHU-01 Top Section, Supply - Fan Performance Data , Supply

Number of fans in section	1
Airflow per Fan	3481.30 CFM
Total Pressure Increase	5.90 in wg
Static pressure	5.70 in wg
External pressure	5.55 in wg
Velocity Pressure	0.20 in wg
Static Efficiency	64 %
Total Efficiency	67 %
Shaft Power	4.96 HP
Fan revolutions	2509 rpm
VFD Setting	86 Hz
Acoustic Power Level	82,8 dB
Acoustic Pressure Level	75,8 dB

Internal Pressure Drop

Function	Pressure Drop
	Pressure Drop in Winter (at 50% Dirty Filters)
All	**0.17 in wg**

Inlet	0.08 in wg
Empty Section	0.01 in wg
Outlet	0.08 in wg



2.2 AHU-01 Bottom Section, Supply

2.2.1 General AHU Data

AHU Tag	**AHU-01 Bottom Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS030**
AHU Type	**Supply unit**	**AHU Set**	**AVS030-L-MFHEC**
Insulation Thickness	2.0 in	Width	53.5 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	816 lb	AHU Support Height	8.0 in
Elevation	0 ft	Shipping Sections	3
Total length	116.4 in		
Unit Execution Side	Left Hand Side (LHS)	Coil Connection Side	Left Hand Side (LHS)

Supply

AirFlow	3300.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Mixing

Mixing Section	

Coils

Hot Water Heater	Rows: 1	Chilled Water Cooler	Rows: 8 HIGH PERFORMANCE COIL

Filters

MERV8/2".Flat.Int.Sld	MERV8/2".Flat.Int.Sld

Empty Section

EMP.SEC AVS030 Medium	EMP.SEC AVS030 Medium

AHU Discharge and Intake Opening Sizes &Unit Accessories

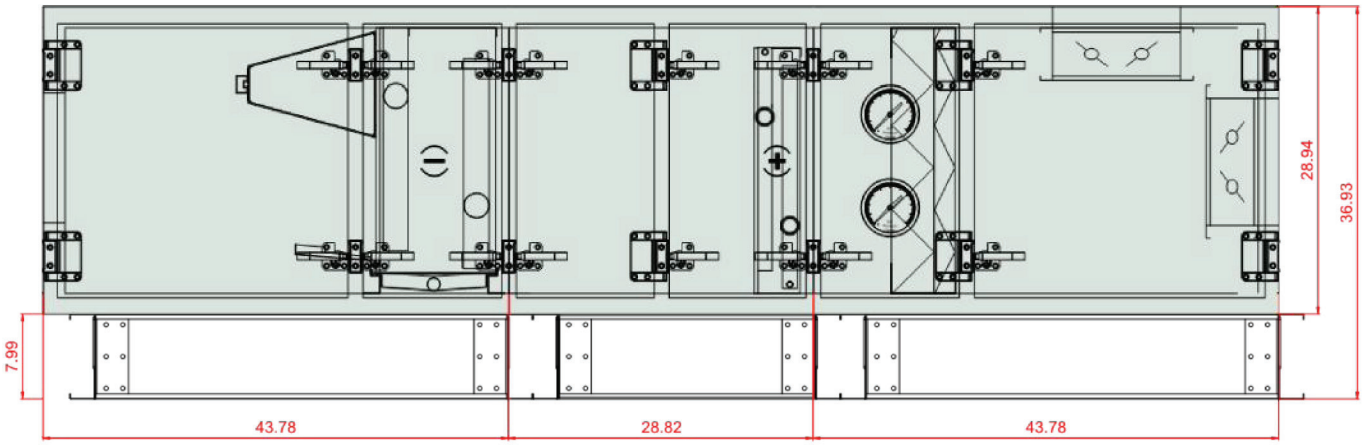
Controls Selection Mode : Air damper actuator

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Front (Small) 34.0x12.0
Air Inlet (2nd)	Top 34.0x12.0
Air Outlet	Front (Small) 34.3x12.3
AirDamper	Supply
Air Inlet	Provided with Actuators
Air Inlet (2nd)	Provided with Actuators
Unit Another Accessories	
Round View Window	Quantity 1
Internal Marine Light	Quantity 3
Hinged Access	Quantity 1
UV Lamp	Quantity 1

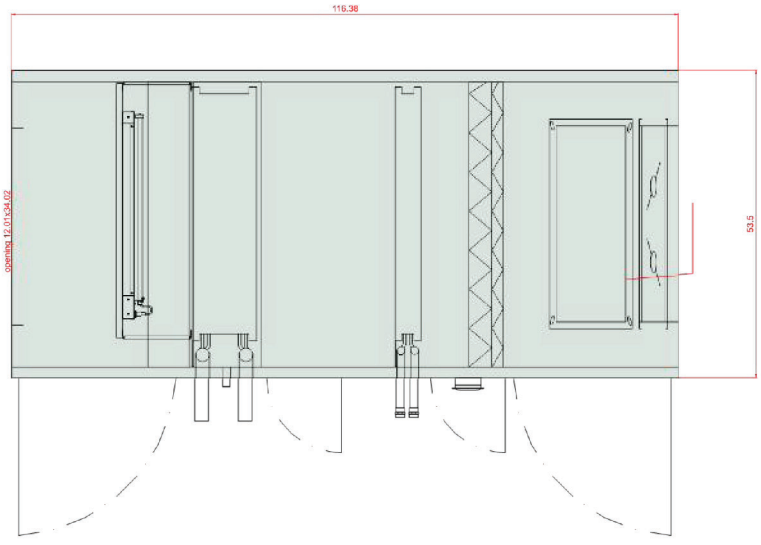
Differential Pressure Gauge	Quantity 2
Rails	Quantity 1

2.2.2 AHU-01 Bottom Section, Supply - Dimensions, media connection points

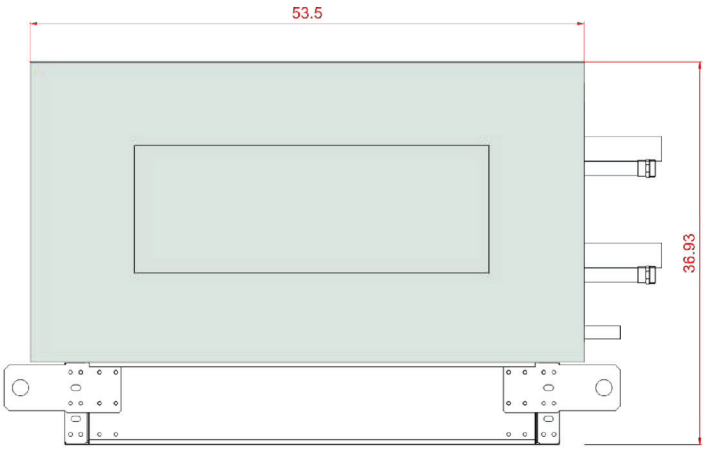
Inspection side



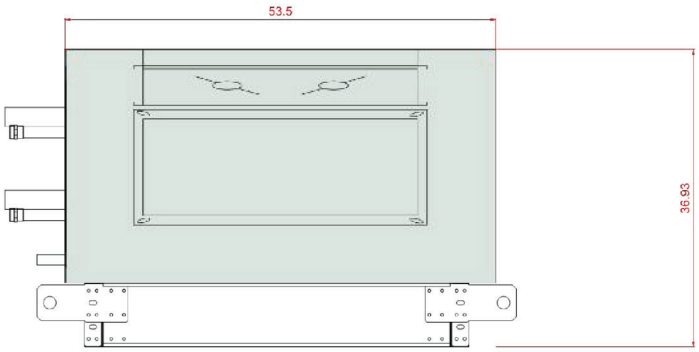
Top View



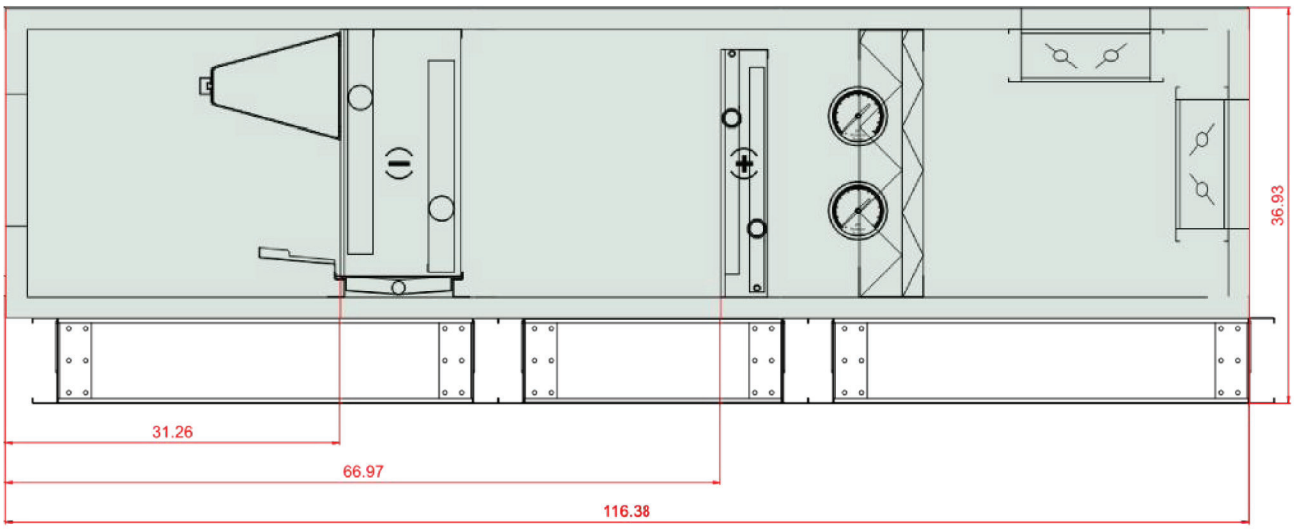
End - Front Openings



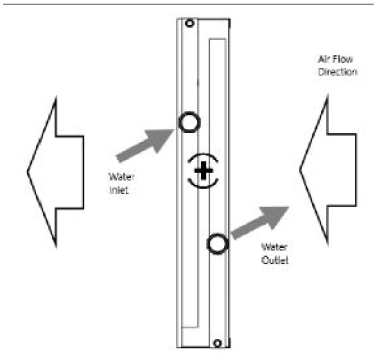
End - Back Openings



Coil Connections - Inspection side view

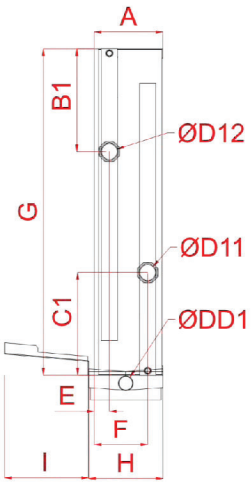


Coil connection rules



Coil dimensions

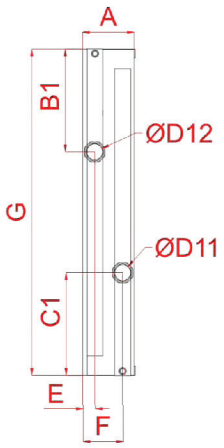
C_cw_8|1|1|SH|N



A	B1	C1	E	F	G
11.38	6.46	6.46	1.9	9.48	23.11

D11	D12	DD1	H	I	L
2.01	2.01	1.26	11.81	7.1	41.34

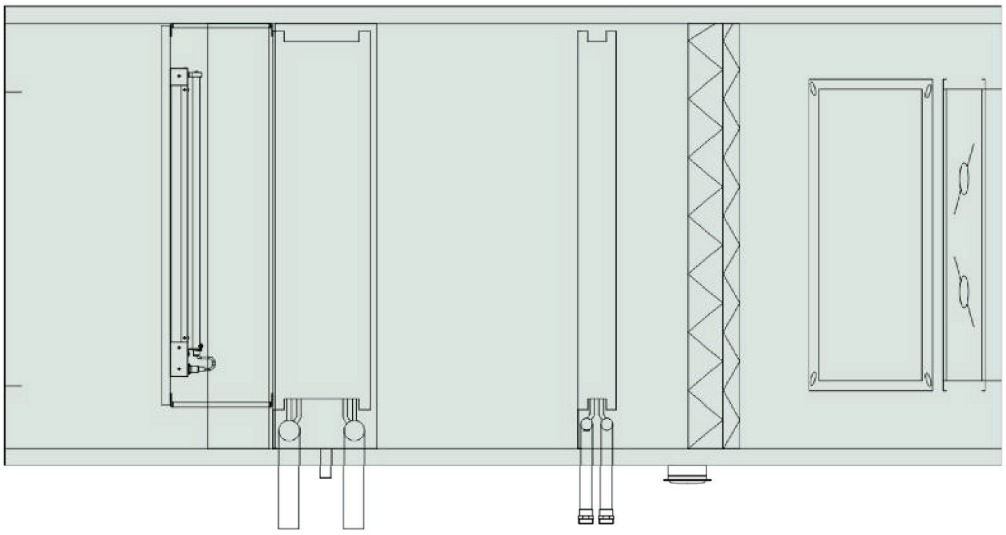
H_hw_1|1|1|SH|N



A	B1	C1	E	F
4.49	6.46	6.46	1.06	3.43

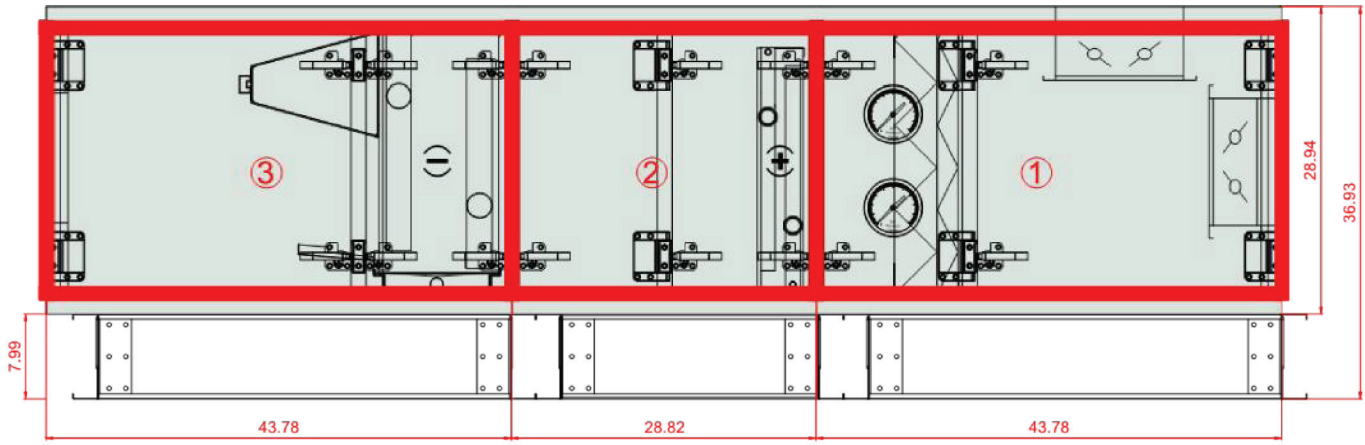
G	D11	D12	L
23.11	1.26	1.26	41.34

Coil Connections - Top View

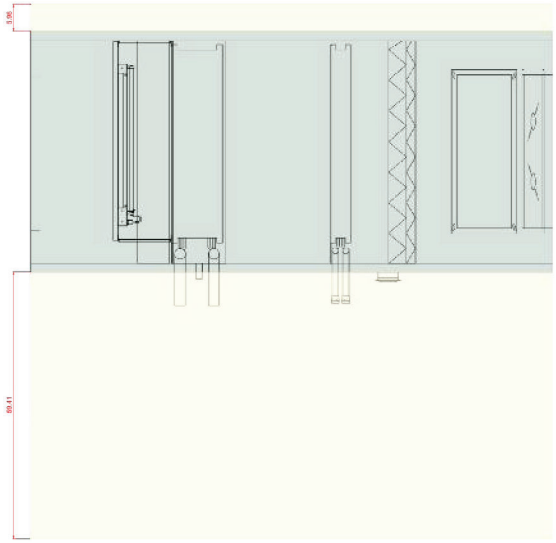


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	252	43.8	53.5	36.9
2	162	28.8	53.5	36.9
3	344	43.8	53.5	36.9



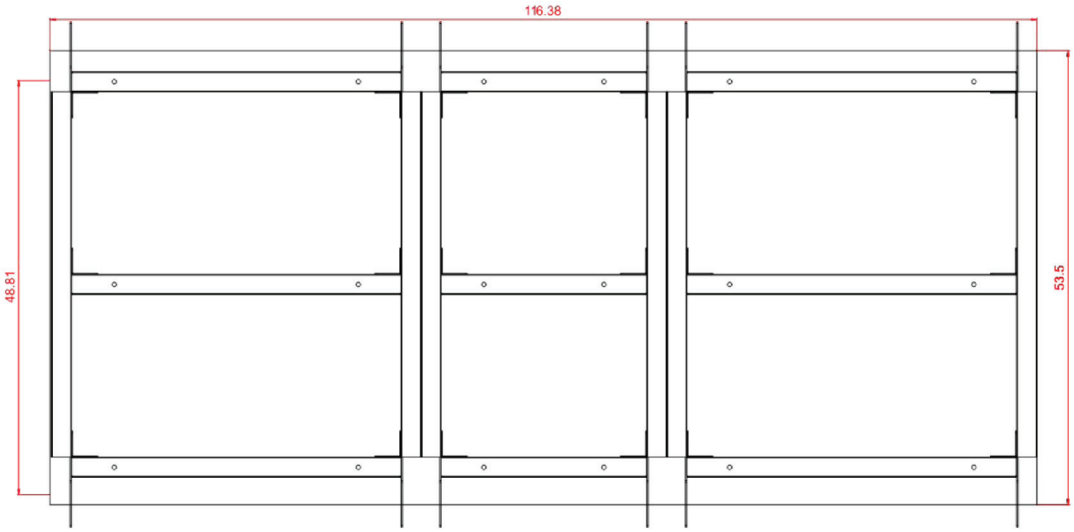
Top view - Service space



The AHU installation clearance is defined by:

- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

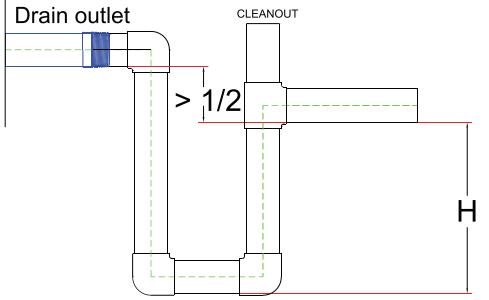
Frame Top View, within the AHU outline contour



Depending on fan static pressure, (negative pressure side of the fan) additional height of the condensate drainage may be required. In order to achieve minimum water column height in water traps.

Positive Pressure Trap

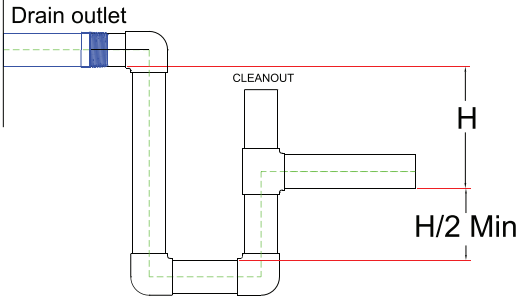
H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

Negative Pressure Trap

H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

2.2.3 AHU-01 Bottom Section, Supply - Performance Data

Supply tier

Mixing section

Mixing Box

Heating operations		Cooling operations	
Recirculation	0 %	Recirculation	0 %
Supply inlet	16.3 °F/13.5 °F	Supply inlet	94.3 °F/80.6 °F
Exhaust inlet DBT/WBT	32.0 °F/20.7 °F	Exhaust inlet DBT/WBT	32.0 °F/20.7 °F
Supply outlet DBT/WBT	16.3 °F/13.5 °F	Supply outlet DBT/WBT	94.3 °F/80.6 °F
Sensible recovery capacity	0.0 MBH	Sensible recovery capacity	0.0 MBH

Resp_MixingChamber_Info_Name

Mixings

Set of Two Flat Filters

Type MERV8/2".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[11.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.58 in wg	50% Dirty Air Pressure Drop	0.60 in wg
Initial Air Pressure Drop	0.18 in wg	Initial Air Pressure Drop	0.22 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg
Air velocity	507 FPM	Air velocity	509 FPM

Air Filter Sizes

P,FLT merv8 15,5 x 24,5 (1-2-0301-0091)	3,000 x Pcs
P,FLT merv13 15,5 x 24,5 (1-2-0301-0100)	3,000 x Pcs

Type MERV13/4".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[12.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.62 in wg	50% Dirty Air Pressure Drop	0.65 in wg
Initial Air Pressure Drop	0.26 in wg	Initial Air Pressure Drop	0.31 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg
Air velocity	507 FPM	Air velocity	509 FPM

Air Filter Sizes

P,FLT merv8 15,5 x 24,5 (1-2-0301-0091)	3,000 x Pcs

P,FLT merv13 15,5 x 24,5 (1-2-0301-0100) 3,000 x Pcs

Hot Water Coil

Type WCL AVS030 1R DT SH.St.St.Std **Number of rows** 1 **Connection Supply/Return:** 1 1/4" - 11 1/2 NPT/1 1/4" - 11 1/2 NPT

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	45.0 °F / 35.0 °F	Discharge air DBT / WBT	60.0 °F / 43.0 °F
Air velocity	471 FPM	Pressure drop Wet / Dry Wet	0.09 in wg
Total heating capacity	53.4 MBH	Medium temperature	130.0 °F/100.0 °F
Medium flow rate	3.56 GPM	Medium pressure drop	0.703 ft wg

Hot Water Coild Additional Info

Rows: 1
Coils tube: 1/2"
Coil volume in cubic inches: 189.2
Finned Length: 3' 5 5/16" (1050mm)
Finned Height: 1' 10 1/2"(572mm)
Coil Connection: 1 1/4"-111/2 NPT
Coil casing material: galvanized steel
Single Coil

Empty section

Type EMP.SEC AVS030 Medium

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	498 FPM	Air velocity	539 FPM

Resp_EmptySection_Info_Name

EmptySections

Chilled Water Coil

Type WCL AVS030 8R DT SH.St.Ss.Std **Number of rows** 8 **Connection Supply/Return:** 2" - 11 1/2 NPT/2" - 11 1/2 NPT

HIGH PERFORMANCE COIL AVS030_WCL_8 High Performance, Stainless Steel Casing WCL AVS030 8R

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	75.2 °F / 63.2 °F	Discharge air DBT / WBT	52.0 °F / 51.0 °F
Air velocity	486 FPM	Pressure drop Wet / Dry Wet / Dry	0.76 in wg / 0.56 in wg
Cooling capacity: Sensible / Total	83.7 MBH/114.4 MBH	Medium temperature: Inlet / Outlet	42.0 °F/60.0 °F
Medium flow rate	12.65 GPM	Medium pressure drop	3.119 ft wg

Chilled water cooler Additional Info

Rows: 8

Coils tube: 1/2"

Coil volume in cubic inches: 1150.3

Finned Length: 3' 5 5/16" (1050mm)

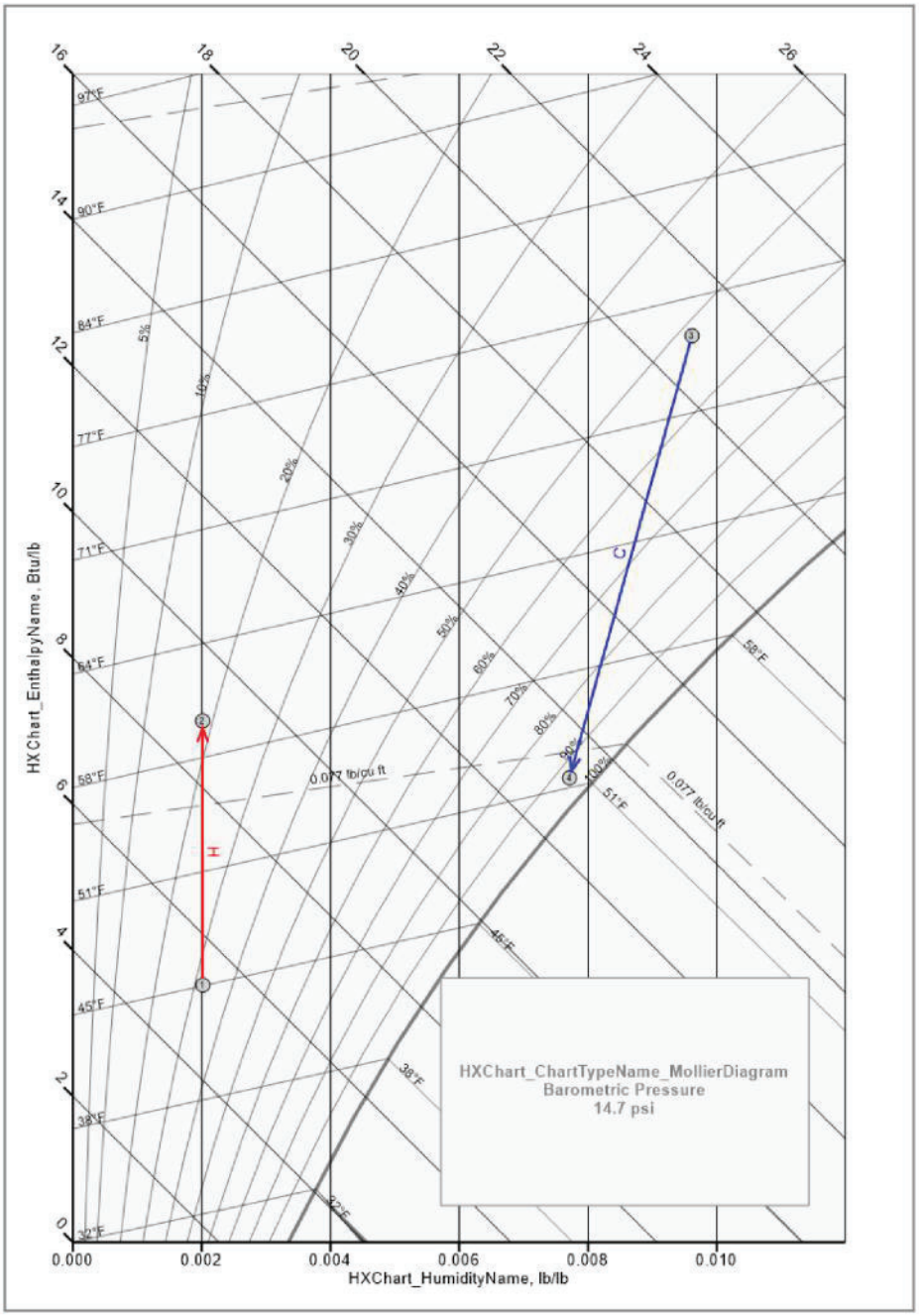
Finned Height: 1' 10 1/2"(572mm)

Coil Connection: 2"-111/2 NPT

Drain pan made of stainless steel

Single Coil

2.2.4 Moist Air Processes



2.3 AHU-02 Top Section, Supply

2.3.1 General AHU Data

AHU Tag	**AHU-02 Top Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS055**
AHU Type	**Supply unit**	**AHU Set**	**AVS055-L-EV**
Insulation Thickness	2.0 in	Width	66.1 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	665 lb	AHU Support Height	3.5 in
Elevation	0 ft	Shipping Sections	2
Total length	87.6 in		
Fan Section Voltage	460/3/60 V/ph/Hz	Coil Connection Side	Left Hand Side (LHS)
Unit Execution Side	Left Hand Side (LHS)		

Supply

AirFlow	5500.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Fan Section

Motor Rated Power	7,5 HP	Impeller	VS 560

Empty Section

EMP.SEC AVS055 Medium	EMP.SEC AVS055 Medium

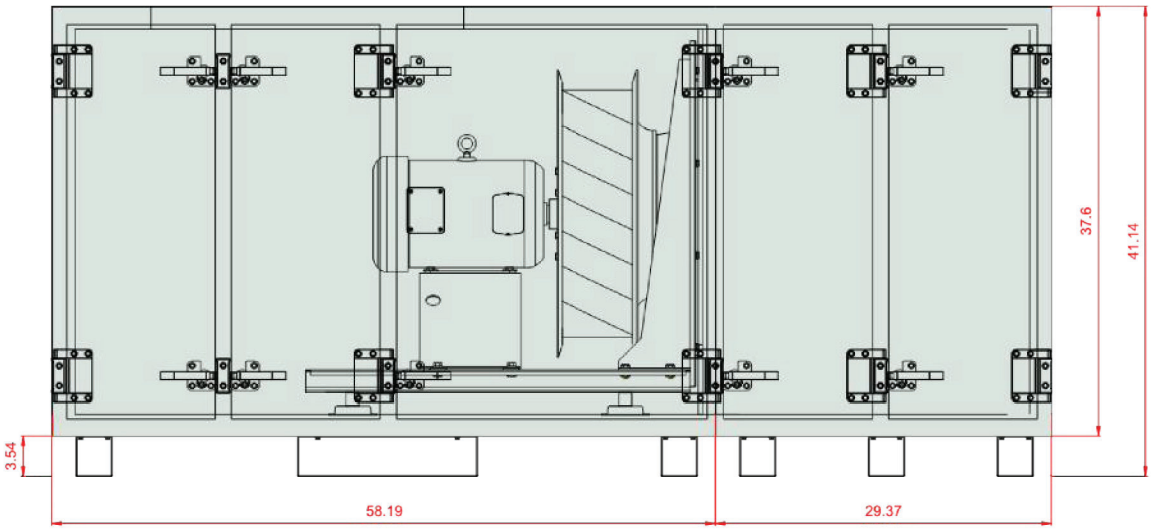
AHU Discharge and Intake Opening Sizes &Unit Accessories

Controls Selection Mode : No controls

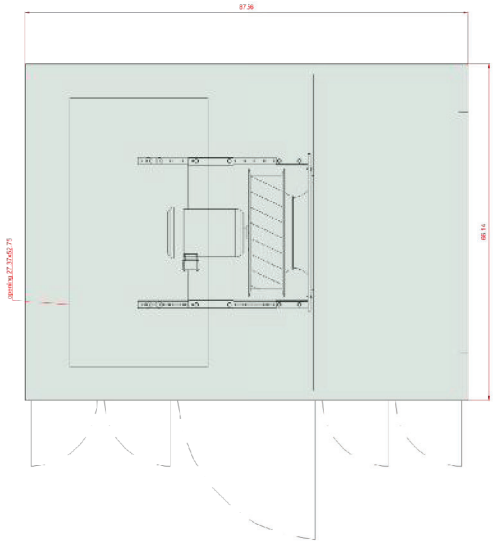
AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Front (Small) 47.2x22.6
Air Outlet	Top 52.8x27.4
Unit Another Accessories	
Internal Marine Light	Quantity 2
Hinged Access	Quantity 1

2.3.2 AHU-02 Top Section, Supply - Dimensions, media connection points

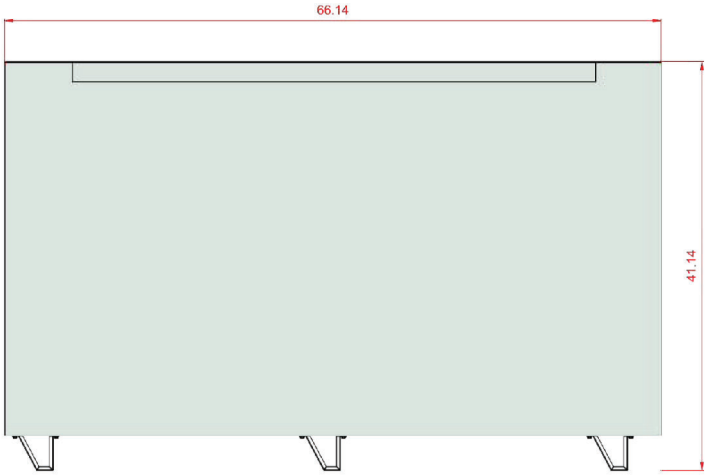
Inspection side



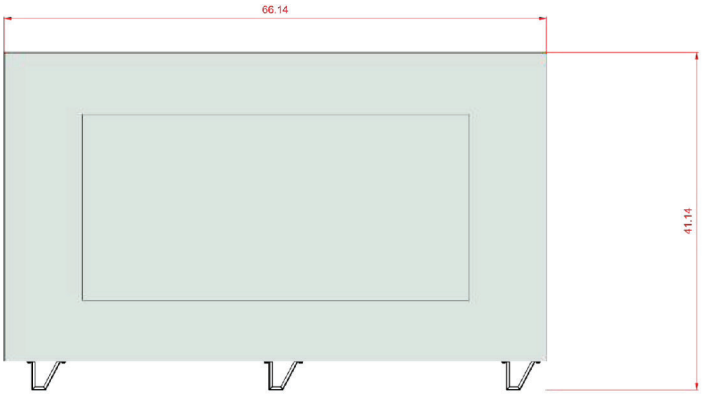
Top View



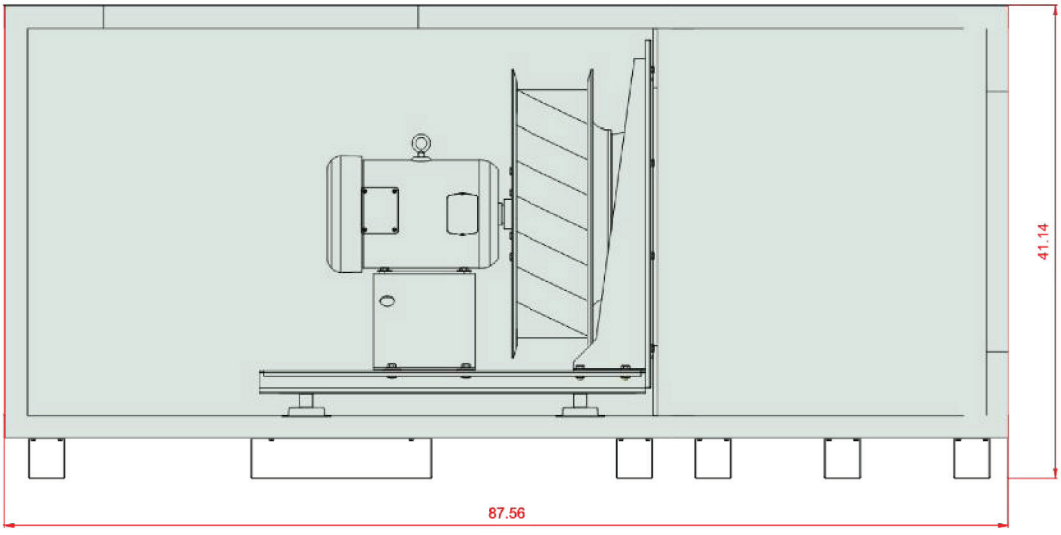
End - Front Openings



End - Back Openings



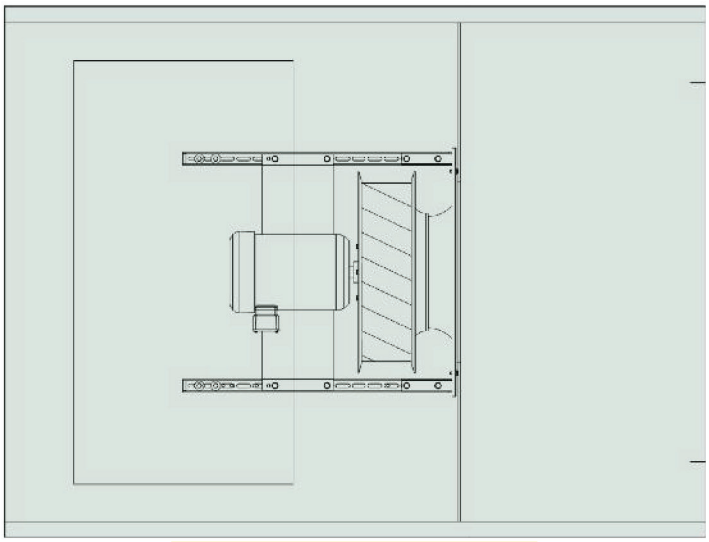
Coil Connections - Inspection side view



Coil connection rules

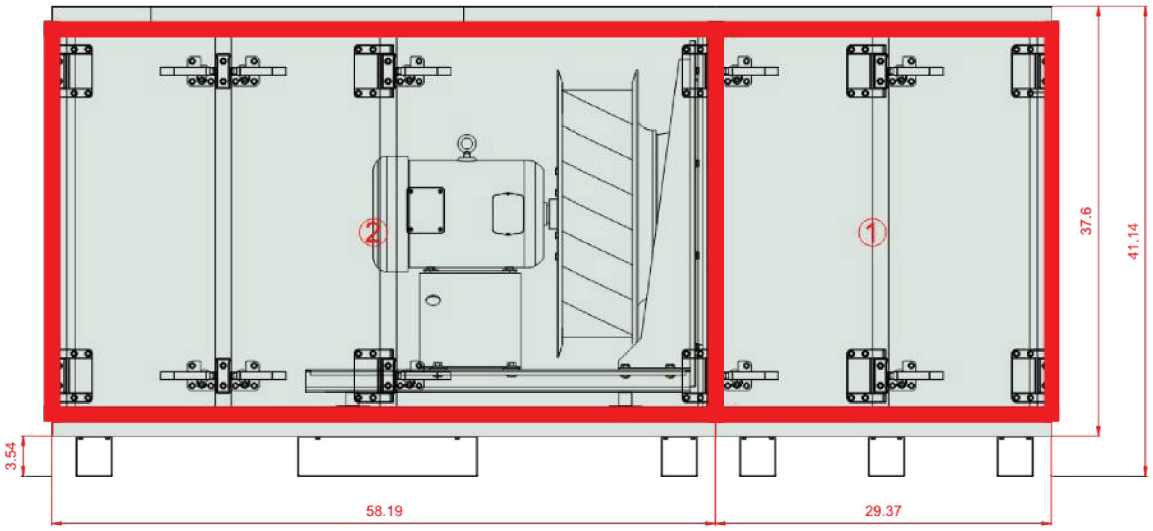
Coil dimensions

Coil Connections - Top View

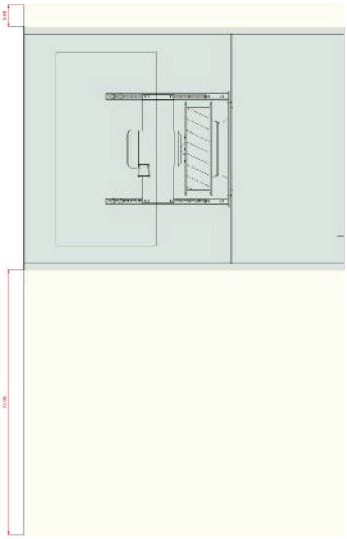


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	162	29.4	66.1	41.1
2	481	58.2	66.1	41.1



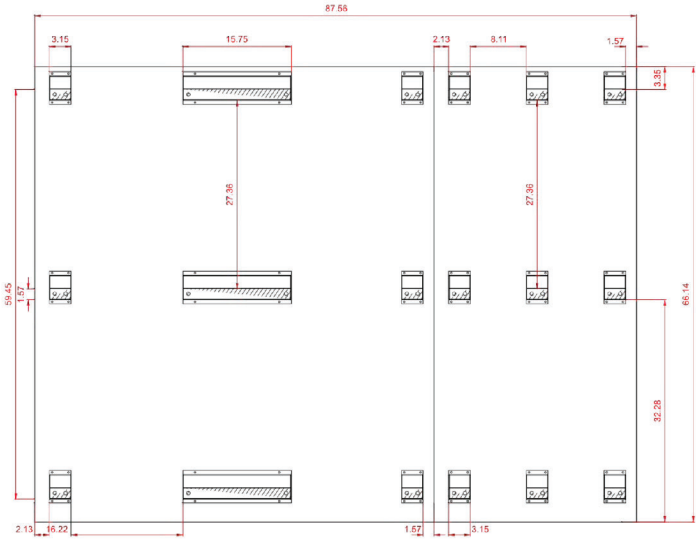
Top view - Service space



The AHU installation clearance is defined by:

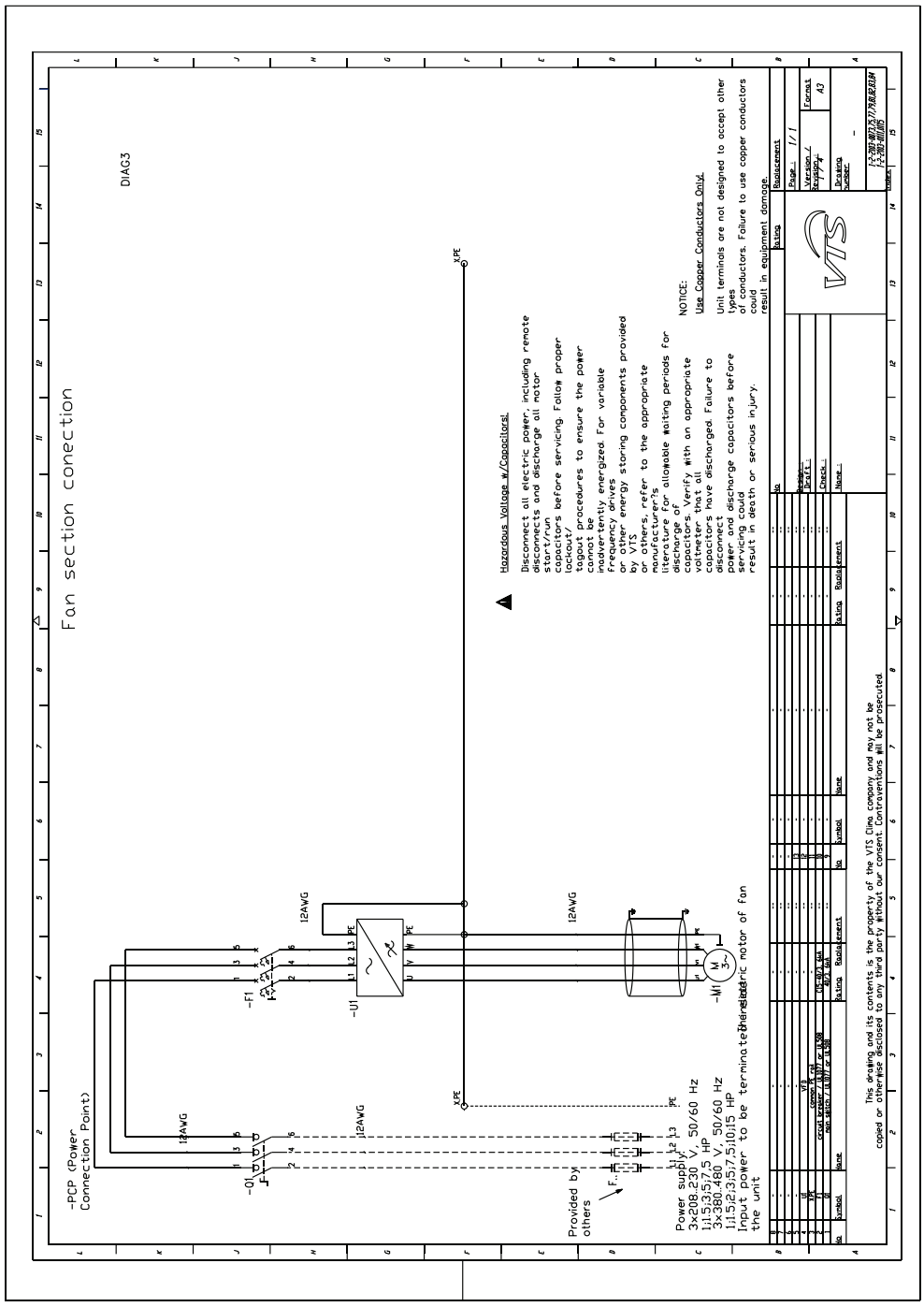
- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

Frame Top View, within the AHU outline contour



2.3.3 AHU-02 Top Section, Supply - Drawings – AHU Sections Shipping Details , Supply

Fan Section Electric Connections



2.3.4 AHU-02 Top Section, Supply - Performance Data

Supply tier

Empty section

Type EMP.SEC AVS055 Medium

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	476 FPM	Air velocity	562 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_560_7,50_4

		Qty in section	x 1
Fan Set Assembly Type	FLX1 (Gasket)	Air Standard	Calculations made for real air density

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_560_AF_Px 1

Total Static Pressure	5.50 in wg	Impeller efficiency: Static / Total	71 %/73 %
Dynamic pressure	0.22 in wg	Shaft power	7.26 HP x 1
External pressure	5.44 in wg	Working revolutions	1924 rpm
Total Pressure	5.72 in wg		

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 560 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_213T_TEFC_4p_7.5_60x 1

460V 60Hz

FLA	9.5 A	MCA	11.9 A
MCB	15.0 A	Maximum Overcurrent Protection (MOP)	21.4 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	9.5 A x 1
IEC Size	213T	Rated revolutions	1770 rpm

Operational Voltage	460 V/3 ph	Rated Power	7.50 HP x 1
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD BY OTHERS

VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	1	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	65 Hz	VFD Rated Power	7.50 HP x 1
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No

Acoustic data

Frequency		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lw dB(A)
Intake	dB	77,3	82,2	88,7	89,3	86,1	82,9	78,1	74,2	94
Outlet	dB	79,3	84,2	90,7	91,3	88,1	84,9	80,1	76,2	96
Environment	dB	57,4	72,7	77,3	77,3	74,4	71,4	50,6	37,7	82,2
Sound Pressure*	dB	44,1	65,7	70,3	70,3	67,4	64,4	43,6	30,7	75,2

(*) Approximate data of sound pressure

2.3.5 AHU-02 Top Section, Supply - Fan Performance Data , Supply

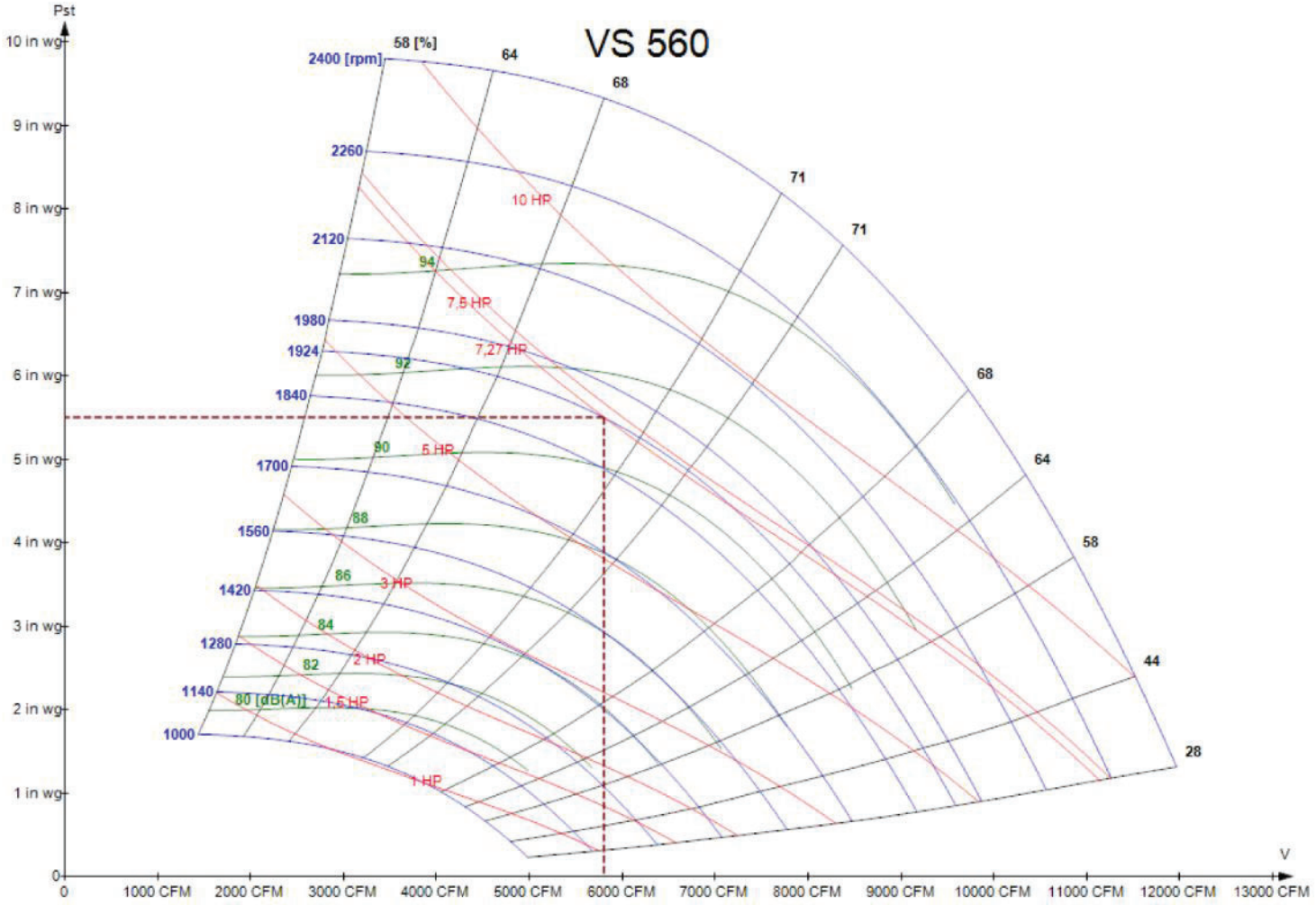
Number of fans in section	1
Airflow per Fan	5802.17 CFM
Total Pressure Increase	5.72 in wg
Static pressure	5.50 in wg
External pressure	5.44 in wg
Velocity Pressure	0.22 in wg
Static Efficiency	71 %
Total Efficiency	73 %
Shaft Power	7.26 HP
Fan revolutions	1924 rpm
VFD Setting	65 Hz
Acoustic Power Level	82,2 dB
Acoustic Pressure Level	75,2 dB

Internal Pressure Drop

Function	Pressure Drop
	Pressure Drop in Winter (at 50% Dirty Filters)
All	**0.07 in wg**

Inlet	0.03 in wg
Empty Section	0.02 in wg
Outlet	0.02 in wg

Project Name:		
UNCW King Hall – TRS NC; John Blakeney	VTS America Inc. 3535 Gravel Springs Rd. Extension, Suite 201, Buford, GA 30519	
Offer Code 11B.3/LIVE.USA/DW/2023-23	Prepared for: THERMAL RESOURCE SALES - WILMINGTON 7215 OGDEN BUSINESS LANE, WILMINGTON,NC, 28411	
Project Tag AHU-02 Top Section, Supply	Page: 40 of 73	Date: February 09, 2023



2.4 AHU-02 Bottom Section, Supply

2.4.1 General AHU Data

AHU Tag	**AHU-02 Bottom Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS055**
AHU Type	**Supply unit**	**AHU Set**	**AVS055-R-MFHEC**
Insulation Thickness	2.0 in	Width	66.1 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	1191 lb	AHU Support Height	8.0 in
Elevation	0 ft	Shipping Sections	3
Total length	116.4 in		
Unit Execution Side	Right Hand Side (RHS)	Coil Connection Side	Right Hand Side (RHS)

Supply

AirFlow	5500.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Mixing

Mixing Section	

Coils

Hot Water Heater	Rows: 2	Chilled Water Cooler	Rows: 8 HIGH PERFORMANCE COIL

Filters

MERV8/2".Flat.Int.Sld	MERV8/2".Flat.Int.Sld

Empty Section

EMP.SEC AVS055 Medium	EMP.SEC AVS055 Medium

AHU Discharge and Intake Opening Sizes &Unit Accessories

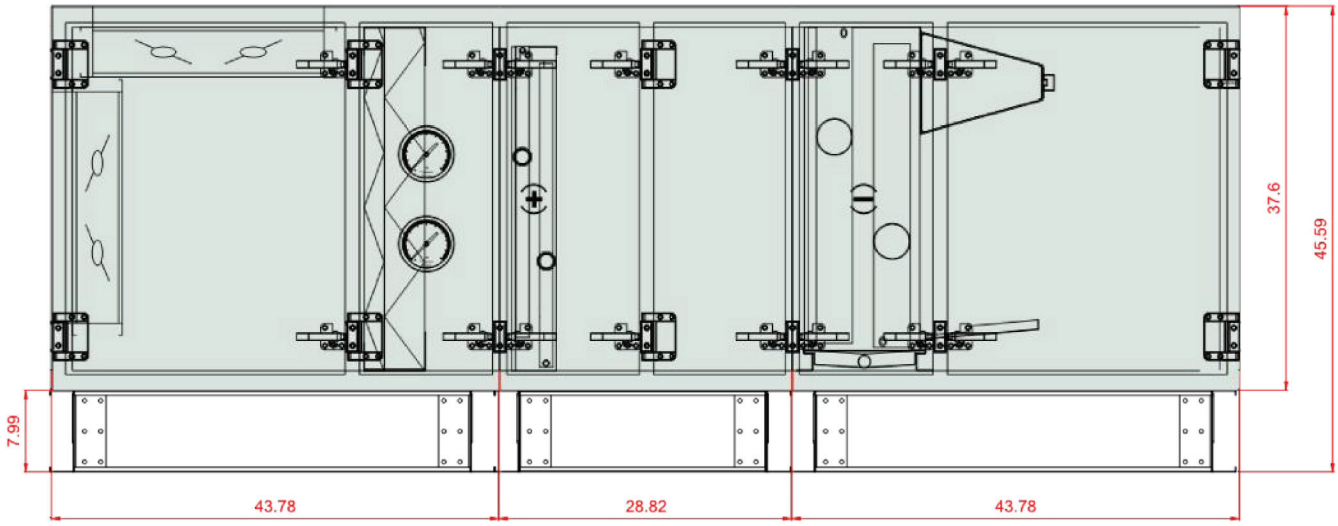
Controls Selection Mode : Air damper actuator

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Front (Small) 47.2x22.6
Air Inlet (2nd)	Top 47.2x22.6
Air Outlet	Front (Small) 47.2x22.6
AirDamper	Supply
Air Inlet	Provided with Actuators
Air Inlet (2nd)	Provided with Actuators
Unit Another Accessories	
Round View Window	Quantity 1
Internal Marine Light	Quantity 3
Hinged Access	Quantity 1
UV Lamp	Quantity 1

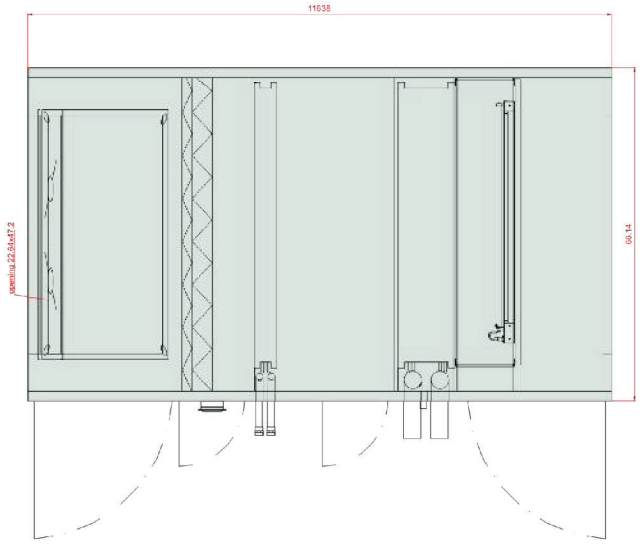
Differential Pressure Gauge	Quantity 2
Rails	Quantity 1

2.4.2 AHU-02 Bottom Section, Supply - Dimensions, media connection points

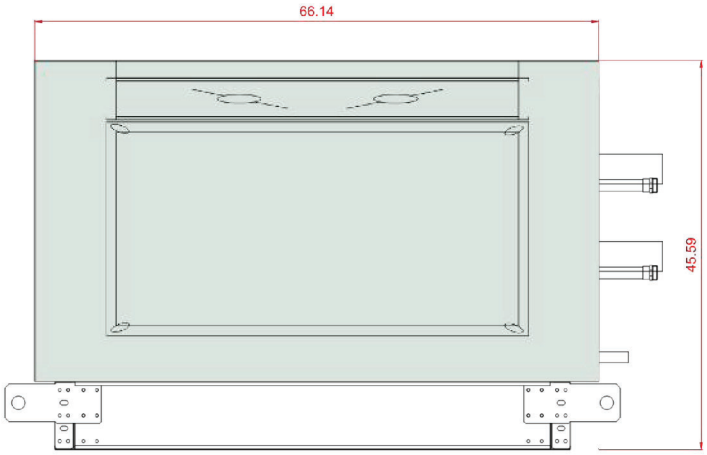
Inspection side



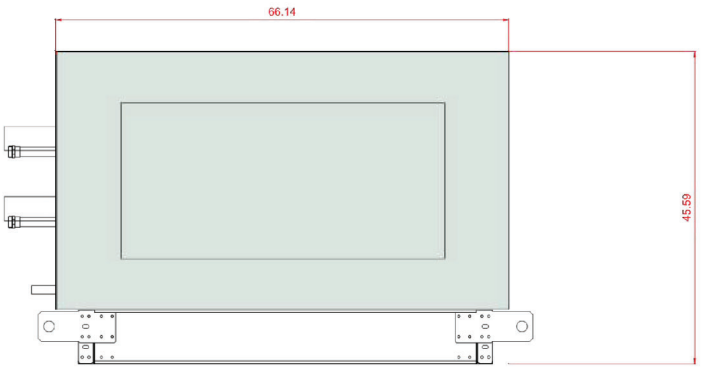
Top View



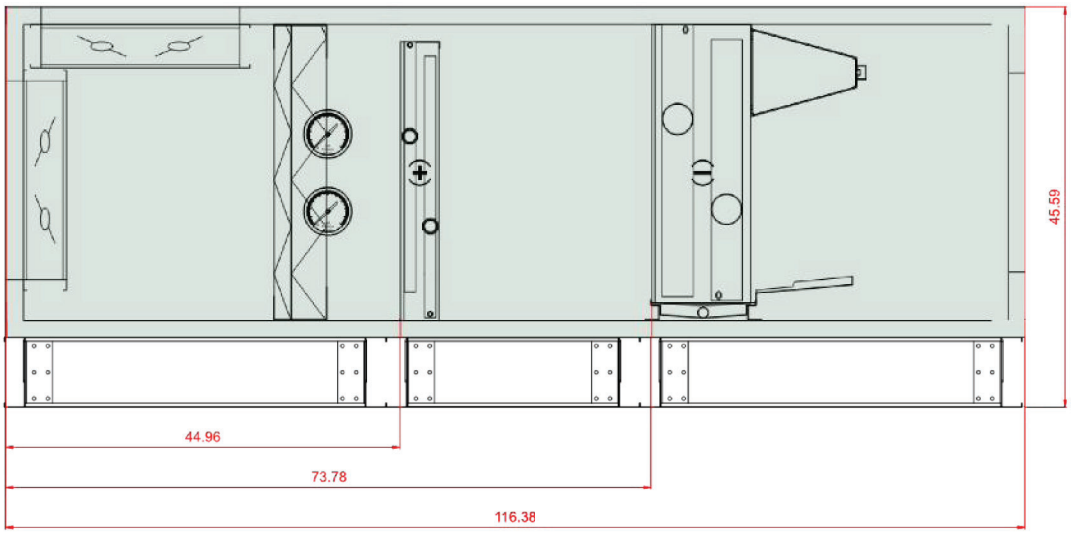
End - Front Openings



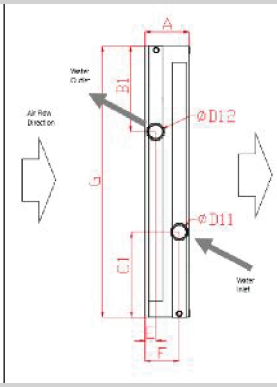
End - Back Openings



Coil Connections - Inspection side view

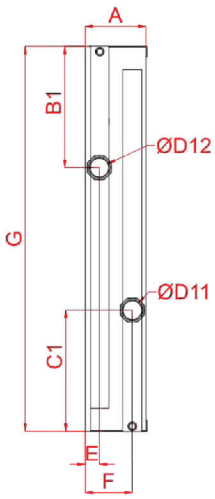


Coil connection rules



Coil dimensions

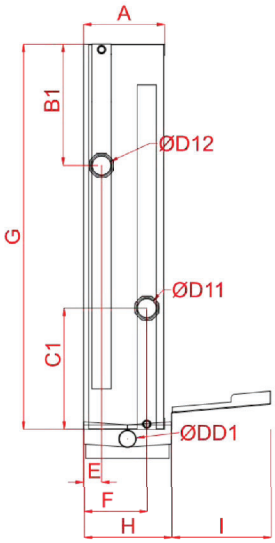
H_hw_2|1|1|SH|N



A	B1	C1	E	F
4.41	10.75	10.75	1.22	3.19

G	D11	D12	L
31.73	1.26	1.26	53.94

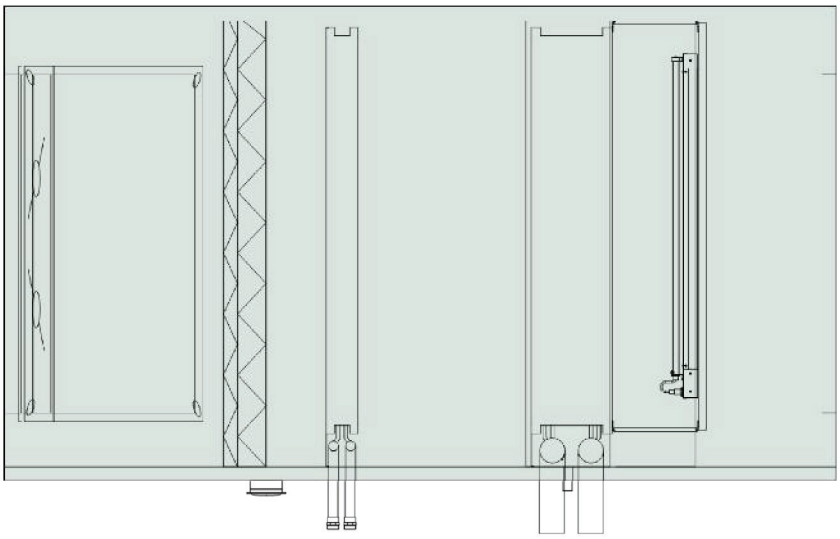
C_cw_8|1|1|SH|N



A	B1	C1	E	F	G
11.3	10.75	10.75	2.95	8.35	31.73

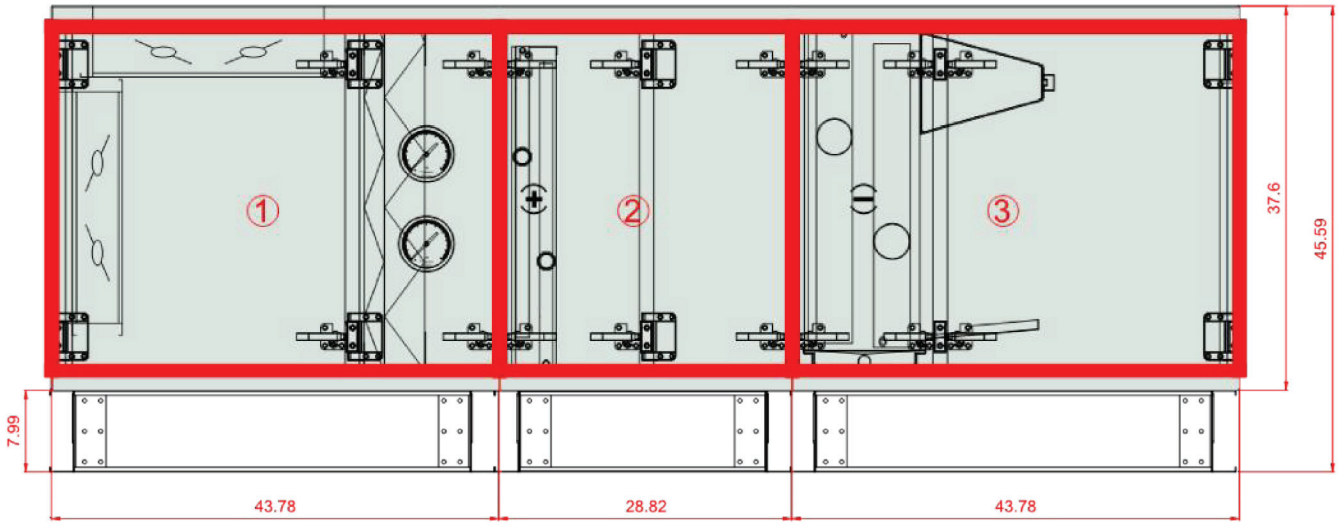
D11	D12	DD1	H	I	L
2.99	2.99	1.26	11.81	11.02	53.94

Coil Connections - Top View

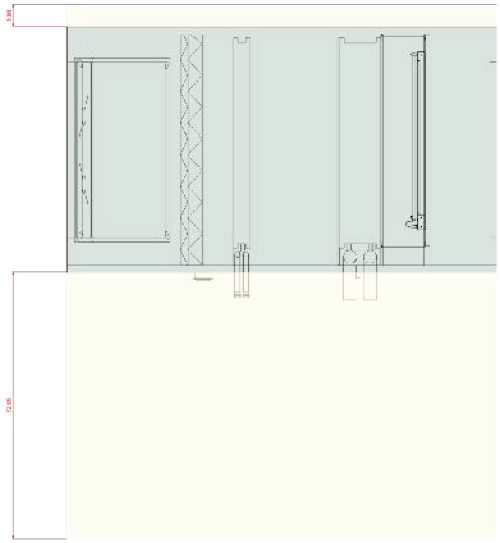


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	394	43.8	66.1	45.6
2	232	28.8	66.1	45.6
3	506	43.8	66.1	45.6



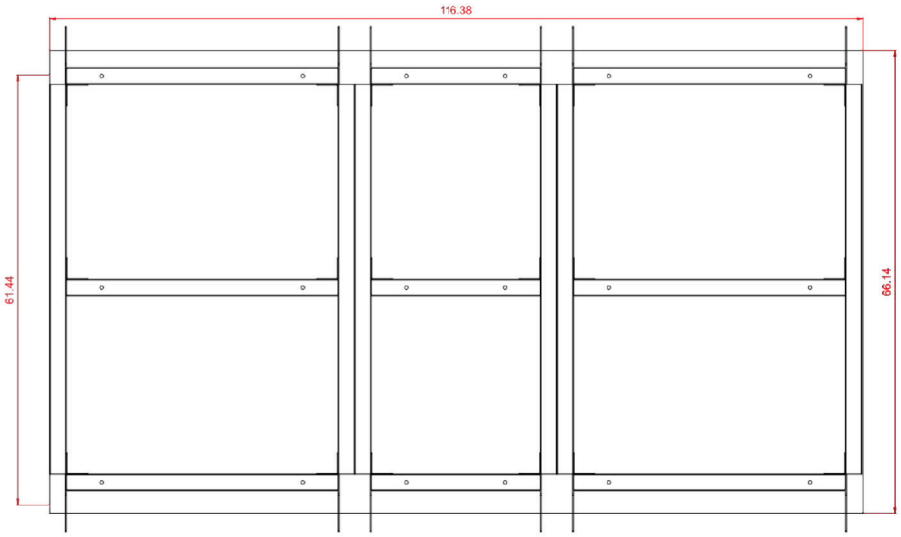
Top view - Service space



The AHU installation clearance is defined by:

- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

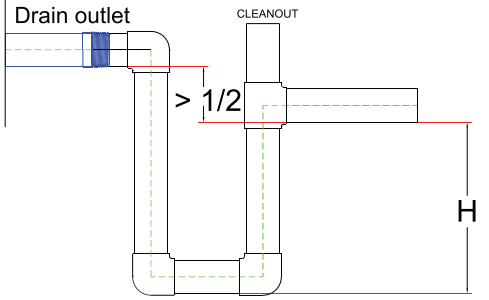
Frame Top View, within the AHU outline contour



Depending on fan static pressure, (negative pressure side of the fan) additional height of the condensate drainage may be required. In order to achieve minimum water column height in water traps.

Positive Pressure Trap

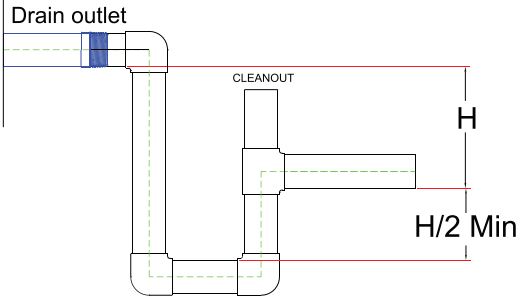
H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

Negative Pressure Trap

H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

2.4.3 AHU-02 Bottom Section, Supply - Performance Data

Supply tier

Mixing section

Mixing Box

Heating operations		Cooling operations	
Recirculation	0 %	Recirculation	0 %
Supply inlet	16.3 °F/13.5 °F	Supply inlet	94.3 °F/80.6 °F
Exhaust inlet DBT/WBT	32.0 °F/20.7 °F	Exhaust inlet DBT/WBT	32.0 °F/20.7 °F
Supply outlet DBT/WBT	16.3 °F/13.5 °F	Supply outlet DBT/WBT	94.3 °F/80.6 °F
Sensible recovery capacity	0.0 MBH	Sensible recovery capacity	0.0 MBH

Resp_MixingChamber_Info_Name

Mixings

Set of Two Flat Filters

Type MERV8/2".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[11.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.59 in wg	50% Dirty Air Pressure Drop	0.61 in wg
Initial Air Pressure Drop	0.20 in wg	Initial Air Pressure Drop	0.23 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg
Air velocity	529 FPM	Air velocity	531 FPM

Air Filter Sizes

P,FLT merv8 15,5 x 19,5 (1-2-0301-0089)	6,000 x Pcs
P,FLT merv13 15,5 x 19,5 (1-2-0301-0098)	6,000 x Pcs

Type MERV13/4".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[12.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.64 in wg	50% Dirty Air Pressure Drop	0.66 in wg
Initial Air Pressure Drop	0.29 in wg	Initial Air Pressure Drop	0.34 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg
Air velocity	529 FPM	Air velocity	531 FPM

Air Filter Sizes

P,FLT merv8 15,5 x 19,5 (1-2-0301-0089)	6,000 x Pcs

P,FLT merv13 15,5 x 19,5 (1-2-0301-0098) 6,000 x Pcs

Hot Water Coil

Type WCL AVS055 2R DT SH.St.St.Std **Number of rows** 2 **Connection Supply/Return:** 1 1/4"-11 1/2 NPT/1 1/4"-11 1/2 NPT

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	35.0 °F / 25.0 °F	Discharge air DBT / WBT	60.0 °F / 40.1 °F
Air velocity	452 FPM	Pressure drop Wet / Dry Wet	0.16 in wg
Total heating capacity	147.1 MBH	Medium temperature	130.0 °F/100.0 °F
Medium flow rate	9.82 GPM	Medium pressure drop	0.874 ft wg

Hot Water Coild Additional Info

Rows: 2
Coils tube: 1/2"
Coil volume in cubic inches: 635.3
Finned Length: 4' 5 15/16" (1370mm)
Finned Height: 2' 7 1/4"(794mm)
Coil Connection: 1 1/4"-111/2 NPT
Coil casing material: galvanized steel
Single Coil

Empty section

Type EMP.SEC AVS055 Medium

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	519 FPM	Air velocity	562 FPM

Resp_EmptySection_Info_Name

EmptySections

Chilled Water Coil

Type WCL AVS055 8R DT SH.St.Ss.Std **Number of rows** 8 **Connection Supply/Return:** 3" - 8 NPT/3" - 8 NPT

HIGH PERFORMANCE COIL AVS055_WCL_8 High Performance, Stainless Steel Casing WCL AVS055 8R

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	81.5 °F / 69.5 °F	Discharge air DBT / WBT	52.0 °F / 51.9 °F
Air velocity	469 FPM	Pressure drop Wet / Dry Wet / Dry	0.78 in wg / 0.47 in wg
Cooling capacity: Sensible / Total	177.8 MBH/296.1 MBH	Medium temperature: Inlet / Outlet	42.0 °F/60.0 °F
Medium flow rate	32.76 GPM	Medium pressure drop	6.961 ft wg

Chilled water cooler Additional Info

Rows: 8

Coils tube: 1/2"

C_VOL_2483_7_CI

Finned Length: 4' 5 15/16" (1370mm)

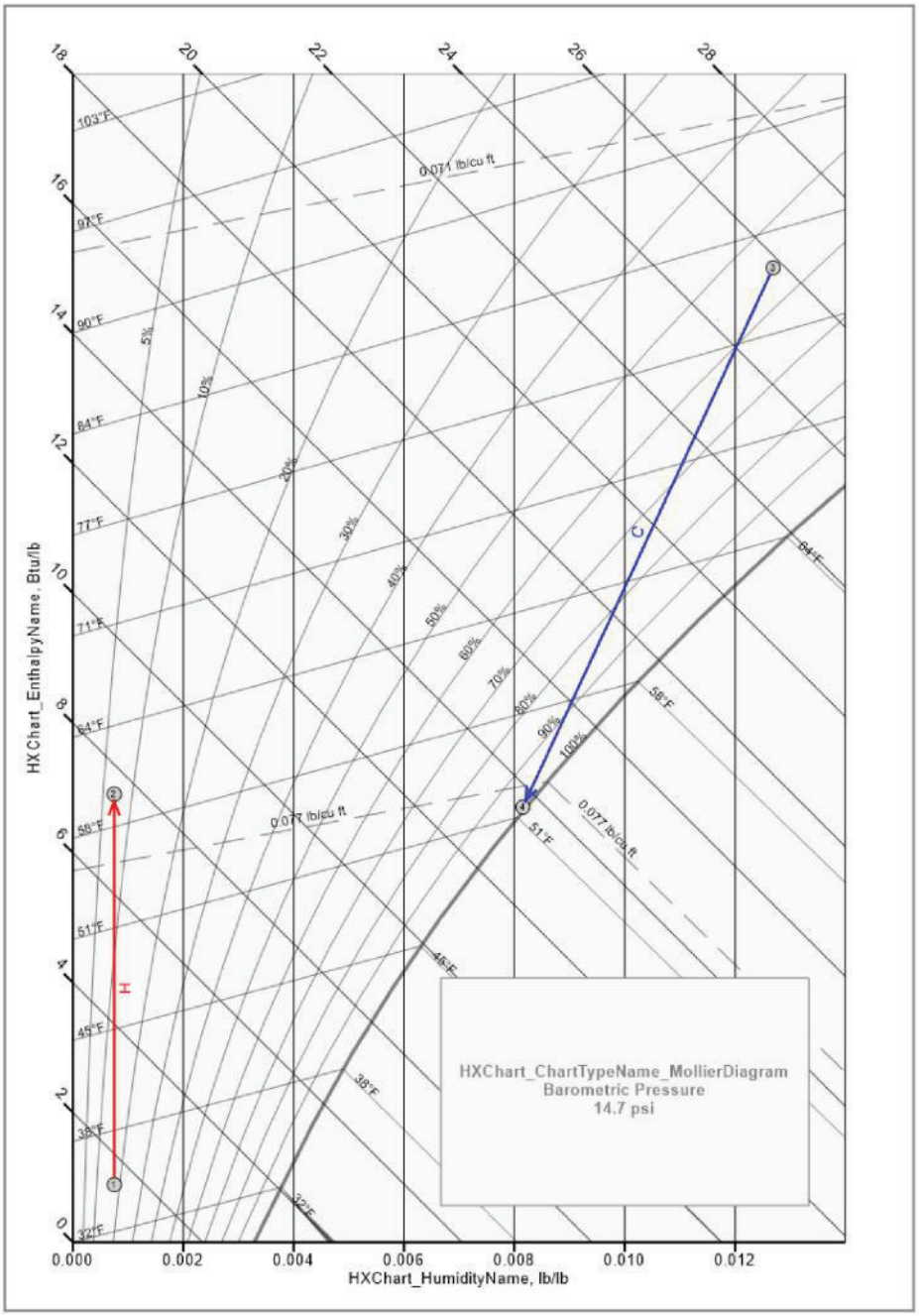
Finned Height: 2' 7 1/4"(794mm)

Coil Connection: 3"-8 NPT

Drain pan made of stainless steel

Single Coil

2.4.4 Moist Air Processes



2.5 AHU-03 Top Section, Supply

2.5.1 General AHU Data

AHU Tag	**AHU-03 Top Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS100**
AHU Type	**Supply unit**	**AHU Set**	**AVS100-R-EV**
Insulation Thickness	2.0 in	Width	82.9 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	1092 lb	AHU Support Height	3.5 in
Elevation	0 ft	Shipping Sections	2
Total length	102.0 in		
Fan Section Voltage	460/3/60 V/ph/Hz	Coil Connection Side	Right Hand Side (RHS)
Unit Execution Side	Right Hand Side (RHS)		

Supply

AirFlow	10500.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Fan Section

Motor Rated Power	7,5 HP	Impeller	VS 560

Empty Section

EMP.SEC AVS100 Long	EMP.SEC AVS100 Long

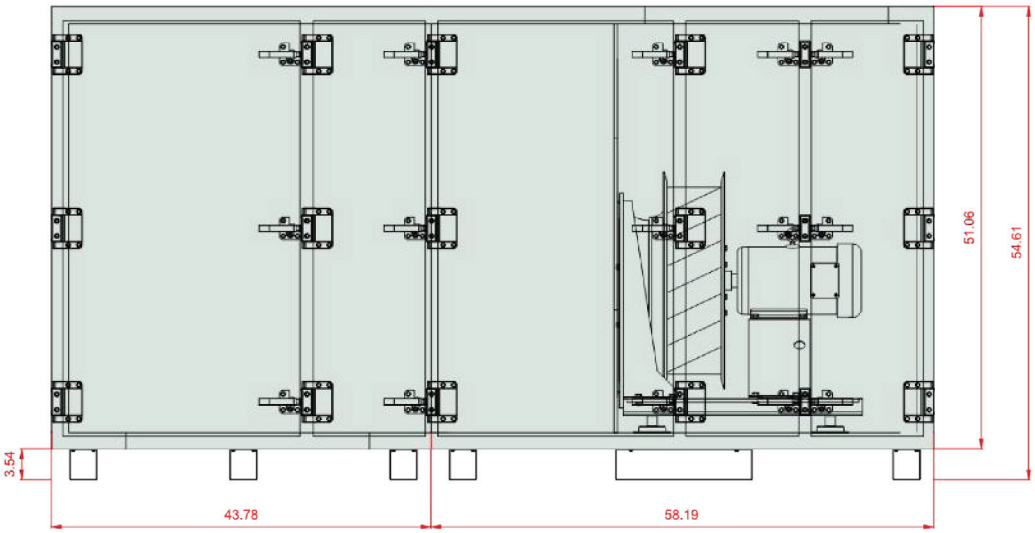
AHU Discharge and Intake Opening Sizes &Unit Accessories

Controls Selection Mode : No controls

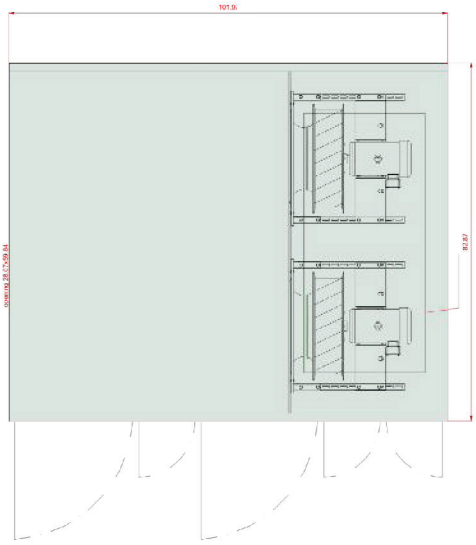
AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Down 59.8x28.1
Air Outlet	Top 59.8x28.1
Unit Another Accessories	
Internal Marine Light	Quantity 2
Hinged Access	Quantity 1

2.5.2 AHU-03 Top Section, Supply - Dimensions, media connection points

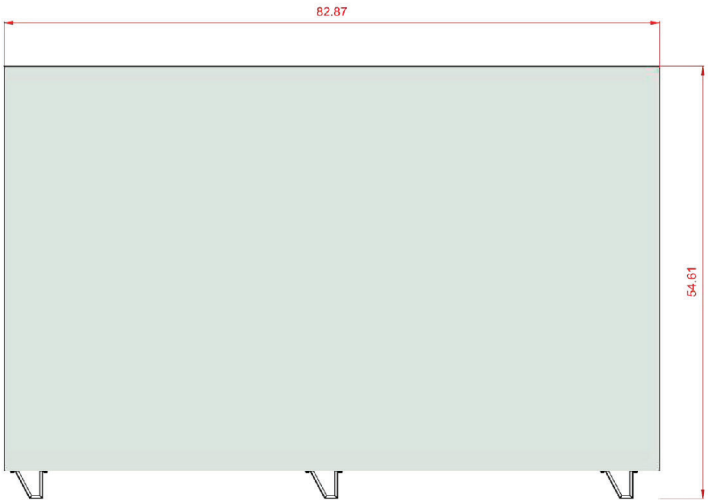
Inspection side



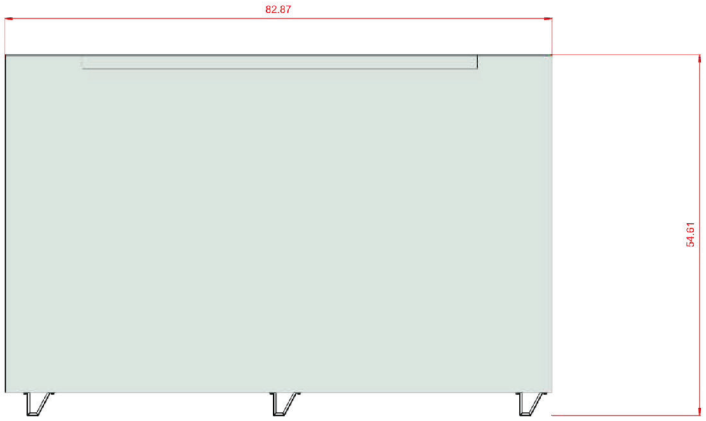
Top View



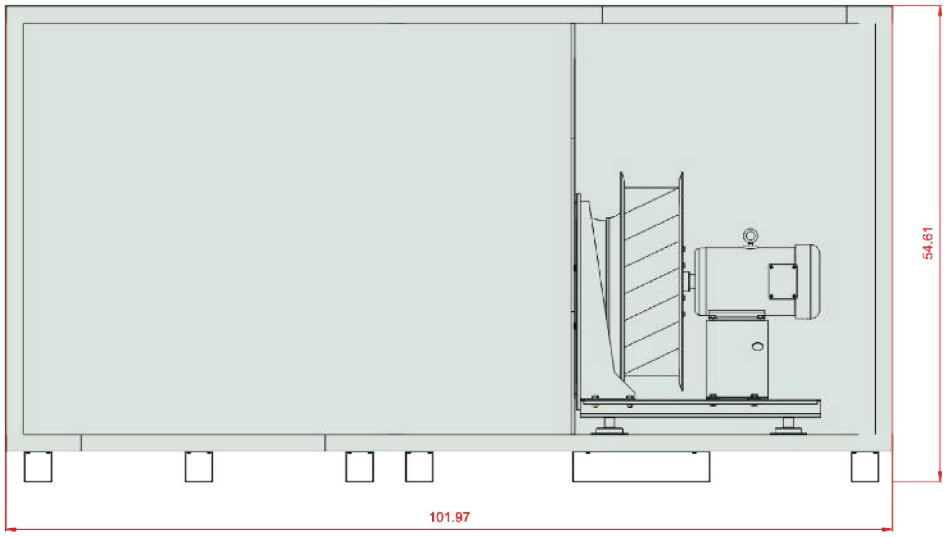
End - Front Openings



End - Back Openings



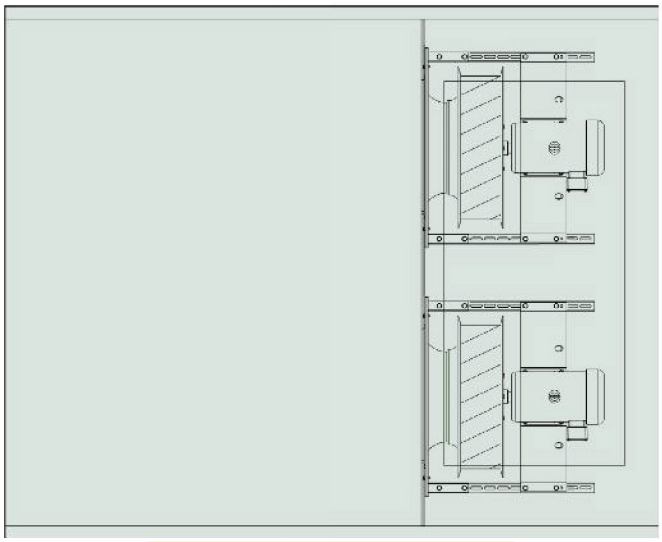
Coil Connections - Inspection side view



Coil connection rules

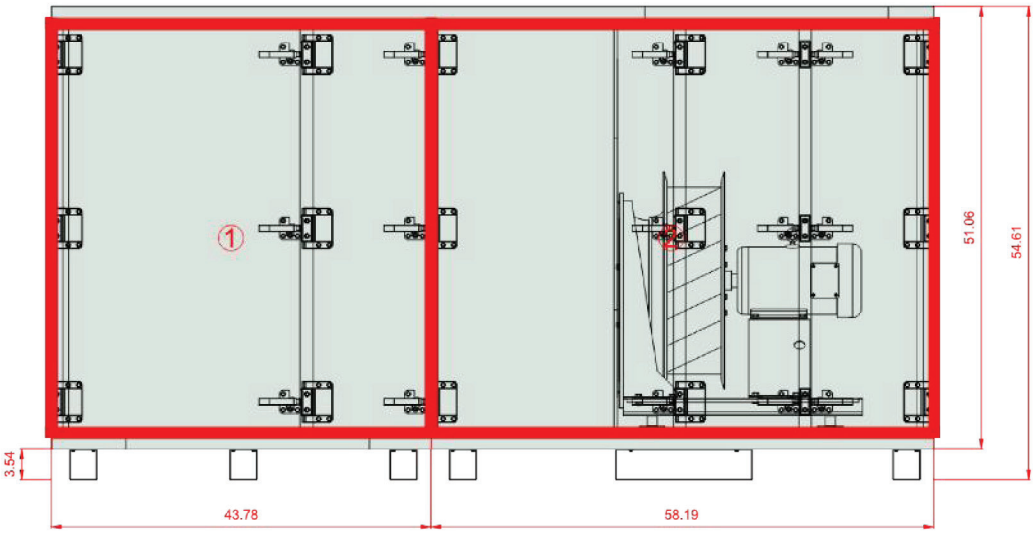
Coil dimensions

Coil Connections - Top View

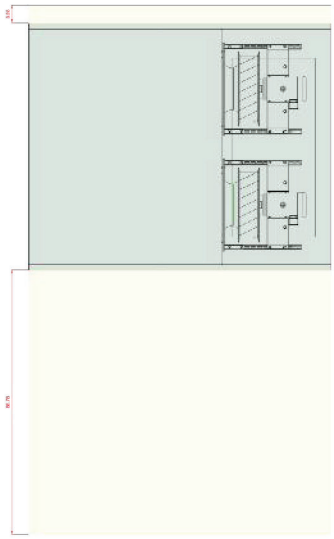


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	282	43.8	82.9	54.6
2	793	58.2	82.9	54.6



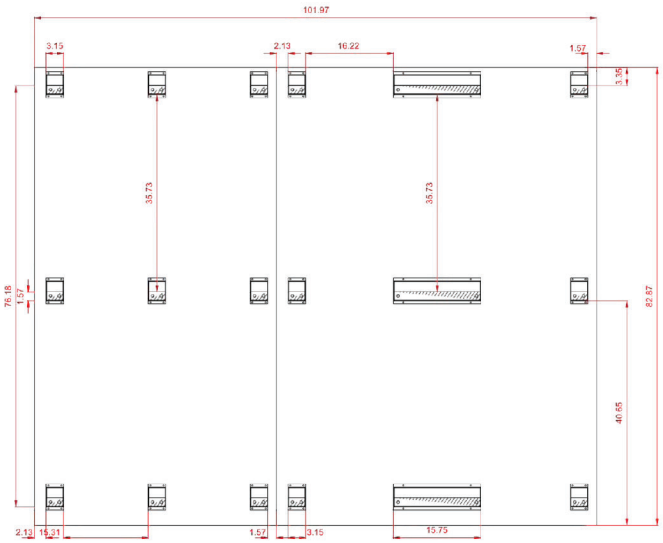
Top view - Service space



The AHU installation clearance is defined by:

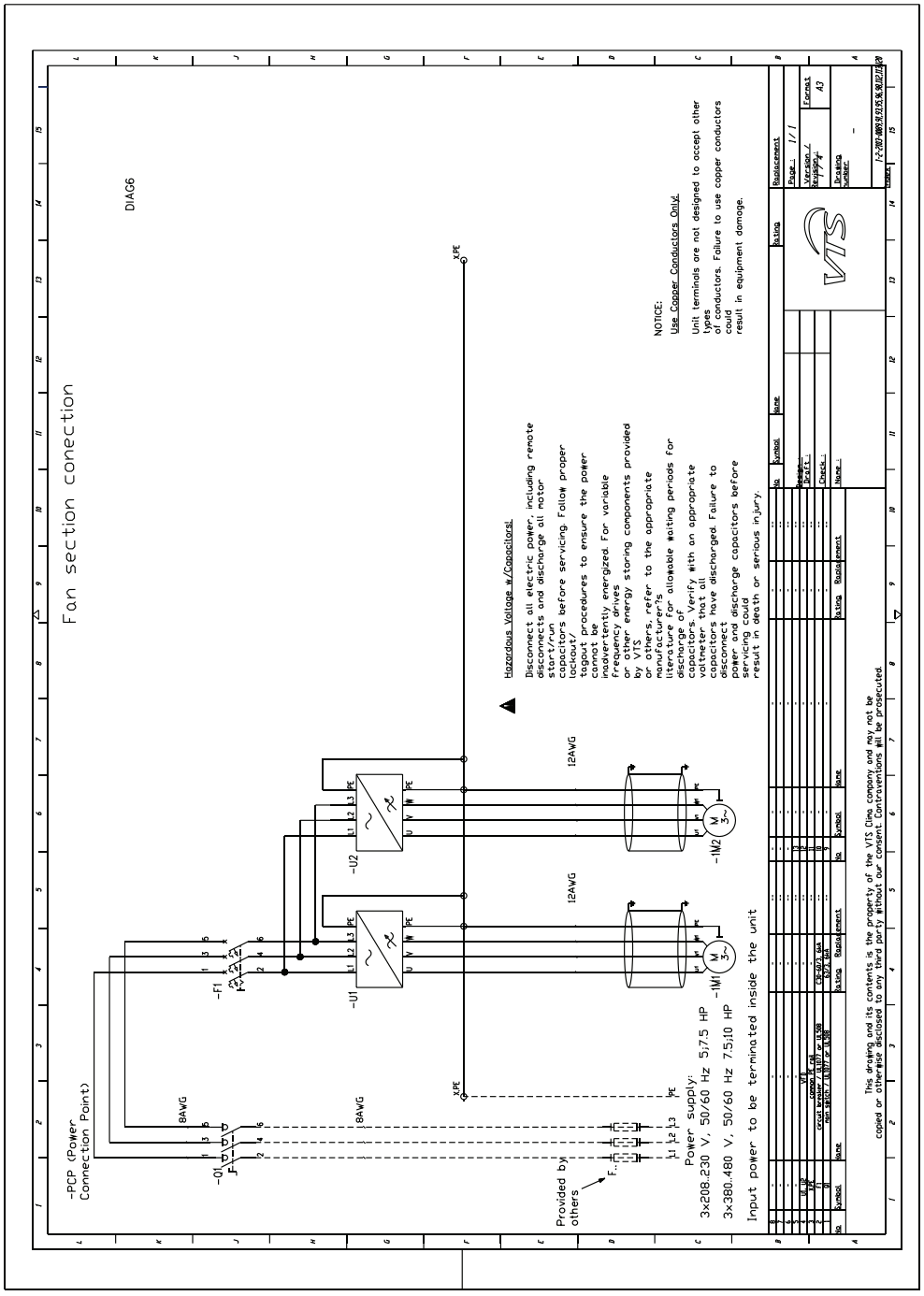
- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

Frame Top View, within the AHU outline contour



2.5.3 AHU-03 Top Section, Supply - Drawings – AHU Sections Shipping Details , Supply

Fan Section Electric Connections



2.5.4 AHU-03 Top Section, Supply - Performance Data

Supply tier

Empty section

Type EMP.SEC AVS100 Long

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	438 FPM	Air velocity	517 FPM

Resp_EmptySection_Info_Name

EmptySections

Plug-Fan Set

Fan Section PLUG_DD_560_7,50_4

		Qty in section	x 2
Fan Set Assembly Type	FLX1 (Gasket)	Air Standard	Calculations made for real air density

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG_VS_560_AF_Px 2

Total Static Pressure	5.74 in wg	Impeller efficiency: Static / Total	70 %/73 %
Dynamic pressure	0.20 in wg	Shaft power	7.28 HP x 2
External pressure	5.64 in wg	Working revolutions	1937 rpm
Total Pressure	5.94 in wg		

Fan Additional Info

Fan Type: Direct Driven Plenum Fan

Fan Wheel Diameter: 560 [mm]

Vibro-Acoustics Insulation: Rubber-in-Shear Floor Mounted Isolator

Motor AC_Premium Eff._F_213T_TEFC_4p_7.5_60x 2

460V 60Hz

FLA	19.0 A	MCA	23.8 A
MCB	30.0 A	Maximum Overcurrent Protection (MOP)	30.9 A
Short-Circuit Current Rating (SCCR)	6.0 kA		
Motor enclousure	TEFC	Rated Currect	9.5 A x 2
IEC Size	213T	Rated revolutions	1770 rpm

Operational Voltage	460 V/3 ph	Rated Power	7.50 HP x 2
Name plate RPM	460 V/3 ph/60 Hz	Motor Version	V-Series

Electric Motor Additional Info

Supplier: Baldor

Motor poles: 4

VFD BY OTHERS

VFD	Required	Connecting Point	CP Provided by others
VFD Qty in section	2	VFD Voltage Supply	460/3/60 V/ph/Hz
VFD Settings	66 Hz	VFD Rated Power	7.50 HP x 2
VFD in selection	Excluded	VFD HMI	No
		VFD 1PH ModBus Comm Board	No

Acoustic data

Frequency		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lw dB(A)
Intake	dB	77,6	82,5	89	89,6	86,4	83,2	78,4	74,5	94,3
Outlet	dB	79,6	84,5	91	91,6	88,4	85,2	80,4	76,5	96,3
Environment	dB	57,8	73	77,6	77,6	74,7	71,7	50,9	38	82,6
Sound Pressure*	dB	44,5	66	70,6	70,6	67,7	64,7	43,9	31	75,6

(*) Approximate data of sound pressure

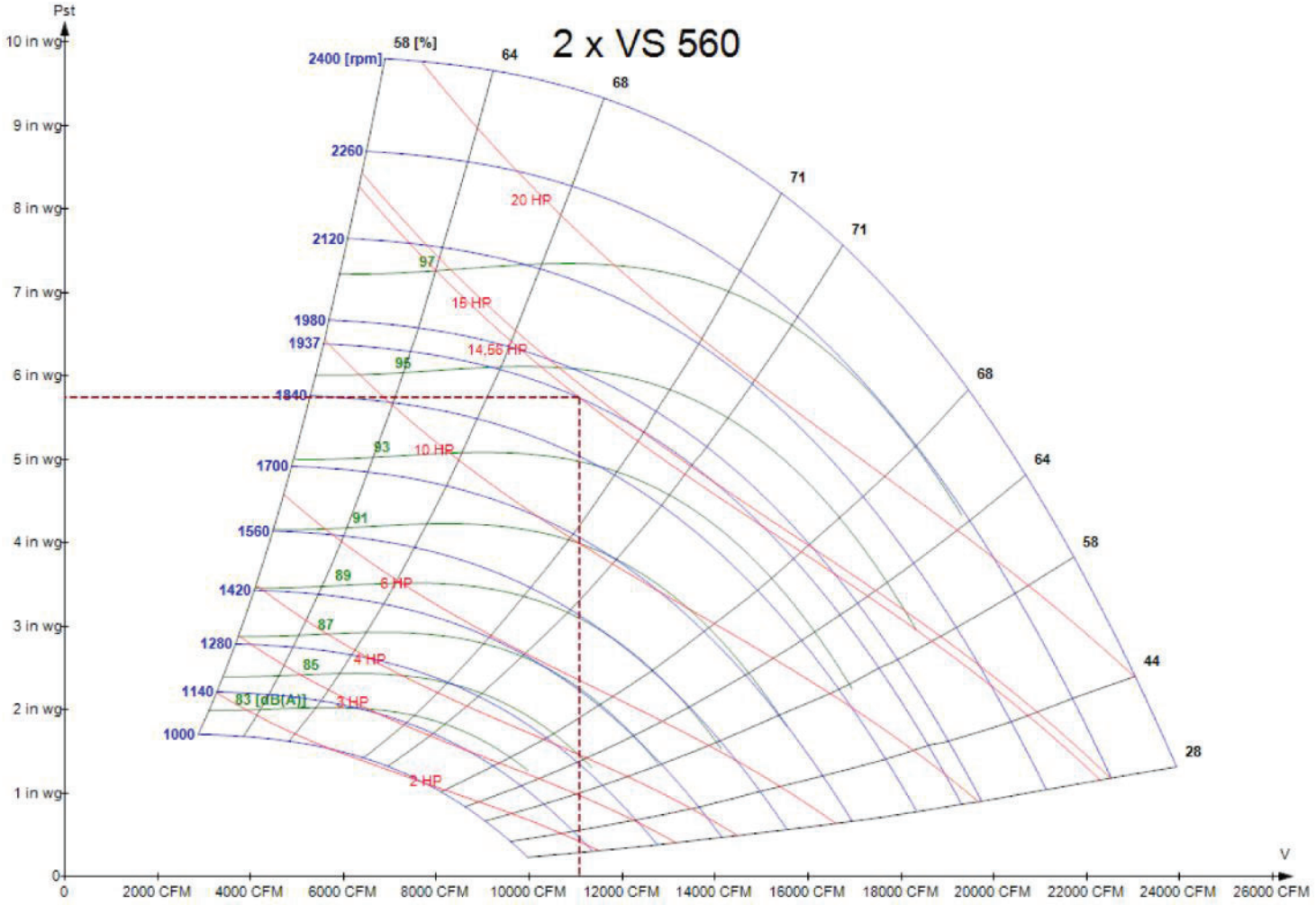
2.5.5 AHU-03 Top Section, Supply - Fan Performance Data , Supply

Number of fans in section	2
Airflow per Fan	5538.43 CFM
Total Pressure Increase	5.94 in wg
Static pressure	5.74 in wg
External pressure	5.64 in wg
Velocity Pressure	0.20 in wg
Static Efficiency	70 %
Total Efficiency	73 %
Shaft Power	7.28 HP
Fan revolutions	1937 rpm
VFD Setting	66 Hz
Acoustic Power Level	82,6 dB
Acoustic Pressure Level	75,6 dB

Internal Pressure Drop

Function	Pressure Drop
	Pressure Drop in Winter (at 50% Dirty Filters)
All	**0.11 in wg**

Inlet	0.05 in wg
Empty Section	0.01 in wg
Outlet	0.05 in wg



2.6 AHU-03 Bottom Section, Supply

2.6.1 General AHU Data

AHU Tag	**AHU-03 Bottom Section**		
Application	**Execution: Indoor**	**AHU Size**	**AVS100**
AHU Type	**Supply unit**	**AHU Set**	**AVS100-L-MFHEC**
Insulation Thickness	2.0 in	Width	82.9 in
Insulation	PUR	AHU Support	AHU Support Type1
Weight	1962 lb	AHU Support Height	8.0 in
Elevation	0 ft	Shipping Sections	3
Total length	145.2 in		
Unit Execution Side	Left Hand Side (LHS)	Coil Connection Side	Left Hand Side (LHS)

Supply

AirFlow	10500.00 CFM
External Pressure	0.00 in wg
Calculation Mode	Real

Mixing

Mixing Section	

Coils

Hot Water Heater	Rows: 1	Chilled Water Cooler	Rows: 8 HIGH PERFORMANCE COIL

Filters

MERV8/2".Flat.Int.Sld	MERV8/2".Flat.Int.Sld

Empty Section

EMP.SEC AVS100 Medium	EMP.SEC AVS100 Medium

AHU Discharge and Intake Opening Sizes &Unit Accessories

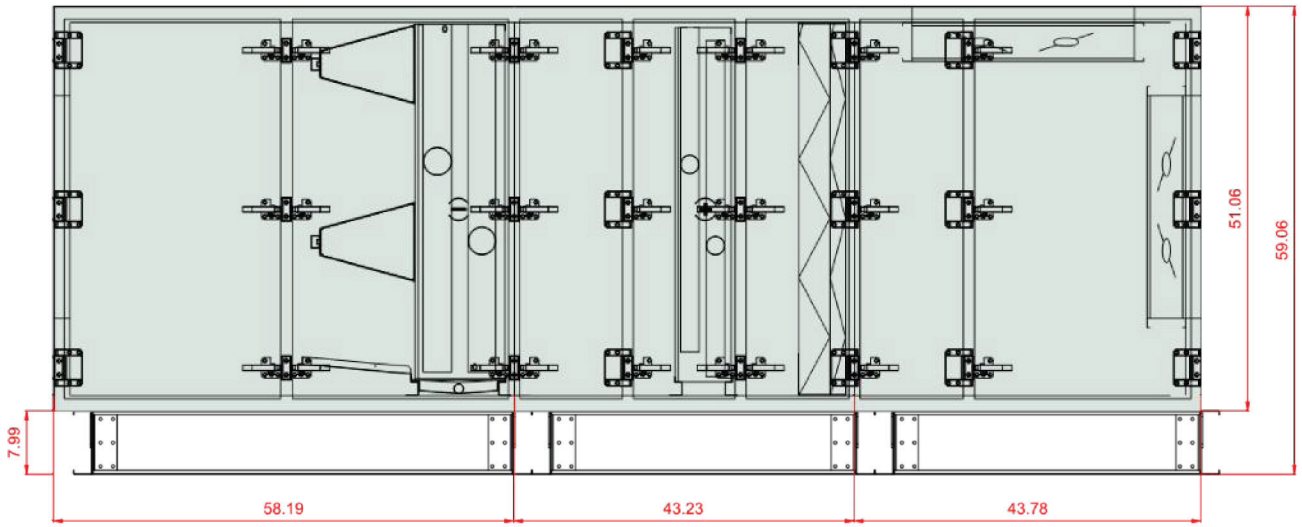
Controls Selection Mode : Air damper actuator

AHU Discharge and Intake Opening Sizes	Supply
Air Inlet	Front (Small) 59.8x28.1
Air Inlet (2nd)	Top 59.8x28.1
Air Outlet	Front (Small) 59.8x28.1
AirDamper	Supply
Air Inlet	Provided with Actuators
Air Inlet (2nd)	Provided with Actuators
Unit Another Accessories	
Round View Window	Quantity 1
Internal Marine Light	Quantity 3
Hinged Access	Quantity 1
UV Lamp	Quantity 1

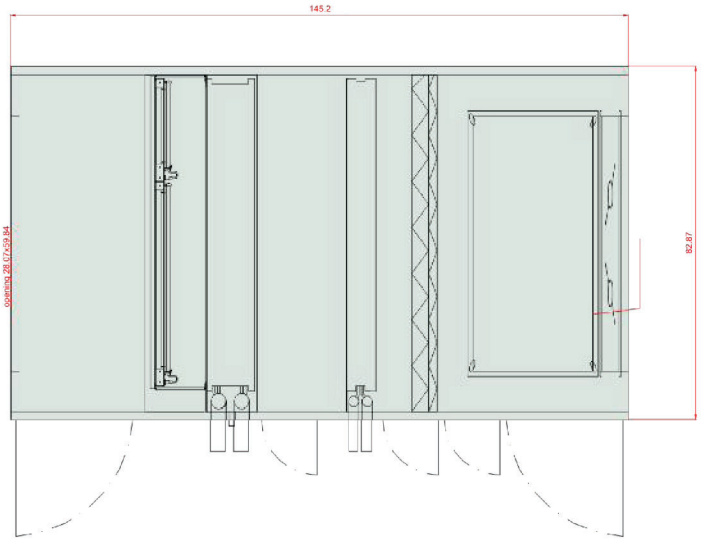
Rails Quantity 1

2.6.2 AHU-03 Bottom Section, Supply - Dimensions, media connection points

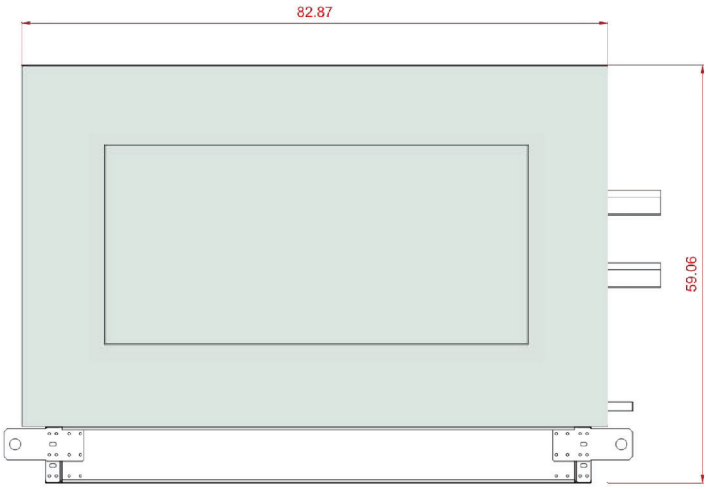
Inspection side



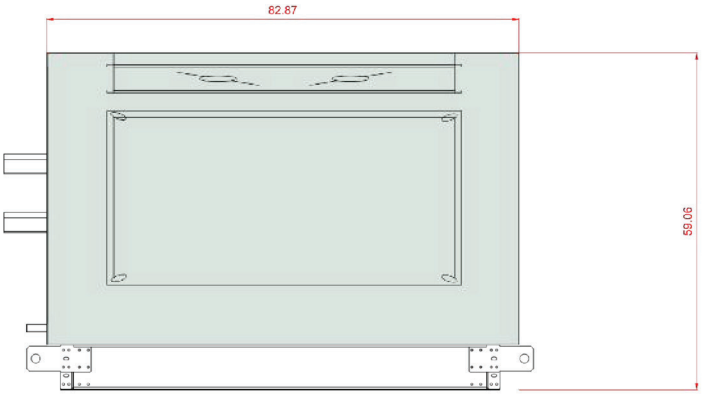
Top View



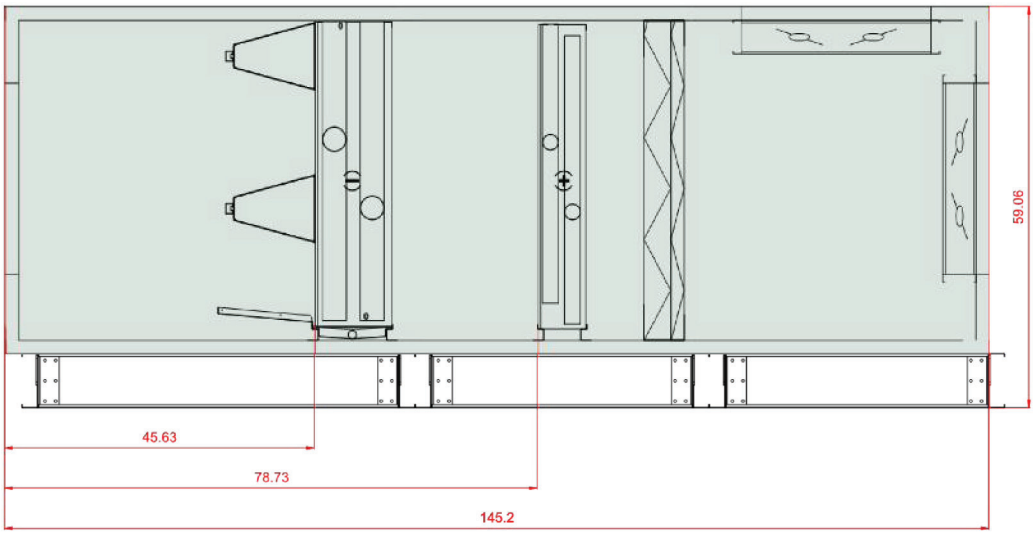
End - Front Openings



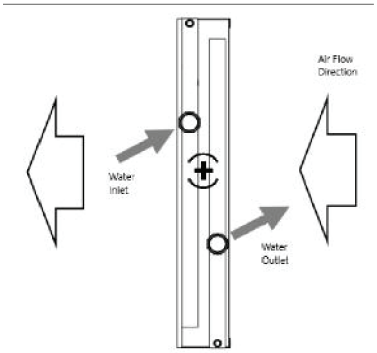
End - Back Openings



Coil Connections - Inspection side view

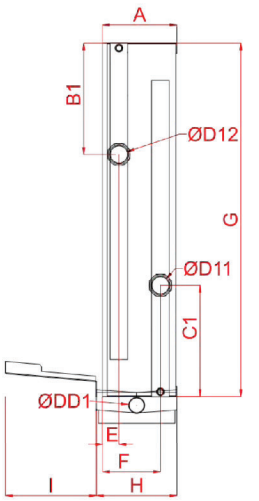


Coil connection rules



Coil dimensions

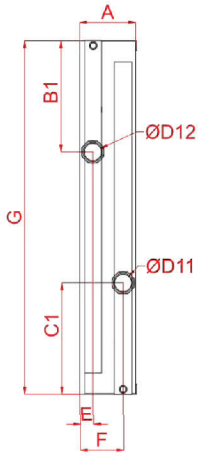
C_cw_8|1|1|SH|N



A	B1	C1	E	F	G
11.34	17.24	17.24	2.97	8.37	44.76

D11	D12	DD1	H	I	L
2.99	2.99	1.26	11.81	13.86	70.47

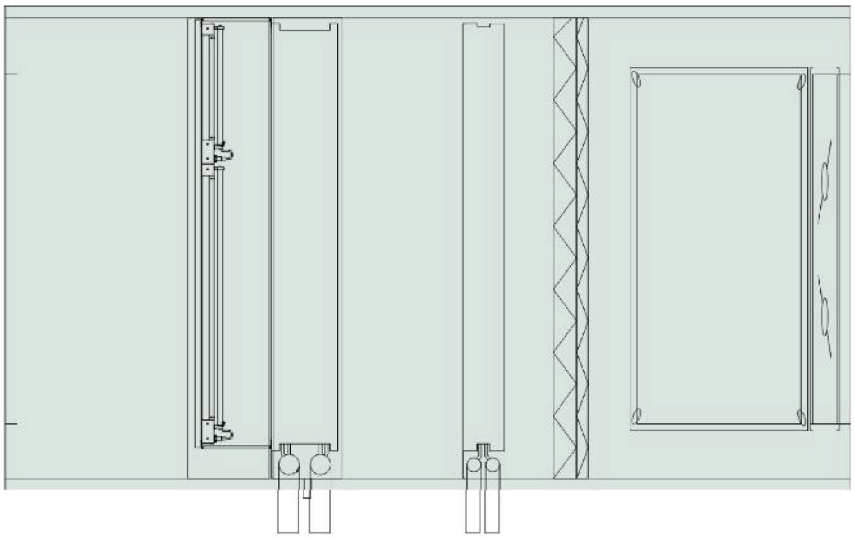
H_hw_1|1|1|SH|N



A	B1	C1	E	F
7.2	17.24	17.24	1.99	5.22

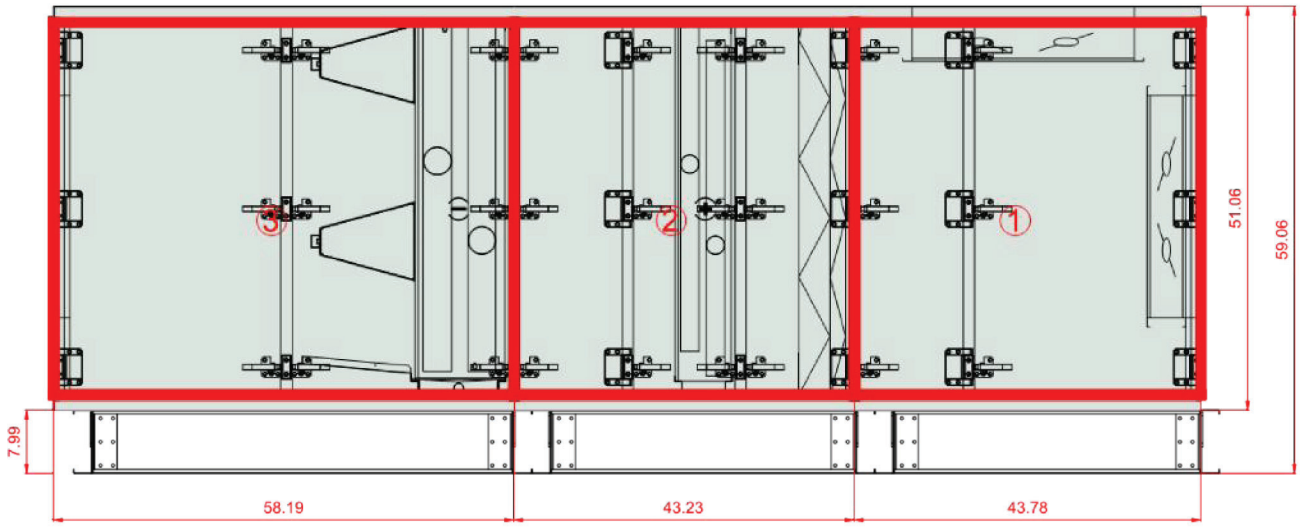
G	D11	D12	L
44.76	2.01	2.01	70.47

Coil Connections - Top View

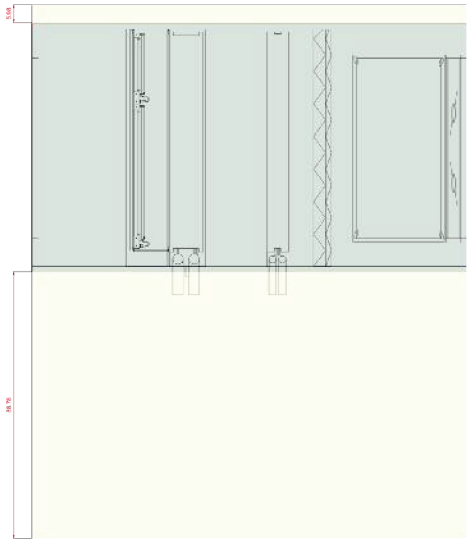


Sections split for transportation

Section number	Section weight [lb]	Section length [in]	Section width [in]	Section height [in]
1	464	43.8	82.9	59.1
2	528	43.2	82.9	59.1
3	885	58.2	82.9	59.1



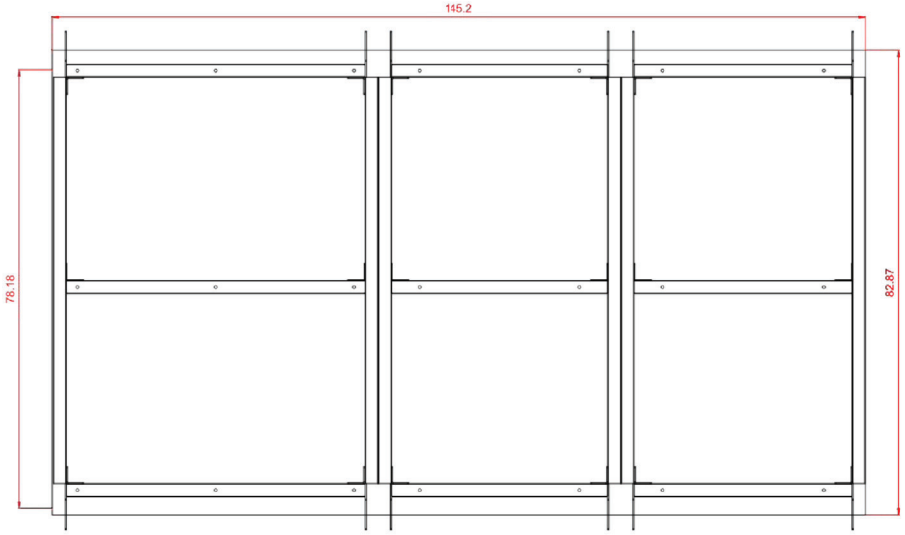
Top view - Service space



The AHU installation clearance is defined by:

- Non-Access Side – minimum space required for unit operation or coil connection
- Access Side – minimum space require allowing opening access door to a position perpendicular to the direction of Air Flow, and removal of side load filter
- Clearance for VFD's, or other high-voltage devices must be provided per NEC requirements
- Clearance for coil removal must be provided per coil drawing through the access side of the unit

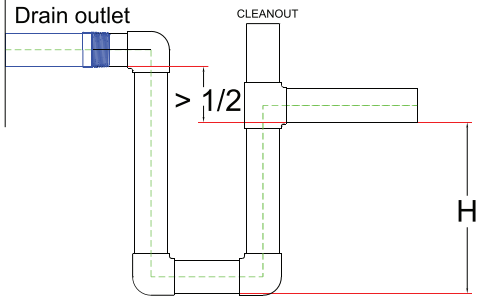
Frame Top View, within the AHU outline contour



Depending on fan static pressure, (negative pressure side of the fan) additional height of the condensate drainage may be required. In order to achieve minimum water column height in water traps.

Positive Pressure Trap

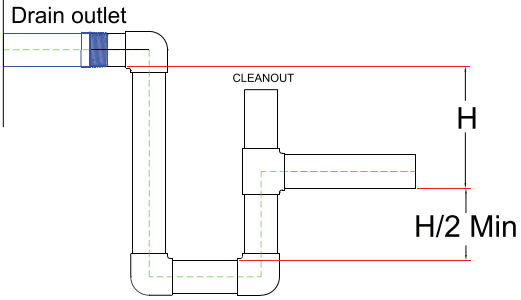
H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

Negative Pressure Trap

H= Static Pressure after the coil + 1in



Drain Pan Connection 1" MPT

2.6.3 AHU-03 Bottom Section, Supply - Performance Data

Supply tier

Mixing section

Mixing Box

Heating operations		Cooling operations	
Recirculation	0 %	Recirculation	0 %
Supply inlet	16.3 °F/13.5 °F	Supply inlet	94.3 °F/80.6 °F
Exhaust inlet DBT/WBT	32.0 °F/20.7 °F	Exhaust inlet DBT/WBT	32.0 °F/20.7 °F
Supply outlet DBT/WBT	16.3 °F/13.5 °F	Supply outlet DBT/WBT	94.3 °F/80.6 °F
Sensible recovery capacity	0.0 MBH	Sensible recovery capacity	0.0 MBH

Resp_MixingChamber_Info_Name

Mixings

Set of Two Flat Filters

Type MERV8/2".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[11.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.58 in wg	50% Dirty Air Pressure Drop	0.59 in wg
Initial Air Pressure Drop	0.17 in wg	Initial Air Pressure Drop	0.20 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg
Air velocity	487 FPM	Air velocity	488 FPM

Air Filter Sizes

P,FLT merv8 19,5 x 19,5 (1-2-0301-0093)	4,000 x Pcs
P,FLT merv8 19,5 x 24,5 (1-2-0301-0095)	4,000 x Pcs
P,FLT merv13 19,5 x 19,5 (1-2-0301-0102)	4,000 x Pcs
P,FLT merv13 19,5 x 24,5 (1-2-0301-0104)	4,000 x Pcs

Type MERV13/4".Flat.Int.Sld

(ISO16890) - EFF CLASS E Flat[12.0]

Heating operations		Cooling operations	
50% Dirty Air Pressure Drop	0.61 in wg	50% Dirty Air Pressure Drop	0.64 in wg
Initial Air Pressure Drop	0.24 in wg	Initial Air Pressure Drop	0.29 in wg
100% Dirty Air Pressure Drop	0.98 in wg	100% Dirty Air Pressure Drop	0.98 in wg

Air velocity	487 FPM	Air velocity	488 FPM

Air Filter Sizes

P,FLT merv8 19,5 x 19,5 (1-2-0301-0093)	4,000 x Pcs
P,FLT merv8 19,5 x 24,5 (1-2-0301-0095)	4,000 x Pcs
P,FLT merv13 19,5 x 19,5 (1-2-0301-0102)	4,000 x Pcs
P,FLT merv13 19,5 x 24,5 (1-2-0301-0104)	4,000 x Pcs

Hot Water Coil

Type WCL AVS100 1R DT SH.St.St.Std **Number of rows** 1 **Connection Supply/Return:** 2"-11 1/2 NPT/2"-11 1/2 NPT

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	40.0 °F / 30.0 °F	Discharge air DBT / WBT	60.0 °F / 41.8 °F
Air velocity	461 FPM	Pressure drop Wet / Dry Wet	0.09 in wg
Total heating capacity	225.7 MBH	Medium temperature	130.0 °F/100.0 °F
Medium flow rate	15.07 GPM	Medium pressure drop	0.651 ft wg

Hot Water Coild Additional Info

Rows: 1
Coils tube: 1/2"
Coil volume in cubic inches: 791.5
Finned Length: 5' 10 1/2" (1790mm)
Finned Height: 3' 7 3/4"(1112mm)
Coil Connection: 2"-111/2 NPT
Coil casing material: galvanized steel
Single Coil

Empty section

Type EMP.SEC AVS100 Medium

Heating operations		**Cooling operations**	
Pressure drop		Pressure drop	
Air velocity	478 FPM	Air velocity	517 FPM

Resp_EmptySection_Info_Name

EmptySections

Chilled Water Coil

Type WCL AVS100 8R DT SH.St.Ss.Std **Number of rows** 8 **Connection Supply/Return:** 2x 3"-8 NPT/2x 3"-8 NPT

HIGH PERFORMANCE COIL AVS100_WCL_8 High Performance, Stainless Steel

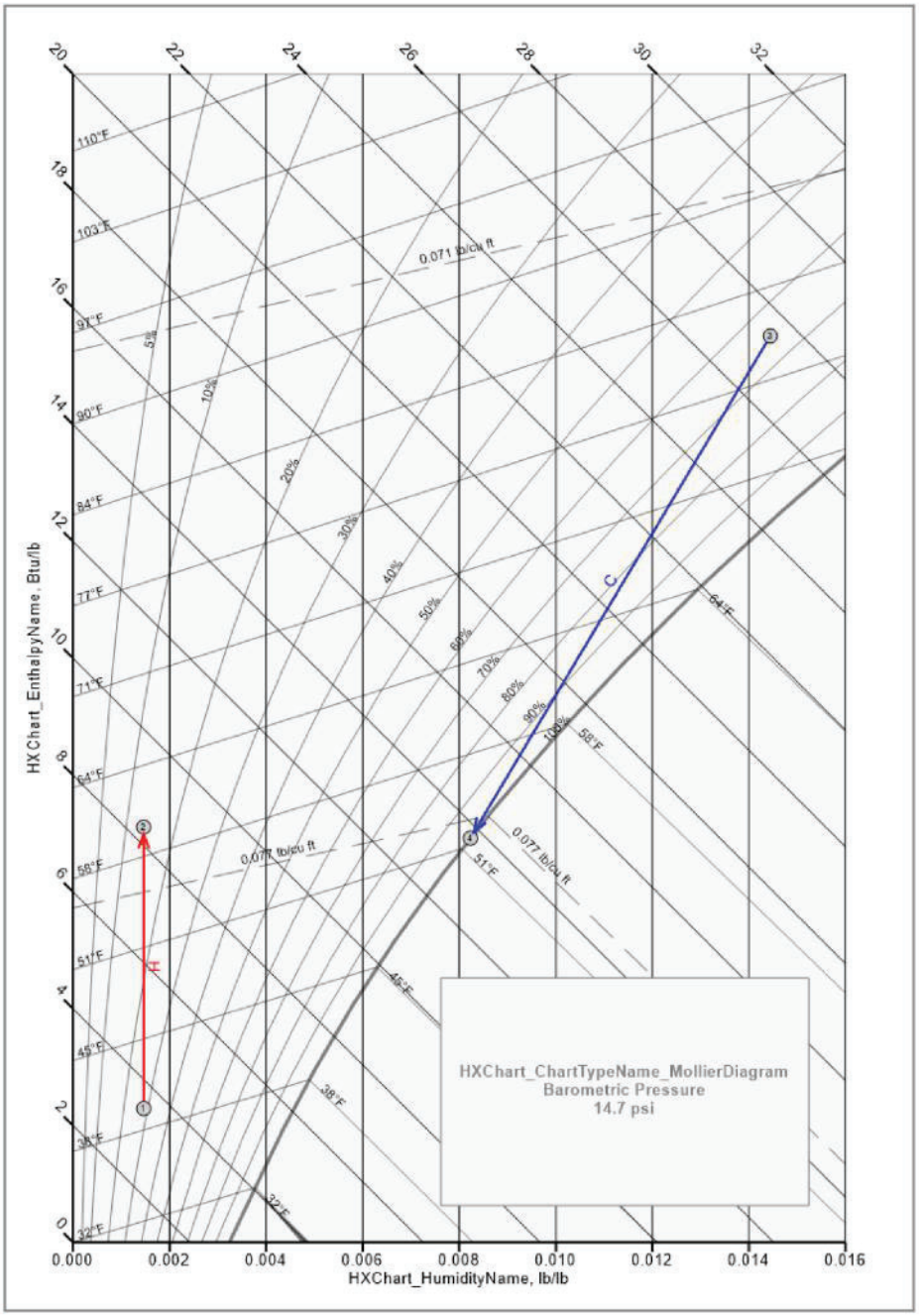
Casing WCL AVS100 8R

Medium	Water	Maximum working pressure	246 PSIG
Intake air DBT / WBT	80.4 °F / 71.4 °F	Discharge air DBT / WBT	52.0 °F / 52.0 °F
Air velocity	489 FPM	Pressure drop Wet / Dry Wet / Dry	0.92 in wg / 0.47 in wg
Cooling capacity: Sensible / Total	330.2 MBH/648.6 MBH	Medium temperature: Inlet / Outlet	42.0 °F/60.0 °F
Medium flow rate	71.75 GPM	Medium pressure drop	9.351 ft wg

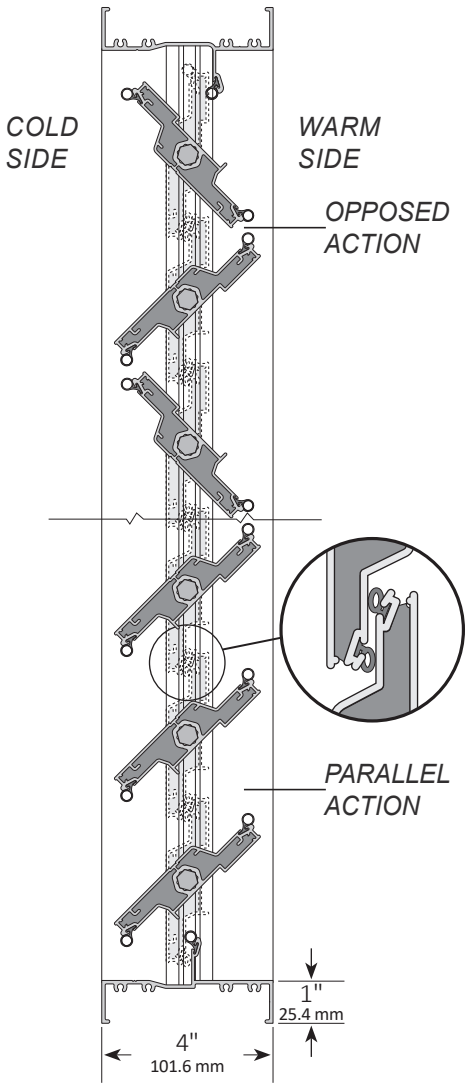
Chilled water cooler Additional Info

Rows: 8
Coils tube: 1/2"
Coil volume in cubic inches: 3812.2
Finned Length: 5' 10 1/2" (1790mm)
Finned Height: 3' 7 3/4"(1112mm)
Coil Connection: 3"-8 NPT
Drain pan made of stainless steel
Single Coil

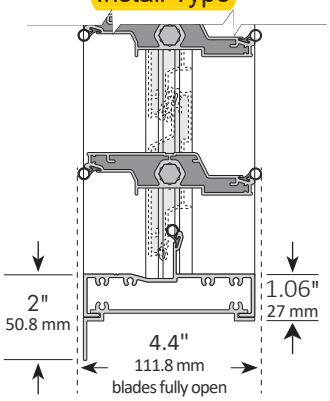
2.6.4 Moist Air Processes



In Duct or Flanged to Duct Install Types



Extended Rear Flange Install Type



1. Extruded aluminum *(6063-T5)* damper frame is not less than 0.080" *(2.03 mm)* in thickness. Damper frame is 4" *(101.6 mm)* deep x 1" *(25.4 mm)*, with mounting flanges on both sides of frame. Damper frame has a 2" *(50.8 mm)* mounting flange on the rear of the damper, when ordered as Extended Rear Flange install type.
2. Blades are 4" *(101.6 mm)* deep extruded aluminum *(6063-T5)* profiles, internally insulated with expanded polyurethane foam and thermally broken. Complete blade has an insulating factor of R-2.29. Each blade seal extends only 0.2" *(5.1 mm)* beyond the frame when in the full open position. All blades are symmetrically pivoted.
3. Blade seals are extruded EPDM. Frame seals are extruded silicone. Seals are secured in an integral slot within the aluminum extrusions. Blade and frame seals are mechanically fastened to prevent shrinkage and movement over the life of the damper.
4. Bearings are composed of a Celcon inner bearing - fixed around a 7/16" *(11.11 mm)* aluminum hexagon blade pivot pin - rotating within a polycarbonate outer bearing inserted in the frame. This eliminates action between metal-to-metal or metal-to-plastic riding surfaces.
5. Adjustable 7/16" *(11.11 mm)* hexagonal drive rod, U-bolt fastener, and hexagonal retaining nuts are zinc-plated steel. These provide a positive connection to blades and linkage.
6. Aluminum and corrosion-resistant zinc-plated steel linkage hardware is installed in the frame side, complete with cup-point trunnion screws for a slip-proof grip.
7. Dampers are designed for operation in temperatures ranging from -40°F *(-40°C)* to 212°F *(100°C)*.
8. Leakage rate through a 36" x 36" *(915 mm x 915 mm)* does not exceed 1.19 cfm/ft² *(6.0 l/s/m²)* against 1 in. w.g. *(0.25 kPa)* differential static pressure. Tested in accordance with ANSI/AMCA Standard 500-D.
9. Dampers are custom made to required size, without blanking off free area. The blade stop is set at a fixed height and is a continuous and integral part of the top and bottom frames.
10. Dampers are available with either opposed blade action or parallel blade action.
11. Dampers are available in four install types: Installed In Duct, Flanged to Duct, Extended Rear Flange, and Square to Round Transition. *(See Install Type pages for details.)*
12. Installation of dampers must be in accordance with TAMCO's current on-line installation guidelines. *(Printed installation guidelines are provided with each damper shipment, however all technical information available on TAMCO's web site at www.tamcodampers.com supersedes information contained within printed versions.)*
13. Intermediate structural support is required to resist applied pressure loads for dampers that consist of two or more sections in both height and width. *(See TAMCO Aluminum Damper Installation Guidelines.)*

OPTIONS FOR NP – NARROW PROFILE:
For each option listed, replace the lines above with their corresponding lines below.

SC - SEVERE COLD TEMPERATURE OPTION:

3. Blade and frame seals are extruded silicone, for reduced air leakage at colder temperatures. Blade and frame seals are secured in an integral slot within the aluminum extrusions and are mechanically fastened to prevent shrinkage and movement over the life of the damper.
8. Leakage rate through a 48" x 36" *(1220 mm x 915 mm)* does not exceed 1.07 cfm/ft² *(5.4 l/s/m²)* against 1 in. w.g. *(0.25 kPa)* differential static pressure. Tested in accordance with ANSI/AMCA Standard 500-D.

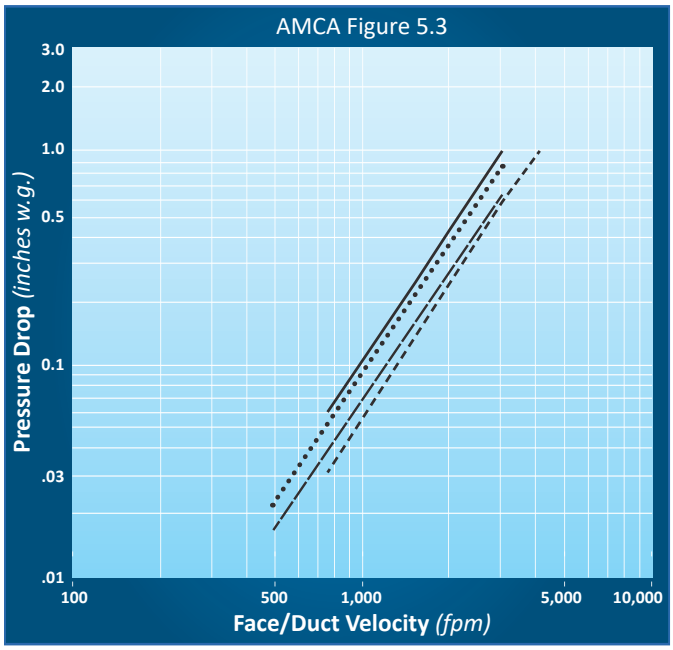
MR - MOISTURE RESISTANCE OPTION:

1. Extruded aluminum *(6063-T5)* damper frame is not less than 0.080" *(2.03 mm)* in thickness. Damper frame is 4" *(101.6 mm)* deep x 1" *(25.4 mm)*, with mounting flanges on both sides of frame. Damper frame has a 2" *(50.8 mm)* mounting flange on the rear of the damper, when ordered as Extended Rear Flange install type. Frame is assembled using stainless steel screws.
5. Adjustable 7/16" *(11.11 mm)* hexagonal drive rod, U-bolt fastener, and hexagonal retaining nuts are stainless steel. These provide a positive connection to blades and linkage.
6. Aluminum and stainless steel linkage hardware is installed in the frame side, complete with stainless steel cup-point trunnion screws for a slip-proof grip.

SW - SALT WATER RESISTANCE OPTION:

1. Extruded aluminum *(6063-T5)* damper frame is not less than 0.080" *(2.03 mm)* in thickness. Damper frame is 4" *(101.6 mm)* deep x 1" *(25.4 mm)*, with mounting flanges on both sides of frame. Damper frame has a 2" *(50.8 mm)* mounting flange on the rear of the damper, when ordered as Extended Rear Flange install type. Aluminum frame is clear anodized to a minimum depth of 0.7 mil *(18 microns)*. Frame is assembled using stainless steel screws.
2. Blades are 4" *(101.6 mm)* deep extruded aluminum *(6063-T5)* profiles, internally insulated with expanded polyurethane foam and thermally broken. Complete blade has an insulating factor of R-2.29. Each blade seal extends only 0.2" *(5.1 mm)* beyond the frame when in the full open position. All blades are symmetrically pivoted. Extruded aluminum blades are clear anodized to a minimum depth of 0.7 mil *(18 microns)*.
3. Blade and frame seals are extruded silicone, for reduced air leakage at colder temperatures. Blade and frame seals are secured in an integral slot within the aluminum extrusions and are mechanically fastened to prevent shrinkage and movement over the life of the damper.
5. Adjustable 7/16" *(11.11 mm)* hexagonal drive rod, U-bolt fastener, and hexagonal retaining nuts are stainless steel. These provide a positive connection to blades and linkage.
6. Clear anodized aluminum and stainless steel linkage hardware is installed in the frame side, complete with stainless steel cup-point trunnion screws for a slip-proof grip.
8. Leakage rate through a 48" x 36" *(1220 mm x 915 mm)* does not exceed 1.07 cfm/ft² *(5.4 l/s/m²)* against 1 in. w.g. *(0.25 kPa)* differential static pressure. Tested in accordance with ANSI/AMCA Standard 500-D.

VELOCITY VS. PRESSURE DROP



LEGEND:

12" x 12" (305 mm x 305 mm)

12" x 24" (305 mm x 610 mm)

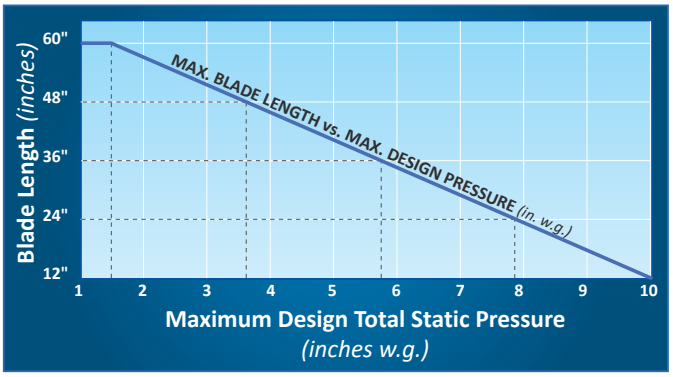
24" x 12" (610 mm x 305 mm)

24" x 24" (610 mm x 610 mm)

FIG. 5.3 Test damper is fully ducted with a 5 diameter duct run upstream, and a 6 diameter duct run downstream. Air Performance testing was conducted in accordance with ANSI/AMCA Standard 500-D.

Pressure drop values are based on Flanged to Duct install type. Pressure drop will be greater for In Duct install type dampers.

BLADE DESIGN PRESSURE LIMITATIONS



Series 9000 dampers with NP – Narrow Profile, whose blade length exceeds the maximum design pressure, may be reconfigured to maintain a blade length compatible with the required system pressure by increasing the number of sections per damper and thereby reducing each damper section's blade length. Appropriate intermediate structural support will be required for all multiple-section damper assemblies. *(Refer to line 13 of the Submittal Data and to TAMCO's Aluminum Damper Installation Guidelines.)*

Example:

A single-section damper of 60"w x 36"h *(1524 mm x 915 mm)* at 5 in. w.g. *(1.24 kPa)* would need to be built in two sections of 30"w x 36"h *(762 mm x 915 mm)*.

INSTALL TYPES | Series 9000

Thermally Insulated Damper with Thermally Broken Blades

- Always provide opening width and height dimensions, when ordering.
- Width dimension is always parallel to blades.
- Height dimension is always perpendicular to blades.

INSTALLED IN DUCT TYPE

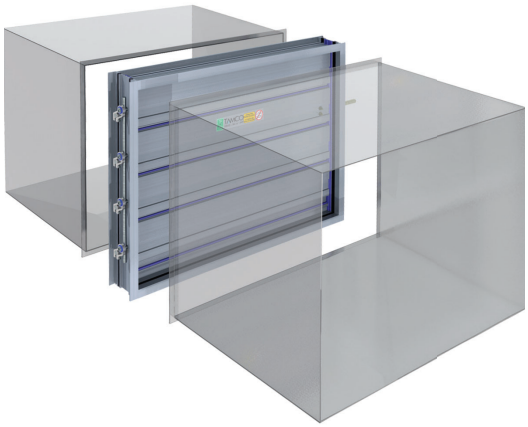
- Applies to SP and NP Profiles only. Not available for WP Profile.
- Finished damper O.D. is ½" *(12.7 mm)* less than opening width and height dimensions.

MINIMUM SECTION SIZE:	
6½"w x 6¾"h	*(166 mm x 172 mm)*
MAXIMUM SECTION SIZE:	
25 ft²	*(2.3 m²)*
60"w x 60"h or	*(1524 mm x 1524 mm) or*
48"w x 75"h	*(1220 mm x 1905 mm)*

FLANGED TO DUCT TYPE

- For SP and NP Profiles, finished damper O.D. is 2" *(50.8 mm)* greater than opening width and height dimensions.
- For WP Profile, finished damper O.D. is 3.25" *(82.6 mm)* greater than opening width and height dimensions.

MINIMUM SECTION SIZE:	
4½"w x 4¼"h	*(115 mm x 108 mm)*
MAXIMUM SECTION SIZE:	
25 ft²	*(2.3 m²)*
60"w x 60"h or	*(1524 mm x 1524 mm) or*
48"w x 75"h	*(1220 mm x 1905 mm)*



EXTENDED REAR FLANGE TYPE

- Applies to SP and NP Profiles only. Not available for WP Profile.
- Finished damper O.D. is 4" *(101.6 mm)* greater than opening width and height dimensions.

MINIMUM SECTION SIZE:	
4½"w x 4¼"h	*(115 mm x 108 mm)*
MAXIMUM SECTION SIZE:	
25 ft²	*(2.3 m²)*
60"w x 60"h or	*(1524 mm x 1524 mm) or*
48"w x 75"h	*(1220 mm x 1905 mm)*

- Extended Rear Flange install type dampers are not designed so that the front of the damper may be inserted into an opening, as the side frame members extend to the full height of the rear flange.

American Ultraviolet

Coil Clean (CC) Series

American Ultraviolet High-output CC Series utility fixtures are designed specifically for HVAC applications. They can be mounted in various configurations for optimum pass-by air decontamination and/or to irradiate cooling coils and drain pans. Individual fixtures can be mounted to plenum walls or multiple fixtures can mount to frame assemblies that span supply ducts or cooling coils.

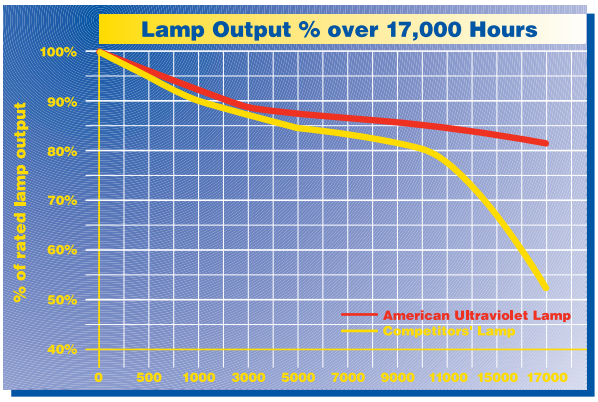
Applications

CC Series fixtures from American Ultraviolet are ideal for internal installation in medium to large air handling systems in commercial, industrial, health care and institutional buildings.

CC Series Fixtures are offered as single and double lamp configurations with "moisture proof" construction. They may be mounted individually; in built-up banks; or in parallel rack-system configurations in a variety of locations, including coils, drain pans, ductwork, mixed air plenums and exhaust systems. The CC Series is available in five lengths (18", 24", 36", 48", and 60") and four voltage options (115, 208, 230 or 277 VAC), providing installation flexibility to accommodate virtually any system.

CC Series fixtures are designed for "moisture-proof" applications with UVC lamps that incorporate a built-in outer quartz sleeve with protective boot on the power end for sealing purposes. Power is brought to the lamp through a waterproof connector that is securely sealed to the lamp with coated lead wires. Lamps are rated for two-year continuous operational life with approximately 20% drop in UVC output at end of lamp life.

CC Series



Benefits

- Improves Indoor Air Quality (IAQ) by reducing bacteria, viruses and mold that either grow or pass through the air handling systems. Reduces the risk of cold, flu, allergies and other illness associated with air handling systems
- "Green" lamps contain ≤8mg of mercury
- Two-year (17,000 hours) guarantee on lamps with only 20% decrease in output over the two years
- Five-year, non-prorated warranty on the ballast
- Continuously cleans coils, drain pans, plenums and ducts - eliminating costly cleaning programs and the use of harmful chemicals and disinfectants
- Reduces HVAC energy costs by restoring heat transfer and net cooling capacity
- Produces no ozone or other secondary contaminants
- Plug-in connections mean no field wiring required to connect fixture to fixture when building banks of rack systems

American Ultraviolet
Since 1960. It's all we do.

AUV CC SERIES

Coil Clean (CC) Series

AUV CC SERIES

CC SERIES SPECIFICATIONS:

Every CC Series fixture is manufactured and factory assembled in the U.S.A., and tested prior to shipment. Each assembly consists of housing, reflector, electronic ballast(s), lamp bracket, plug-in power connectors and high output lamp(s).

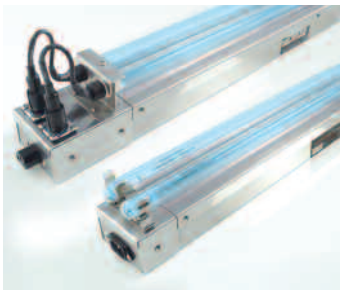
FIXTURE: Housings are constructed of heavy gauge hospital grade stainless steel. Reflectors are fabricated from the highest grade bright annealed polished stainless steel, which has a reflectivity rate of 88% when exposed to short-wave UVC in the range of 254 nm. All components are in one integrated assembly to maximize serviceability.

BALLAST: The solid-state electronic ballast (furnished with this series), is a Class P rapid start with a power factor minimum of .95. It is available as a 120, 208, 230, or 277 VAC 50/60 Hz and is designed to maximize photon production in air temperatures of 35 to 175 degrees F. Minimum ballast start temperature is minus 20 degrees F. Ballasts have a RFI - EMI rating as defined by FCC part 18A for industrial / commercial applications in regards to suppression. Ballasts are UL listed and suitable for use in air handling spaces.

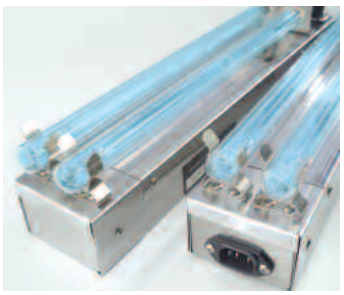
LAMPS: CC Series UVC lamps are high-output (800mA), T5 tube diameter, and constructed from hard glass tubing for superior UV transmittance. Lamps are "green", containing ≤8mg of mercury (Hg) and they produce no ozone. Lamps shall retain, at minimum, 80% of initial output after 17,000 hours of use. They are sealed for moisture protection with a water-tight connection. Electrodes are designed to maximize plasma convection and stability for superior lamp performance. Lamps are rated to produce 11.7 microwatts/cm2 per linear inch of lamp arc length at a distance of one meter. This output has been independently tested in airstreams of 400 feet per minute velocities at temperatures of 45 degrees F.

INDEPENDENT TESTING: Units are tested in accordance with the general provisions of IES Lighting Handbook, 1981 Applications Volume, and provide output per 1" arc length of not less than 11.7 µW/cm2 at 1 meter in a 400 fpm airstream of 45° F.

Water-tight lamp connection



Connect multiple fixtures to one power source



Hardwire fixtures are also available

CC Series Fixture Offerings

		120VAC 50/60Hz		208/230VAC 50/60Hz		277VAC 50/60Hz
2-LAMP UNITS		**End-to-End Plug-in**	**Hardwire**	**End-to-End Plug-in**	**Hardwire**	**Hardwire**
Fixture Length	18"	CC18-2-120C	CC18-2-120	CC18-2-230C	CC18-2-230	CC18-2-277
	24"	CC24-2-120C	CC24-2-120	CC24-2-230C	CC24-2-230	CC24-2-277
	36"	CC36-2-120C	CC36-2-120	CC36-2-230C	CC36-2-230	CC36-2-277
	48"	CC48-2-120C	CC48-2-120	CC48-2-230C	CC48-2-230	CC48-2-277
	60"	CC60-2-120C	CC60-2-120	CC60-2-230C	CC60-2-230	CC60-2-277
1-LAMP UNITS						
Fixture Length	18"	CC18-1-120C	CC18-1-120	CC18-1-230C	CC18-1-230	CC18-1-277
	24"	CC24-1-120C	CC24-1-120	CC24-1-230C	CC24-1-230	CC24-1-277
	36"	CC36-1-120C	CC36-1-120	CC36-1-230C	CC36-1-230	CC36-1-277
	48"	CC48-1-120C	CC48-1-120	CC48-1-230C	CC48-1-230	CC48-1-277
	60"	CC60-1-120C	CC60-1-120	CC60-1-230C	CC60-1-230	CC60-1-277

All CC Fixtures are 3.07" wide and 5.2" deep (including lamps). **End-to-End Plug-in units require one (1) female junction box and one end cover per row; Junction Box 2540-15B, End Cover 2540-18.** Amperage draw provided on submittal drawings. **Cord kits available for 120V hardwire units to plug into standard 120V receptacle.**

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Light Wiring Diagram

Feed
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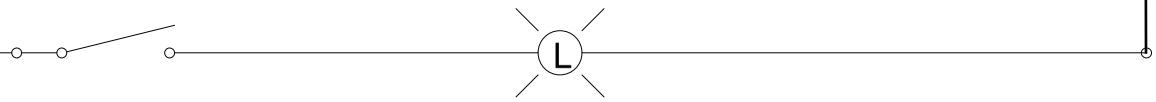
120/1/60

Neu

Hot



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Blygold®
CORROSION PROTECTION

Cabinet & Casing Coating

- ✓ *Corrosion protection*
- ✓ *UV resistant*
- ✓ *For harsh environments (C1-C5M)*
- ✓ *Abrasion resistant*

Blygold HVAC Cabinet & Casing protection

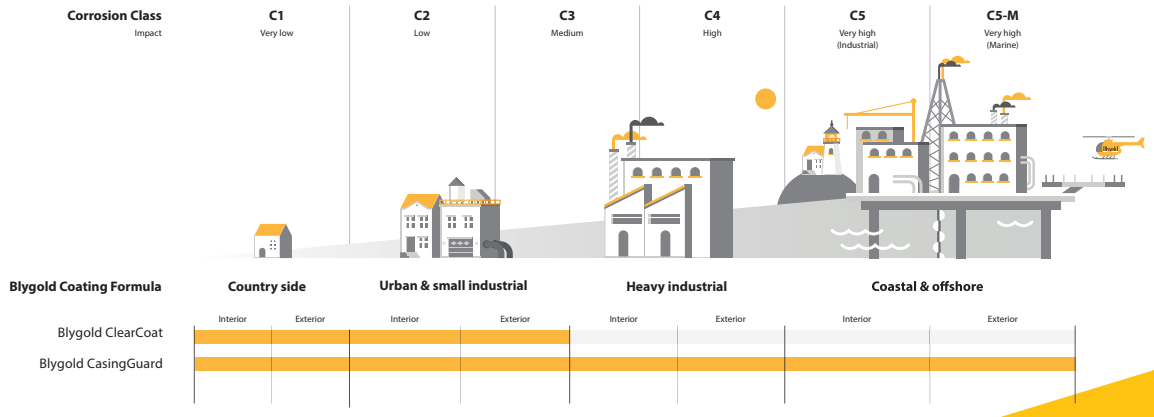
Blygold casing coatings provide a long lasting corrosion protection for HVAC equipment. The coatings are developed to be the perfect add-on to the standard applied OEM coatings systems. The Blygold coating techniques and procedures create protection on all vulnerable surfaces like cutting edges, screws and bolds, tubing and construction parts. The protective coatings can be applied in the factory as well as on-site.

Blygold has been specializing in HVAC equipment coating for more than 40 years. Our applicators know how to handle this vulnerable equipment. Blygold maintains a quality standard that makes customers come back over and over again not only in coating application, but also in logistics and service.

Special coatings and unique applications: HVAC equipment protection calls for specialists

Blygold Casing Coating compliant with ISO 12944-6

To assist corrosion experts, engineers and consultant in selecting the best corrosion protection option for every specific situation, guidelines are set in ISO 12944-6. This international standard describes different corrosion classes, and sets the benchmark on corrosion protection of steel structures by protective paint systems. Blygold coating formulas are compliant with ISO 12944-6.



Designed for the job!

Ever since Blygold was founded in 1976, our core business focused specifically on corrosion protection of HVAC equipment and especially heat exchangers . This makes us unique, and it's the reason why still today Blygold is global market leader in this industry. Our own R&D department is constantly testing and improving our range of products and services. This mentality makes Blygold the benchmark application in our industry. Blygold products are always specifically designed for their purpose. Blygold PoluAl coatings are designed to offer maximum corrosion protection without affecting the efficiency of the heat exchanger. Blygold ClearCoat and Blygold CasingGuard offer optimal protection for cabinet and casings. Blygold CasingGuard system is to be used in severe corrosive conditions while the Blygold ClearCoat system provides good protection for moderate corrosive applications. Your local Blygold representative can help you in deciding which coating system is most suitable for your application.

BLYGOLD CASINGGUARD

Blygold developed the Casing Guard coating system for the most severe exposure conditions. HVAC equipment at oil platforms, coastal environments or wastewater plants are examples where the system has a long track record. All reasonable accessible surfaces are thoroughly pretreated , primed with Refamac 3509 and finished with Refamac 3800. The primer creates excellent adhesion to OEM coatings and bare metals, special metallic pigments provide the first corrosion protective barrier. The finishing coating "3800" is designed to create coverage even on vulnerable sharp edges. The thin layer technology creates a smooth and extremely protective finish with limited layer thickness.

BLYGOLD CLEARCOAT

Blygold Clearcoat is a transparent coating system that enhances the existing OEM coating properties. The coating adheres directly to several coating types without special primer or pre-treatment. The finished surface has ahigh gloss and has a extremely long resistance against UV exposure. The application of the Blygold Clearcoat will also bring back faded colours of HVAC equipment. The thin and smooth film has repellent properties that limits the adhesion of pollution. The coating is applied after thorough cleaning of all visible surfaces of the HVAC equipment. Because of the transparency of the coating, the unit will maintain the original OEM colour.

TECHNICAL INFORMATION	BLYGOLD CASINGGUARD	BLYGOLD CLEARCOAT
Color	Ral 7001 (or as specified)	Transparent
Pretreatment	Degreasing, sanding and primecoat Refamac 3509	Degreasing (Blygold CoilClean AP)
Substrates	Bare metals, plastics & OEM coatings	OEM coatings
Gloss retention ASTM G154 / ISO11507	5.000h >75%	30.000h >90%
Adhesion ASTM 3359 b	5B	5B
Saltspray test ASTM B117 / ISO 9227-NSS	>7.500h	>4.000h (OEM coating dependent)
Pull of test ISO 4624 / ASTM D4541	9,3 MPa / 9,1 MPa	ND
Class acc. standard ISO 12944 PART 6	C5-I	C3-C4 (as finish in system)
Layer thickness	4-6 mil (100-150 micron)	1-2 mil (25-50 micron)
Abrasion resistance ASTM D4060	-	150 mg / 4.000 turns
Flexibility ASTM D522	-	10 mm

BLYGOLD INTERNATIONAL

Blygold is an innovative and forward-thinking company offering unique and sustainable high-quality protection against corrosion. With over 40 years experience, we have the know-how and state-of-the-art products and techniques to solve any corrosion problem. Our multitude of success stories says it all.

Application protocols

To protect air-conditioning equipment from corrosion in aggressive conditions, the quality of the application process is just as important as the applied product. Blygold has developed specific application protocols for air-conditioning equipment of all different dimensions, geometries and materials.

Global network

To ensure our products are applied according to these protocols, Blygold works with trained and certified applicators only. Our global network of qualified Blygold applicators can offer local support in over 60 countries around the world.

Quality

- Over 40 years of experience
- Unique application techniques
- Unrivalled test results
- All trained & qualified applicators
- ISO 9001 Certified

Innovation

- Revolutionary R&D
- Inhouse laboratory
- Deep understanding of the market
- Global awareness of customer needs
- Problem solving mentality

Sustainability

- Lifetime extension
- Energy saving & Eco Friendly
- Life Cycle Cost reduction
- Maintenance friendly
- Corporate Social Responsibility

Blygold®
CORROSION PROTECTION

P.O. box 44 3990 DA Houten
The Netherlands
www.blygold.com

T. +31 30 634 43 44
E. info@blygold.com

Your local Blygold applicator

WILMINGTON COLLEGE EDUCATION AND PSYCHOLOGY BUILDING

BALLARD, McKIM and SAWYER Architects
Gardner - Kline Assoc. Structural Engineers
Henry Von Oesen and Assoc. Engineers

President William H. Wagoner

ARCHITECTURAL
A-1 SITE PLAN
A-2 SITE DETAILS
A-3 FIRST FLOOR PLAN
A-4 SECOND FLOOR PLAN
A-5 FINISH SCHEDULE
A-6 ELEVATIONS
A-7 SMALL SCALE SECTIONS
A-8 AUDITORIUM DETAILS, TOILETS, CABINETS
A-9 STAIRS, PORCH DETAILS
A-10 STEEL STUD DETAILS, RAMP, RAILING DETAILS
A-11 DOOR & FRAME SCHEDULE & DETAILS
A-12 REFLECTED CEILING PLAN
A-13 BUILT-IN FURNISHINGS PLANS

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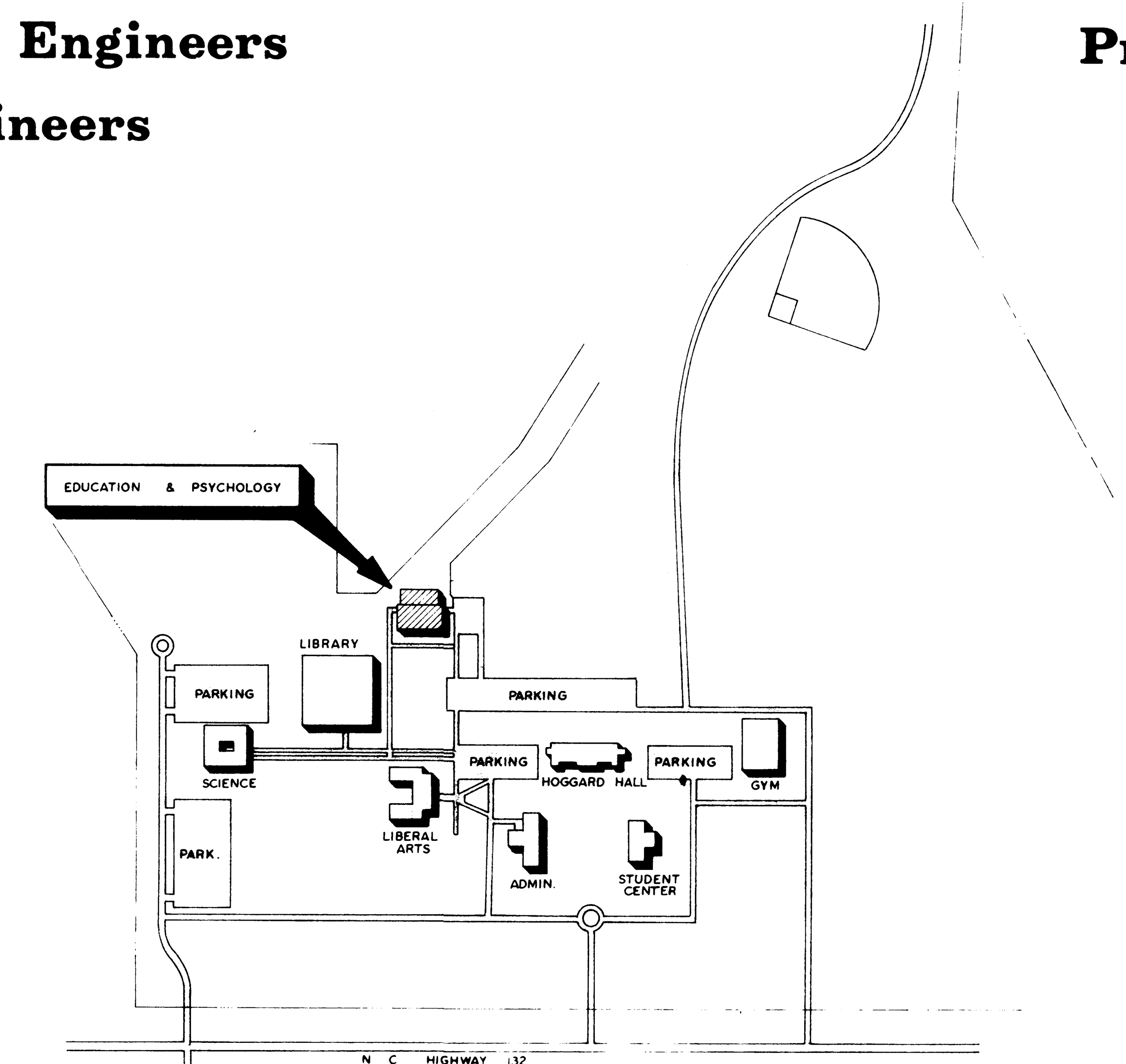
S-1 FOUNDATION PLAN AND DETAILS
S-2 FIRST FLOOR FRAMING PLAN
S-3 SECOND FLOOR FRAMING PLAN, GENERAL NOTES
S-4 SECOND FLOOR CEILING STRUCTURE, TRUSS DETAILS
S-5 ROOF FRAMING PLAN
S-6 TRUSS DETAILS
S-7 TRUSS DETAILS
S-8 PILING PLAN

EQUIPMENT
EQ-1 LABORATORY CASEWORK

PLUMBING
P-1 SMALL SCALE PLANS, FIXTURE SCHEDULE
P-2 LARGE SCALE PLANS, RISER DIAGRAMS
P-3 LARGE SCALE PLANS, DETAILS

ELECTRICAL
E-1 LIGHTING PLANS, GENERAL NOTES, POWER RISER DIAGRAM
E-2 RECEPTACLE PLANS, NOTES, LEGEND
E-3 DETAILS, NOTES
E-4 PANEL SCHEDULES, SITE PLAN

MECHANICAL
M-1 BOILER ROOM PLAN, DETAILS
M-2 AIR DISTRIBUTION PLANS
M-3 CONTROLS, SCHEDULES



LEGEND OF SYMBOLS

BRICK PLAN SECTION ELEVATION
MASONRY BLOCK PLAN & SECTION
CONCRETE PLAN SECTION ELEVATION
GRAVEL & CRUSHED STONE, SECTION
STEEL SECTION OR PLAN
STUD WALL (STEEL) PLAN
METAL PLAN OR SECTION ELEVATION
ACOUSTICAL TILE SECTION
PLASTER SECTION ELEVATION
INSULATION SECTION
WOOD SECTION FINISH ROUGH
TERRAZZO SECTION
HARD TILE SECTION ELEVATION
PLYWOOD SECTION ELEVATION
ELEVATION LETTER DRAWING SH. NO. — INTERIOR ELEV.
DOOR NUMBER — DOOR
SECTION LETTER DRAWING SH. NO. — SECTION
WINDOW
DETAIL NUMBER DRAWING SH. NO. — DETAIL
SPACE NUMBER — SPACES

PROJECT DATA

SQUARE FEET	22,288
CUBIC FEET	755,552
HEATING MBH	900
AIR COND. - TONS REFRIG.	90
PLUMBING	
FIXTURE UNITS	194
WATER - G.P.M.	87
ELECTRICAL LOAD - KW	280

"AS-BUILT" DRAWING
DATE

SET 0

REVISIONS

WILMINGTON COLLEGE EDUCATION & PSYCHOLOGY BUILDING
WILMINGTON, NORTH CAROLINA
BOARD OF TRUSTEES - L. BRADFORD TILLERY, JR. CHAIRMAN - DR. WILLIAM M. RANDALL PRESIDENT
CODE 66737 - ITEM 6

BALLARD, McKIM, & SAWYER, AIA
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

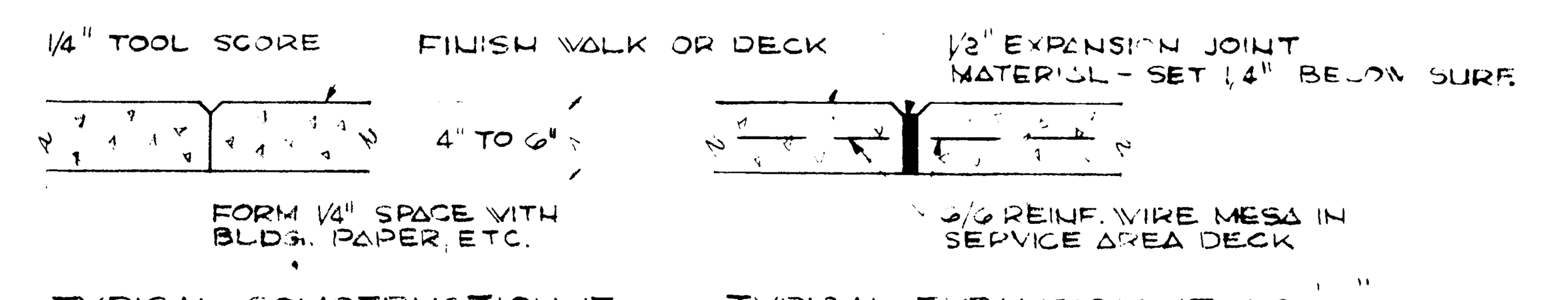
PROJECT NO. 4-3-00358-0

DRAWN BY:
CHECKED BY:
DATE
SHEET NO.

Southern Photo Print & Supply Co., Greensboro, N. C. 1100 1-67

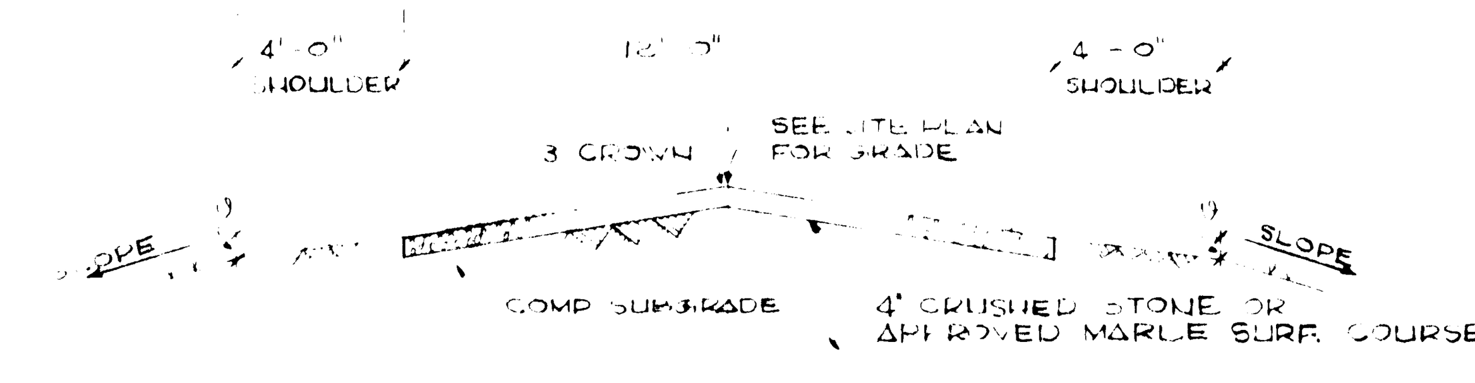
CONSTRUCTION NOTES

1. CLEAR AND GRADE ALL AREAS WITHIN PROJECT LIMIT EXEPT TREES TO REMAIN WHERE DESIGNATED.
2. CONSTRUCTION JOINTS: SEE DETAIL THIS SHEET.



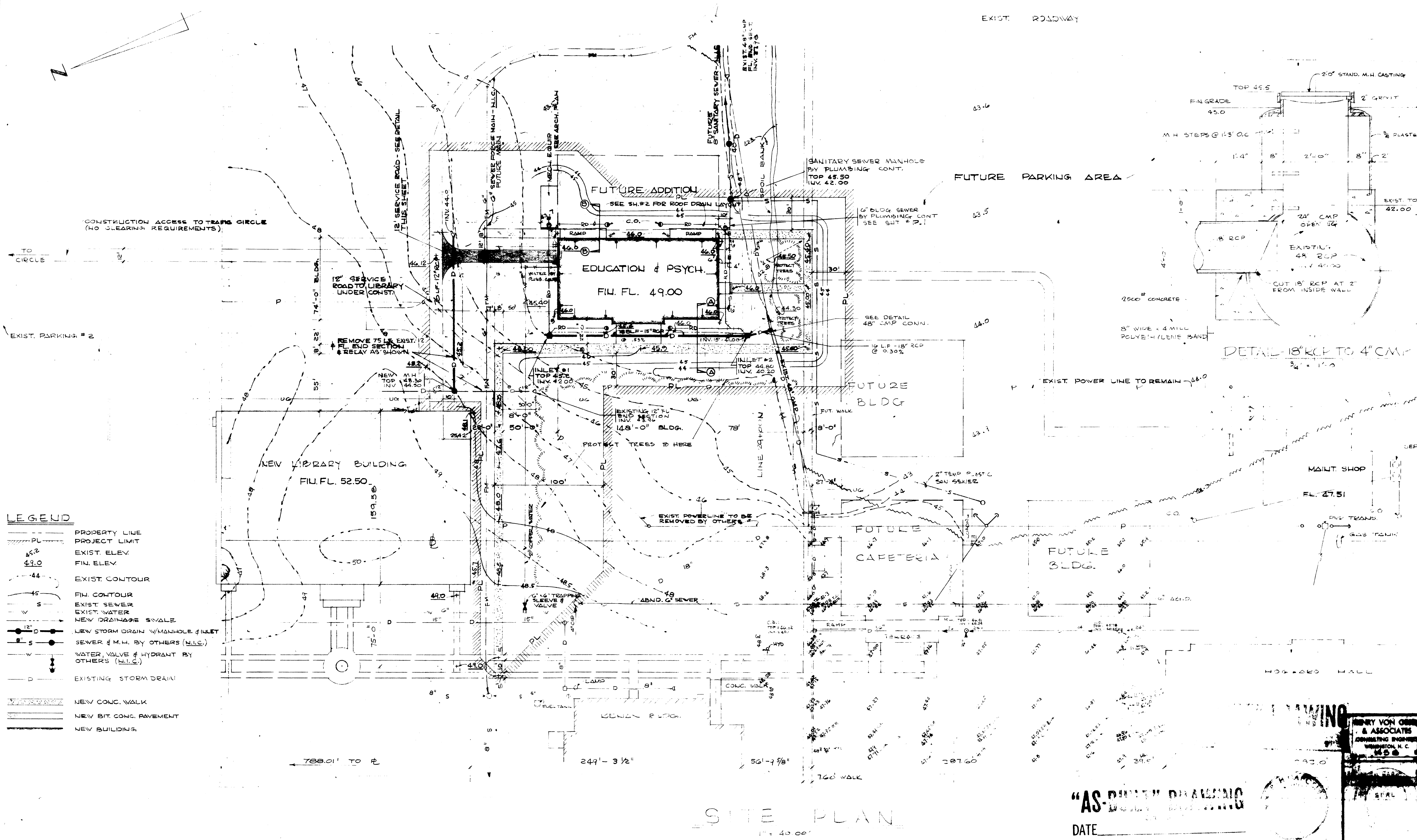
DETAIL - CONSTRUCTION JOINTS

NO SCALE



DETAIL - 12' SERVICE DRIVE

NO SCALE



SITE PLAN

1" = 40.00'

"AS-BUILT" DRAWING

DATE ____________

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

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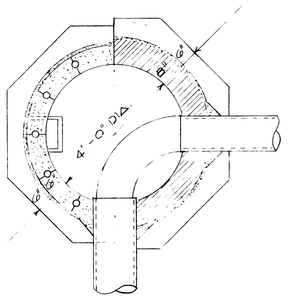
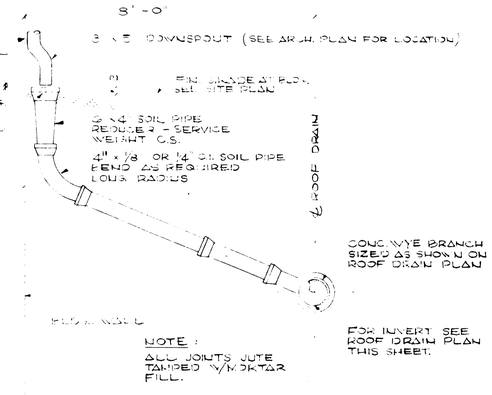
DRAWN BY: HM

CHECKED BY:

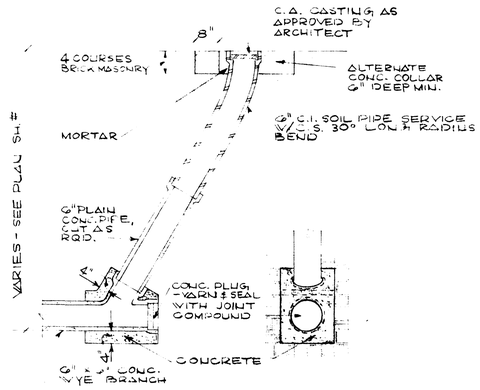
DATE

SHEET NO. A-1





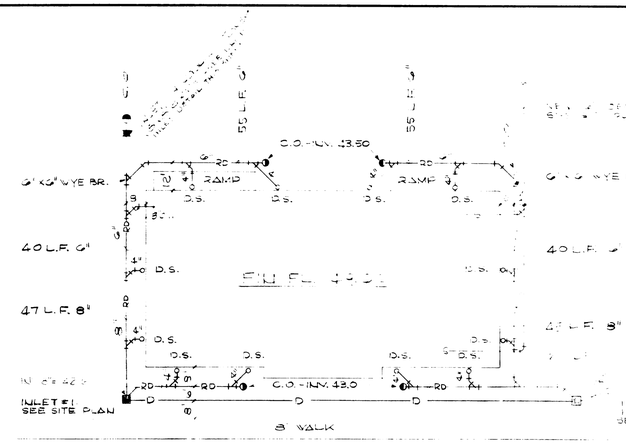
DETAIL A/2 - DOWNSPOUT CONNECTION



DETAIL C/2 - ROOF DRAIN CLEANOUT

NOTE: SEE ROOF DRAIN PLAN SH.# FOR LOCATION

NO SCALE

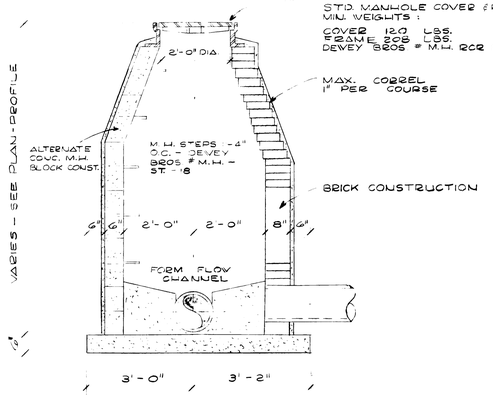


NOTE:

1. ALL ROOF DRAIN LINE TO BE REINF. CONC. PIPE.
2. SLOPE ALL LINES AT 0.50% UNLESS OTHERWISE SHOWN.
3. CONNECT DOWNSPOUT TO ROOF DRAIN WITH 6" x 4" SOIL WYE BRANCH PER DETAIL A/2.
4. LOCATIONS OF DOWNSPOUTS AT BUILDING ARE APPROXIMATE. VERIFY LOCATION PRIOR TO INSTALLATION OF ROOF DRAIN COLLECTION SYSTEM.

PLAN OF ROOF DRAIN COLLECTION SYSTEM.

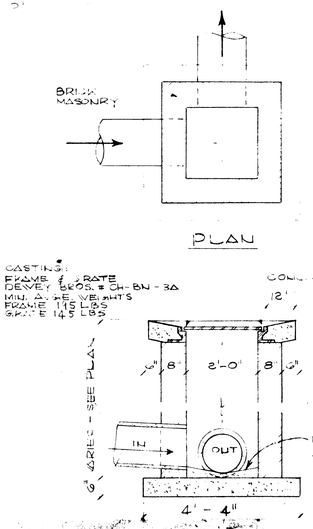
1" = 30'

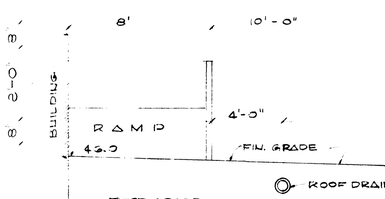


SECTION

TYPICAL DETAIL SANITARY SEWER

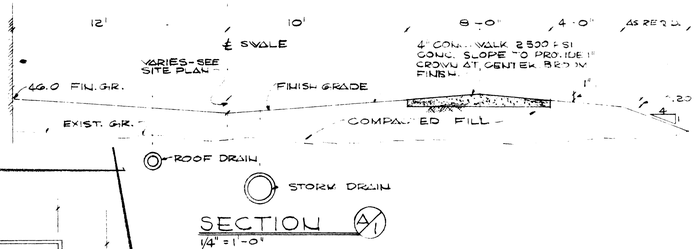
SCALE: 1/2" = 1'-0"





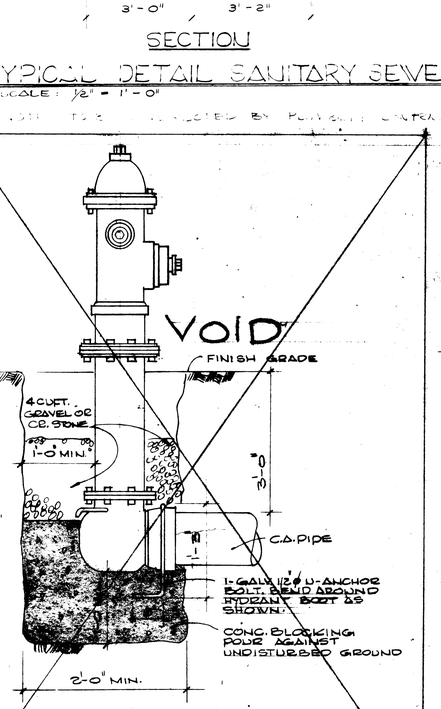
SECTION B/1

1/4" = 1'-0"



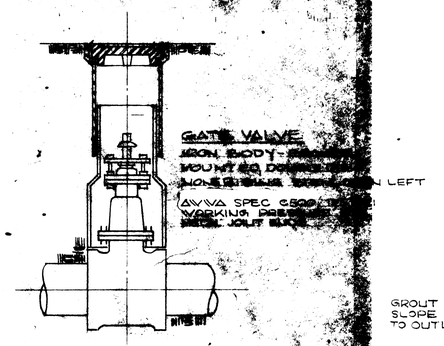
SECTION A/1

1/4" = 1'-0"



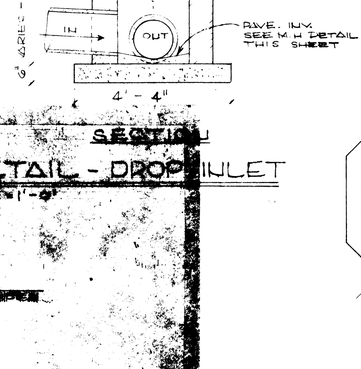
HYDRANT DETAIL

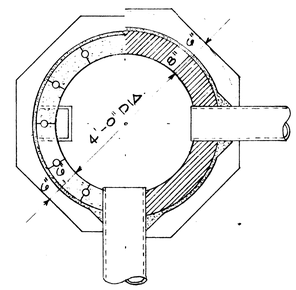
NO SCALE

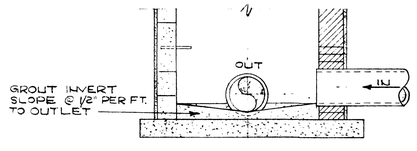


VALVE DETAIL

NO SCALE



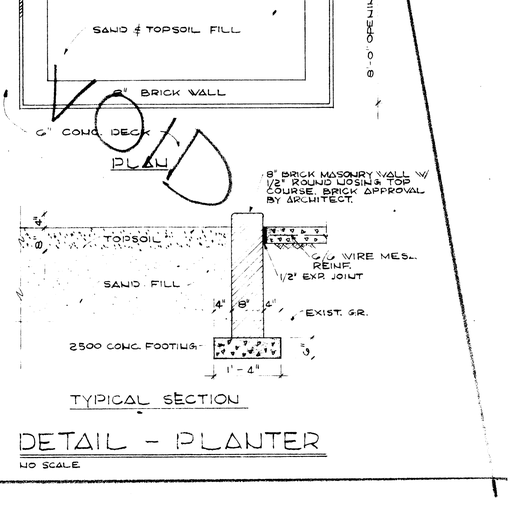




SECTION

STORM DRAIN DETAIL

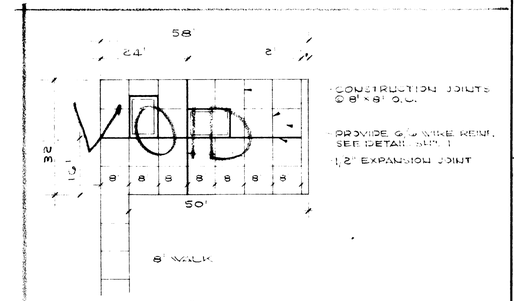
1/2" = 1'-0"



TYPICAL SECTION

DETAIL - PLANTER

NO SCALE



DETAIL - 6" SERVICE AREA CONST.

NO SCALE

"AS-BUILT" DRAWING

DATE _____

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CONSULTING ENGINEERS
WILMINGTON, N.C.
FILE NO. 143F-C

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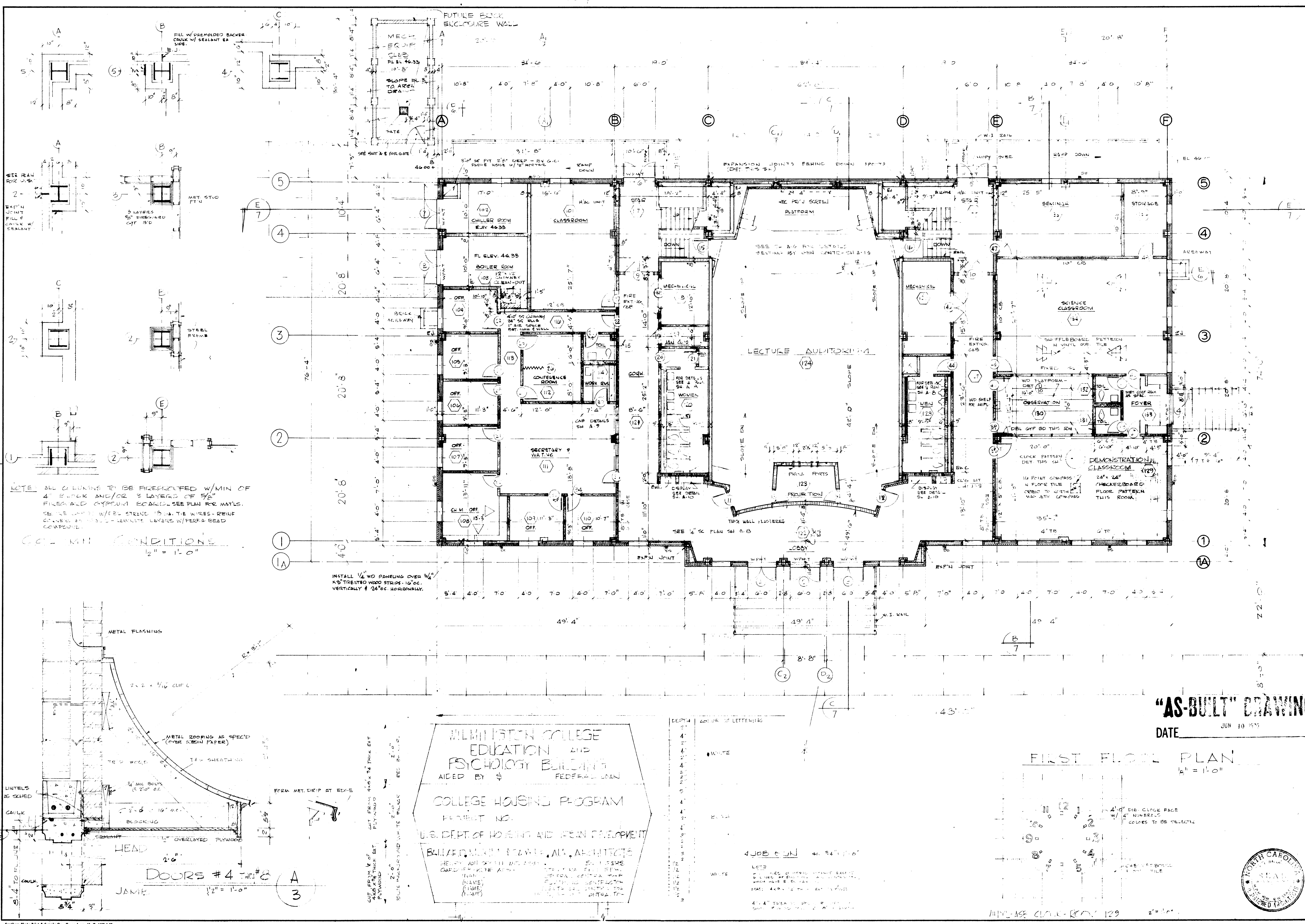
CODE 66737 - ITEM 6

DRAWN BY: [illegible]
CHECKED BY: [illegible]
DATE [illegible]
SHEET NO. A-2



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7-C-792

A-3


SECOND FLOOR PLAN
1/8" = 1'-0"
READING CLINIC
STORAGE
CURRICULUM LAB.
CLASSROOM
FACULTY SEMINAR
TESTING CLASSROOM
AUDIO VISUAL CLASSROOM
PSYCHOLOGY LAB.
DARK RM
MECHANICAL
CORE
CORR 8' WIDE
SECRETARY
PREP ROOM
OFF.
OFFICE
CLASSROOM
BALCONY
"AS-BUILT" DRAWING
DATE
COLUMN CONDITIONS
SEE COLUMN CONDITIONS NOTES SH A-3
CEMENT WASH
DETAIL OF CHIMNEY CAP
MET. FLASHING
MET. FLASHING OVER ROOF FELT
24" x 24" FLUE LINER
CHIMNEY DETAILS 3/4" = 1'-0"
TOTAL LENGTH 25'-0" - VERIFY TO REACH ROOF SCUTTLE
SECURE TO FL & TOP & BOT OF TRUSS T-1
PASS THRU PLASTER CLG AT ATTIC ACCESS
1" ⌀ RUNGS @ 10" O.C.
ROOF ACCESS LADDER RM. 204
ROOF PLAN
1/16" = 1'-0"
ELEV + SECT LAB 4 RM 204
148'-0"

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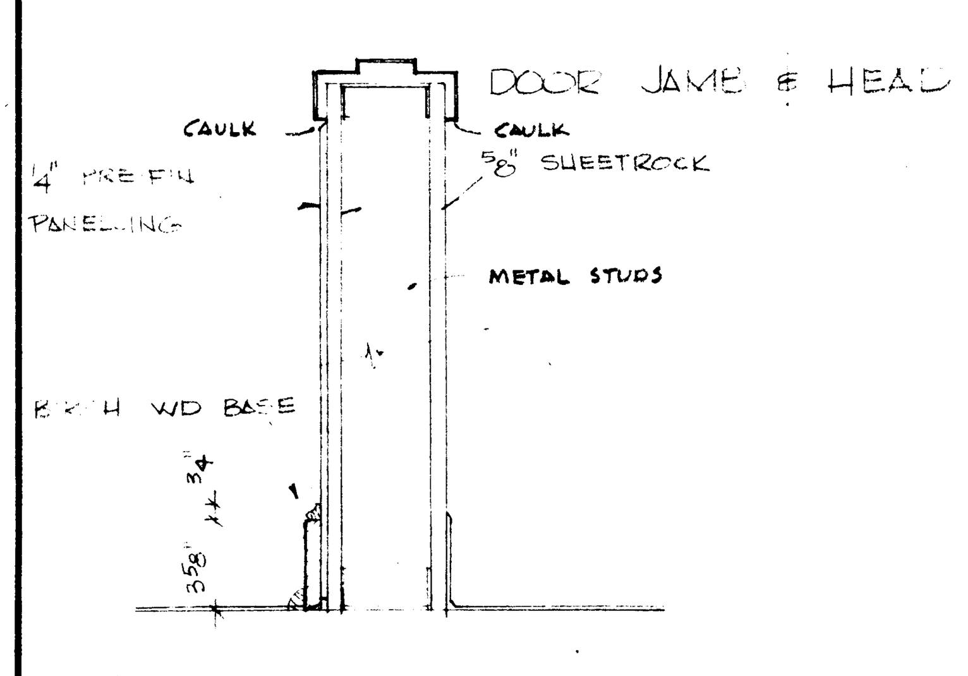
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

A-4

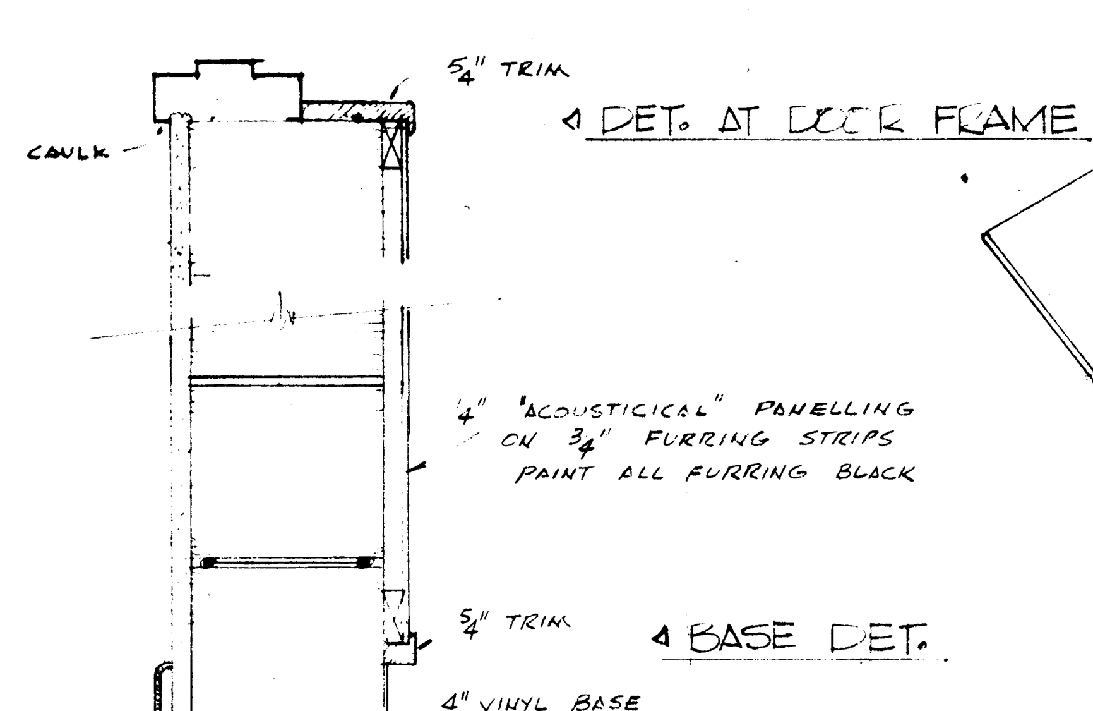
ROOM FINISH SCHEDULE

ROOM NO.	SPACE	FLOOR	BASE	WALLS	CEILING	CLG. HGT.	REMARKS	
101	CLASSROOM	V.A.T.	V	P.B. G.B.	A.T.	9'-2"		101
102	CHILLER ROOM	S.C.	-	U.N.F.	P		HANG CLG DIRECTLY BELOW JOISTS	102
103	BOILER ROOM	S.C.	-	U.N.F.	P		HANG CLG DIRECTLY BELOW JOISTS	103
104	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		104
105	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		105
106	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		106
107	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		107
108	OFFICE	V.A.T	W.D.	W.P.	A.T.	9'-2"	MOUNT PANELING OVER SHEETROCK. APPLY PANELING ON EXTERIOR WALLS OVER WOOD FURRING STRIPS. STAIN BASE, WOOD WINDOW ETC TO MATCH PANELING	108
109	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		109
110	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		110
111	SECRETARY	V.A.T.	V	G.B.	A.T.	8'-0"		111
112	CONFERENCE ROOM	V.A.T.	V.	G.B.	A.T.	8'-0"		112
113	CORRIDOR	V.A.T.	V.	G.B.	A.T.	8'-0"		113
114	WORK ROOM	V.A.T.	V.	G.B.	A.T.	8'-0"		114
115	TOILET	V.A.T.	V.	G.B.	A.T.	8'-0"		115
116	CORRIDOR	V.A.T.	V.	G.B.	A.T.	8'-0"		116
117	STAIR	V.A.T	V.	V.I.T.	A.T.	8'-6"	SEE DET. -	117
118	MECHANICAL ROOM	S.C.	V	UNF	A.T.		COORDINATE CLG HT W/MECH EQUIP.	118
119	JANITOR'S CLOSET	S.C.	V	V.I.T.	P.	8'-0"		119
120	WOMEN'S TOILET	C.T.	C.T.	V.I.T.	P.	8'-6"	- MARBLE THRESH	120
121	CORRIDOR	V.A.T.	V.	V.I.T.	A.T.	8'-0"	SEE ALT. FOR TERRAZZO	121
122	LOBBY	V.A.T.	V. & C.T.	F.B. P.B.	A.T.	10'-4"	C.T. BASE ON BRICK & PLAS WALLS - V. BASE ON ST. STUD WALLS - (PLAST ON CURVED WALL)	122
123	PROJECTION ROOM	V.A.T.	V.	P.B.	A.T.	9'-0"		123
124	LECTURE AUDITORIUM	V.A.T.	V.	P.B. G.B.	P. A.T.	VARIES	SEE A-8 FOR CEILING CHANGES - & FLOOR PATTERN. ACCOUSTICAL PANELS ON REAR WALLS -	124
125	STAIR	V.A.T.	V.	V.I.T.	A.T.	8'-6"	SEE DET. SH A-9 -	125
126	MECHANICAL ROOM	S.C.	V	UNF.	A.T.		COORDINATE CLG HT. W/MECH EQUIP	126
127	CORRIDOR	V.A.T.	V.	V.I.T.	A.T.	8'-0"		127
128	MEN'S TOILET	C.T.	C.T.	V.I.T.	P.	8'-6"	- MARBLE THRESH	128
129	DEMONSTRATION CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"	24" x 24" CHECKERB'D PATTERN - 48" x 48" CLOCK PATTERN - 24" x 24" COMPASS PATTERN (16 POINTS-ORIENT NORTH)	129
130	OBSERVATION ROOM	V.A.T.	V.	G.B.	A.T.	9'-2"	WOOD PLATFORM - SEE DET. - DBL GYP BD ALL WALLS CARRY GYP BD TO 2ND FL	130
131	TOILET	C.T.	C.T.	V.I.T.	P.	8'-0"	- MARBLE THRESH FLOOR ON 1½" SETTING BED - SLOPE TO DRAIN	131
132	TOILET	C.T.	C.T.	V.I.T.	P.	8'-0"	- MARBLE THRESH FLOOR ON 1½" SETTING BED - SLOPE TO DRAIN	132
133	FOYER	V.A.T.	V.	P.B. G.B.	A.T.	8'-6"		133
134	SCIENCE CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"	SHUFFLEBOARD PATTERN IN FLOOR	134
135	SEMINAR ROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		135
136	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		136
137	STORAGE	V.A.T.	V	P.B. G.B.	A.T.	9'-2"		137
138	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		138

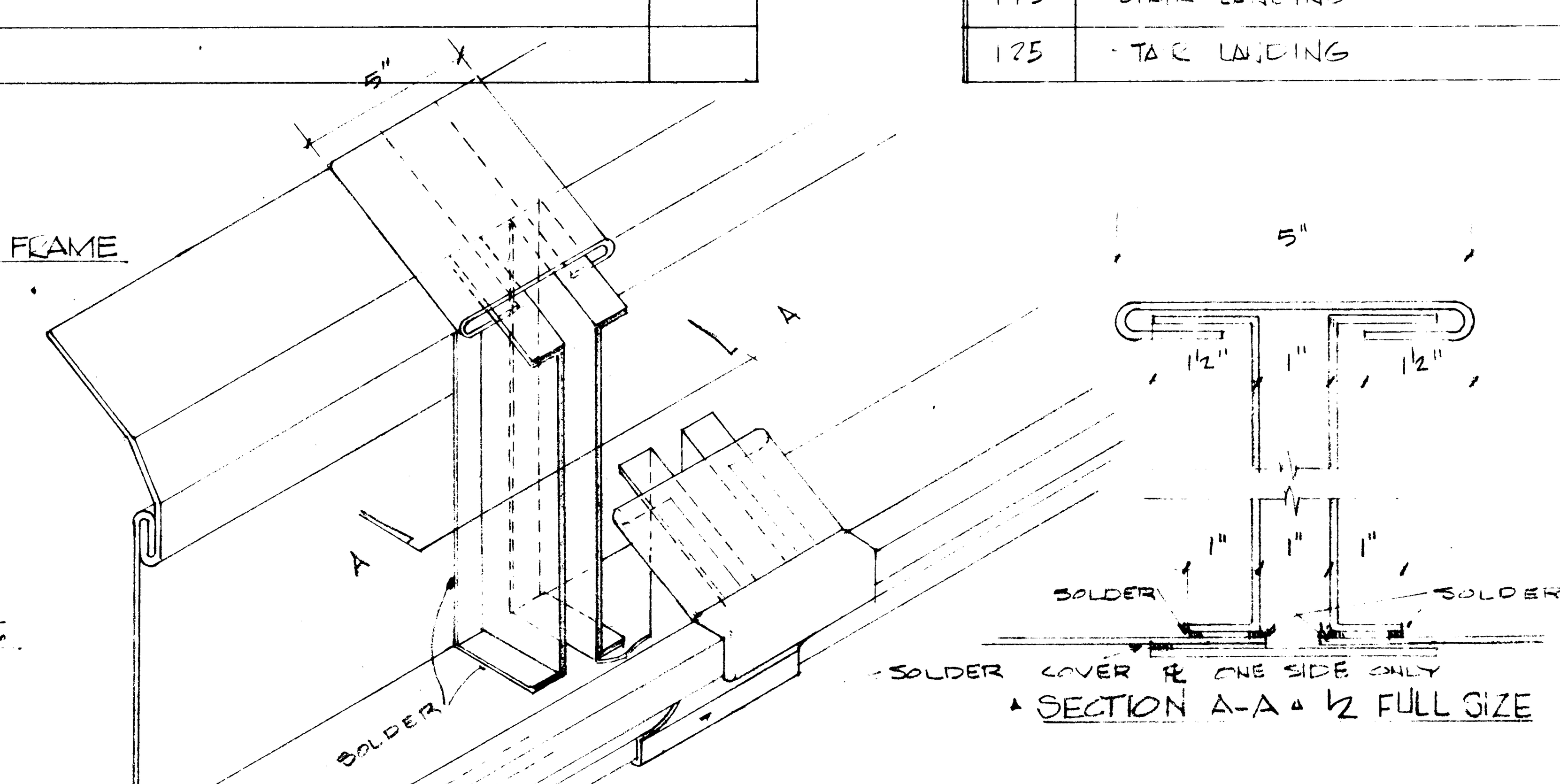
ROOM NO.	SPACE	FLOOR	BASE	WALLS	CEILING	CLG. HGT.	REMARKS	
201	READING CLINIC	V.A.T.	V	P.B. G.B.	A.T.	9'-2"		201
202	STORAGE	V.A.T.	V	P.B. G.B.	A.T.	9'-2"		202
203	STORAGE	V.A.T.	V.	G.B.	A.T.	8'-6"		203
204	JANITOR'S CLOSET	V.A.T.	V.	V.I.T.	P.	8'-0"		204
205	CURRICULUM LAB	V.A.T.	WD	P.B. G.B.	A.T.	9'-2"	DROP CLG AT CHARGE DESK TO 8'-6" STAIN WD. BASE TO MATCH FURNISHINGS - SEE ALT FOR CARPET	205
206	CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		206
207	FACULTY [illegible] ROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		207
208	TOILET	V.A.T.	V.	G.B.	A.T.	8'-0"		208
209	ALCOVE	V.A.T.	V.	G.B.	A.T.	8'-0"		209
210	STORAGE	V.A.T.	V	P.B. G.B.	A.T.	8'-0"	5 ADJ SHELVES - ¾ PLYWOOD W/WD NOSING	210
211	CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		211
212	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	8'-0"	5 ADJ SHELVES - ¾" PLYWOOD W/WD NOSING	212
213	TESTING BOOTH	V.A.T.	V.	G.B.	A.T.	8'-0"		213
214	TESTING BOOTH	V.A.T.	V	G.B.	A.T.	8'-0"		214
215	TESTING BOOTH	V.A.T.	V.	G.B.	A.T.	8'-0"		215
216	TESTING BOOTH	V.A.T.	V.	G.B.	A.T.	8'-0"		216
217	OBSERVATION ROOM	V.A.T.	V.	G.B. P.B.	A.T.	8'-0"	DBL GYP BD ALL WALLS THIS RM.	217
218	CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		218
219	RECEPTION	V.A.T.	V.	G.B.	A.T.	8'-0"		219
220	STORAGE	V.A.T.	V.	G.B.	A.T.	8'-0"		220
221	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		221
222	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		222
223	OFFICE	V.A.T.	V	P.B. G.B.	A.T.	9'-2"		223
224	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		224
225	CLASSROOM	V.A.T.	V.	G.B.	A.T.	9'-2"		225
226	OFFICE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		226
227	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		227
228	CLASSROOM	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		228
229	PSYCHOLOGY LAB.	V.A.T.	V.	G.B.	A.T.	9'-2"		229
230	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		230
231	MECHANICAL ROOM	S.C.	V.	G.B.	A.T.		COORDINATE CLG HT W/MECH EQUIP	231
232	AUDIO VISUAL CLASSROOM	V.A.T.	V	P.B. G.B.	A.T.	9'-2"	CORKBOARD ON WALLS - SEE H/10	232
233	ALCOVE	V.A.T.	V.	G.B.	A.T.	8'-6"		233
234	DARK ROOM	V.A.T.	V.	G.B.	A.T.	8'-6"		234
235	STORAGE	V.A.T.	V.	P.B. G.B.	A.T.	9'-2"		235
236	CORRIDOR	V.A.T.	V	V.I.T.	A.T.	8'-0"		236
237	CORRIDOR	V.A.T.	V.	V.I.T.	A.T.	8'-0"		237
238	CORRIDOR	V.A.T.	V.	V.I.T.	A.T.	8'-0"		238
115	STAIR LANDING	V.A.T	V.	V.I.T	A.T.	9'-2"		
125	STAIR LANDING	V.A.T.	V.	V.I.T	A.T.	9'-2"		



A/5 WD BASE & DOOR FRAME DET.
1½" = 1'-0"



B/5 AUDITORIUM PANELING DETAIL
1½" = 1'-0"



GUTTER - EXPANSION JOINT DETAIL
SCALE: 3" = 1'-0"

"AS-BUILT" DRAWING
DATE JUN 16 [illegible]

SEAL

ABBREVIATIONS			
AT	ACOUSTIC TILE	SC	SMOOTH CONCRETE
FB	FACE BRICK	UNF	UNFINISHED - UNPAINTED MAS. BLOCK ... GYP BD TAPED BUT NOT PAINTED.
GB	GYPSUM WALL BOARD, PAINTED	V	VINYL, 4" HIGH
P	PLASTER, PAINTED	VAT	VINYL ASBESTOS TILE
PB	PAINTED MASONRY BLOCK	VIT	VITREOUS COATING
C.T.	CERAMIC TILE	WP	PRE-FINISHED WOOD PANELLING
		Tz	TERRAZZO

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7-6-792
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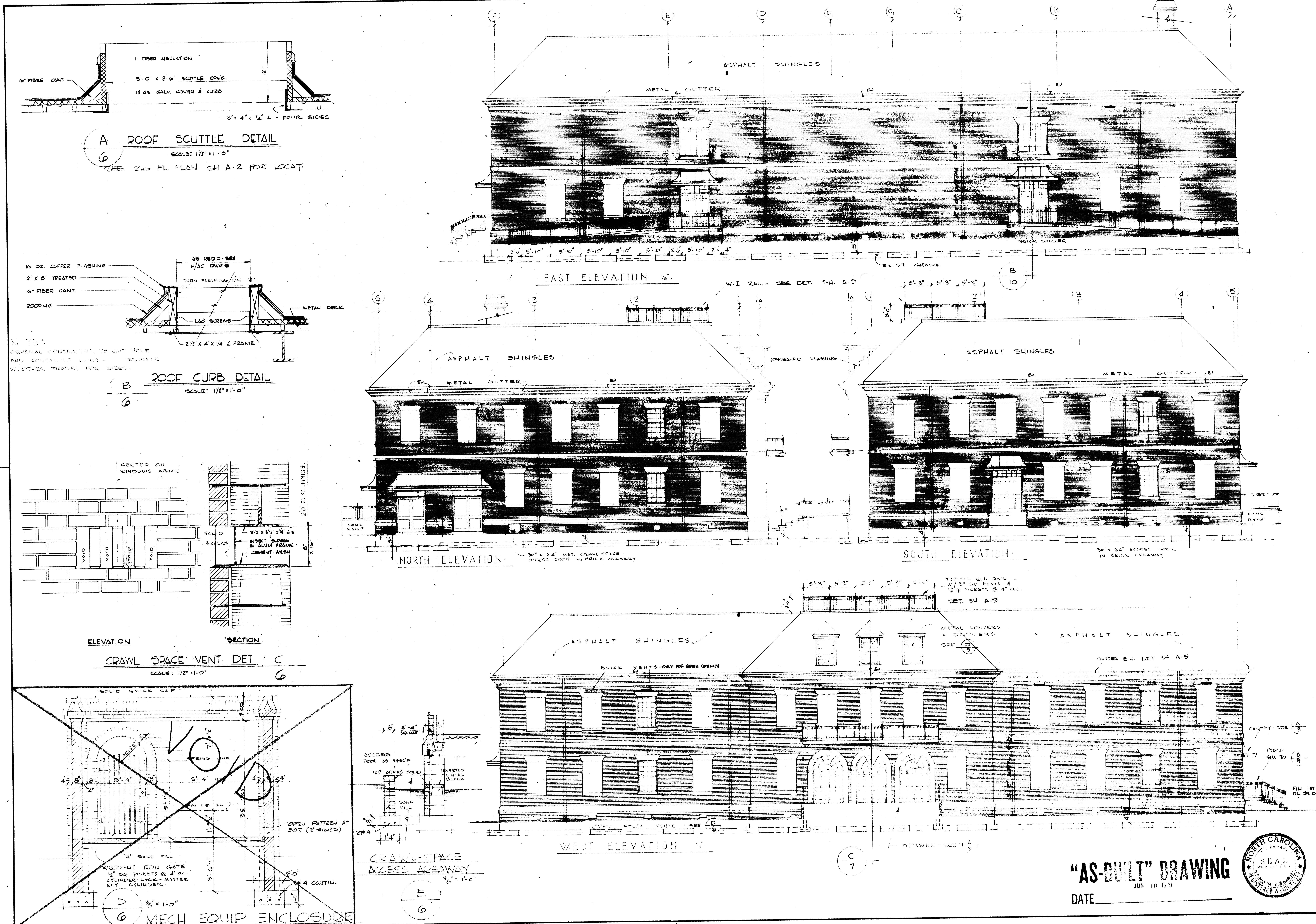
CHECKED BY: FIB
DATE JUN 28, '68
SHEET NO. A-5



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CHECKED BY: PDS

DATE JAN 29, 68

SHEET NO. A-6

"AS-BUILT" DRAWING
DATE JUN
CATWALK DET. 1"=1'-0"
TYP. BEADED BRICK JT. DETAIL 3"=1'-0"
BUILT UP ROOFING
1" RIGID INSULATION
1½" MET. DECK
TREATED WD. BLK.
16 OZ. COPPER GRAVEL STOP & FLASHING
SLATE ROOFING
2¾" NAILABLE CONC.
CATWALK CONT. TOP JST. DET. THIS SH.
TOP OF BEAM
2nd FL.
1st FL.
218 CLASS RM.
219 SECRETARY
225 CLASS RM.
228 CLASS RM.
127 DEMONSTRATION CLASS
129 OBSERVATION
132 SCIENCE CL. RM.
134 SEMINAR
ENCASE COLS. BEL. GRADE W/ MIN. 3" CONC.
B 7 1/8" = 1'-0"
BALCONY - SEE
PORCH - SEE
216 TESTING CLASS RM.
224
229 PSYCHOLOGY
122 LOBBY
120 PROJ.
121 AUDITORIUM LECTURE RM.
42'-10" SLOPED FLOOR
PLATFORM
FILL & TAMP
C 7 1/8" = 1'-0"
GRAVITY VENTS
METAL GUTTER AS SPEC'D.
NOTE: CUT MODILLIONS FROM SOLID BLOCK - DO NOT APPLY COVE MLDG.
TREATED WD. BLOCKING W/16d GALV. NAILS INTO SIDES AS SHOWN
CONT. XTRD. BLOCKING
ANCHOR @ 4'-0" O.C.
ALTERNATE WOODEN CORNICE G 7
BEAM AT STAIRWELL 3/8" = 1'-0" D 7
GRAVITY VENTS BY G.C. - 6 REQ'D - AS SPEC'D
238 CLASSROOM
126
STRUCTURE IN WALL
230 STORE
235 STORE
READING CLINIC
INSULATION
133 STORE
134 SEMINAR
12" x 16" PROJ. PORTS TOP UP 6'-0"
102 CHILLER RM.
34'-6"
19'-0"
39'-4"
19'-0"
E 7 1/8" = 1'-0"
TREATED WD. BLOCK @ 24" O.C. - BOLTED @ 48" O.C. TO BM.
2" WIDE, 16 GA. CORR. TIES @ 2'-0" O.C.
24 x 24" BRICK VENT CENTER ON EA. WIND. PAINT TO MATCH BRICK
LINTEL AS SCHED.
INSULATION
LAY-IN ACOUST. CEILING
SEALANT
MOLDED BRICK SILL
3 OZ. COPPER-FABRIC
CAVITY WALL TIES 16" O.C. VERT.
FABRIC FLASH
BRICK SOLDIER
BELT COURSE
MOLDED BRICK
BRICK SOLDIER
CONTIN. BOND BM.
FILL THIS BLK. CRS. W/ CONC.
TYP. WINDOW & WALL F 7
NORTH CAROLINA SEAL
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A-7

"AS-BUILT" DRAWING

DATE JUN 10 1970

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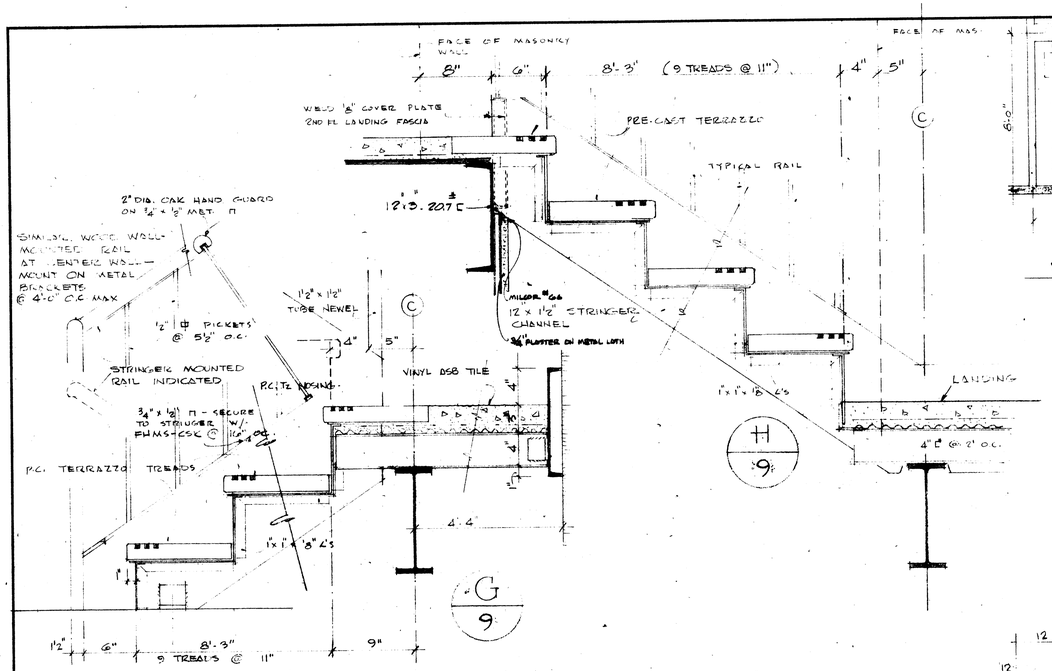
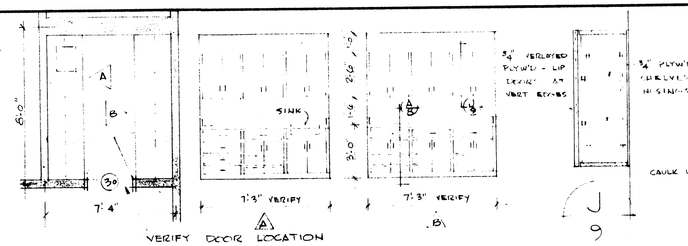
CHECKED BY:

DATE JUN 28 '68

SHEET NO. A-8

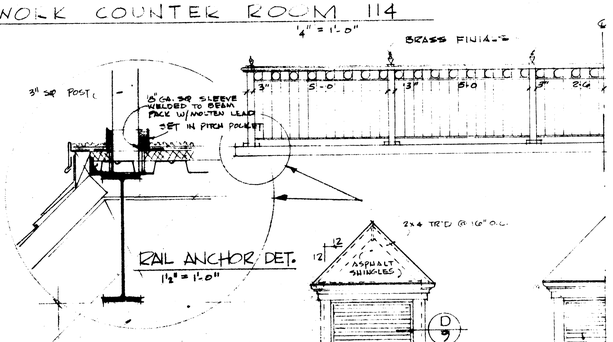
"AS-BUILT" DRAWING
DATE JUN 30 1970

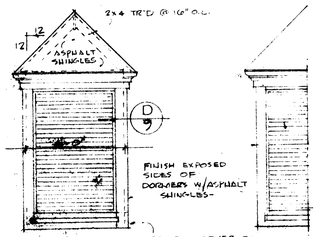


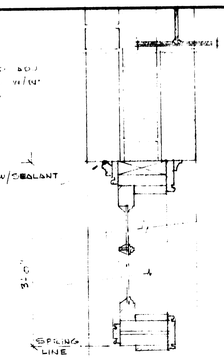


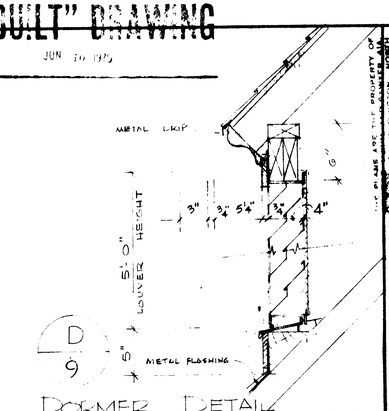
WORK COUNTER ROOM 114

1/4" = 1'-0"



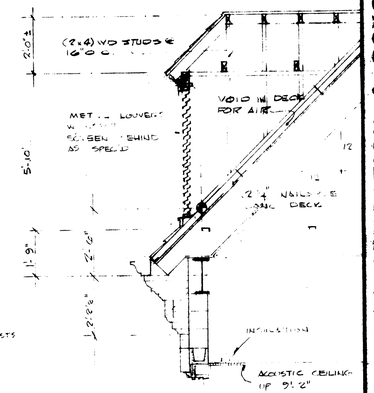


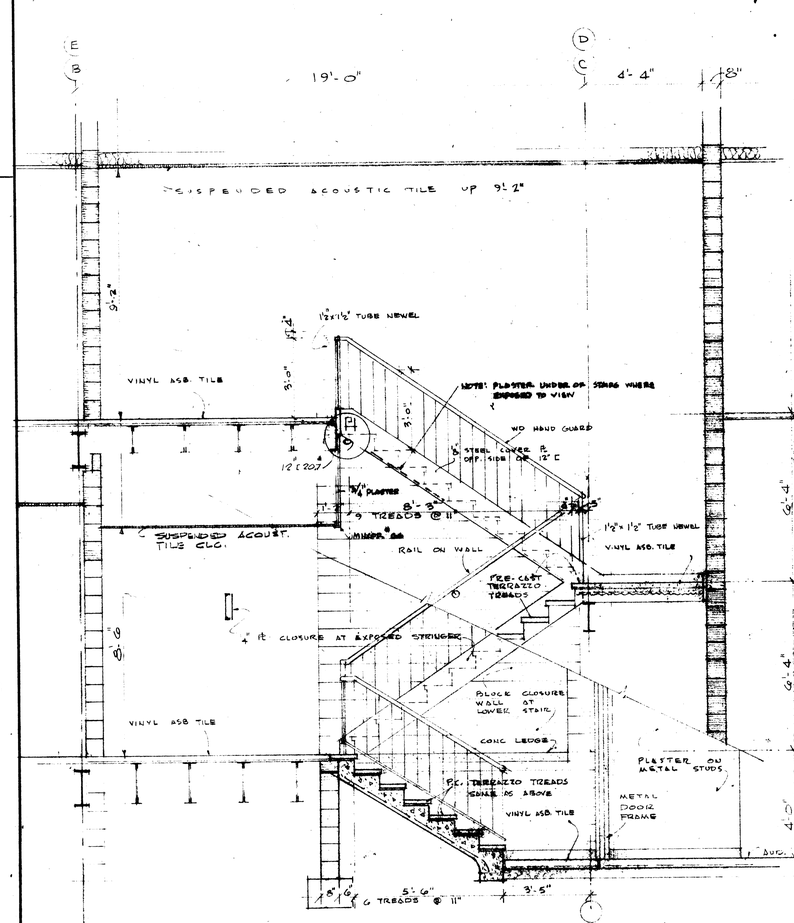




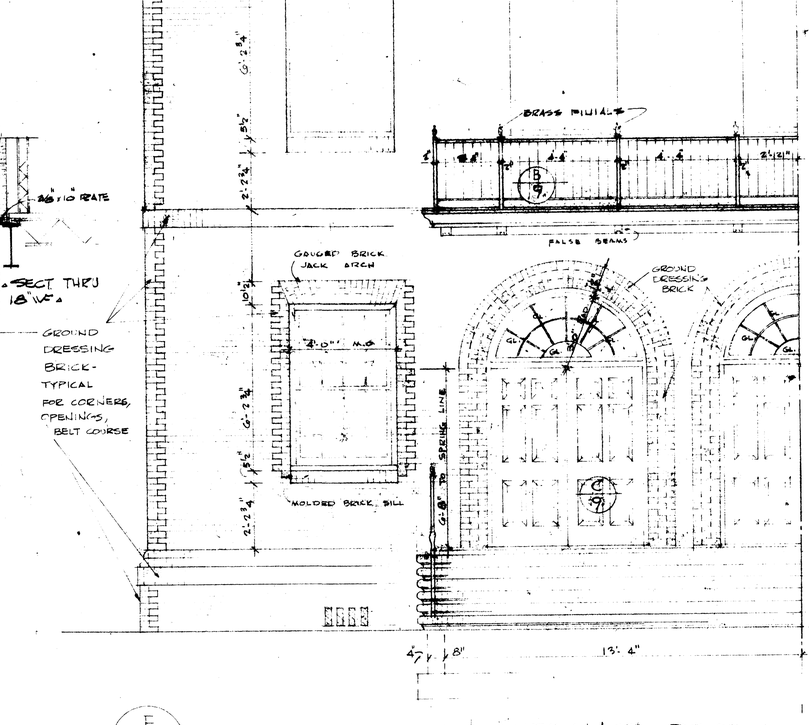
DORMER DETAIL
1 1/2" = 1'-0"

NOTE: CONSTRUCT DORMERS ENTIRELY OF TRESTLE WD.

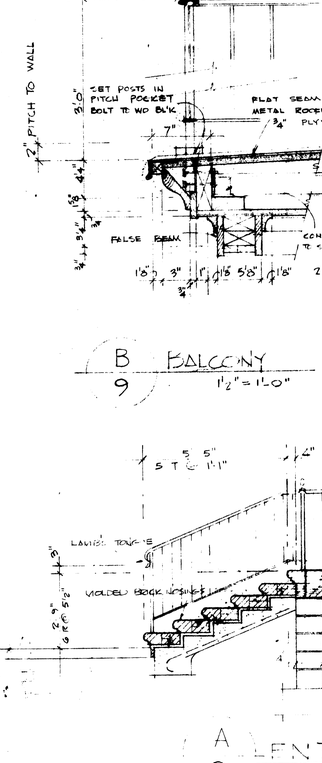




F 9 STAIR DETAILS
3/8" = 1'-0"



E 9 TYPICAL WINDOW & ENTRANCE DOORS
3/8" = 1'-0"



B 9 BALCONY
1 1/2" = 1'-0"

A 9 ENTRANCE PORCH
PORCH AT DOOR #4 - MILCOR
3/8" = 1'-0"

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SHEET NO.
A-9

NORTH CAROLINA SEAL

BASE VERT. SECTION J/10
SECT - CLG. LEVEL CHANGE K/10
PLAN - OUTLET BOX M/10
PLAN PARTITION - TERMINAL L/10
PLAN - PARTITION "T" P/10
PLAN PART. CORNER N/10
CUT-OUTS REQ'D FOR ELECT. CONDUIT Q/10
SECT. AT LIGHT FIXT. ATTACHMENT S/10
SECT. AT HEAVY FIXT. ATTACHMENT R/10
RAILING DETAIL T/10
CORKBOARD DET. H/10
TACKBOARD DET. G/10
TACKBOARD IN GLASS CASE F/10
CHALKBOARD DET. D/10
PARTITION NOTES
1. CARRY GYP WALL BOARD FULL HEIGHT OF STUDS.
2. CARRY STUDS & WALL BOARD TO UNDERSIDE OF 2ND FL. SLAB AT RM. 130
TRACK FOR FOLDING DOOR E/10
PLATFORM - ROOM 130 U/10
DET. EXHIBIT CASE C/10
ELEVATION
SECTION 3/8" = 1'-0" B/10
DETAILS 1 1/2" = 1'-0" A/10
"AS-BUILT" DRAWING
DATE
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A-10

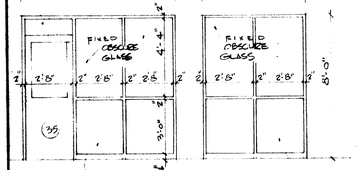
DOOR & FRAME SCHEDULE

"AS-BUILT" DRAWING
JUN 10 1970
DATE

DOOR NO.	SPACE NO.	DOOR SIZE	DOOR TYPE	FRAME TYPE	FRAME PROFILE		HDW GROUP	KEY GROUP	DOOR NO.
1	122	2-2'-8" x 6'-8"	A	WD	–	SEE DET.	H-1	a	1
2	122	2-2'-8" x 6'-8"	A	WD	–	SEE DET.	H-1	b	2
3	122	2-2'-8" x 7'-0"	A	WD	–	SEE DET.	H-1	a	3
4	133	2-2'-10" x 7'-0"	A	SM	8 5/8"	SEE DET.	H-1	f	4
5	125	2-2'-10" x 7'-0"	A	WD	8 3/4"	SEE ELEV. SH #6	H-1	b	5
6	117	2-2'-10" x 7'-0"	A	WD	8 3/4"	SEE ELEV. SH #6	H-1	b	6
7	102	2-3'-0" x 7'-0"	E	SM	8 5/8"	SEE ELEV. SH #6.	H-2	a	7
8	103	2-3'-0" x 7'-0"	E	SM	8 5/8"	SEE ELEV. SH #6.	H-2	a	8
9	117	2-3'-0" x 7'-0"	C	"B" LABEL SM	8 3/4"	UL "B" LABEL - SEE FRAME ELEVATION THIS SHEET.	H-5	-	9
10	125	2-3'-0" x 7'-0"	C	"B" LABEL SM	8 3/4"	UL "B" LABEL DO	H-5	-	10
11	124	3'-0" x 7'-0"	B	SM	6"		H-10	c	11
12	124	3'-0" x 7'-0"	B	SM	6"		H-10	c	12
13	125	2'-8" x 7'-0"	B	SM	8 3/4"		H-6	c	13
14	125	2'-8" x 7'-0"	B	SM	8 3/4"		H-6	c	14
15	124	3'-0" x 7'-0"	B	SM	6"	PLAST ON AUDITOR WALL UL "B" LABEL	H-10	c	15
16	124	3'-0" x 7'-0"	B	SM	6"	DO UL "B" LABEL	H-10	c	16
17	101	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	d	17
18	118	2- 3'-0" x 7'-0"	B	SS	6"		H-8	a	18
19	119	3'-0" x 7'-0"	B	SS	6"	20" x 10" L TOP & BOTTOM	H-7	a	19
20	120	2'-8" x 7'-0"	B	SS	6"		H-4	-	20
21	120	2'-8" x 7'-0"	B	SS	6"		H-7	a	21
22	116	3'-0" x 7'-0"	B	SS	6"	20 x 20 L	H-6	d	22
23	118	2'-0" x 7'-0"	B	SS	6"		H-12	-	23
24	104	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	24
25	112	2'-8" x 7'-0"	B	SS	6"	20 x 10 L	H-11	d	25
26	112	11'-6" x 8'-0"		WD	–	SEE DETAIL – FOLDING DOOR AS SPEC'D	-	-	26
27	105	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	27
28	106	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	28
29	112	2'-8" x 7'-0"	B	SS	6"	20 x 10 L	H-11	d	29
30	114	2'-6" x 7'-0"	C	SS	6"	20 x 10 L	H-3	h	30
31	107	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	31
32	108	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	32
33	109	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	33
34	110	2'-8" x 7'-0"	C	SS	6"	20 x 10 L	H-3	f	34
35	111	3'-0" x 7'-0"	D	SS	6"	20 x 20 L	H-6	d	35
36	129	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	f	36
37	133	3'-0" x 7'-0"	C	SS	6"		H-6	f	37
38	131	2'-0" x 7'-0"	B	SS	6"		H-12	-	38
39	132	2'-0" x 7'-0"	B	SS	6"		H-6	e	39
40	130	3'-0" x 7'-0"	B	SS	6"	20 x 10 L	H-6	d	40
41	130	3'-0" x 7'-0"	B	SS	6"	20 x 10 L	H-12	-	41
42	134	3'-0" x 7'-0"	C	SS	6"	20 x 10 L	H-6	f	42
43	133	3'-0" x 7'-0"	C	SS	6"		H-6	f	43
44	128	2'-8" x 7'-0"	B	SS	6"		H-4	-	44
45	—	—	-	-	-	OMIT	-	-	45
46	126	2 - 3'-0" x 7'-0"	B	SS	6"		H-8	a	46
47	136	3'-0" x 7'-0"	C	SM	8 3/4"	UL "B" LABEL	H-6	d.	47
48	136	3'-0" x 7'-0"	C	SS	6"	20 x 10 L	H-7	f	48

DOOR NO.	SPACE NO.	DOOR SIZE	DOOR TYPE	FRAME TYPE	FRAME PROFILE		HDW GROUP	KEY GROUP	DOOR NO.
51	115	2-3'-0" x 7'-0"	C	"B" LABEL SM	8 3/4"	SEE ELEV. THIS SHEET - UL "B" LABEL	H-5	-	51
52	126	2-3'-0" x 7'-0"	C	"B" LABEL SM	8 3/4"	DO UL "B" LABEL	H-5	-	52
53	201	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	g	53
54	202	3'-0" x 7'-0"	C	SS	6"		H-3	g	54
55	204	3'-0" x 7'-0"	B	SS	6"	10" x 20" L TOP & BOTTOM	H-7	a	55
56	205	3'-0" x 7'-0"	D	SS	6"	SEE SPEC FRAME DET. 28 x 20 L	H-6	g	56
57	203	3'-0" x 7'-0"	D	SS	6"	SEE SPEC. FRAME DET. 28 x 10 L	H-3	g	57
58	206	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	d.	58
59	209	3'-0" x 7'-0"	B	SS	6"	20 x 20 L	H-6	d.	59
60	208	2'-0" x 7'-0"	B	SS	6"		H-12	-	60
61	210	2'-0" x 7'-0"	B	SS	6"		H-7	h.	61
62	211	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	e	62
62a	216	2'-0" x 7'-0"	C	SS	6"	8 x 16 L	H-11	-	63
64	215	2'-0" x 7'-0"	C	SS	6"	8 x 16 L	H-11	-	64
65	214	2'-0" x 7'-0"	C	SS	6"	8 x 16 L	H-11	-	65
66	213	2'-0" x 7'-0"	C	SS	6"	8 x 16 L	H-11	-	66
67	212	2'-0" x 7'-0"	B	SS	6"		H-7	i.	67
68	217	3'-0" x 7'-0"	B	SS	6 5/8"	20 x 20 L	H-6	e	68
69	218	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	e	69
70	219	3'-0" x 7'-0"	D	SS	6"	SEE SPEC FRAME DET. 28 x 20 L	H-6	e	70
71	220	2'-8" x 7'-0"	B	SS	6"		H-7	h.	71
72	221	2'-8" x 7'-0"	C	SS	6"	10 x 20 L	H-3	k	72
73	222	2'-8" x 7'-0"	C	SS	6"	10 x 20 L	H-3	j & k	73
74	223	2'-8" x 7'-0"	C	SS	6"	10 x 20 L	H-3	k	74
75	224	2'-8" x 7'-0"	C	SS	6"	10 x 20 L	H-3	k	75
76	225	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	e	76
77	226	3'-0" x 7'-0"	D	SS	6"	10 x 20 L	H-3	e	77
78	227	3'-0" x 7'-0"	D	SS	6"		H-3	c	78
79	228	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	e	79
80	229	3'-0" x 7'-0"	C	SS	6"	20 x 20 L	H-6	e	80
81	230	3'-0" x 7'-0"	C	SS	6"	10 x 20 L	H-7	e	81
82	231	2-3'-0" x 7'-0"	B	SS	6"		H-8	c	82
83	231	3'-0" x 7'-0"	B	SS	6"		H-7	a	83
84	232	3'-0" x 7'-0"	B	SS	6"	20 x 20 L	H-6	e	84
85	233	3'-0" x 7'-0"	B	SS	6"	20 x 20 LIGHTPROF LOUVERS AS SPEC'D	H-9	g	85
86	233	3'-0" x 7'-0"	B	SS	6"	20 x 20 LIGHTPROF LOUVERS AS SPEC'D	H-9	g	86
87	232	6'-6" x 9'-4"		WD	–		-	-	87
88	232	12'-8" x 9'-4"		WD	–		-	-	88
89	235	3'-0" x 7'-0"	C	SS	6"	10 x 20 L	H-7	a	89
90	232	3'-0" x 7'-0"	B	SS	6"	20 x 20 L	H-6	g	90
9:	204	30" x 30"	ATTIC ACCESS - BILCO, CAD #1 W/SPRING LIFTING LEVER						

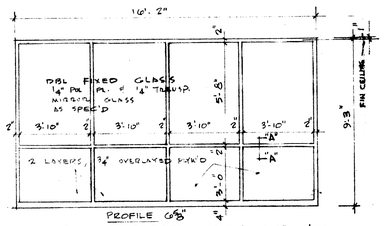
1¾" OVERDOOR PANEL - DET. THIS SHEET



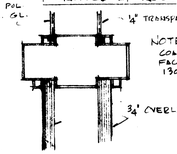
¾" OVERLAYED PLYW'D PANELS FINISH 2 SIDES

FRAMES AT DOOR #35

4" = 1'-0"



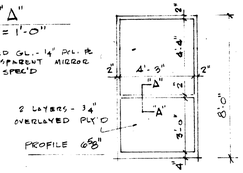
FRAMES AT ROOM 130 - 2 REQ'D



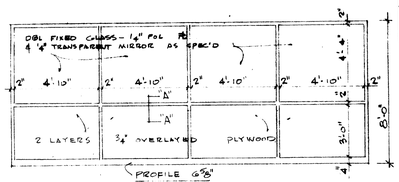
NOTE: COATED SIDE OF GLASS TO FACE AWAY FROM RMS 130 & 217

DET. "A"

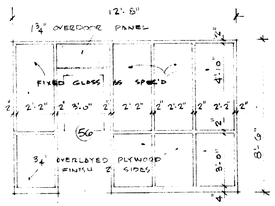
3" = 1'-0"



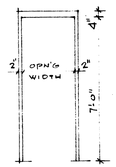
FRAMES AT RM 217 - 4 REQ'D



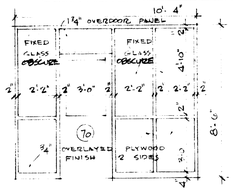
FRAME AT RM 217



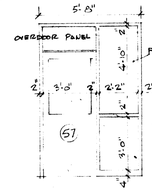
FRAME AT DOOR 56



TYP. FRAME IN MAS. WALL



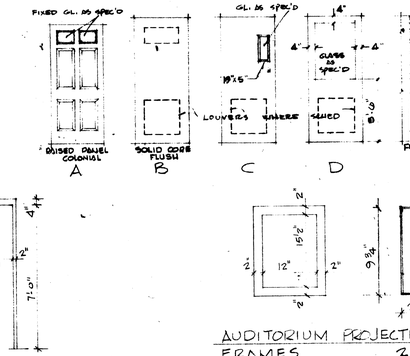
FRAME AT DOOR 70

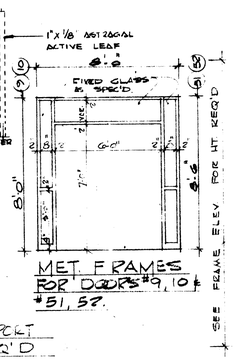


FRAME AT DOOR 57

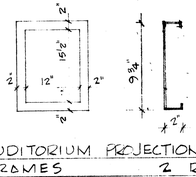
KEY GROUPINGS - SEE SCHED.

a.	DOORS 1, 3, 7, 8, 18, 19, 21, 46, 55, 82, 83 - MECH ENCL GATES, ALL PRODUCTS KEY ALIKE
b.	DOORS 2, 5, 6, KEY ALIKE, PASS GROUPS "f" & "k"
c.	DOORS 11, 12, 13, 14, 15, 16, KEY ALIKE
d.	DOORS 17, 22, 35, 40, 47, 58, 59, 25, 29 KEY ALIKE - PASS BY "b" & "f"
e.	DOORS 39, 62, 68, 69, 70, 76, 77, 78, 79, 80, 81, 84. KEY ALIKE, PASS BY "b" & "k"
f.	DOORS 24, 27, 28 31, 32, 33, 34 - SEPARATE KEYS TO PASS "d" & "g" - PASS BY "b"
g.	DOORS 53, 54, 56, 57, "88, 85, 89, 90 - KEY ALIKE - PASS BY "f"
h.	DOORS 30, 61, 71 SEPARATE KEYS
i.	DOORS 67, 73 - KEY ALIKE
j.	DOORS 4, 36, 37, 42, 43, 48 KEY ALIKE
k	DOORS 72, 73, 74, 75 - SEPARATE KEYS - PASS BY "b" - PASS "e"

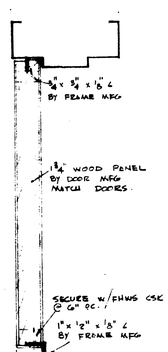




MET. FRAMES FOR DOORS #9, 10 & #51, 52.

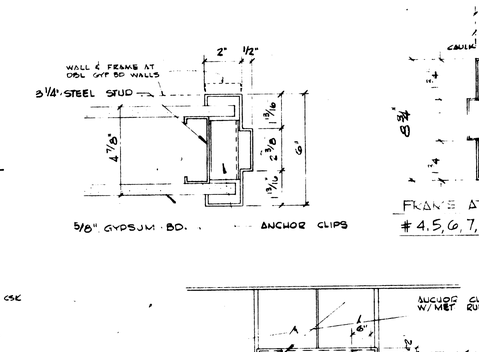


AUDITORIUM PROJECTION PORT FRAMES 2 REQ'D

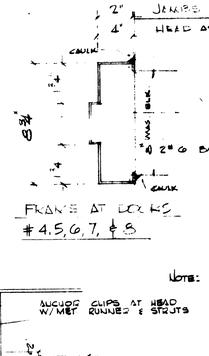


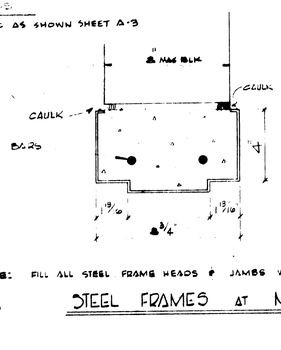
OVERDOOR PANEL

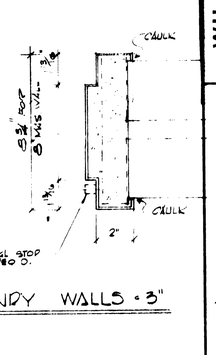
3" = 1'-0"



FRAME AT DOORS #4, 5, 6, 7, & 8



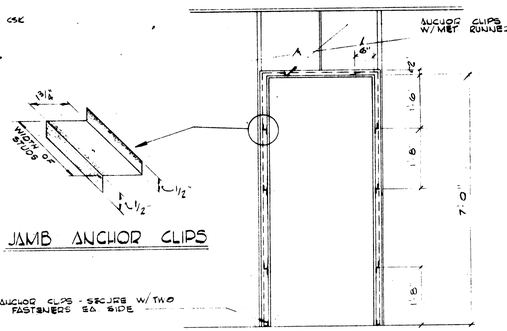




½" x ½" GL STOP WHERE REQ'D.

NOTE: FILL ALL STEEL FRAME HEADS & JAMBS W/ CONC.

STEEL FRAMES AT MASONRY WALLS - 3"



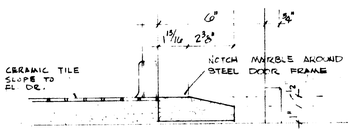
STEEL FRAMES AT STEEL STUD PT'NS - 1½"

JAMB ANCHOR CLIPS

FLOOR ANCHOR CLIPS - SECURE W/TWO RAMSET FASTENERS EA SIDE

ABBREVIATIONS USED ON SCHED.

WS	WL FRAME BY MILLWORK CONTR.
SM	STEEL FRAME - MASONRY ANCHORS
SS	STEEL FRAME - STEEL STUD JAMB ANCHOR CLIPS
L	METAL LOUVER IN DOOR



MARBLE THRESH AT DOORS 20, 36, 41, 44

3" = 1'-0"

NORTH CAROLINA SEAL WILMINGTON

BALLARD, McKIM, & SAWYER, AIA
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

7-C-792
DRAWN BY: JEFF
CHECKED BY: F.L.S.
DATE: JUN 28, '68
SHEET NO. A-11

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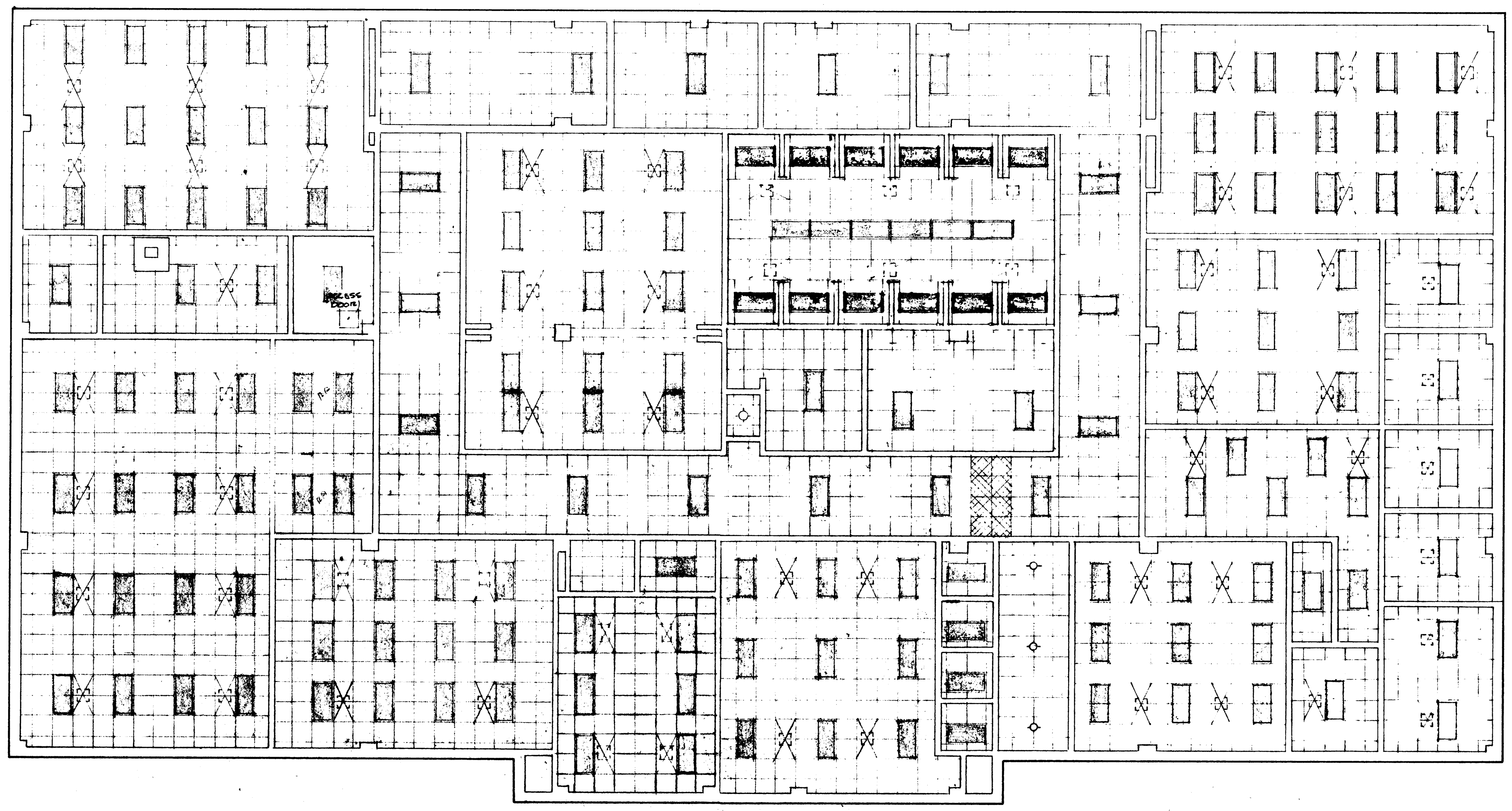
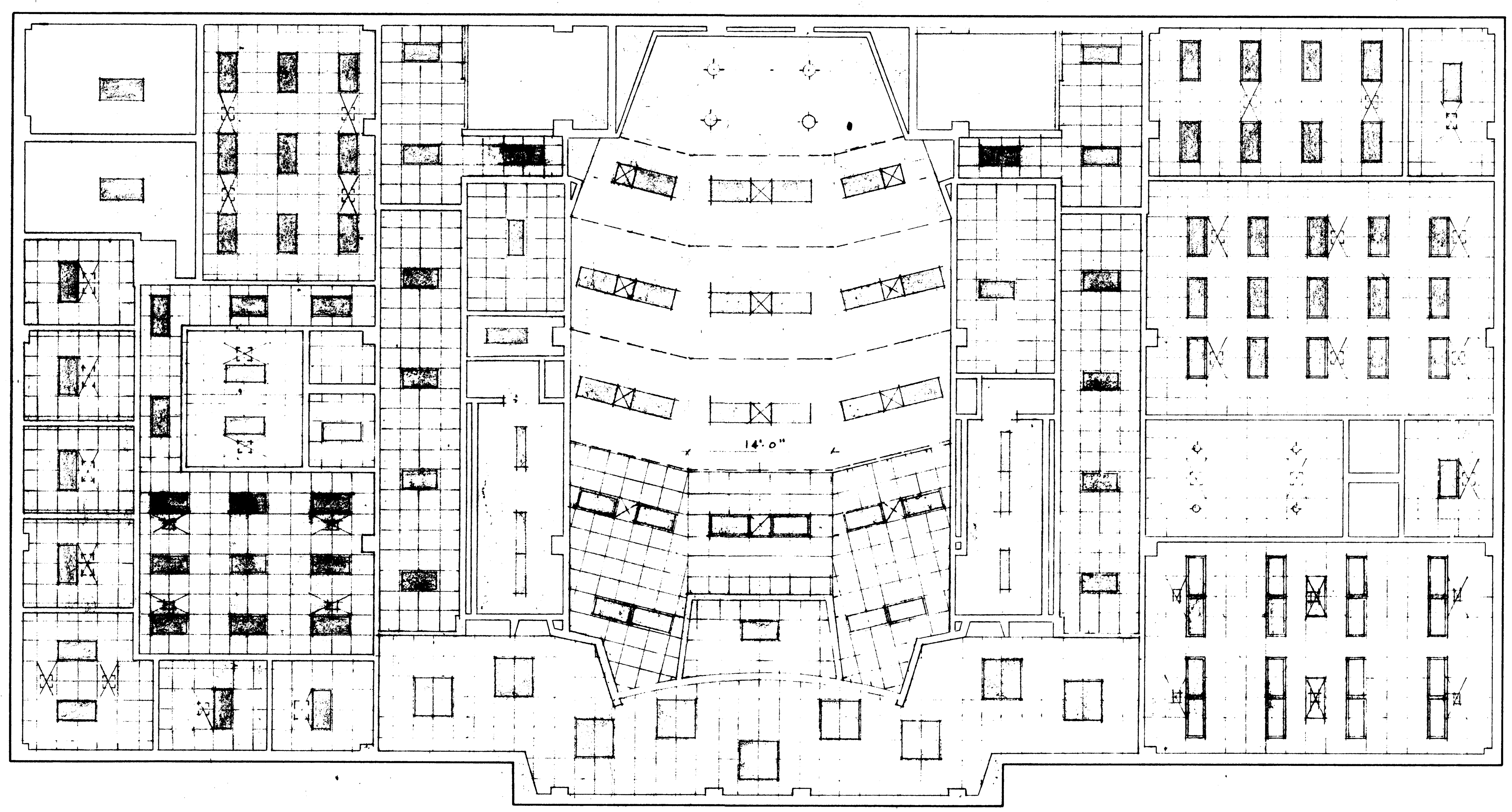


REFLECTED CEILING PLAN SECOND FLOOR



REFLECTED CEILING PLAN FIRST FLOOR

5 JUNE'69 KMP

"AS-BUILT" DRAWING

DATE

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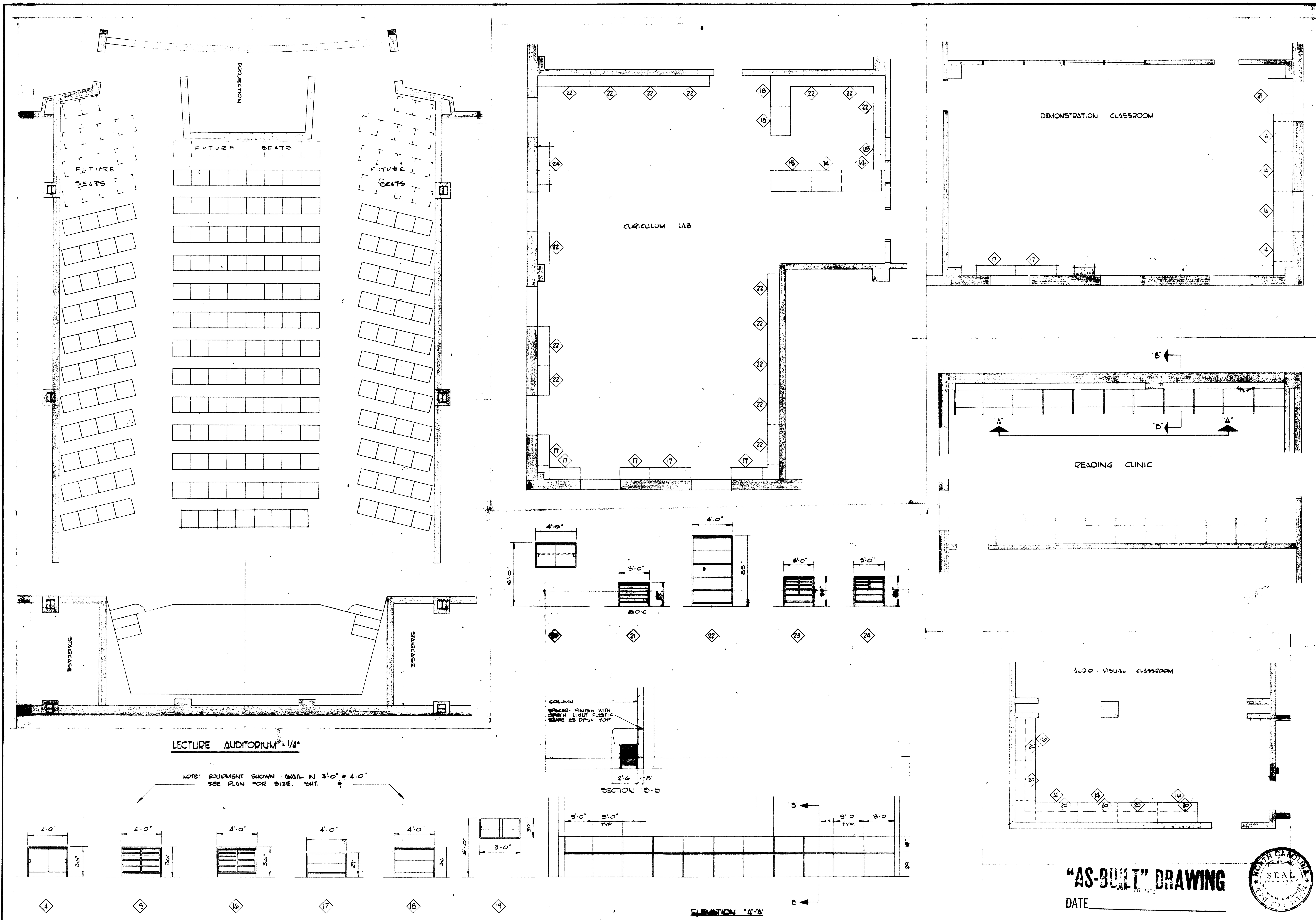
CHECKED BY: BJG

DATE JUN 28, 68

SHEET NO.

A-12



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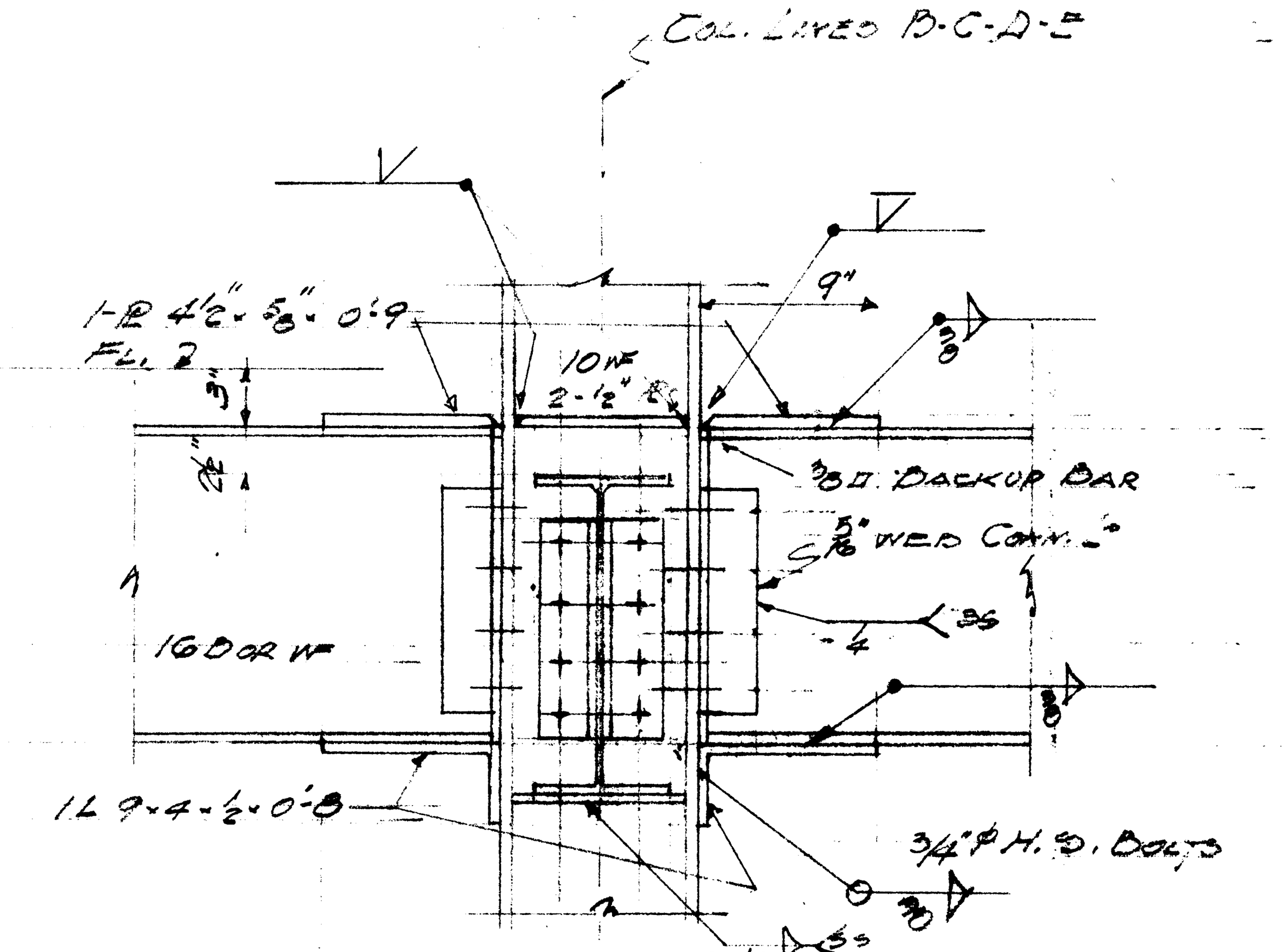
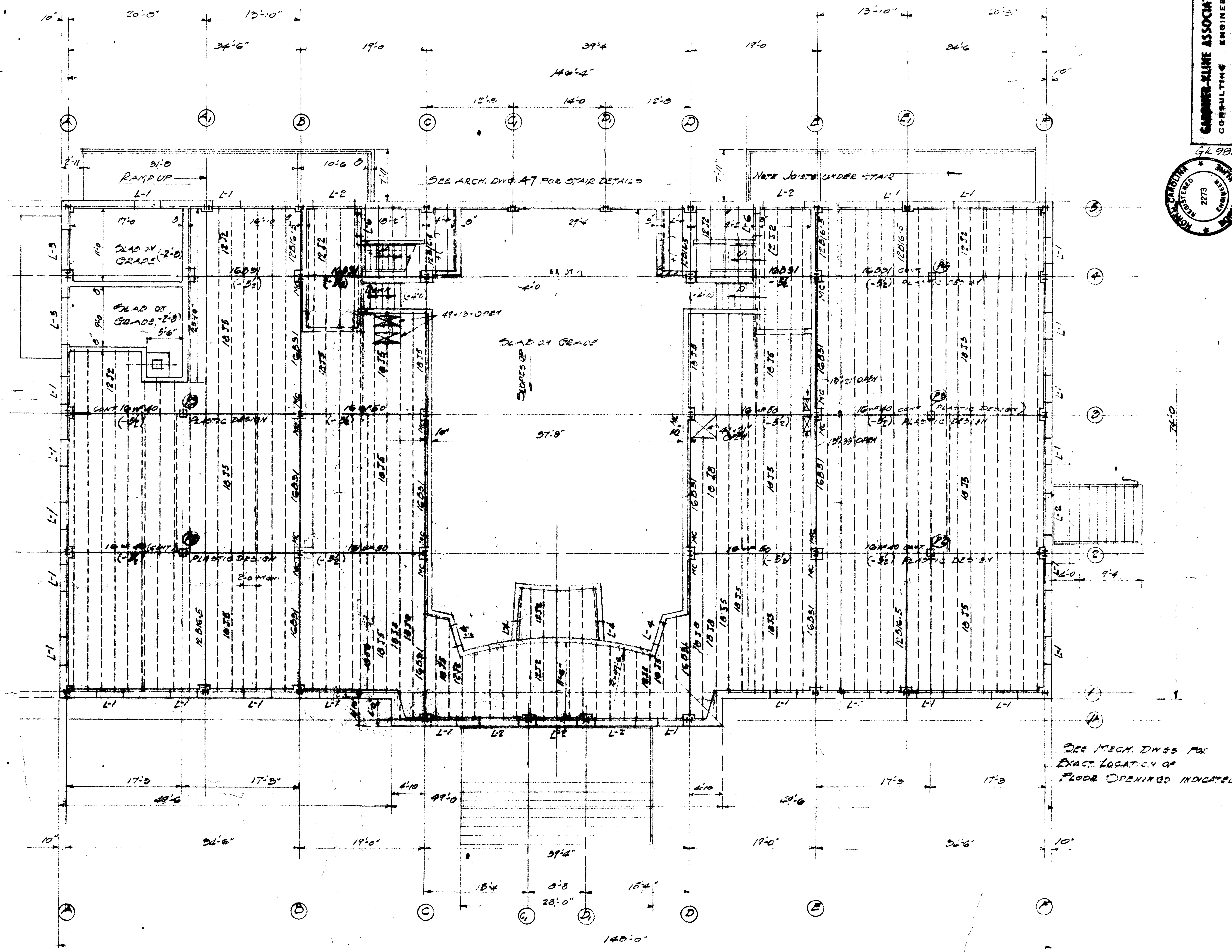
DRAWN BY
CHECKED BY
DATE

S1



TYPICAL WIND MOMENT CONN. FOR (1½" = 1 FOOT) NON-LOAD BEARING STRUTS ON 1ST AND 2ND. FLOORS



LINTEL SCHEDULE

L-1	1 L 4 × 3½ × 5/16 AND 8" BLOCK LINTEL w/ 2 #4 BARS
L-2	8 B 10 + 1 L 4 P
L-3	8 B 10 + 1 L 4 P
L-4	8" BLOCK LINTEL - 2 #4 BARS
L-5	2 Ls 3½ × 3½ × ¼
L-6	2 Ls 3 × 2½ × ¼

FIRST FLOOR FRAMING PLAN 1/8" = 1'-0" ELEV. 49'-0" TOP OF 3" CONC. SLAB

TOP OF STEEL -3" UNLESS NOTED

"AS-BUILT DRAWING"
JUN 10 19..
DATE

GARDNER-KLINE ASSOCIATES
CONSULTING ENGINEERS
DURHAM-RALEIGH, NORTH CAROLINA
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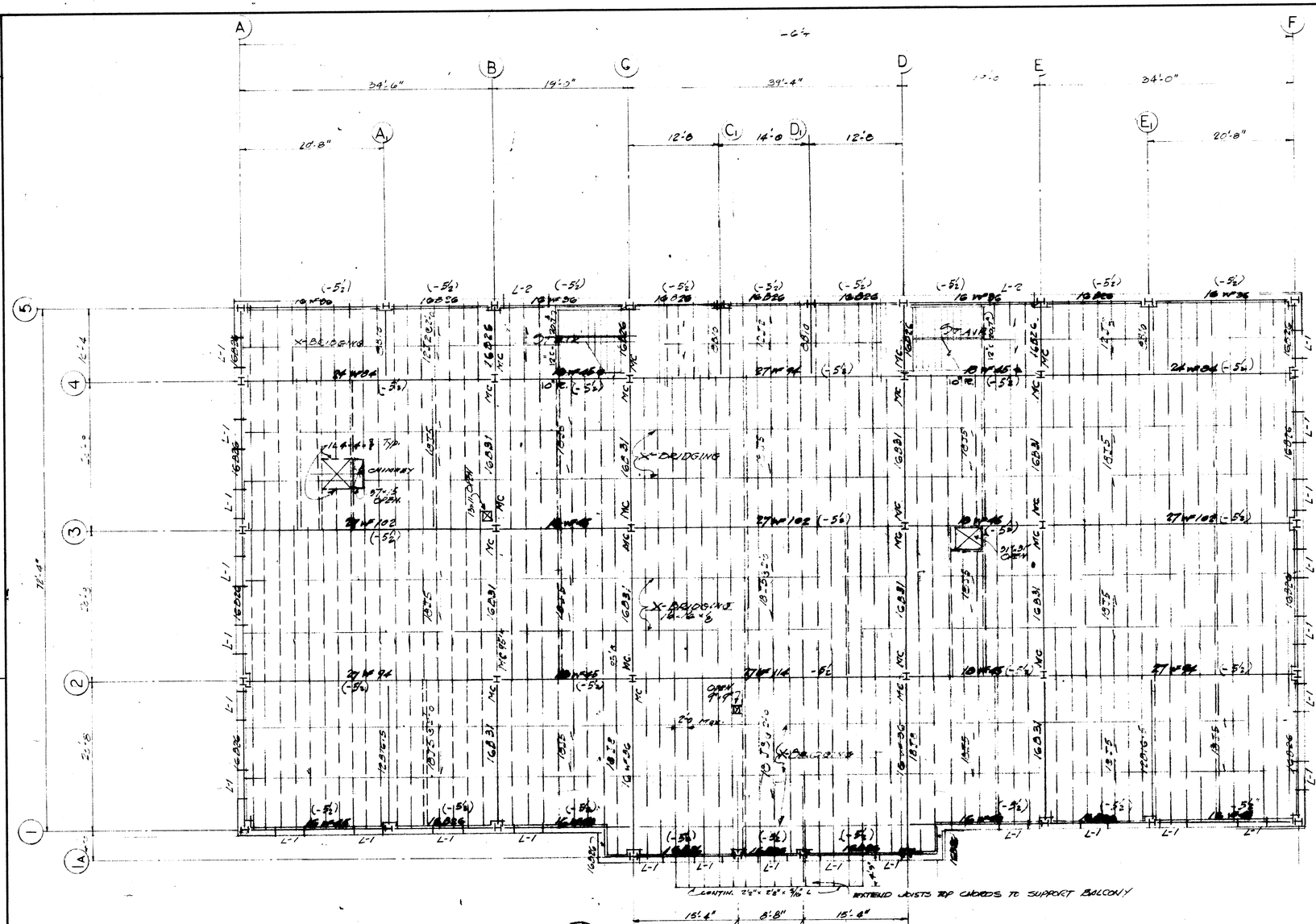
NORTH CAROLINA SEAL REGISTERED ARCHITECT



SECOND FLOOR FRAMING PLAN 1/8"=1'-0"

FL. FIN. FLOOR 61'0" TOP OF STEEL -3" U.O.N.

STEEL JOISTS:

1. STEEL, DESIGN, FABRICATION, AND ERECTION: STANDARD SPECIFICATIONS OF THE STEEL JOIST INSTITUTE.
2. BOTTOM CHORD OF JOISTS TO BE 2 ANGLES. PROVIDE CEILING EXTENSIONS AS SHOWN ON ARCHITECT'S DRAWINGS.
3. BRIDGING (SPACING PER SJI SPECS.) ALL BRIDGING TO BE CROSSED ANGLES WELDED IN PLACE.
4. WELD JOISTS TO STEEL SUPPORTS WITH 1" OF ⅜" FILLET EACH SIDE OF JOIST, U.O.N. ALL WELDING TO BE BY WELDERS AS UNDER "STRUCTURAL STEEL".
5. WHERE JOISTS BUTT OVER A 4" FLANGE, WELD JOISTS TOGETHER AS WELL AS TO BEAM. LENGTH OF JOISTS TO BE EXACT.
6. WELD DECK TO JOISTS PER DECK MFR'S RECOMMENDATIONS, U.O.N.
7. UNDER JOISTS, PROVIDE CONCRETE LINTEL BLOCKS REINFORCED.
8. PROVIDE DOUBLE JOISTS UNDER ALL PARTITIONS PARALLEL TO JOISTS, U.O.N.
9. WHERE JOIST LAYOUT PERMITS, THE BEARING END OF ALL JOISTS ARE TO BE CENTERED OVER THE WEB OF THE SUPPORTING BEAM. DIAGONAL MEMBERS AND BASE ℙ ARE TO BE SO DETAILED. A TOP CHORD EXTENSION IS NOT ACCEPTABLE IN LIEU OF THE SPECIAL BEARING DETAIL. NOTE ON ERECTION DRAWINGS THE BEARING CONDITION AT THESE JOISTS.
10. THE DESIGN OF ALL JOISTS FURNISHED SHALL HAVE BEEN SUBMITTED TO AND APPROVED BY THE STEEL JOIST INSTITUTE.

STRUCTURAL MASONRY:

1. LOAD-BEARING MASONRY PIERS OR WALLS, MASONRY RETAINING WALLS, FOUNDATION WALLS, WALLS DESIGNATED ON DRAWINGS AS SHEAR WALLS AND OTHER MASONRY SO DESIGNATED ON DRAWINGS ARE CONSIDERED HERE TO BE STRUCTURAL MASONRY.
2. COMPRESSIVE STRENGTH OF MASONRY UNITS:
   - CLAY UNITS . . . . . 3000 PSI
   - CONCRETE UNITS . . . . . 2000 PSI ON NET AREA
3. COMPRESSIVE STRENGTH AT 28 DAYS OF MORTAR FOR STRUCTURAL MASONRY TO BE 2500 PSI MINIMUM. OTHER PROPERTIES OF MORTAR TO BE IN ACCORDANCE WITH ASTM C161 AND C270.
4. WHERE CONCRETE FILL IS SHOWN IN HOLLOW MASONRY UNITS, USE CONCRETE OR MORTAR OF 2500 PSI MINIMUM 28-DAY STRENGTH. COMPACT WELL TO FILL VOIDS COMPLETELY.
5. REINFORCING GRADE AND DETAILS AS FOR CONCRETE. TIE IN POSITION AND PLACE CONCRETE AROUND REINF DURING CONSTRUCTION OF MASONRY. DO NOT PUSH REINF DOWN INTO PREVIOUSLY PLACED CONCRETE FILL. SET BOLTS SIMILARLY.
6. TIE WYTHES WITH HORIZONTAL REINF AS SPECIFIED.

"AS-BUILT" DRAWING
DATE JUN 10 [illegible]

GENERAL NOTES

GENERAL:

1. DESIGN LIVE LOADS:
   - ROOF: 30 LBS PER SQ FT.
   - FLOOR AREAS: MECHANICAL + 150; CORRIDORS - 100; STAIRS - 100; OTHER AREAS - 60
   - WIND: 35 LBS PER SQ FT.
2. "U.O.N." MEANS "UNLESS OTHERWISE NOTED".
3. SUBMIT ALL STRUCTURAL SHOP DRAWINGS IN QUADRUPLICATE. DO NOT FABRICATE MATERIAL UNTIL APPROVAL OF ARCHITECT IS RECEIVED.
4. ALL SPECIFICATIONS REFER TO LATEST EDITION.
5. ALL LINTELS BEAR 8" MINIMUM EACH SIDE OF OPENINGS.
6. CONTRACTOR RESPONSIBLE FOR DISSEMINATION OF REVISIONS TO CONTRACT DOCUMENTS AND REQUIREMENTS TO ALL SUB-CONTRACTORS.
7. ALL SAFETY REGULATIONS TO BE FOLLOWED STRICTLY.
8. NOTES BELOW ARE NOT INTENDED TO REPLACE WRITTEN SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES.
9. METHOD OF ERECTION OF ALL STRUCTURAL MATERIAL IS ERECTOR'S RESPONSIBILITY. CONSULT ARCHITECT IN CASE OF QUESTIONS.
10. STRUCTURAL FRAME TO BE BRACED UNTIL ERECTION IS COMPLETE AND PERMANENT CONNECTIONS, VERTICAL BRACING, OR MASONRY BRACING IS INSTALLED.

FOUNDATIONS:

1. ALLOWABLE SOIL PRESSURE ASSUMED 5000 PSF MINIMUM, TO BE VERIFIED IN THE FIELD BEFORE CONSTRUCT.
2. No THUS DENOTES ELEVATION OF TOP OF WALL FOOTINGS OR GRADE BEAMS, U.O.N.
3. No THUS DENOTES ELEVATION OF TOP OF COLUMN FOOTINGS, U.O.N.
4. FTGS TO BE RAISED OR LOWERED FROM ELEVATIONS SHOWN ON DRAWINGS AS DIRECTED BY ARCHITECT WITH ADJUSTMENT IN CONTRACT USING UNIT PRICES.
5. WALLS ACTING AS RETAINING WALLS SHALL NOT BE BACKFILLED WITHOUT BRACING UNTIL ALL SUPPORTING SOIL AND SLABS IN PLACE AND AT ADEQUATE STRENGTH.
6. PROVIDE WELL-BRACED SHORING AT EXCAVATIONS NEAR EXISTING BUILDINGS TO PREVENT SETTLEMENT.
7. COMPACT ALL FILL UNDER BUILDING TO 95% MAXIMUM DENSITY AS DETERMINED BY ASTM D1557. PLACE IN LAYERS 8" MAXIMUM LOOSE THICKNESS. VERIFY FIELD DENSITY, ASTM D1556, WITH AT LEAST ONE TEST PER 5000 SQ FT PER LAYER. ALL TESTS TO BE AT EXPENSE OF OWNER.
8. SELECT AND PLACE POROUS BACKFILL AT RETAINING WALLS CAREFULLY.

CONCRETE:

1. CONCRETE COMPRESSIVE STRENGTH IN 28 DAYS: 3000 LBS PER SQ INCH.
2. REINFORCING BARS: INTERMEDIATE GRADE NEW BILLET STEEL DEFORMED BARS, ASTM A15 AND A305.
3. WELDED WIRE FABRIC: ASTM A185
4. USE REGULAR STONE CONCRETE FOR ALL CONCRETE.
5. GROUT: ONE PART TYPE I PORTLAND CEMENT AND 2½ PARTS SAND BY VOLUME.
6. BAR DETAILS AND SUPPORTS: ACI BUILDING CODE AND ACI DETAILING MANUAL. LAP ALL SPLICES 30 DIAMETER, U.O.N.
7. CLEAR DISTANCE FROM FACE OF CONCRETE ON MAIN STEEL:
   - SLABS . . . . . 3/4"
   - BEAMS, COLS, AND WALLS . . . 1½"
   - FOOTINGS . . . . . 3" BOTTOM - SIDES 2"
8. PROVIDE WIRE MESH IN ALL SLABS ON THE GROUND, 1½" FROM TOP OF SLAB:
   - 4" SLABS 66-1010
   - 5" SLABS 66-66
9. PROVIDE ¾" X 45° CHAMFER ON ALL EXPOSED CONCRETE EDGES.
10. PROVIDE DOUBLE JOISTS UNDER ALL PARTITIONS PARALLEL TO JOISTS, U.O.N.
11. WELDING TO BE BY WELDERS AS UNDER "STRUCTURAL STEEL".
12. ALL 3" CONCRETE FLOOR SLABS REINFORCED WITH W.W.F. 66-1010.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL: ASTM A36
2. DESIGN, FABRICATION, AND ERECTION: AISC SPECIFICATIONS FOR BUILDINGS.
3. DESIGN CONNECTIONS FOR FULL STRENGTH OF MEMBER UNLESS LOADS ARE SHOWN ON THE DRAWINGS. SHOP CONNECTIONS: WELDED. FIELD CONNECTIONS: ¾" HIGH TENSILE STRENGTH BOLTS, ASTM A325, U.O.N.
4. WELDS SHALL BE MADE ONLY BY OPERATORS CERTIFIED BY THE STANDARD QUALIFICATION PROCEDURE OF THE AMERICAN WELDING SOCIETY FOR TYPE OF WELD REQUIRED.
5. PROVIDE ERECTION BOLTS AS REQUIRED FOR WELDED CONNECTIONS. ERECTION BOLTS EXPOSED OUTSIDE SHALL BE REMOVED AND HOLES PLUGGED AS DIRECTED BY THE ARCHITECT. GRIND IF REQUIRED.
6. RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM.
7. WELDED CONNECTIONS TO EXISTING MEMBERS CARRYING STRESS TO BE MADE TO REDUCE WARPING TO MINIMUM. SHORE OR BRACE EXISTING MEMBER DURING WELDING OPERATION.
8. GENERAL CONTRACTOR TO SUBMIT A STATEMENT BY ERECTOR THAT HE IS FAMILIAR WITH SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS AS ENDORSED BY THE AISC.
9. PROVIDE 8x½x0'-8" BASE ℙ WITH 2-½x1'-0" ANCHOR BOLTS UNDER ALL BEAMS BEARING ON MASONRY, U.O.N.
10. PROVIDE ¾" MINIMUM GROUT UNDER COLUMN BASE ℙS. GROUT TO CONTAIN A NONSHRINK ADMIXTURE EQUAL TO "EMBECO".
11. PROVIDE HOLES FOR BLOCKING AS PER ARCHITECT'S DRAWINGS.
12. DEFORMED BAR ANCHORS SHOWN WELDED TO STEEL SHAPES TO BE FURNISHED WITH SHAPES. BARS TO BE ASTM A15 AND A305.
13. WHERE MEMBERS WERE DESIGNED USING PLASTIC STRENGTH, FOLLOW AISC SPECIFICATIONS FOR SPECIAL FABRICATION TECHNIQUES.
14. FABRICATOR SHALL PROVIDE ALL BOLTS NECESSARY FOR ERECTION.
15. ALL STEEL SHAPES SHOWN ON STRUCTURAL DRAWINGS BY STRUCTURAL STEEL CONTRACTOR UNLESS NOTED MISCELLANEOUS STEEL.
16. UNLESS NOTED, ALL END CONNECTIONS FOR BEAMS TO BE PROPORTIONED FOR REACTIONS FOR FULL UNIFORM WORKING LOAD ON CORRESPONDING SPAN.

NORTH CAROLINA REGISTERED SEAL 2273 ENGINEER

CARDNER-KLINE ASSOCIATES
CONSULTING ENGINEERS
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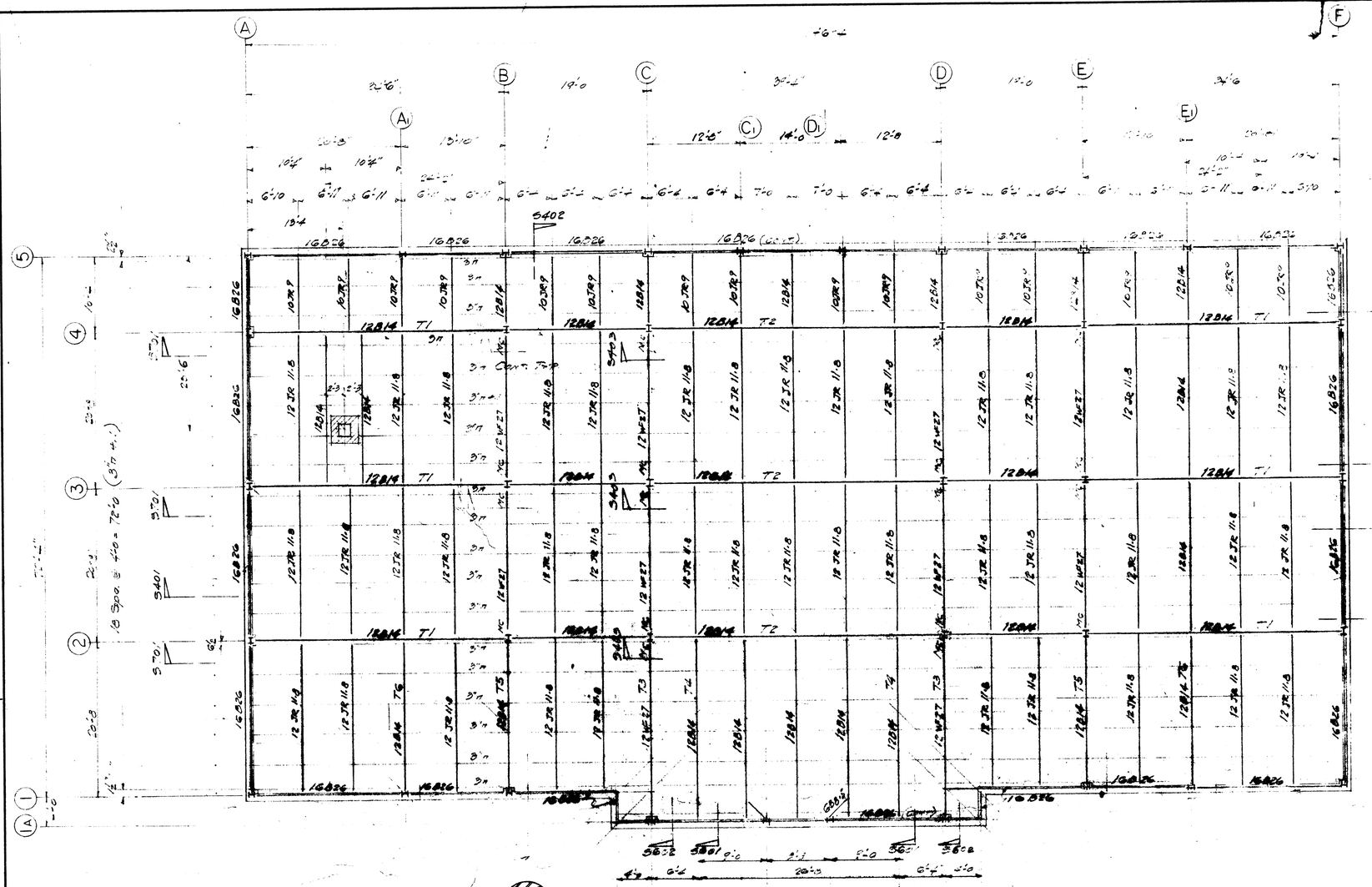
WILMINGTON, NORTH CAROLINA

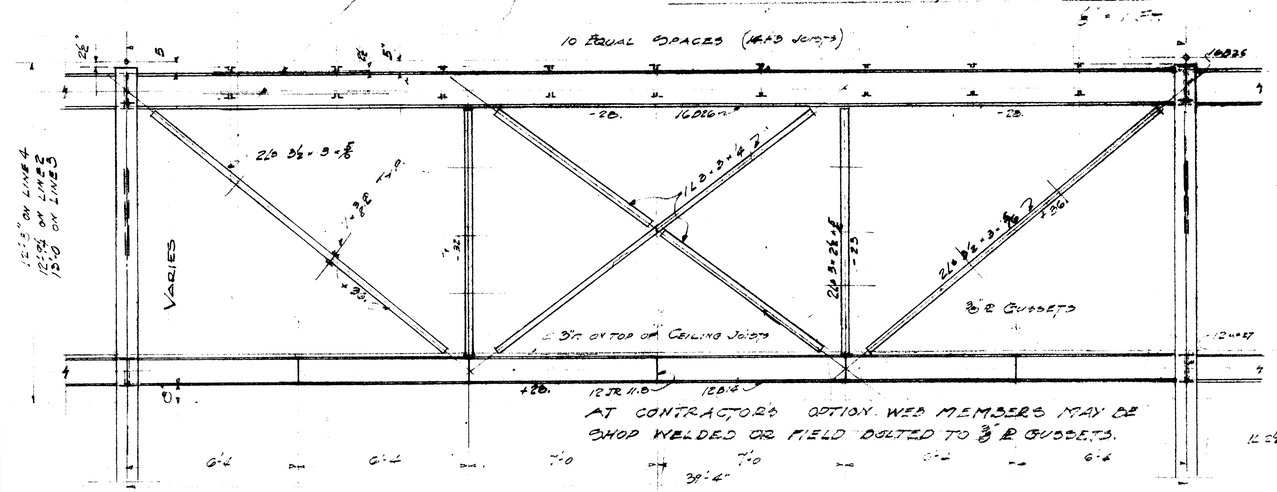
DRAWN BY
CHECKED
DATE

"AS-BUILT" DRAWING

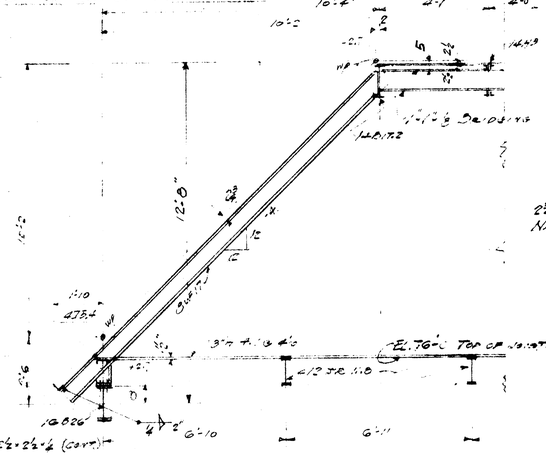
DATE JUN 10 1970



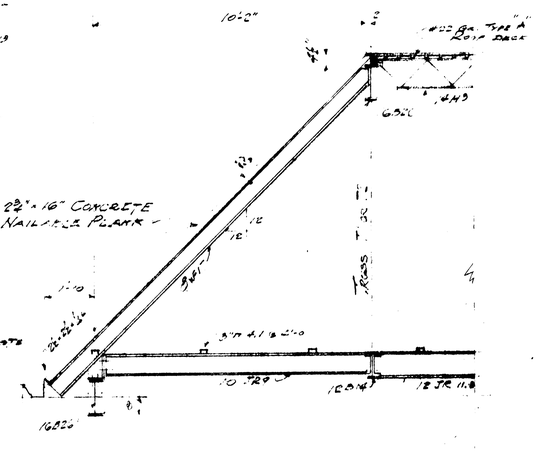
EL. TOP OF 12" CEILING JOISTS - 75'0 -
CEILING STRUCTURE AND BOTTOM CHORD OF ROOF TRUSSES



HORIZONTAL ROOF TRUSS - T2 3/8" = 1'0" 5403



RAFTER SEC. 5401



RAFTER - SEC 5402 3/8" = 1'0"

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GK 981

NORTH CAROLINA REGISTERED 2273 DONALD H. REANE PROFESSIONAL ENGINEER

NORTH CAROLINA REGISTERED ARCHITECT SEAL

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DEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF ROOF OPENINGS INDICATED

ROOF FRAMING PLAN 1/8" = 1'-0"

"AS-BUILT" DRAWING

DATE JUN 10

GARDNER-KLINE ASSOCIATES
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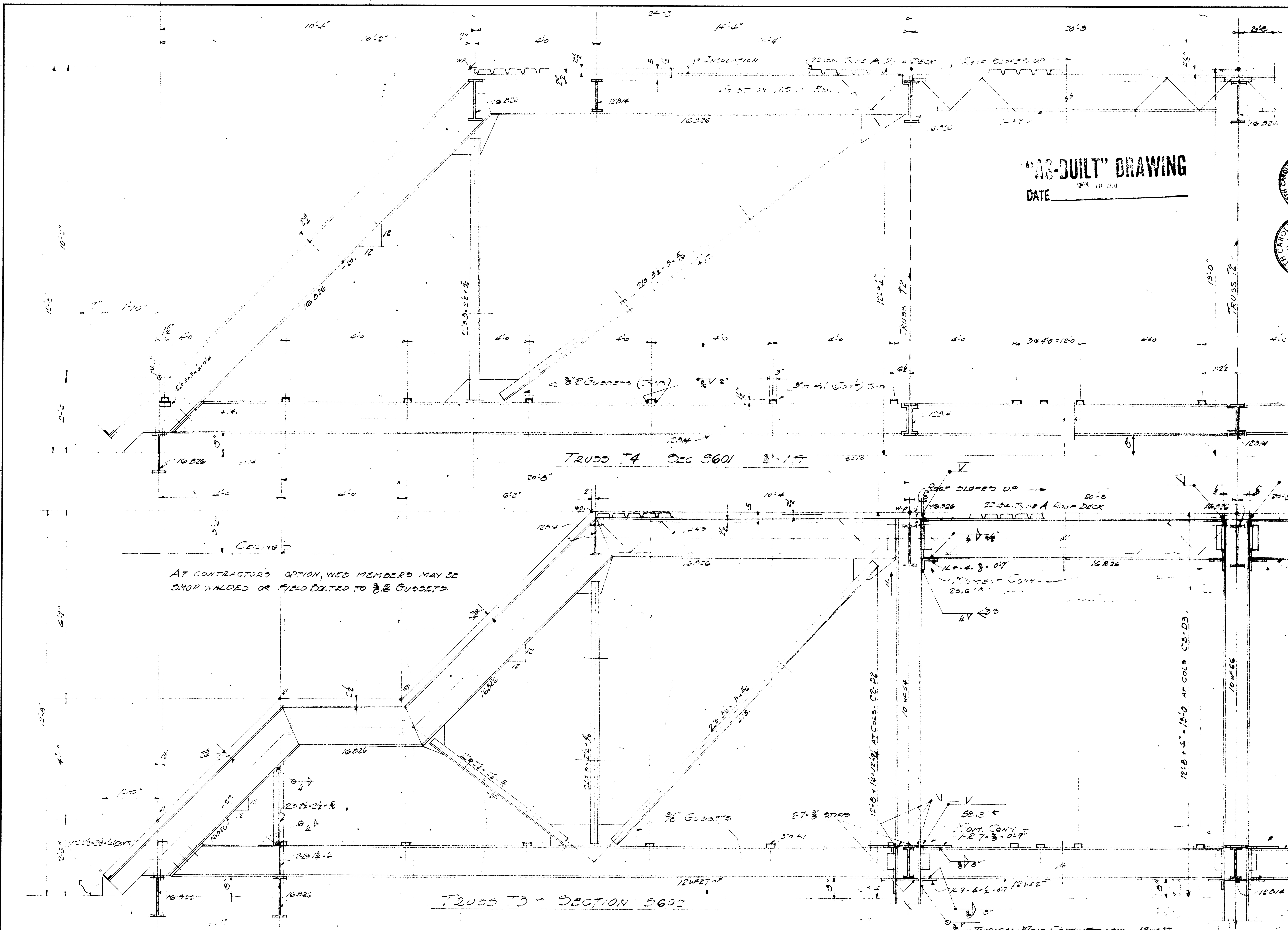
S6



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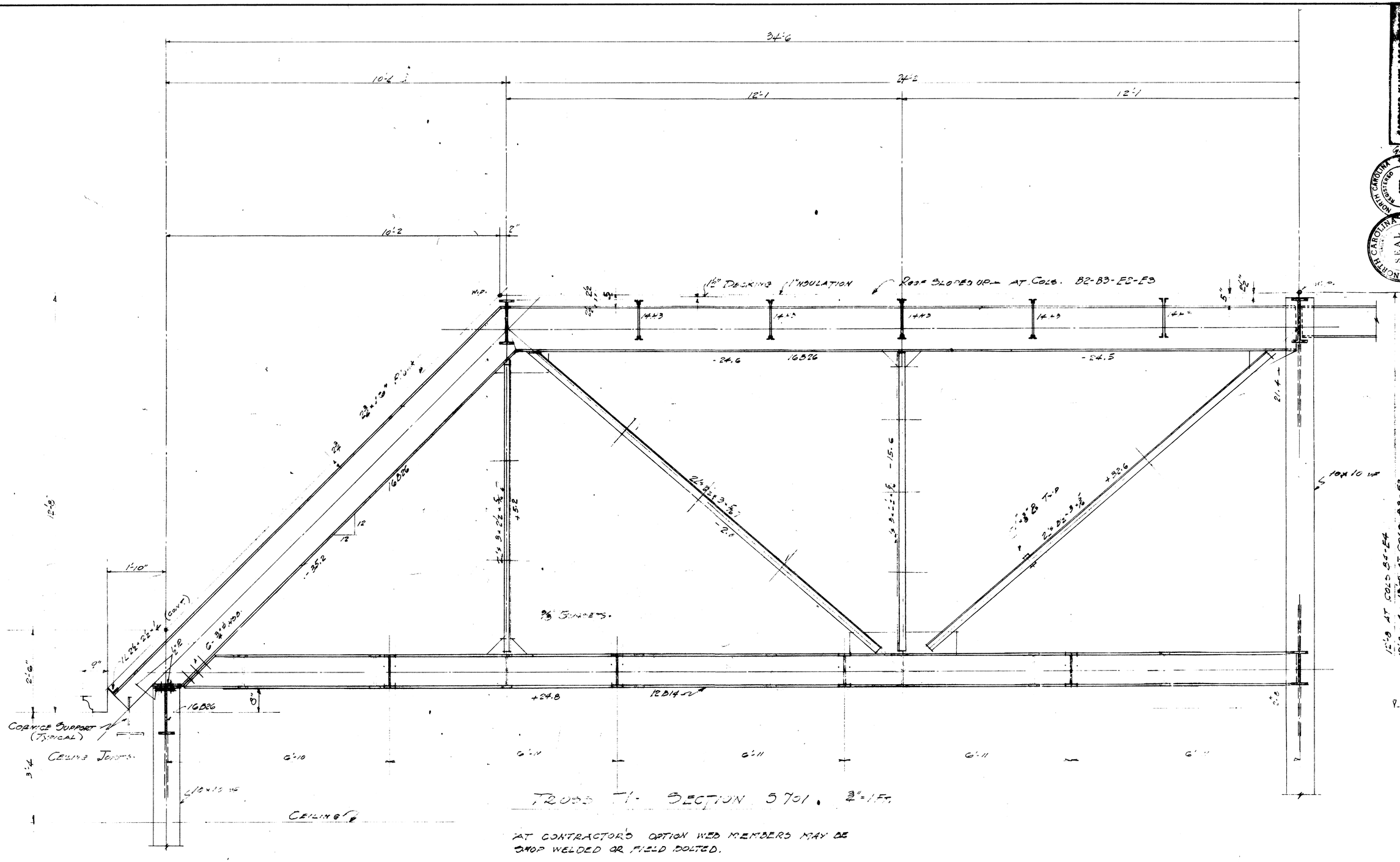

AT CONTRACTOR'S OPTION WEB MEMBERS MAY BE SHOP WELDED OR FIELD BOLTED.

"AS-BUILT" DRAWING

DATE_____

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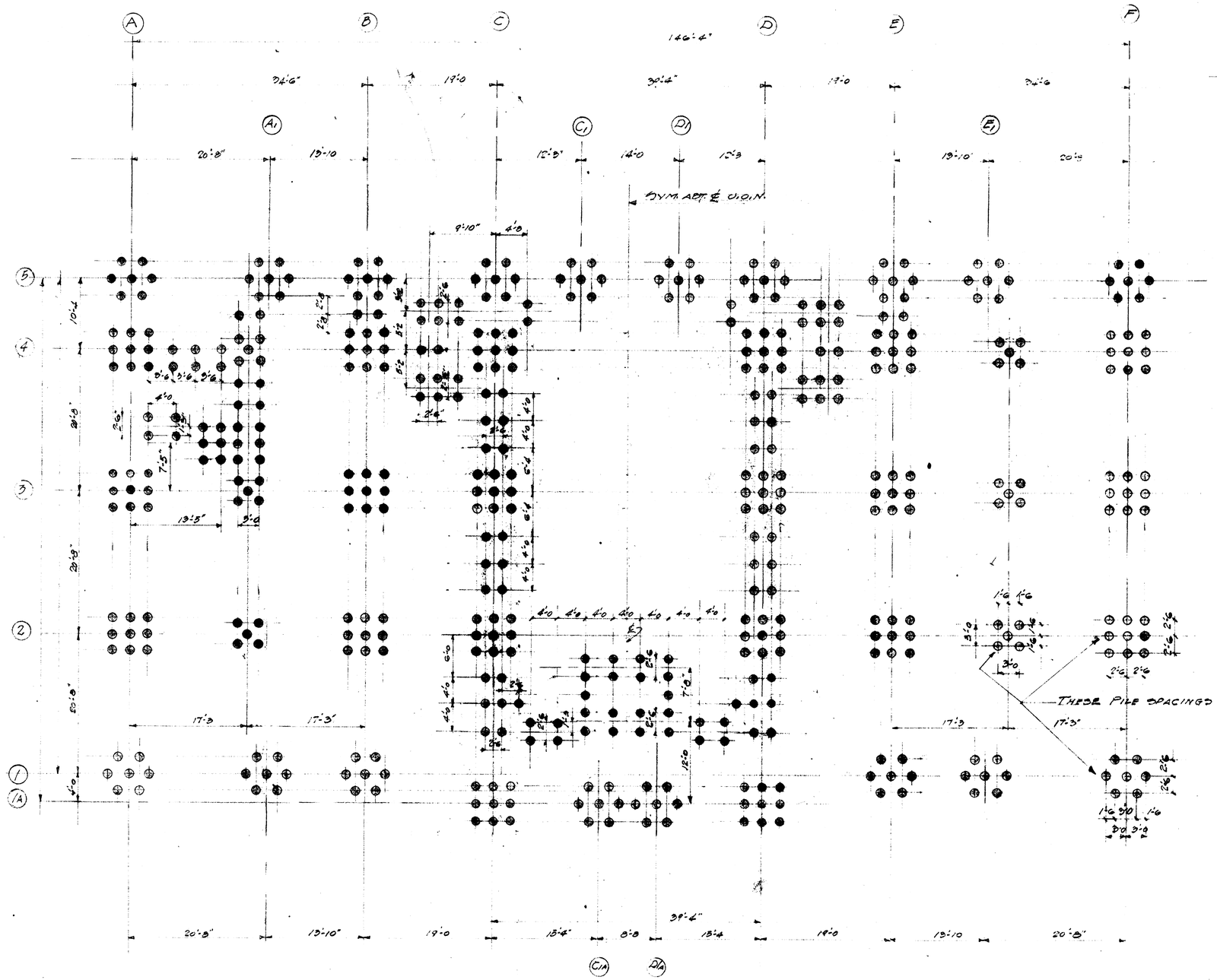
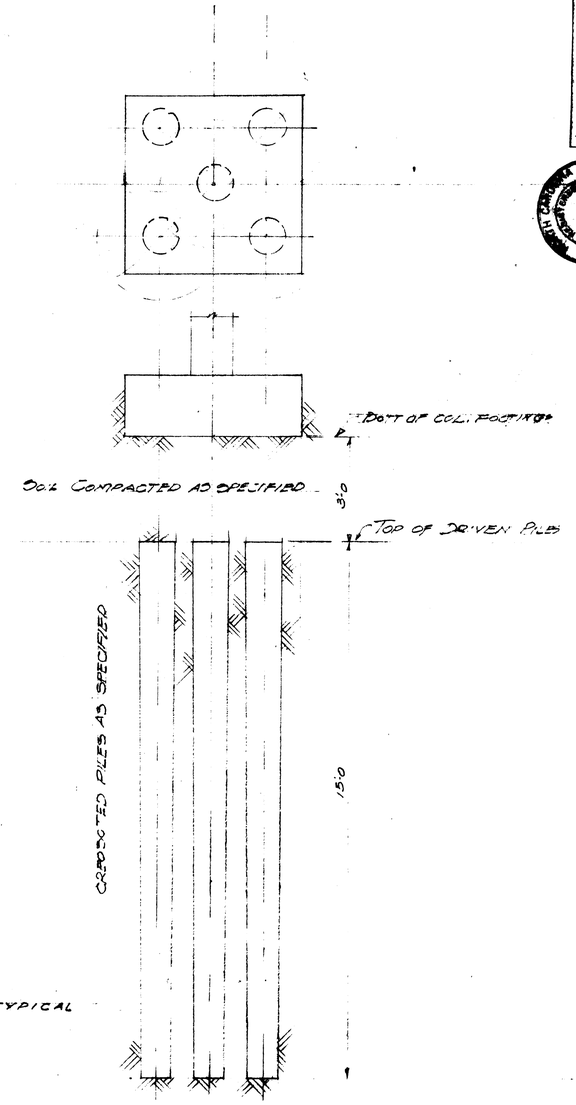


FOUNDATION PLAN 1/8"=1'-0"



TYPICAL EXAMPLE OF PILE LOCATION
1/2" = 1'-0"

"AS-BUILT" DRAWING
DATE JUN 10

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REVISIONS

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DRAWN BY: GF
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DATE: 2/14/68
SHEET NO.
S8

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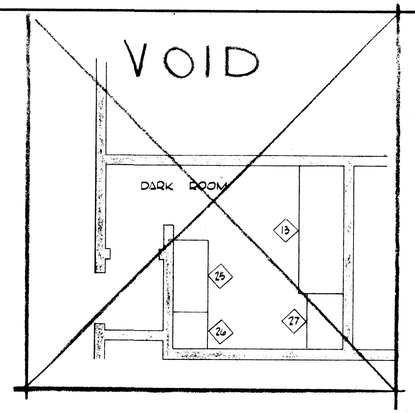

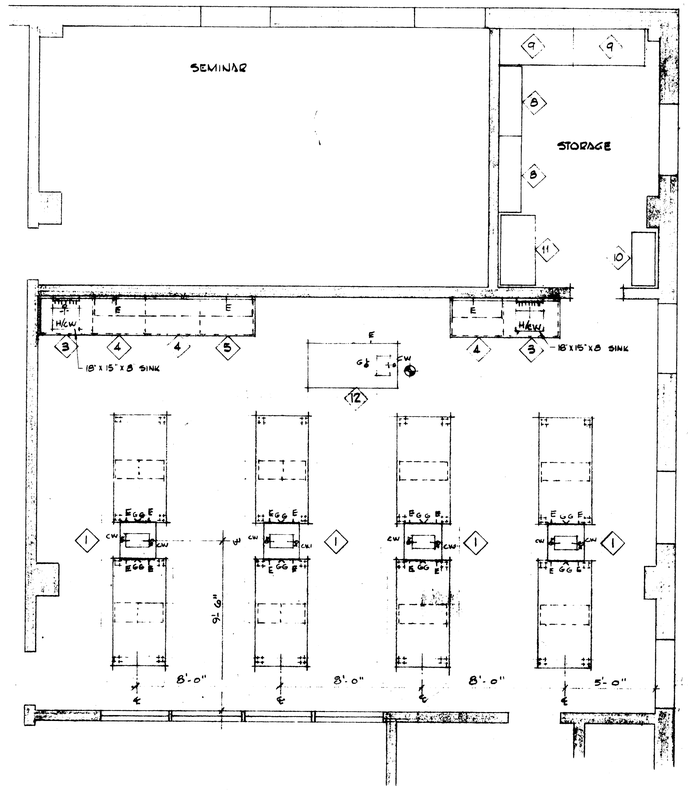

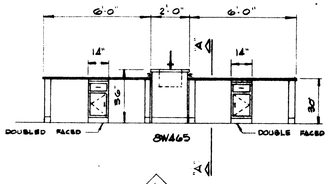

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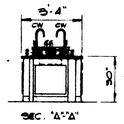

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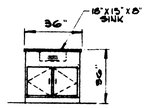

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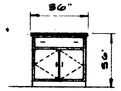

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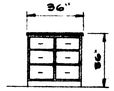

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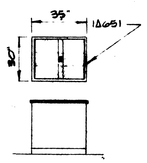

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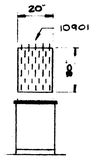

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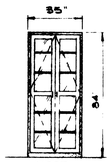

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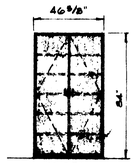

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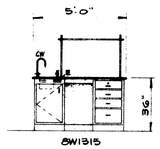

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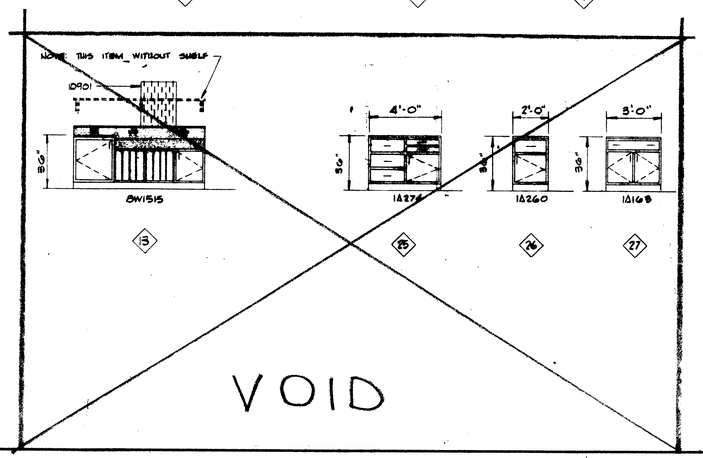

13 25 26 27

"AS-BUILT" DRAWING

DATE JUN 10 '80

NORTH CAROLINA SEAL REGISTERED ARCHITECTS

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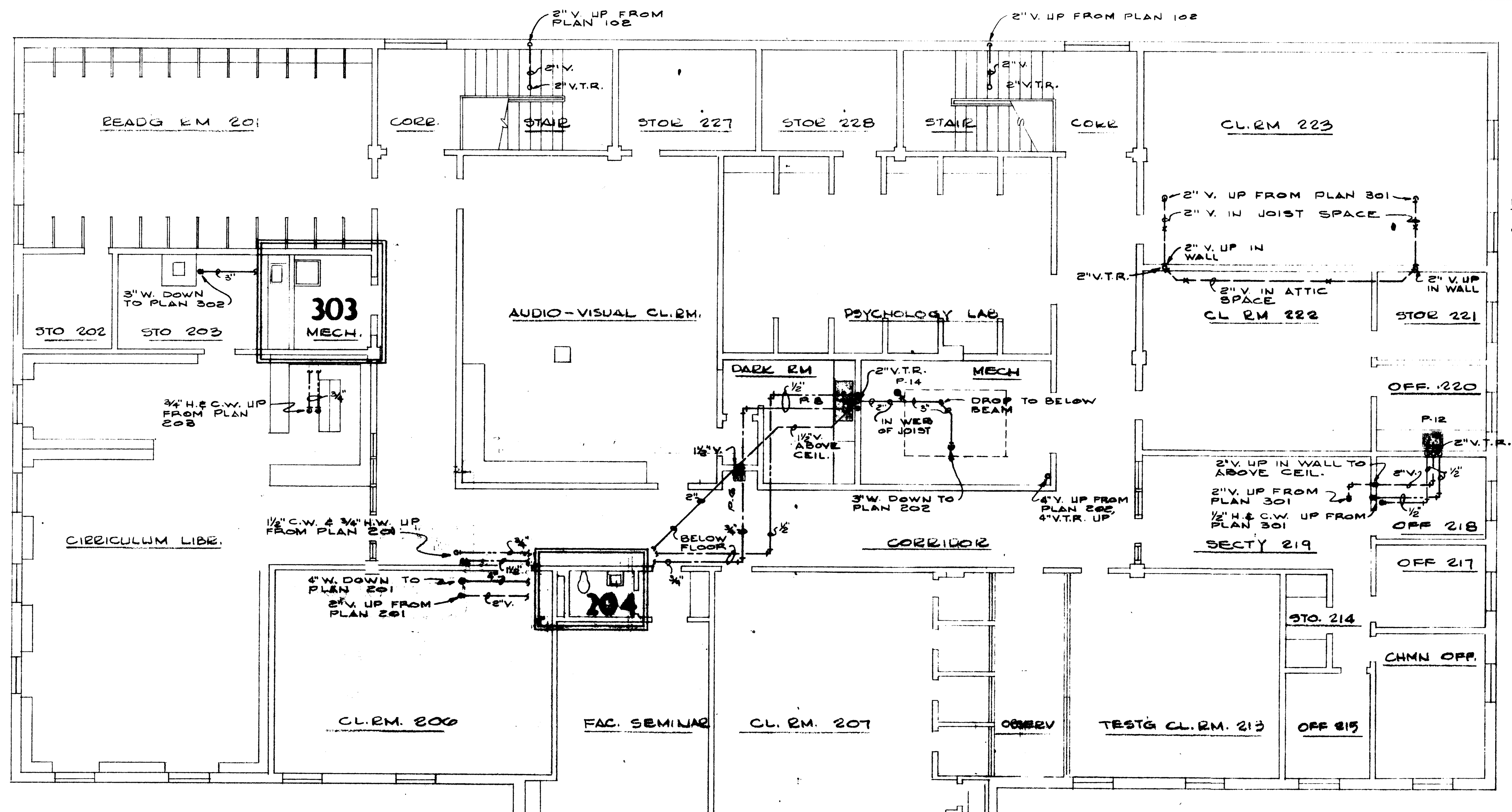
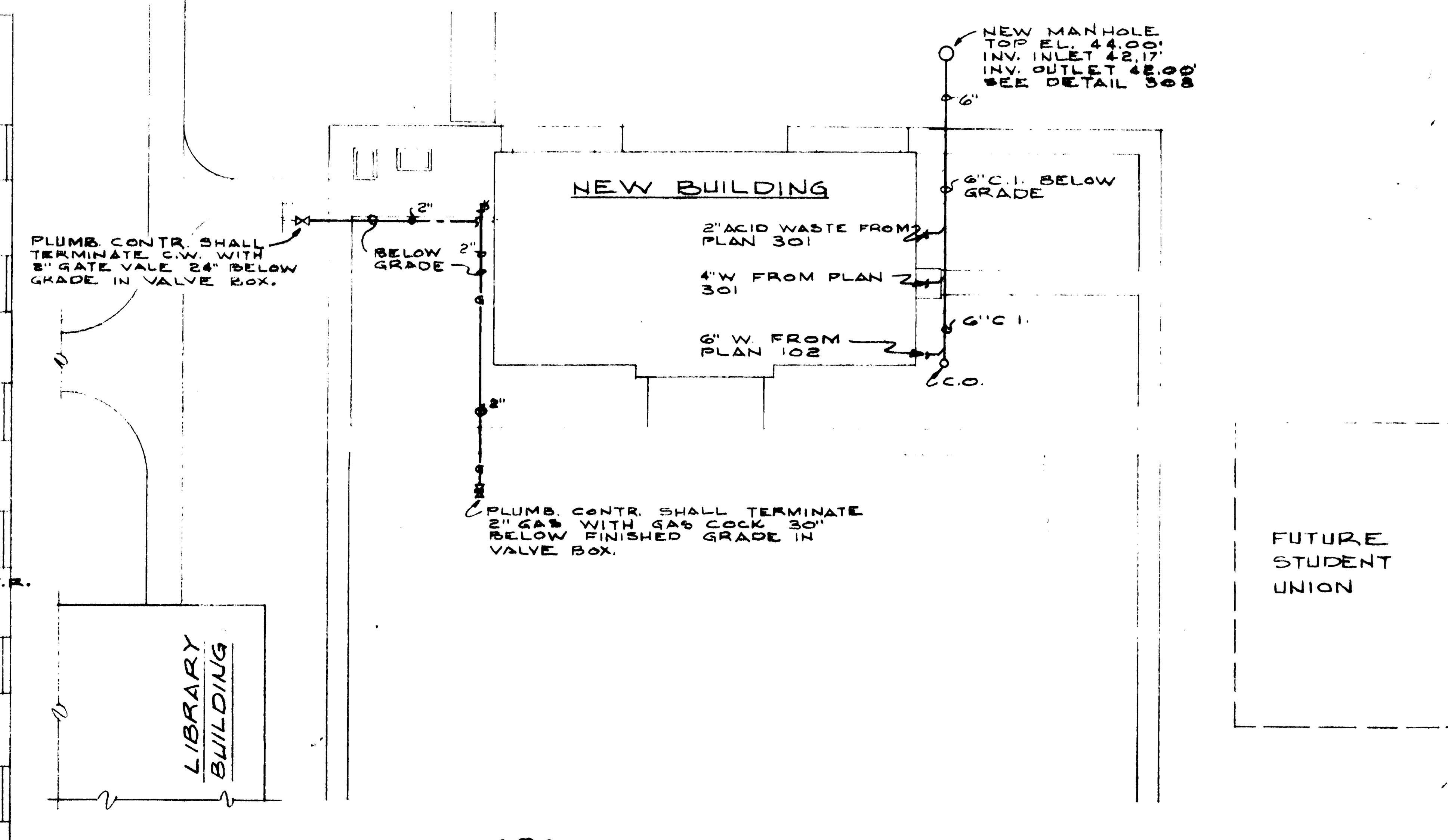
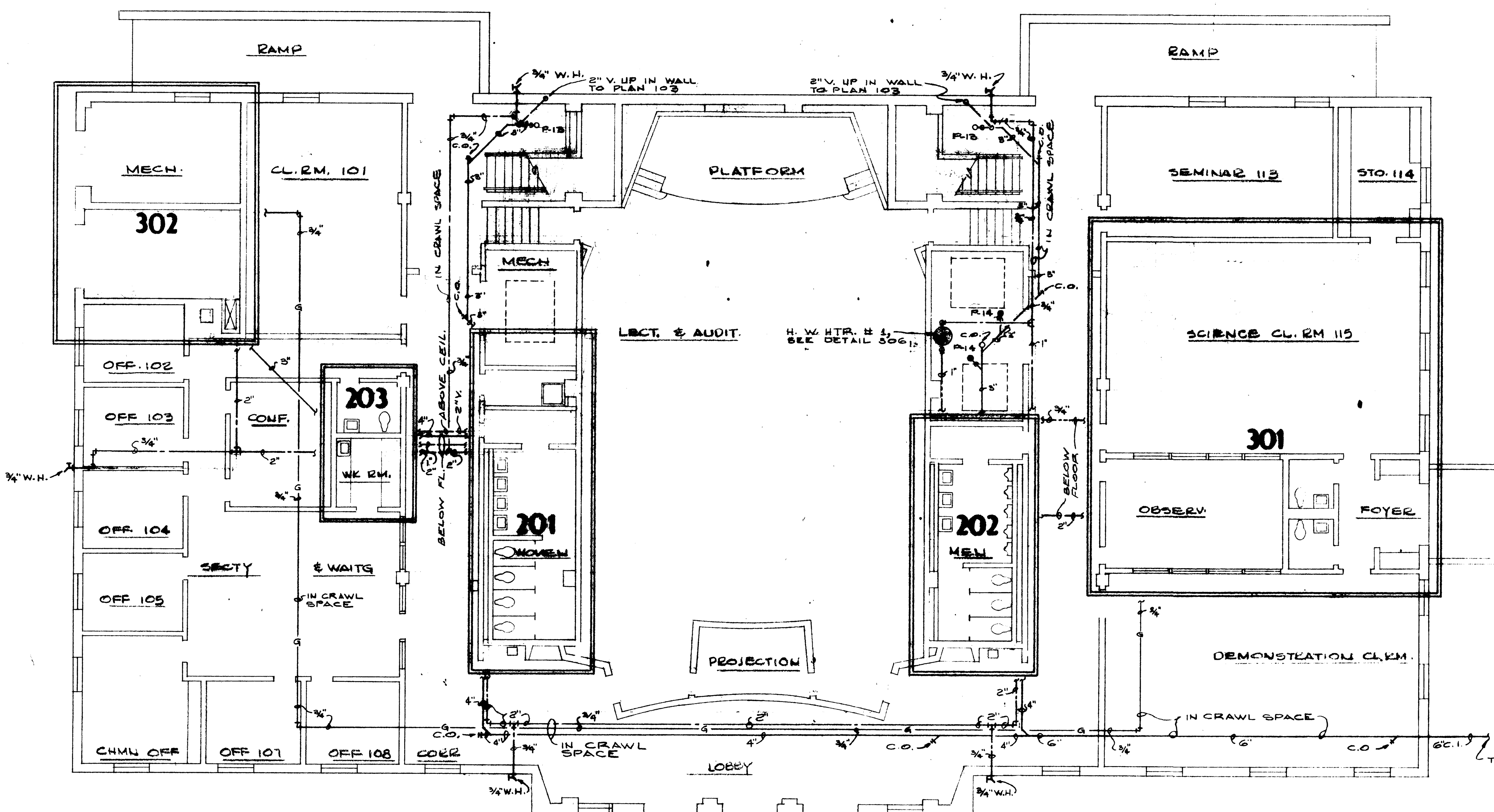
7-C-792
DRAWN BY: J.E.
CHECKED BY: R.B.
DATE: JAN 20, 80
SHEET NO.
EQ-1



103 SECOND FLOOR PLAN
SCALE: 1/8"=1'-0"



101 PLOT PLAN
SCALE: 1"=40'



102 FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

LEGEND

W ———	WASTE PIPING (CAST IRON)
W —✱——✱—	WASTE PIPING (HIGH SILICON CAST IRON)
V. — — —	VENT PIPING (SERVICE WEIGHT CAST IRON SYSTEM)
V. —✱— —✱—	VENT PIPING (HIGH SILICON CAST IRON SYSTEM)
S.D. ——D——	STORM OR ROOF DRAIN PIPING
C.W. ——-——	COLD WATER PIPING
H.W. ——--——	HOT WATER PIPING
V.T.R.	VENT THRU ROOF
C.I.	CAST IRON
C.O.	CLEANOUT
R.D.	ROOF DRAIN
F.D.	FLOOR DRAIN
H.B.	HOSE BIBB
W.H.	WALL HYDRANT
——⋈——	GATE VALVE
——‖——	UNION
A.F.F.	ABOVE FINISHED FLOOR

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	WASTE	C.W.	H.W.	REMARKS
P—1	WATER CLOSET	4"	1"	—	
P—2	URINAL	2"	1"	—	
P—3	LAVATORY	1½"	½"	½"	
P—4	COUNTERTOP SINK	1½"	½"	½"	
P—5	MOP RECEPTOR	3"	½"	½"	
P—6	ELEC. WATER COOLER	1¼"	½"	—	
P—7	SCIENCE TABLE	2"	¾"	—	¾" GAS
P—8	DARK ROOM SINK	2"	½"	½"	
P—9	INSTRUCTOR'S DESK	2"	½"	—	½" GAS
P—10	WORK SINK	2"	1/2"	½"	
P—11	WATER CLOSET	4"	1"	—	RIM MTD 20" A.F.F.
P—12	WORK SINK/DISPOSAL	1½"	1/2"	1/2"	
P—13	FLOOR DRAIN	3"	—	—	
P—14	FLOOR DRAIN	3"	—	—	
P—15	FLOOR DRAIN	3"	—	—	

PLUMBING NOTES:

1. DRAWINGS ARE SCHEMATIC ONLY & ARE NOT INTENDED TO SHOW ALL FITTINGS &/OR OFFSETS REQUIRED OR EXACT LOCATION OF EQUIPMENT.
2. GRADE WASTE PIPING ¼" PER FOOT WHERE POSSIBLE, ⅛" PER FOOT MINIMUM.
3. PROVIDE SHOCK ARRESTERS AT ALL FIXTURE RUN-OUTS IN ACCORDANCE WITH PDI STANDARD WH-201.
4. PROVIDE AN INDIVIDUAL SHUT-OFF VALVE ON EACH FIXTURE SUPPLY LINE.
5. ALL WATER PIPING BELOW GRADE TO BE TYPE 'K' COPPER & PIPING ABOVE GRADE TO BE TYPE 'L' HARD DRAWN COPPER.
6. INSTALL HOSE BIBBS 18" ABOVE FINISHED FLOOR.
7. ALL WASTE, VENT & WATER PIPING TO BE RUN CONCEALED UNLESS NOTED OTHERWISE.
8. ALL FLOOR DRAINS ARE 3" INSIDE CAULK UNLESS NOTED OTHERWISE.
9. INSTALL WALL HYDRANTS 18" ABOVE FINISHED GRADE.

TOTAL CONNECTED LOAD

194 FIXTURE UNITS WASTE
87 GPM COLD WATER DEMAND

"AS-BUILT" DRAWING
DATE JUN 10 [illegible]

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS

NORTH CAROLINA SEAL

WILMINGTON COLLEGE EDUCATION & PSYCHOLOGY BUILDING
WILMINGTON, NORTH CAROLINA

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P-1

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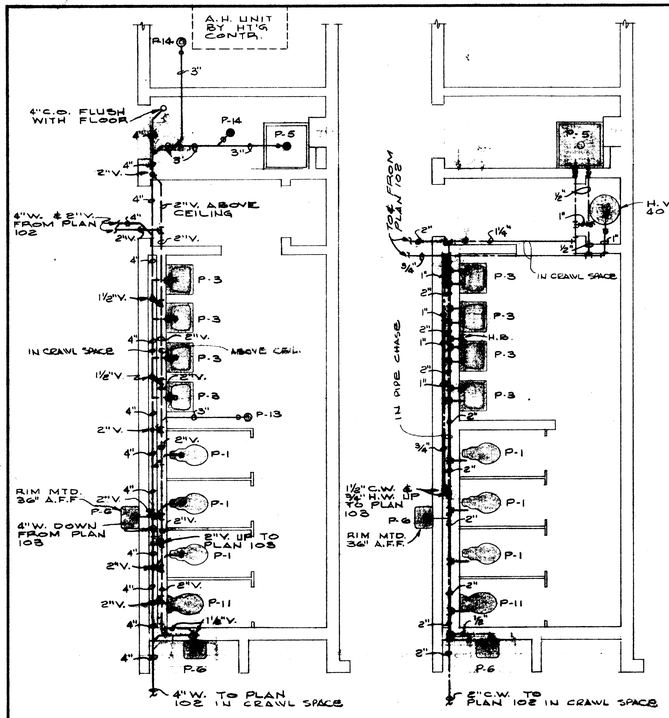
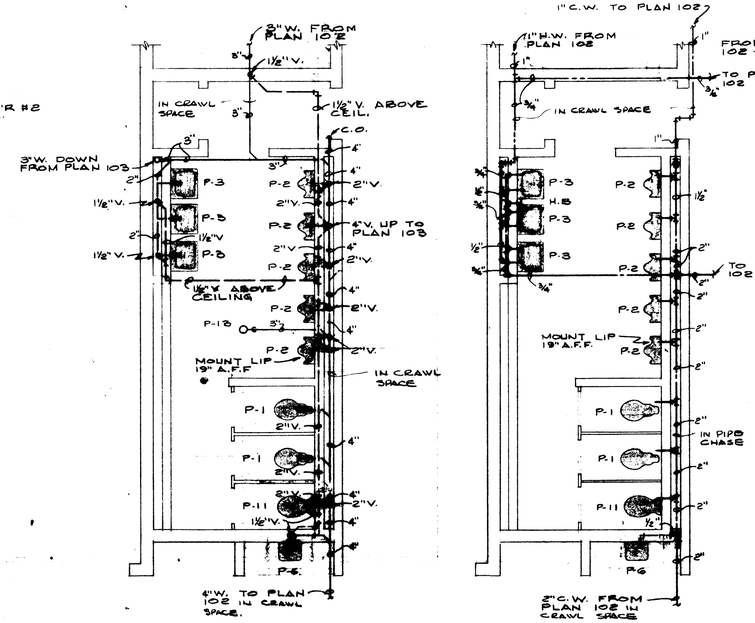


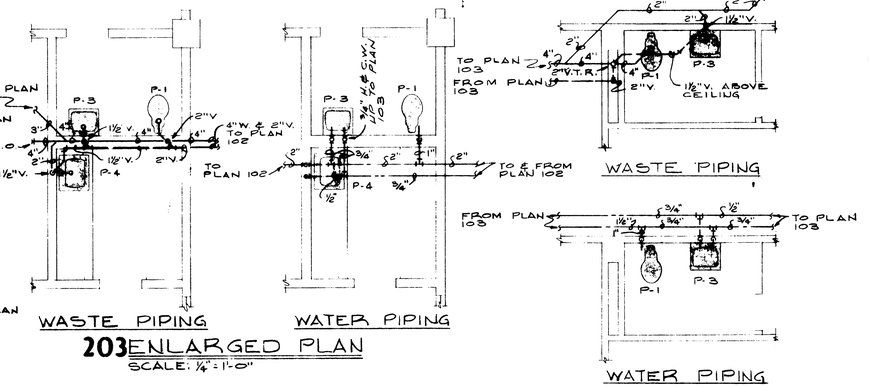
WASTE PIPING WATER PIPING

201 ENLARGED PLAN
SCALE: ¼"=1'-0"



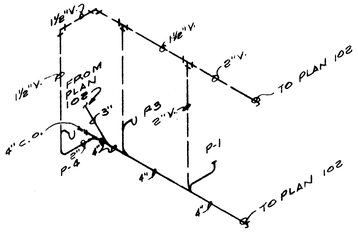
WASTE PIPING WATER PIPING

202 ENLARGED PLAN
SCALE: ¼"=1'-0"



203 ENLARGED PLAN
SCALE: ¼"=1'-0"

204 ENLARGED PLAN
SCALE: ¼"=1'-0"



203 WASTE RISER
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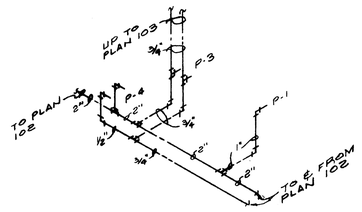

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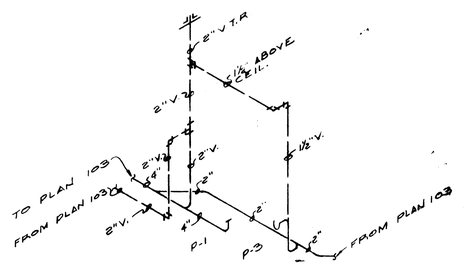

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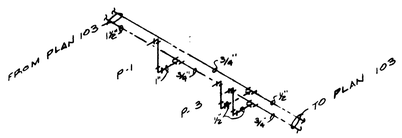

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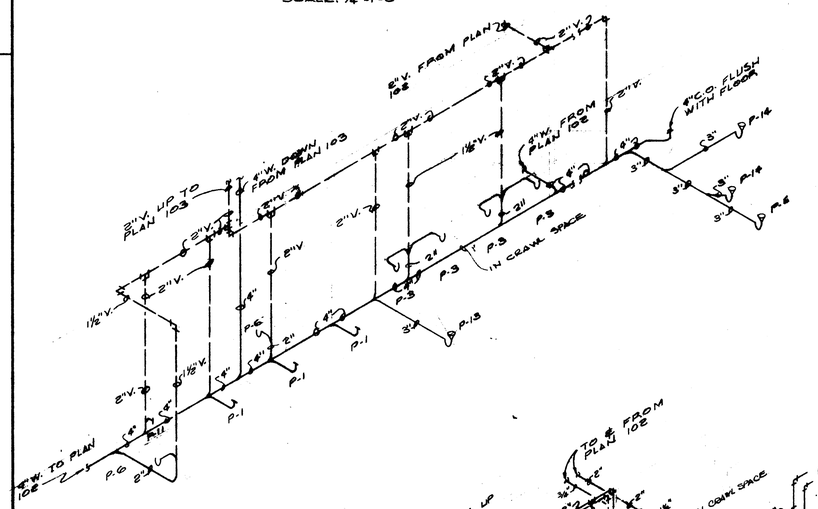

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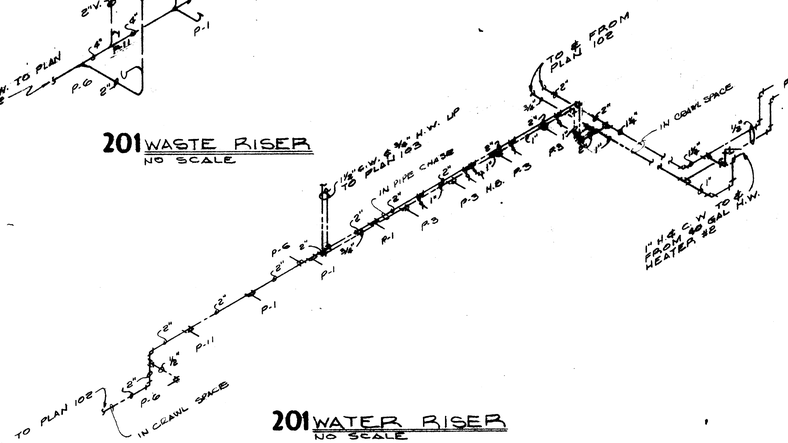

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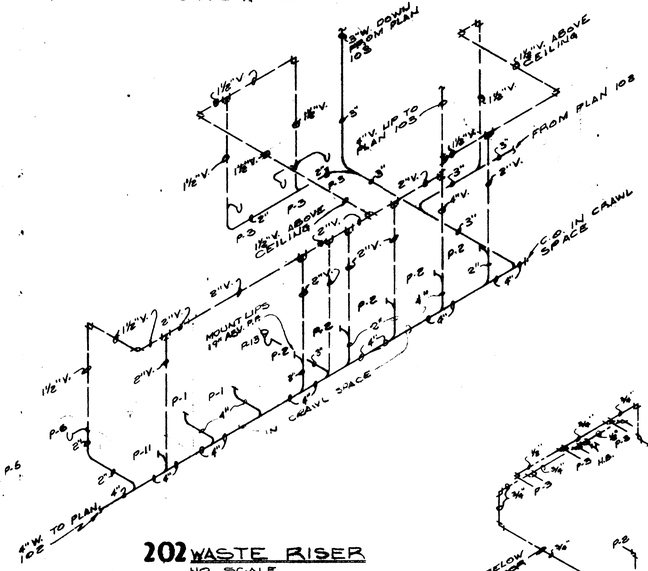
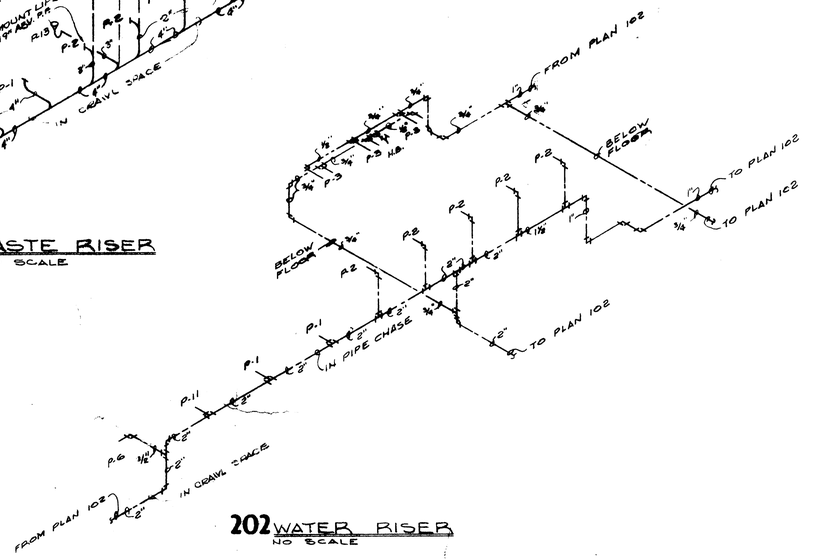


202 WASTE RISER
NO SCALE



202 WATER RISER
NO SCALE

"AS-BUILT" DRAWING
DATE JUN

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 1391

NORTH CAROLINA SEAL 4168 ENGINEER

BALLARD, McKIM, & SAWYER, AIA
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

DRAWN BY: J.G.W.
CHECKED BY: H.V.O.
DATE 7/1/68
SHEET NO. P-2
OF 3

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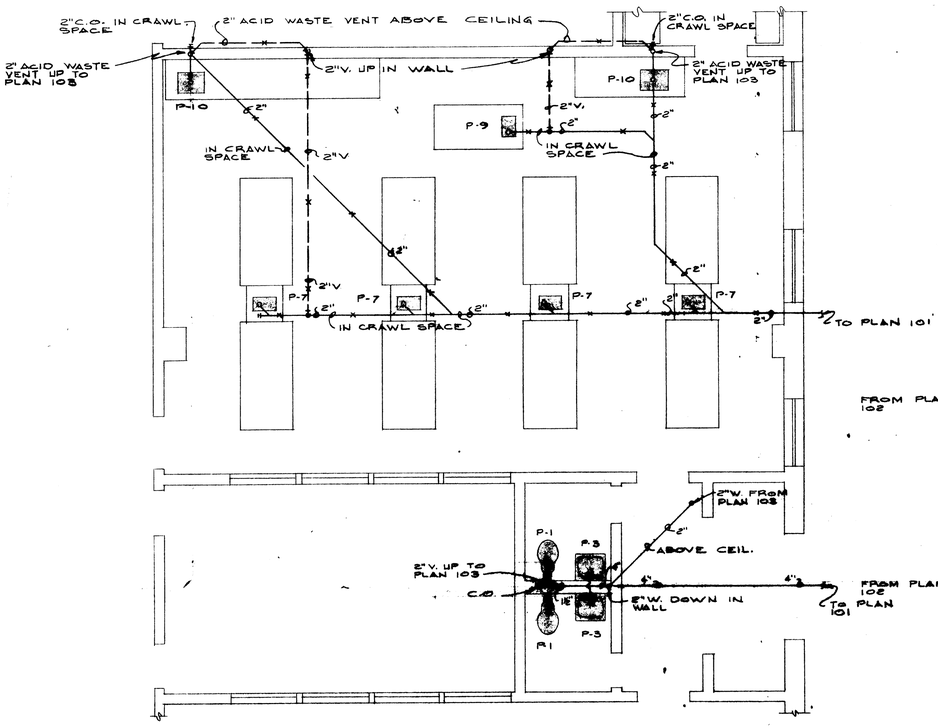
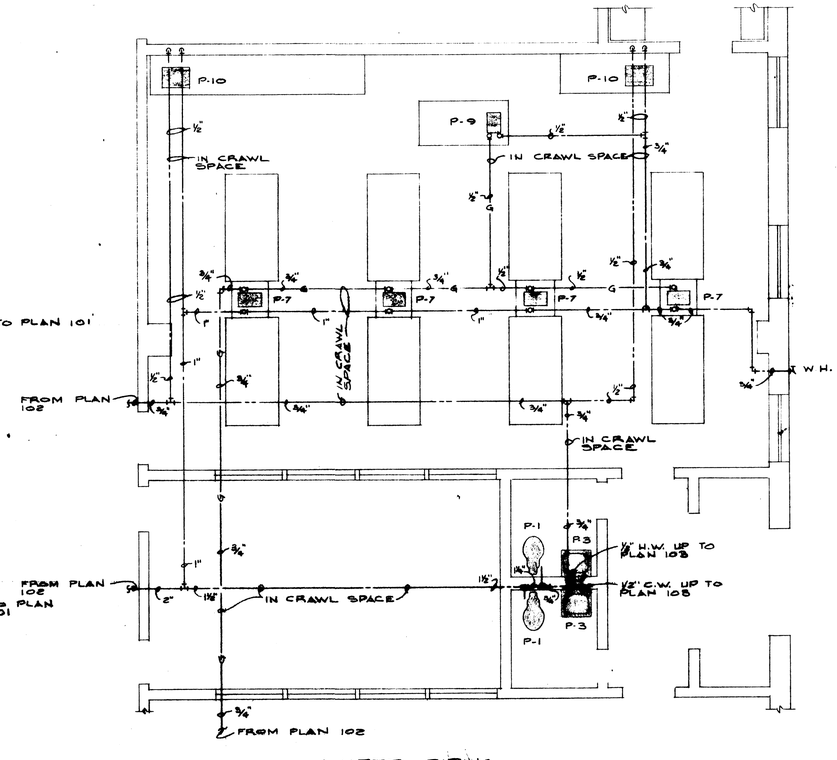
REVISIONS



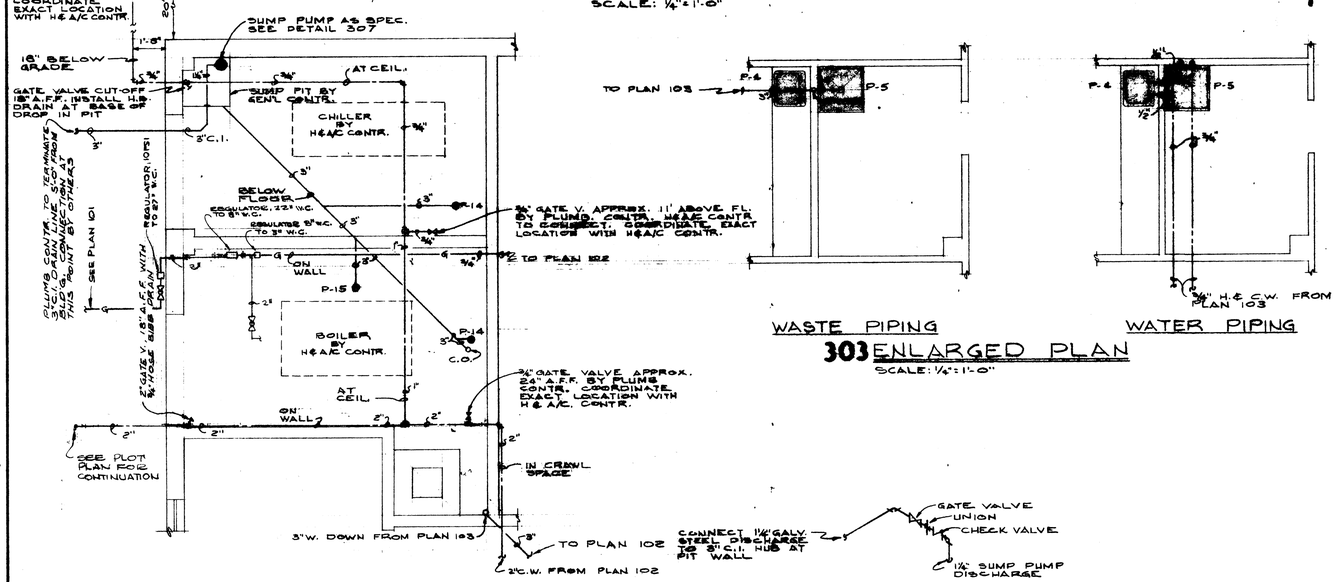
WASTE PIPING



WATER PIPING

301 ENLARGED SCIENCE AREA PLAN

SCALE: ¼"=1'-0"



WASTE PIPING

WATER PIPING

303 ENLARGED PLAN

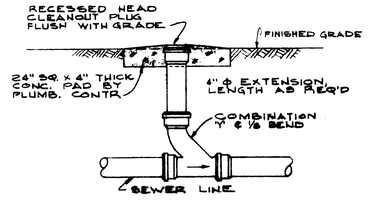
SCALE: ¼"=1'-0"

302 ENLARGED PLAN

SCALE: ¼"=1'-0"

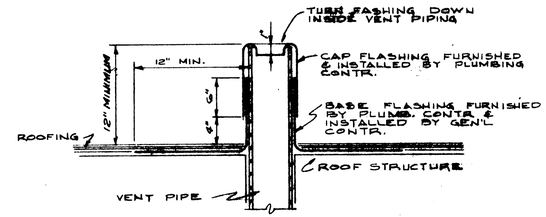
307 SUMP PUMP PIPING DETAIL

NO SCALE



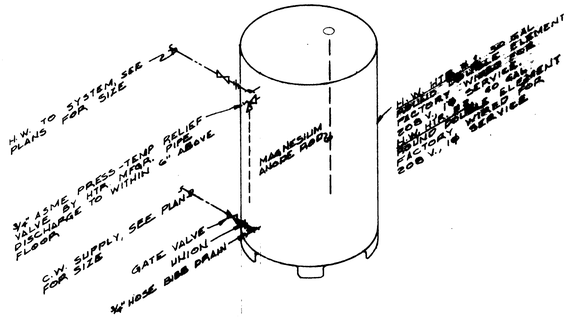
304 EXTERIOR CLEANOUT DETAIL

NO SCALE



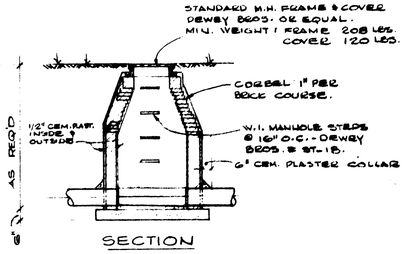
305 VENT FLASHING DETAIL

NO SCALE

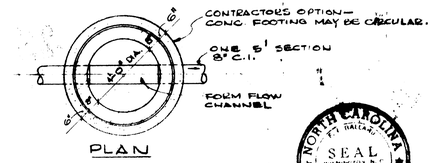


306 TYPICAL HOT WATER HEATER PIPING SCHEMATIC

NO SCALE



SECTION



PLAN

308 MANHOLE DETAIL

NO SCALE

NORTH CAROLINA REGISTERED SEAL ARCHITECTS

"AS-BUILT" DRAWING
DATE JUN

BALLARD, McKIM, & SAWYER, AIA
612 SOUTH SEVENTH/FIFTH STREET
WILMINGTON, NORTH CAROLINA

WILMINGTON COLLEGE EDUCATION & PSYCHOLOGY BUILDING
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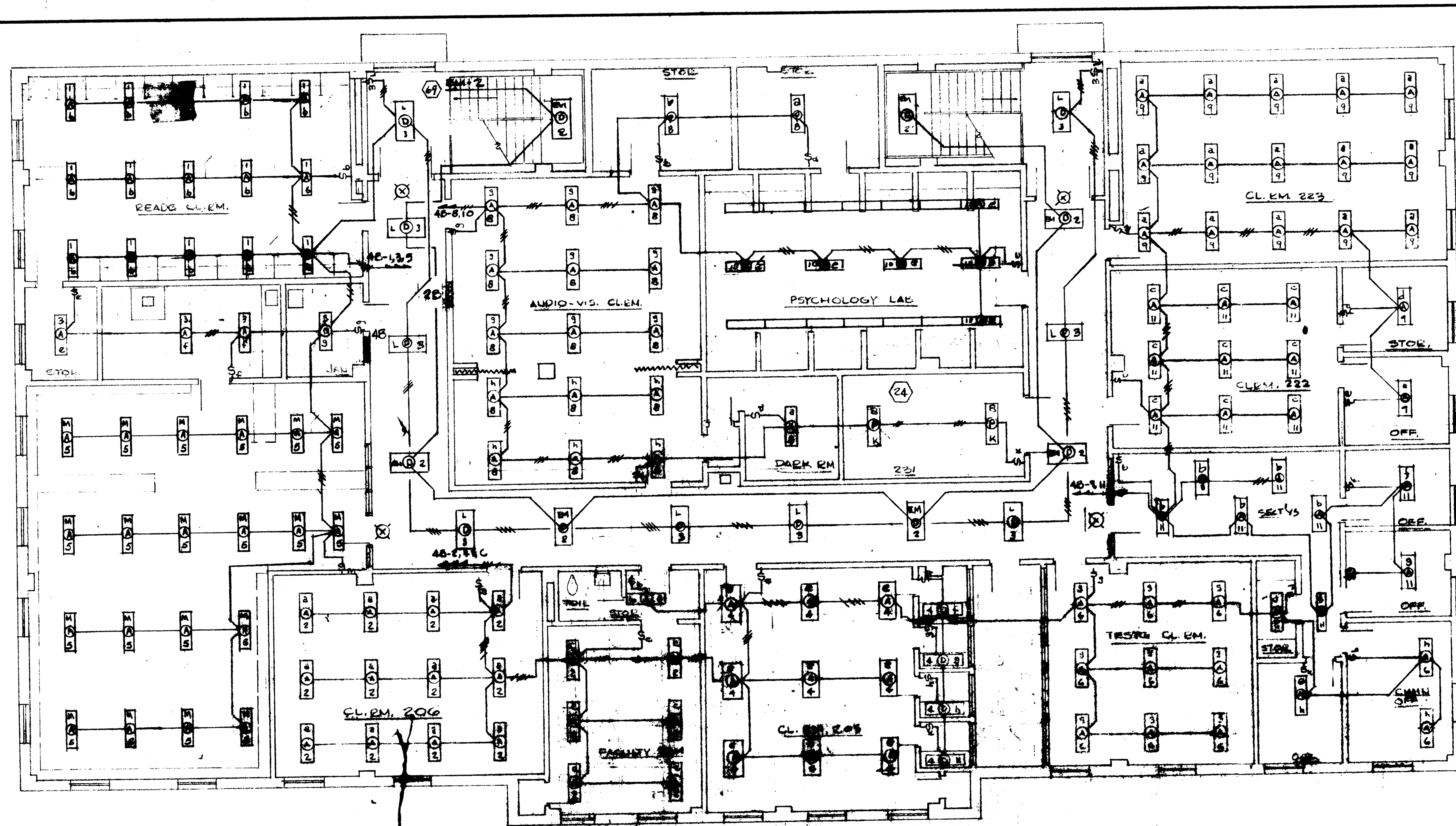
CODE-68737 - ITEM 6

REVISIONS

P-1

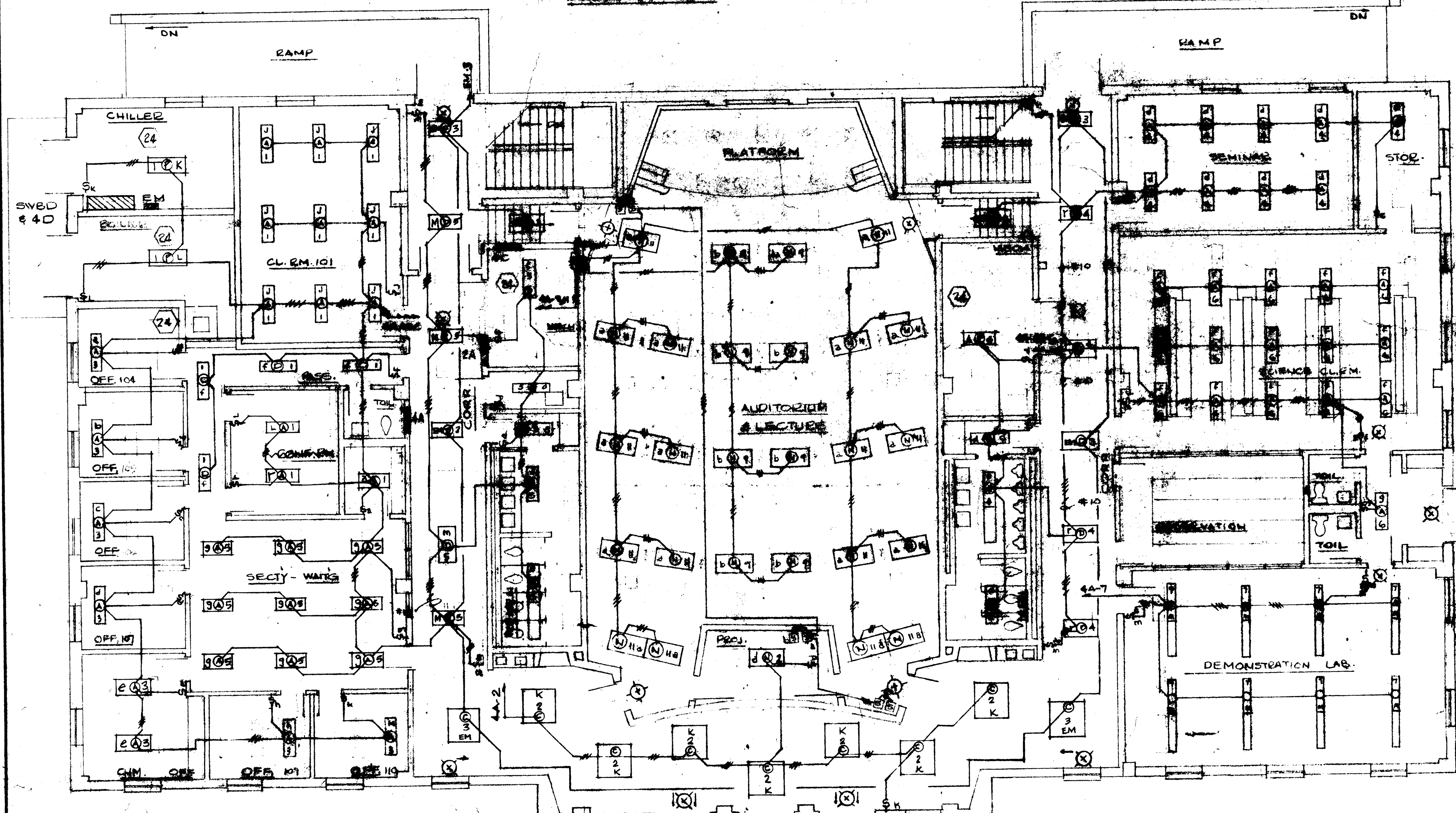
NOTES

SYM.	DESCRIPTION
1	4 - 500 MCM THW IN 3½" CONDUIT
2	3 # 8 THW IN 3/4" CONDUIT.
3	3 # 12 TW IN 3/4" CONDUIT.
4	3 # 1/0 THW IN 2" CONDUIT.
5	4 # 8THW IN 1½" CONDUIT.
6	3 # 4THW IN 1¼" CONDUIT.
7	3 # 12 TW IN 3/4" CONDUIT.
8	2 # 10 TW IN 3/4" CONDUIT.
9	GROUND TO 2" COLD WATER PIPE IN BOILER ROOM WITH APPROVED TYPE GROUNDING CLAMP. GROUND RACEWAY CARRYING GROUNDING CONDUCTOR AT SAME POINT. GROUNDING POINT SHALL BE VISIBLE AND ACCESSIBLE UPON COMPLETION OF CONSTRUCTION.
10	1 # 1/0 TW (GREEN) IN 1" CONDUIT.
11	PAINT PANEL CASE WITH TWO COATS OF "FIRE ENGINE RED" ENAMEL, STENCIL WORD "EMERGENCY" IN WHITE LETTERS 1" HIGH ACROSS DOOR OF PANEL CASE
12	480V DELTA - 208/120V WYE VOLTAGE, 45 KVA DRY TYPE 3Φ TRANSFORMER, PROVIDED WITH 4-2½% TAPS.
13	3 # 10 TW IN 3/4" CONDUIT.
14	4 # 1 THW IN 2" CONDUIT.
24	ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF LTG. FIXTURE WITH MECHANICAL EQUIPMENT TO AVOID CONFLICT.
28	480-120/240 VOLT SINGLE PHASE TRANSFORMER, WESTINGHOUSE TYPE GC, 1KVA OR EQUAL BY G.E. OR A-C
32	4"x4" x 18" GALV. SHEET STEEL GUTTER WITH SCREW-FASTENED COVER.
68	1 # 8TW (GREEN) IN 3/4" CONDUIT.
61	EXTEND DOWN TO EM PANEL LOCATED IN MAIN 1ST FLOOR MECHANICAL ROOM



SECOND FLOOR LIGHTING PLAN

SCALE 1/8" = 1'-0"



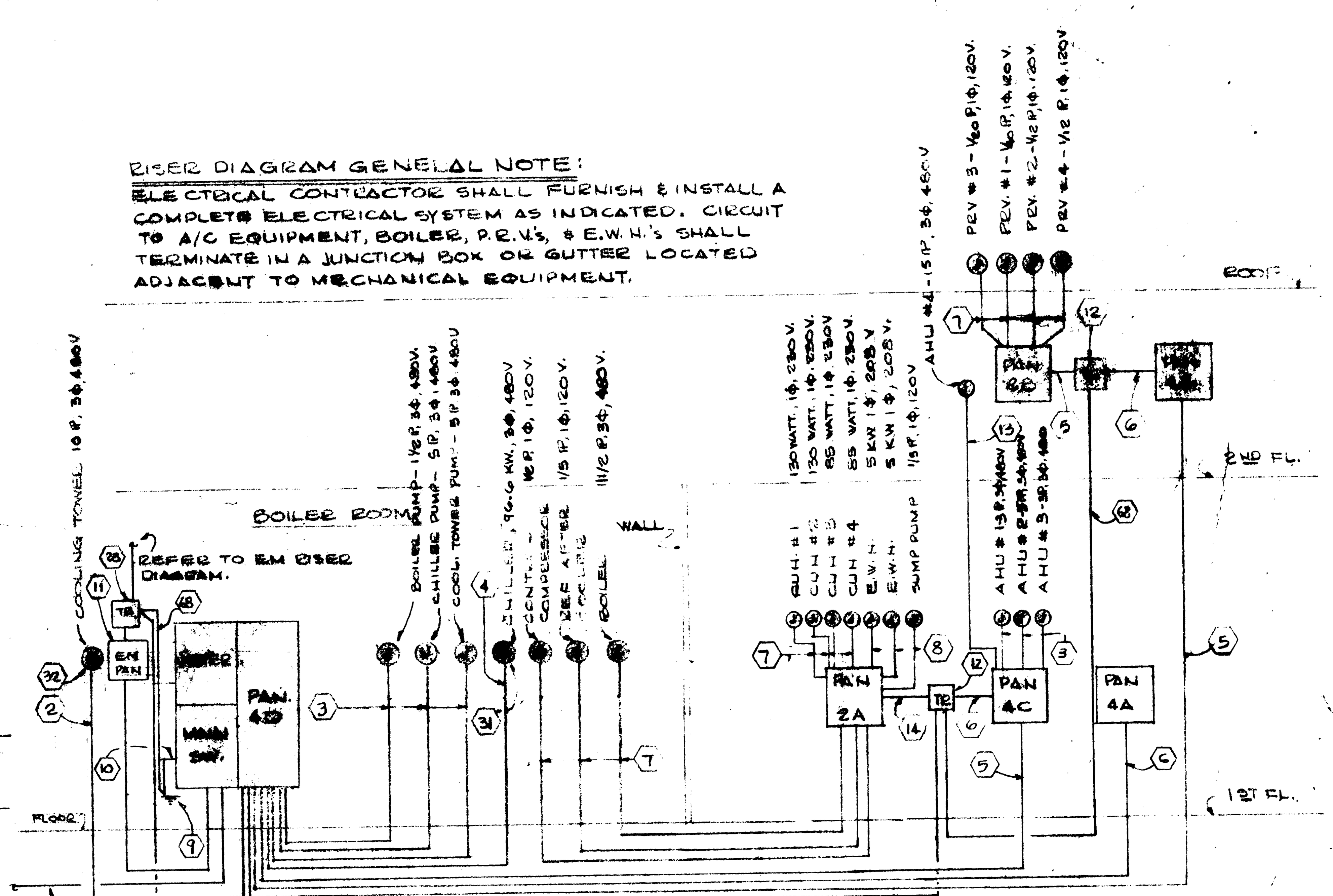
GENERAL FLUORESCENT LIGHTING FIXTURE NOTE:
ELECTRICAL CONTRACTOR SHALL INSTALL ALL FLUORESCENT FIXTURES AS INDICATED ON THE REFLECTED CEILING PLAN — SHEET A-12 WIRING, CONNECTION & SWITCHING SHALL BE AS PER LIGHTING PLAN SHEET E-1

FIRST FLOOR LIGHTING PLAN

SCALE 1/8" = 1'-0"

NOTE:
DO NOT SCALE THESE DRAWINGS. FOR EXACT ARCHITECTURAL OR STRUCTURAL DIMENSIONS SEE ARCHITECTURAL OR STRUCTURAL DRAWINGS.

RISER DIAGRAM GENERAL NOTE:
ELECTRICAL CONTRACTOR SHALL FURNISH & INSTALL A COMPLETE ELECTRICAL SYSTEM AS INDICATED. CIRCUIT TO A/C EQUIPMENT, BOILER, P.R.V.'s, & E.W.H.'s SHALL TERMINATE IN A JUNCTION BOX OR GUTTER LOCATED ADJACENT TO MECHANICAL EQUIPMENT.



POWER RISER DIAGRAM

NO SCALE

"AS-BUILT" DRAWING

CAUTION	DATE JUN '70
THIS IS A 277/480 VOLT ELECTRICAL SYSTEM PERSONS NOT FAMILIAR WITH THIS TYPE SYSTEM SHOULD NOT ATTEMPT REPAIRS.	

PROVIDE DECAL AS ABOVE FOR EACH SWITCH, MOTOR STARTER & PANEL. BLACK LETTERS ON YELLOW BACKGROUND.

NORTH CAROLINA F. I. BALLARD SEAL REGISTERED ARCHITECTS

VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

NORTH CAROLINA REGISTERED ENGINEER REG. NO. 1968

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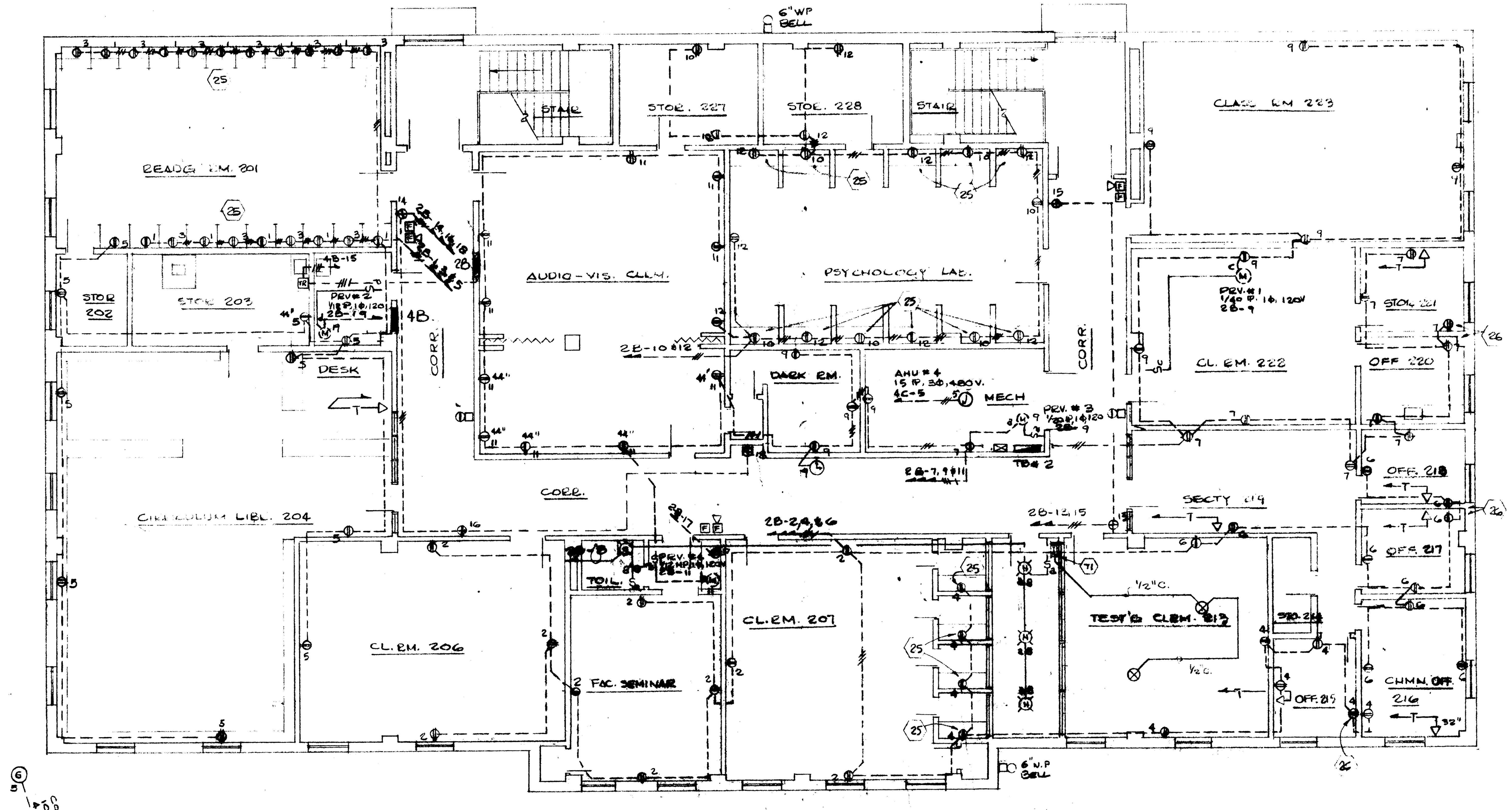
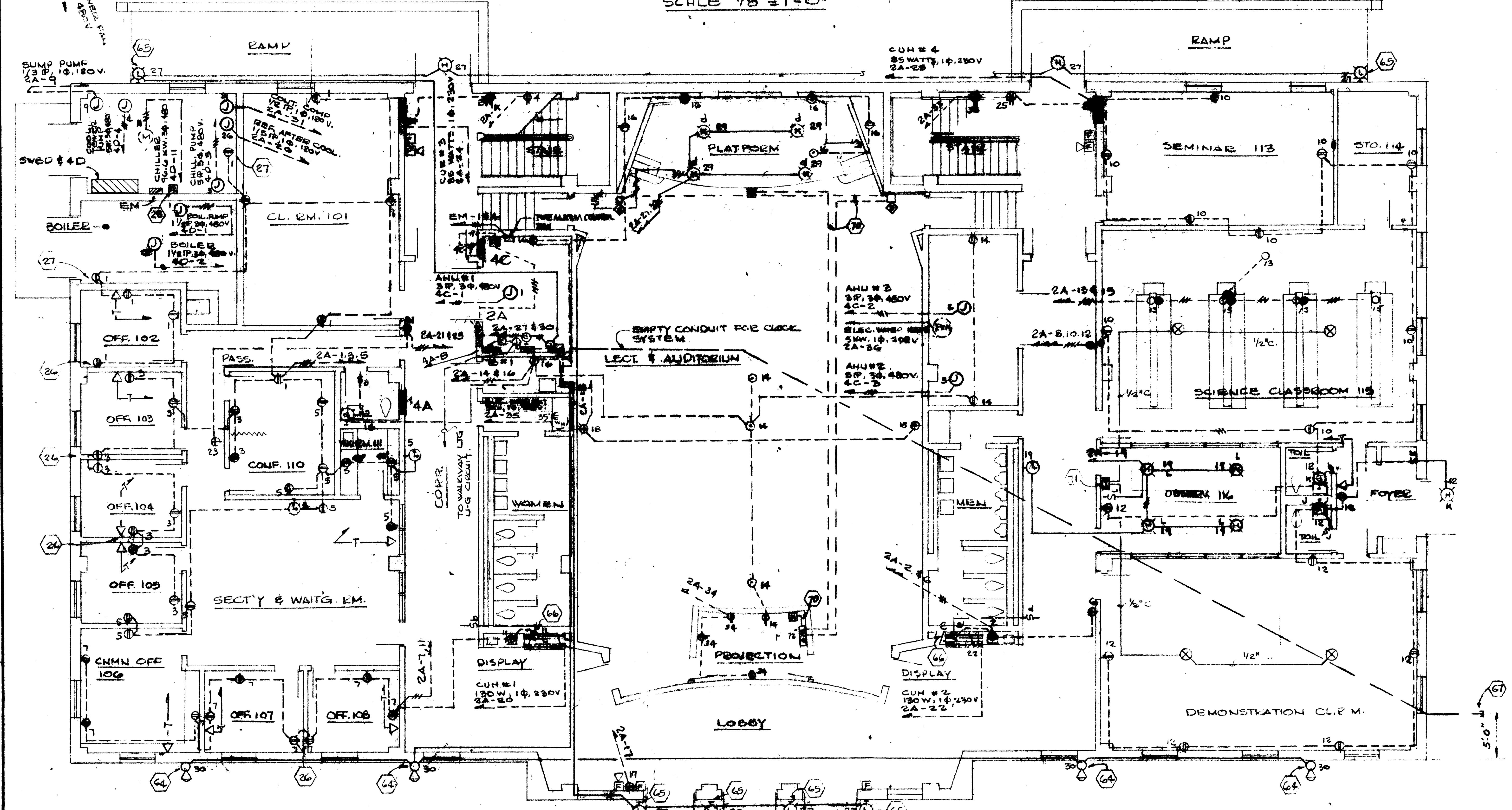


SECOND FLOOR ELECTRICAL RECEPT., POWER, TELEPHONE & FIRE ALARM PLAN

SCALE 1/8" = 1'-0"



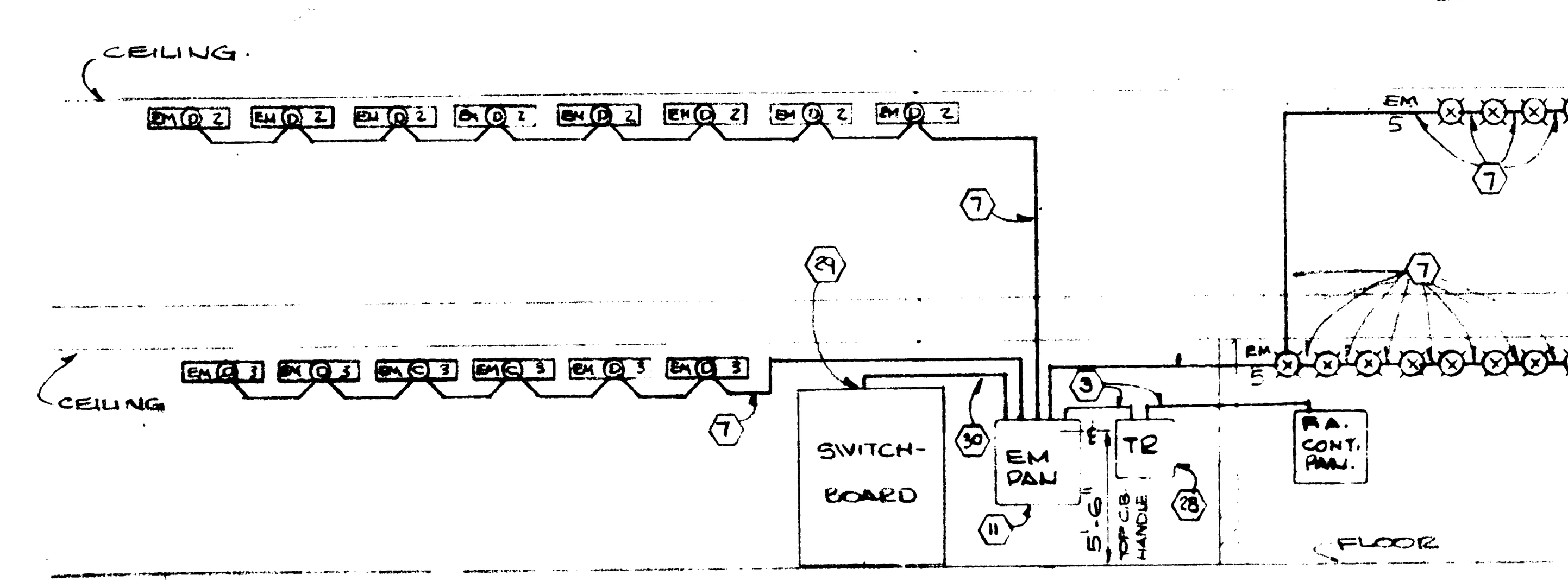
FIRST FLOOR ELECTRICAL RECEPT. POWER TELEPHONE & FIRE ALARM PLAN

SCALE 1/8" = 1'-0"

NOTES

SYM	DESCRIPTION
3	3#12 TW IN 3/4" CONDUIT.
7	2#12 TW IN 3/4" CONDUIT.
11	PAINT PANEL CASE WITH TWO COATS OF "FIRE ENGINE RED" ENAMEL. STENCIL WORD "EMERGENCY" IN WHITE LETTERS 1" HIGH ACROSS DOOR OF PANEL CASE.
25	MT. RECEPTACLES THIS AREA ABOVE DESK. FLOOR TO CENTERLINE RECEPTACLE BOX 45".
26	MT. 12" ABOVE FLOOR ON INSIDE WALL, TWO FEET FROM OUTSIDE WALL.
27	COORDINATE RECEPT. LOCATION WITH MECHANICAL CONTRACTOR TO CLEAR MECHANICAL EQUIPMENT.
28	480 - 120/240 V, 1Φ TRANSFORMER, WESTINGHOUSE TYPE GC, 1 KVA OR EQUAL G.E. OR A.-C.
29	CONNECT EM PANEL FEEDER TO LINE SIDE OF SW. BOARD MAIN SWITCH.
30	3#10 TW IN 3/4" CONDUIT.
64	MOUNT FLOODLIGHT ONE FOOT ABOVE GRADE ON OUTSIDE OF BLDG. WALL, USE STONCO JUNCTION BOX #140 WITH MINIMUM OF THREE 1/2" TAPPED HOLES IN BOX & ONE 1/2" HOLE ON COVER PLATE. THIS ASSEMBLY SHALL BE WATER-TIGHT.
65	MOUNT CENTERLINE OF OUTLET BOX 6'-0" ABOVE FINISH. FLOOR.
66	SEE ARCHITECTURAL SHEET A-8, DETAIL 8/8 FOR MTD. STRIP LIGHT.
67	STUB 5'-0" OUTSIDE BLDG, CAP. & LEAVE FOR USE BY OTHERS, SEE PLOT PLAN.
70	EMPTY 3/4" AUDIO SYSTEM CONDUIT.
71	P... 4"x4" JUNCTION BOX & 1" BUSHINGS AT AMPLIFIER.

REVISED 3 JUNE 69 KMP



EXIT LTG. & EMERGENCY C.R. RISER DIAGRAM

NO SCALE

LEGEND

SYMBOL	DESCRIPTION
R	LOW VOLTAGE RELAY CABINET G.E. #LEF-2 W/1-RLF-24 & 1-LFT-26 PLANKS & 4-... L.-V. RELAY, GE #RR-3
	FLUSH MTD. CLOCK CHIME CABINET.
A.H.U.	AIR HANDLING UNIT BY OTHERS.
	NORMALLY OPEN SINGLE-POLE DOUBLE THROW MOMENTARY CONTACT SWITCH, G.E. #LTS-5 OR EQUAL.
FC	FIRE HORN, FLUSH GRILLE TYPE, EDWARDS #360A OR EQUAL. MT 8'-0" ABOVE FLOOR.
F	MANUAL STATION, BREAK-GLASS TYPE, EDWARDS #270 SPO OR EQUAL, MTG. HT. 54" ABOVE FIN. FL.
E.W.C.	ELEC. WATER COOL. FURN. & INSTALLED BY OTHERS, POWER WIRED & CONNECTED BY ELEC. CONTR.
	6" WEATHERPROOF BELL, SEE SPECS.
5	SYMBOL FOR SPECIAL NOTE, SEE NOTES.
TR	TRANSFORMER, SEE NOTE.
	FLUORESCENT CEILING OUTLET, SEE FIXTURE SCHEDULE. "a" INDICATES SW. CONTROLLING. "10" INDICATES CIR. NO.
	FLUORESCENT WALL BRACKET OUTLET, SEE FIXTURE SCHEDULE.
	CHIMES, SEE SPECS. | MICROPHONE OUTLET, EQ. BY OTHERS | SPEAKER OUTLET, EQUIPMENT BY OTHERS | AM AMPLIFIER OUTLET, EQUIPMENT BY OTHERS.
	INCANDESCENT WALL BRACKET OUTLET, SEE FIXTURE SCHEDULE.
	INCANDESCENT CEILING OUTLET, SEE FIXTURE SCHEDULE.
	CONDUIT DOWN. | LAB. RM. SPEAKERS.
	ELECTRICAL JUNCTION BOX, SEE NOTES.
	TIME CLOCK SW. ... MTD. NEMA ... 120V, 40A, 7-DAY DIAL RESERVE POWER TORK #... WL.
	DUPLEX GROUNDING RECEPT. ... #5252 W/97101 SERIES, ST. STL. PLATE, MTG. HT. 12" ABV. FIN. FL. UNLESS OTHERWISE INDICATED. | DUKANE AMPLIFIER #4A875 MODIFIED SEE SPECIFICATIONS.
G	WIRING GUTTER SEE SPECIAL NOTES.
	CONDUIT UP.
	FLUSH FLOOR ... TYPE, STEEL ... 8B W/ #478-G.E. RECEPTACLE.
	SING.-POLE FLUSH WALL SW. 15AMP 120/277 VAC, HUBBELL #1121 ... W/SERIES 97000 ST. STL. PLATE. MTG. HT. 50".
	3-WAY FLUSH WALL SW. 15A, 120/277 VAC, HUBBELL #1123 ... W/SERIES 97000 ST. STL. PLATE, MTG. HT. 50".
	SYSTEM CLOCK, SIMPLEX. SEE SPECS. "2" WHERE INDICATED DENOTES DOUBLE-FACE. MT CLOCK 7'-10" ABOVE FIN. FLOOR. IN DROPPED CEILING AREA, VERIFY MTG. HT. WITH ARCHITECT.
	CONVECTION UNIT HEATER.
	ELECTRIC POWER PANEL, SEE PANEL SCHEDULE.
	ELECTRIC LIGHTING PANEL, SEE PANEL SCHEDULE.
	RACEWAY CONCEALED IN OR BELOW FLOOR.
	RACEWAY CONCEALED IN WALLS OR CEILING.
	MOTOR H.P. Φ AND VOLTAGE INDICATED.
	WALL MTD. TELE. RECEPT. MTG. HT. 12" ABV. FIN. FL. UNLESS OTHERWISE INDICATED. CONDUIT SIZE INDICATED.
	DISCONNECT SWITCH ...
	SURF. MTD. TELE. TERMINAL BOARD 96"H x 48"W x 3/4"D PLYWOOD BOARD.
E.W.H.	ELEC. WATER HEATER, FURNISHED & INSTALLED BY OTHERS, POWER WIRED & CONNECTED BY ELECTRICAL CONTRACTOR.
	SING. GND. RECEPT. 125 V, 20 A, HUBBELL #5361 W/97091 ST. STL. PLATE, MTG. HT. 12" ABV FIN. FLOOR UNLESS OTHERWISE INDICATED.
	FLOODLIGHTS . INA-24/400 W/12° BEAM ...

"AS-BUILT" DRAWING

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 891

NORTH CAROLINA SEAL

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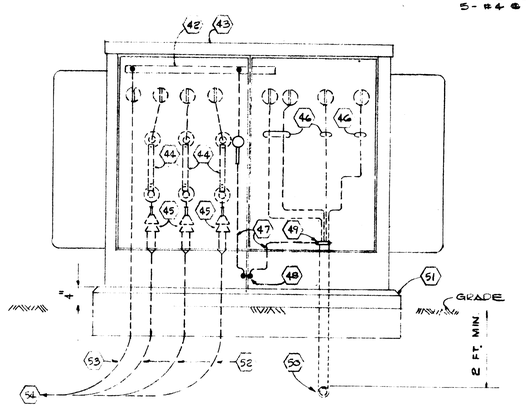
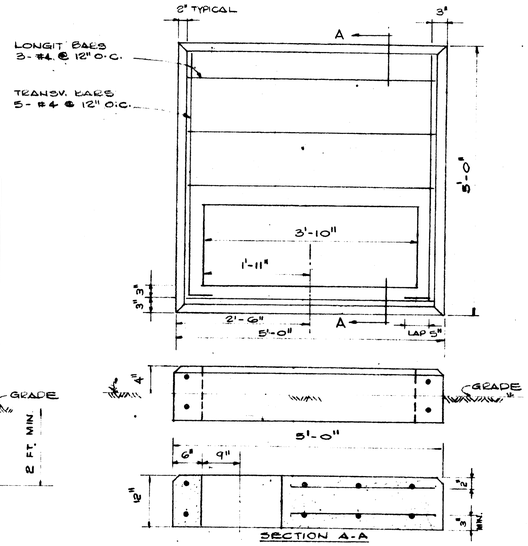
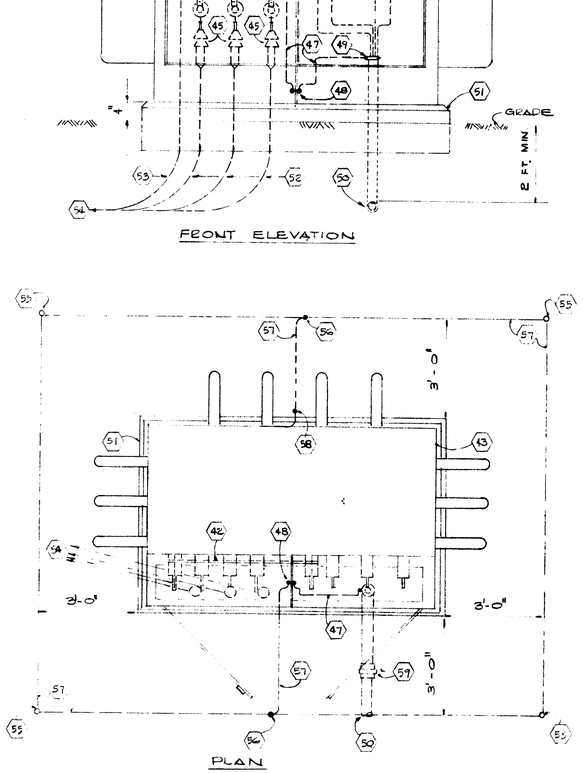
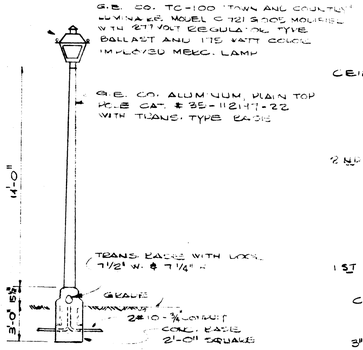
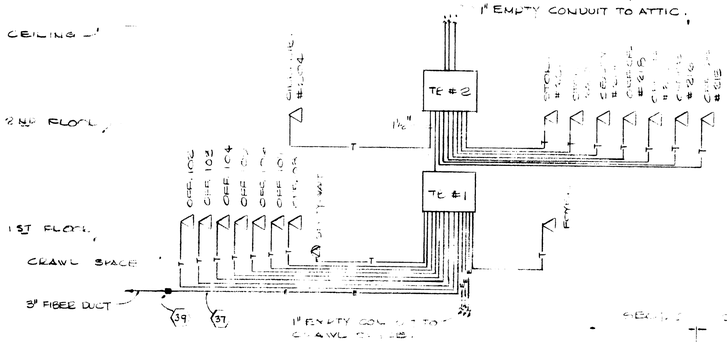
WILMINGTON, NORTH CAROLINA











NOTES

SYM	DESCRIPTION
19	UNDISTURBED EARTH.
20	BACKFILL WITH EXCAVATED MATERIAL IN COMPACTED LAYERS OF 8" AEV. GUARD BOARDS.
21	"ALLEN SYSTEM", PVC MARKER TAPE.
22	DIRECT BURIAL ELECTRICAL CABLE.
23	SELECTED FILL MATERIAL FREE FROM DEBRIS & LARGE PIECES OF ORGANIC MATTER OR COARSE BUILDERS SAND.
33	1" EMPTY CONDUIT TO ATTIC SPACE, CAP & LEAVE FOR FUTURE USE.
34	3/4" CONDUIT W/ #12 TW WIRE AS REQUIRED FOR CLOCK & CHIMES.
35	1 1/4" CONDUIT W/ #12TW WIRE AS REQUIRED FOR CLOCKS & CHIMES.
36	FLUSH MTD. CLOCK - CHIME CABINET
37	3" RIGID STEEL CONDUIT. ENCASE IN CONC. PORTIONS LOCATED BELOW GRADE.
38	3/4" CONDUIT W/ #12 TW WIRE AS REQUIRED FOR CLOCK & CHIMES.
39	3 1/2" I.D. FIBER DUCT TO CONDUIT ADAPTER LOCATED 5 FEET OUTSIDE BLDG.
40	3" FIBER DUCT CONDUIT ENCASED IN CONCRETE W/ #12TW WIRE AS REQUIRED.
41	1" EMPTY CONDUIT TO CRAWL SPACE, CAP & LEAVE FOR FUTURE USE.
42	100 AMP COPPER, EXTERNALLY MOUNTED, NEUTRAL TIE BAR.
43	300 KVA, 12470 GND WYE / 7200 - 208 GND WYE / 120 VOLTS, 3-PHASE, 4-WIRE PAD MOUNTED TRANSFORMER, SEE SPECS.

SYM	DESCRIPTION
44	CURRENT LIMITING POWER FUSE CLIP MOUNTED FOR HOOK-STICK SWITCHING & REMOVAL, FUSE RATED AT 20 AMP. SEE SPEC.
45	SINGLE CONDUCTOR, 15 KV. POTHEAD, SEE SPEC.
46	500 MCM THW SECONDARY CONDUCTOR.
47	1/0 THW (GREEN) GND. CONDUCTOR IN 1" CONDUIT.
48	CONNECT GND. CONDUCTOR TO METALLIC FRAME OF SWITCHGEAR W/ PRESSURE TYPE LUG & BRASS BOLTS.
49	3 1/2" INSULATION - LINED GND. BUSHING.
50	3 1/2" SERVICE ENTRANCE CONDUIT.
51	TRANSFORMER PAD, SEE DETAIL "B".
52	1 #4, 15 KV. SHIELDED DIRECT BURIAL CABLE SEE SPECIFICATIONS.
53	1 # 4 600 VOLT THW W/ NEOPRENE JACKET FOR DIRECT BURIAL.
54	TO CAMPUS PAD MOUNTED SECTIONALIZING SWITCH, SEE ELECTRICAL SITE PLAN E-4.
55	3/4" X 10 FT. COPPER CLAD GND. ROD DRIVEN 11 FT INTO EARTH, BRAZE OR CADWELD GND. CONDUCTOR TO ROD.
56	BRAZE OR CADWELD GND. CONDUCTORS.
57	#2 BARE STRANDED COPPER GROUNDING CONDUCTOR 1 FT. BELOW GRADE.
58	CONNECT TO EXTERIOR OF TRANSFORMER CASE W/ PRESSURE LUG & BRASS BOLTS.

SYM	DESCRIPTION
59	3 1/2" CONDUIT UNION.
62	3" EMPTY FIBER DUCT CONDUIT ENCASED IN CONCRETE. LEAVE W/ #16 FISH WIRE.
61	STUB 5'-0" OUTSIDE BLDG., CAP & LEAVE FOR USE BY OTHERS SEE PLOT PLAN.

FRONT ELEVATION

PLAN

DETAIL "C"
300 KVA PAD MOUNTED TRANSFORMER & CONNECTIONS
NO SCALE

DETAIL "B"
300 KVA TRANSFORMER MOUNTING PAD
SCALE 3/4" = 1'-0"

NOTES:
1. ALL REINF. BARS #4.
2. MIN. SPACING REINF. BARS TO OUTSIDE SURFACE OF CONCRETE 2".
3. MIN. SPACING REINF. BAR TO BOTTOM SURFACES 3".
4. PAD DESIGNED FOR 8000 LBS GROSS WEIGHT & OPENING LOCATED FOR UPTEGRAFF EQUIP. OTHER EQUIP. WILL REQUIRE ADJUSTMENT OF DIMENSIONS.
5. PROVIDE ANCHOR BOLTS WHERE, AND AS REQUIRED BY MANUFACTURER.

WALKWAY LIGHTING DETAIL
NO SCALE

TELEPHONE RISER DIAGRAM
NO SCALE

TWO-SECTIONAL SWITCHBOARD
NO SCALE

DETAIL "D"
NO SCALE

DETAIL "E"
NO SCALE

CHIMES & CLOCK RISER DIAGRAM
NO SCALE

EXIT AND REAR LAMP LIGHTING DIAGRAM
NO SCALE

DETAIL "A"
TYPICAL SECTION OF DIRECT BURIAL CABLE INSTALLATION
NO SCALE

REVISIONS

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WILMINGTON, NORTH CAROLINA

HENRY VON OESEN
& ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 1391

William B. King

DRAWN BY: CTJ
CHECKED BY: WTJ
DATE
SHEET NO.
E-3
OF 4

Southern Photo Print & Supply Co., Greensboro, N. C. 1984 600 3-66

PANEL SCHEDULES

CIR. NO.	CONNECTED TO	WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 4A, 3Φ, 4-WIRE 480/277V, S/N BAR, LUGS ONLY, 100 A. MAINS, C.B. TYPE, FLUSH MTD. TYPE NY1B										
1	LTG. CL.RM. 101, PASS., MECH., CONF. & WK. RM.	3800	3800			Y1B	1	20	2#12TW	3/4"
2	" ENTRANCE & PROJECTION BOOTH	3100	3100							
3	" OFF.S, 104, 105, 106, 107, CHMN. 109, 110	3200		3200						
4	" CORR., MECH. RM., TOIL., SEMINAR & STOR	3600		3600						
5	" CORR. MECH RM., JAN., TOIL., SECTY.	3600			3600					
6	" SCIENCE LAB. & SIDE ENTRANCE	3200			3200					
7	" DEMONSTRATION CL.RM.	3200	3200							3/4"
8	LTG. WALKWAYS	1750	1750					30	2# 8 TW	3/4"
9	LTG. CENTER ROWS AUDITORIUM	1600		1600				20	2#12TW	3/4"
10	SPARE	-		-					-	-
11	LTG. OUTSIDE ROWS AUDITORIUM	3600			3600				2#12TW	3/4"
12	SPARE	-			-				-	-
13	SPARE	-	-						-	-
14	SPARE	-	-						-	-
	TOTAL CONNECTED LOAD	28900	10,100	8400	10400					

CIR. NO.	CONNECTED TO	WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 4B, 3Φ, 4-WIRE 480/277V, S/N BAR, LUGS ONLY, 100 A. MAINS, C.B. TYPE, FLUSH MTD. TYPE NY1B										
1	LTG. READING CL.RM.	3000	3000			Y1B	1	20	2#12TW	3/4"
2	" CL.RM. & FACULTY SEMINAR	3600	3600							
3	" JAN., STOR., & CORRIDOR	2900		2900						
4	" CL.RM. 205 & OBSERVATION	2400		2400						
5	" CURRICULUM LIBRARY	4000			4000					
6	" TESTING CL.RM., OFFICES & [illegible]	3100			3100					
7	SPARE	-	-						-	-
8	LTG. AUD.-VIS., MECH. DARK RM. & STOR. RM.	3900	3900						2#12TW	3/4"
9	" STOR., OFF., CL.RM. 223	3800		3800					2#12TW	
10	" PSYCHOLOGY LAB.	3600		3600					2#12TW	
11	" CLRM. 223, STORAGE & OFFICES	3800			3800				2#12TW	3/4"
12	SPARE	-			-				-	-
13	SPARE	-	-						-	-
14	SPARE	-	-						-	-
15	PANEL 2B THRU TRANSFORMER	23890	8550	8100	7200		3	70	3#4TW	1½"
	TOTAL CONNECTED LOAD	51950	19050	20800	18100					

CIR. NO.	CONNECTED TO	WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 2A, 3Φ, 4-WIRE 208/120 V. S/N BAR. LUGS ONLY 225 A. MAINS, C.B. TYPE, FLUSH MTD. TYPE NQOB.										
1	RECEPT. CL.RMS. 101, 102, 110 CHILLER & BOIL.	1800	1800			QOB	1	20	2#12TW	3/4"
2	" E.W.C. & STRIP LIGHT	720	720							
3	" OFF. 103, 104, 105, CONF. 110	1800		1800						
4	SPARE	-		-					-	-
5	RECEPT. OFF. 105, [illegible], SEC/WTG, WKRM	1800			1800				2#12TW	3/4"
6	" CORRIDOR CLEANING	720			720					
7	" OFF. 106, 107, 108	1620	1620							
8	" CORR. CLEANING	720	720							
9	" SUMP PUMP VSP	720		720						
10	" SEMINAR, STORAGE, SCIENCE	1620		1620						
11	" E.W.C. & STRIP LIGHT	720			720					
12	" DEMST'N, OBSERV., FOYER EXIT.LT.ST.	1710			1710					
13	" SCIENCE CL.RM. TABLES	720	720							
14	" MECH. JAN. AUDITORIUM FLOOR	1440	1440							
15	" SCIENCE CLRM TABLES	720		720						
16	" MECH, TOIL.-LT., PLATFORM, J.B. CURT. MTR.	1410		1410						
17	" LOBBY CLEANING	720			720					
18	" AUDITORIUM CLEANING	720			720					
19	LTG. OBSERVATION & CLOCK	600	600							
20	CUH #1	130	130							
21	RECEPT. CORRIDOR CLEANING	720		720						
22	CUH #2	130		130						
23	RECEPT CORRIDOR CLEANING	720			720					
24	CUH #3	85			85					
25	CUH #4	85	85							
26	REF. AFTER COOLER (1/5 H.P.)	480	480							
27	LTG. REAR RAMPS & ENT. LTG.	1200		1200						
28	LTG LOBBY INCAND	1000		1000					2#12TW	3/4"
29	LTG STAGE AREAS (INCAND)	1500			1500				2#12TW	3/4"
30	LTG EXTERIOR FLOOD LTG.	1600			1600				2#12TW	3/4"
31	CONTROL COMPRESSOR (1/2 H.P.)	1200	1200					30	2#12TW	3/4"
32	LTG STAGE AREAS	1650	1650					20	2#12TW	3/4"
33	SPARE	-		-				20	-	-
34	SPARE	-		-				20	-	-
35	ELEC. WATER HEATER #1	5000	2500		2500		2	30	2#10TW	3/4"
36	ELEC. WATER HEATER #2	5000	2500		2500		2	30	2#10TW	3/4"
	TOTAL CONNECTED LOAD	40700	16165	9040	15495					

CIR. NO.	CONNECTED TO	WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 2B, 3Φ, 4-WIRE 208/120 V. S/N BAR, LUGS ONLY 100 A. MAINS, C.B. TYPE, FLUSH MTD. TYPE NQOB.										
1	RECEPT. READ'G ROOM BOOTHS (10)	1800	1800			QOB	1	20	2#12TW	3/4"
2	" CL.RM. 204, 207, FACULTY SEMIN. (10)	1800	1800							
3	" READ'G ROOM BOOTHS (10)	1800		1800						
4	" TEST'G RM., OFF. 215, CHMN. OFF (10)	1800		1800						
5	" CURRICULUM LIB., CL.RM. 206 (9)	1620			1620					
6	" TEST'G CR. SECTY, OFF. CHMN. OFF (10)	1800			1800					
7	" MECH. SECTY CL.RM. OFF'S	1800	1800							
8	LTG (INCAND.) TOIL, DARK RM. & OBSERV. (5)	750	750							
9	RECEPT. CR 222, 223, [illegible], JAN, CLASS. RM (1)	1800		1800						3/4"
10	" STOR. 227, PSYCHOLOGY LAB. (7)	1460		1460						3/4"
11	" AUD-VIS. CLASS RM., PRV #4 (9)	1620			1620					3/4"
12	" STOR. 228, PSYCHO. LAB. (8)	1640			1640					3/4"
13	" CORRIDOR CLEANING (1)	720	720							3/4
14	" CORRIDOR CLEANING (1)	720	720							3/4
15	" CORRIDOR CLEANING (1)	720		720						3/4
16	" CORRIDOR CLEANING (1)	720		720						3/4"
17	" FAC. SEMINAR COFFEE MAKER 1	300			300					
18	RECEPT ELECTRIC WATER COOLER (1)	720			720				2#12TW	3/4"
19	PEV. #2	480	480						2#12TW	3/4"
20	SPARE	—	—						—	—
21	SPARE	-	-						-	-
22	SPARE	-		-					-	-
23	SPARE	-			-				-	-
24	SPARE	-			-				-	-
	TOTAL CONNECTED LOAD	24070	8070	8300	7700					

CIR. NO.	CONNECTED TO		WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 4C, 3Φ, 4-WIRE 480/277V, S/N BAR, LUGS ONLY, 100A. MAINS, C.B. TYPE, FLUSH MTD. TYPE NY1B.											
1	A.H.U. #1	3 H.P.	3700	1233	1233	1234	FA	3	20	3#12TW	3/4"
2	A.H.U. #3	3 H.P.	3700	1233	1233	1234	FA	3	20	3#12TW	3/4"
3	A.H.U. #2	5 H.P.	6200	2066	2066	2068	FA	3	20	3#12TW	3/4"
4	SPARE		-	-	-	-	-	3	20	-	-
5	A.H.U. #4	15 H.P.	16,600	5530	5530	5540	FA	3	50	3#10TW	3/4"
6	SPACE ONLY		-	-	-	-	-	3	-	-	-
7	PANEL 2A THRU TRANSFORMER		40700	16165	9040	15495	FA	3	70	4#4TW	1½"
8	SPACE ONLY		-	-	-	-	-	3	-	-	-
	TOTAL CONNECTED LOAD		70950	26277	19102	25571					

CIR. NO.	CONNECTED TO		WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
PAN. 4D, 3Φ, 4-WIRE 480/277 V., S/N BAR, LUGS ONLY, 400A MAINS C.B. TYPE, SURF. MTD. TYPE NY1B.											
1	BOILER PUMP	1½ H.P.	2000	666	666	668	FAH	3	20	3#12TW	3/4"
2	BOILER	1½ H.P.	2000	666	666	668	FAH	3	20	3#12TW	3/4"
3	CHILLER PUMP	5 H.P.	6200	2066	2066	2068	FAH	3	20	3#12TW	3/4"
4	COOLING TOWER PUMP	5 H.P.	6200	2066	2066	2068	FAH	3	20	3#12TW	3/4"
5	COOLING TOWER FAN	10 H.P.	11600	3866	3866	3868	FAH	3	40	3#8TW	3/4"
6	SPACE ONLY		-	-	-	-	-	3	—	-	-
7	PANEL 4A		28900	10100	8400	10400	FAH	3	70	4#4TW	1½"
8	SPACE ONLY		-	-	-	-	-	3	-	-	-
9	PANEL 4B		57950	19050	20800	18100	FAH	3	100	4#[illegible]THW	1½"
10	PANEL 4C		70950	26277	19102	25571	FAH	3	100	4#[illegible]THW	1½"
11	CHILLER		96600	32200	32200	32200	LA	3	300	3#1/0THW	2"
	TOTAL CONNECTED LOAD		280,400	96291	89166	94943					

CIR. NO.	SEC. NO.	CONNECTED TO	WATTS LOAD	PHASE A	PHASE B	PHASE C	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE
SWBD. 3Φ, 4-WIRE 480/277 V. S/N BAR, MAIN C.B. 400A MAINS, C.B. TYPE FREE STANDING, NEMA CLASS II.											
1	I	METER EQUIPMENT	-	-	-	-	-	-	-	-	-
2	I	PANEL 4D (MAIN SWITCH)	280400	96291	89166	94913	LAH	3	400	4#500MCM THW	3½"
		PROVIDE SWBD. COMPLETE WITH WATT-HOUR, VOLTMETER & AMMETERS. METERS SHALL BE WESTINGHOUSE, G.E., OR SANGAMO.									

FIXTURE SCHEDULE

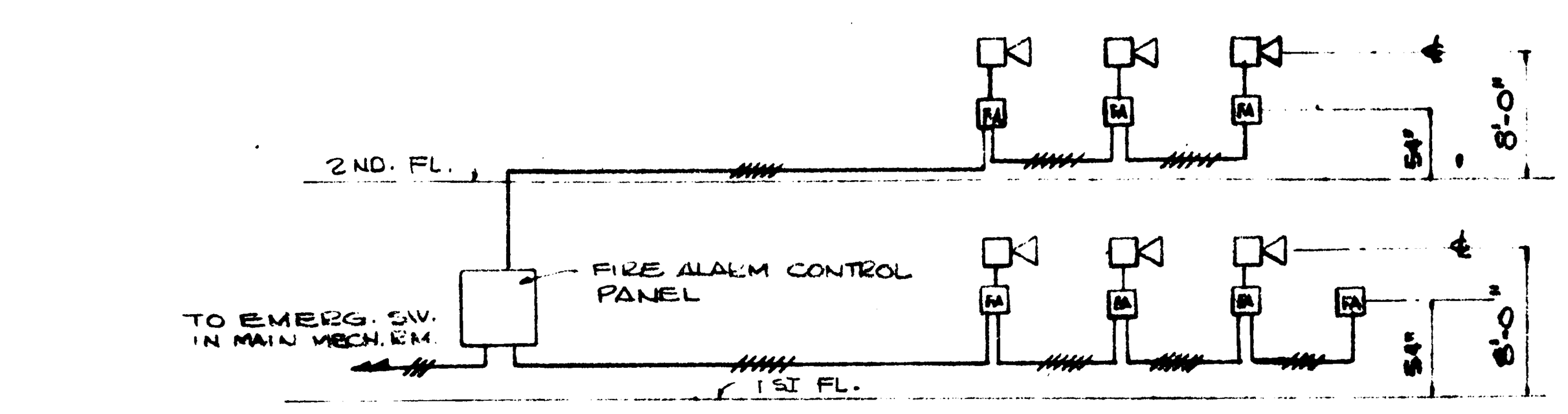
SYM	MAX. WATTS	NO. & SIZE LAMPS	DESCRIPTION	MANUFACTURER	MTG. HT.
R	50	1 F40T12 CW/RS	STRIP LIGHT	PITTSBURG # A-140	SEE NOTE [illegible] ON SHEET E-2
A	200	4-F40T12 CW/RS	2'x4' - 4 LAMP FLUOR W/ VIRGIN ACRYLIC LENS IN STEEL FRAME.	DAYBRITE 4GT42-WF[illegible]-4	CEILING
B	100	2-F40T12 CW/RS	VIRGIN ACRYLIC FRAMED LENS IN 2'x4' RECESSED HOUSING.	DAYBRITE #4 FT22-WF[illegible]-4	CEILING
C	300	6-F40T12 CW/RS	4'x4' STEEL HOUSING W/ 89% REFLECTANCE & 4'x4' PARACHEX GOLD LOUVER.	PITTSBURG #ARK 644[illegible]	CEILING
D	100	2-F40T12 CW/RS	2'x4' 2-LAMP FLUOR. W/ VIRGIN ACRYLIC LENS IN STEEL FRAME.	DAYBRITE 4GT22-WF[illegible]	CEILING
E	200	200 PAR46	ADJUSTMENT INCANDESCENT FIXTURE W/ LONGITUDINAL GRILLE.	MARCO #JAS-T272	CEILING
G	100	1-100 W IF	CAST AL. HOUS. W/ BRONZOTIC FIN. & POLISHED THERMOPAL GL. SPHERE & GNDED CONVENIENCE OUTLET.	PRESCOLITE # WG 6-10	CEILING
H	150	1-150 W IF	RECESSED FIXTURE W/ REGRESSED FRESNEL LENS.	MARCO # J[illegible]-T33	CEILING
K	300	1-300 W IF	INCANDESCENT FIXTURE W/ HEAT RESIST. BLACK PHENOLIC POLYGROOVE BAFFLE.	MARCO # J[illegible]10-T190	CEILING
L	200	4-50W	WEATHERTIGHT CAST ALUM. CARRIAGE LANTERN W/ FROSTED CHIMNEY.	HADCO # B1427	MT. 10' ABV. FL. EL.
N	200	4-F40T12 CW/RS	2'x4' VIRGIN ACRYLIC FRAMED LENS.	DAYBRITE # 4FT22-WF[illegible]-4	CEILING
P	100	2-F40T12 CW/RS	INDUSTRIAL W/UP-LITE FOR 277 VOLT. SERVICE.	MILLER # MI 8102-04	CEILING
Q	200	4-F40T12 CW/RS	2'x4' 4-FLUOR LAMPS W/ VIRGIN ACRYLIC LENS IN STEEL FRAME.	DAYBRITE 4FT42-WF 883-4	CEILING
X	20	2, 6W T-5	CAST AL. HOUSING & STENCIL W/ LAMP LIFE MULTIPLIER & DOWN LT. (277V.)	MR PHILBEN # 30C-6MA	CEILING
X	20	2 6W T-5	CAST AL. HOUSING & STENCIL W/ LAMP LIFE MULTIPLIER, DOWN LT. (277V) ARROW RIGHT.	MR PHILBEN # 30C-6MA	CEILING
X	20	2 6W T-5	CAST AL. HOUSING & STENCIL W/LAMP LIFE MULTIPLIER, DOWN LIGHT. (277V) ARROW LEFT.	MR PHILBEN # 30C-6MA	CEILING
X	20	2 6W T-5	CAST AL. HOUSING & STENCIL W/LAMP LIFE MULTIPLIER, DOWN LIGHT. (277V) ARROWS L&R	MR PHILBEN # 30C-26MA	CEILING

NOTES

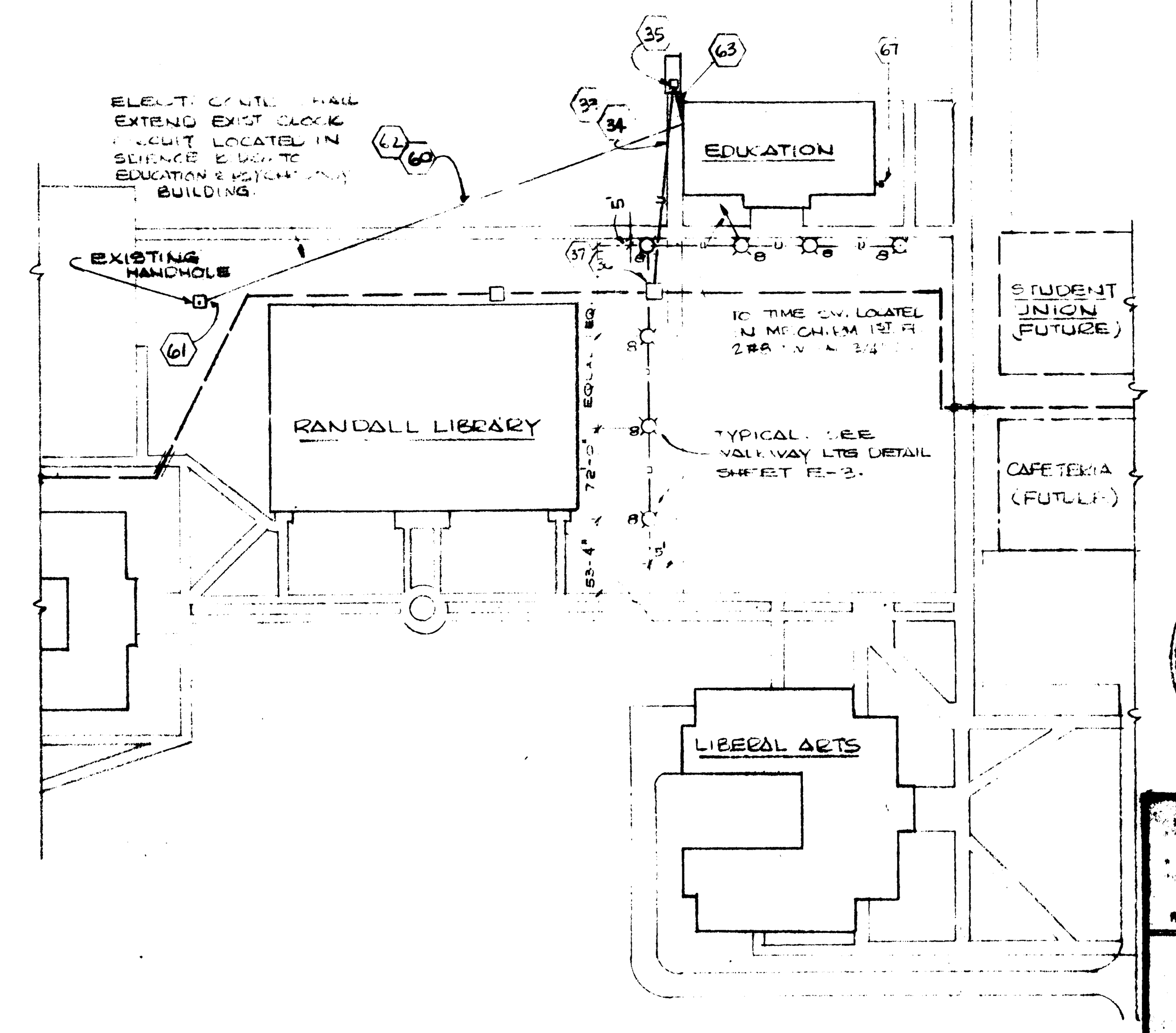
SYM	DESCRIPTION
33	3#4, 15 KV GROUNDED NEUTRAL & 1#4 600V DIRECT BURIAL CABLE REFER TO SPECIFICATIONS
34	REFER TO DETAIL "A" SHEET E-3 FOR CABLE INSTALLATION.
35	PAD MOUNTED TRANSFORMER, SEE TRANSFORMER SPECIFICATIONS & DETAILS "B" & "C",
36	DISTRIBUTION SYSTEM PAD MOUNTED SECTIONALIZING SWITCH.
37	PROVIDE PRIMARY TERMINATORS & CONNECT TO SWITCH.
60	1-3" TELEPHONE & 1-3" CLOCK SYSTEM FIBRE DUCT CONDUITS. SEE DETAIL "E".
61	DRILL HOLE IN EXISTING HANDHOLE WALL FOR INSTALLATION OF 3" FIBRE DUCT CONDUIT. REPAIR AROUND CONDUIT WITH CEMENT GROUT.
62	3" EMPTY FIBRE DUCT CONDUIT ENCASED IN CONCRETE. LEAVE W/ #16 FISH WIRE.
63	SEE DETAIL "D" & RISER DIAGRAM.
67	STUB 5'-0" OUTSIDE BUILDING, CAP & LEAVE FOR USE BY OTHERS, SEE PLOT PLAN.

PANEL SCHEDULE (CONT'D)

CIR. NO.	CONNECTED TO:	WATTS LOAD	PHASE A	PHASE B	CIR. BKR. FRM.	POLE	AMPS	NO. WIRES SIZE, TYPE	COND. SIZE	REMARKS:
PAN. EM, 1Φ, 3 WIRE 480/277V, S/N BAR MAIN C.B. 100A MAINS, CIR. BKR. TYPE, SURF. MTD. TYPE NY1B										
1	FIRE ALARM CONTROL CABINET	1000	1000		Y1B	1	20	3#12 TW	3/4"	
2	EMERG. LTG. HALLWAY 2ND FL.	1600	1600					2#12 TW	3/4"	
3	EMERG. LTG HALLWAY 1ST FL.	1600		1600				2#12TW	3/4"	
4	FIRE ALARM CONTROL CABINET	1000		1000				3#12 TW	3/4"	
5	EXIT LIGHTS.	360	360					2#12TW	3/4"	
MAIN	BREAKER	5560	2960	2600		2	40	3#8 TW	3/4"	



MANUAL FIRE ALARM RISER DIAGRAM
NO SCALE



ELECTRICAL SITE PLAN
SCALE 1"=100'

"AS-BUILT" DRAWING

WILMINGTON COLLEGE EDUCATION & PSYCHOLOGY BUILDING
WILMINGTON, NORTH CAROLINA

CODE 65737

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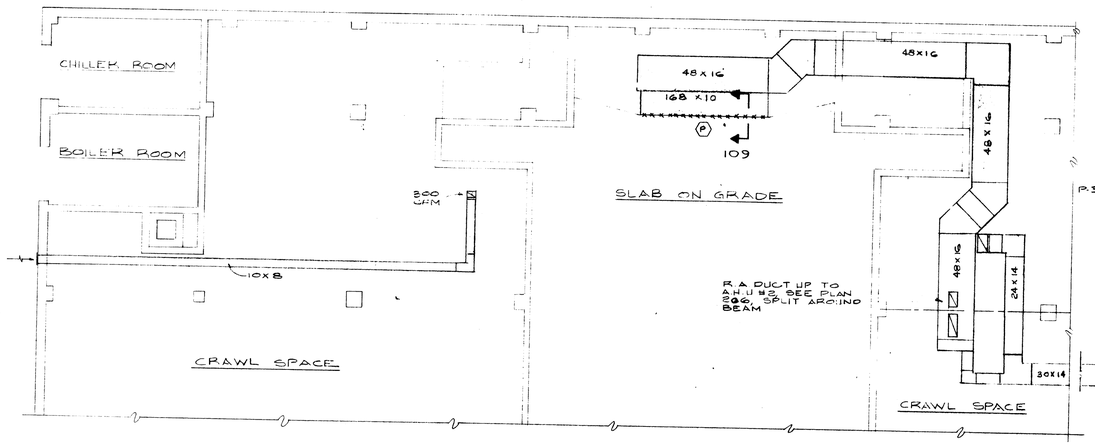
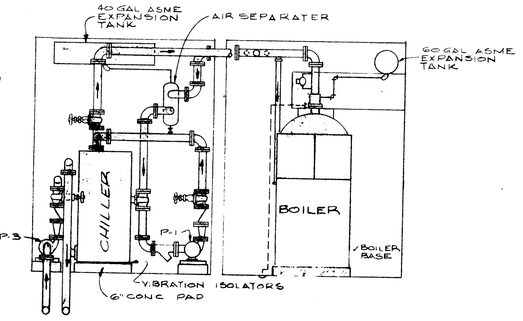
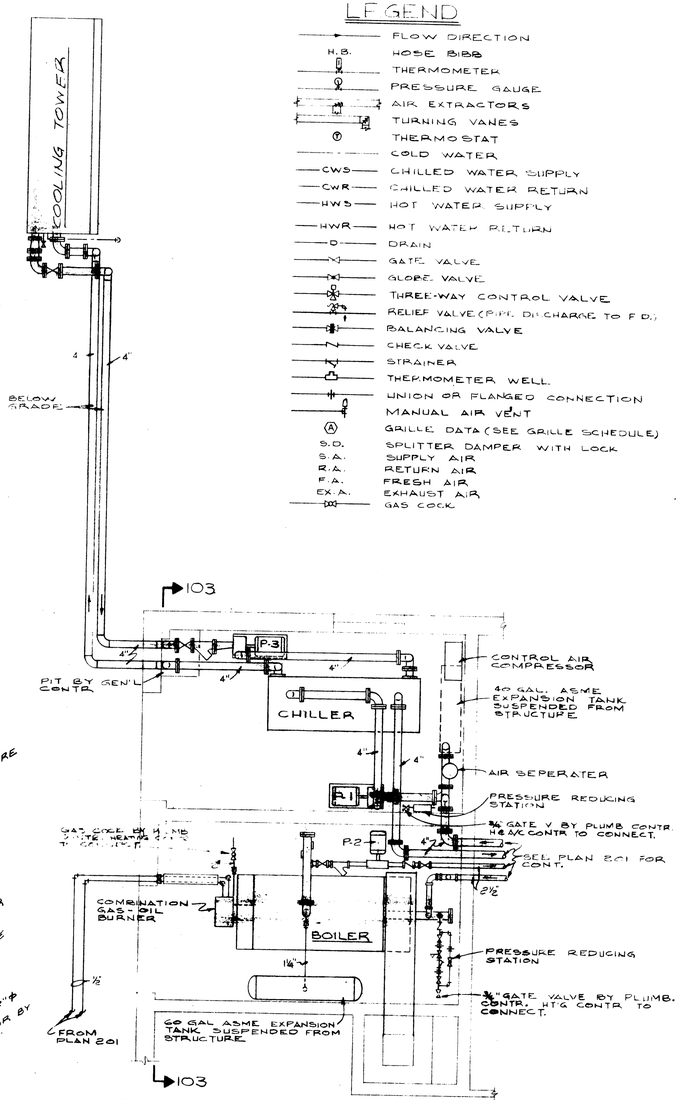
412 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA



101 PARTIAL FOUNDATION PLAN
SCALE: 1/8"=1'-0"



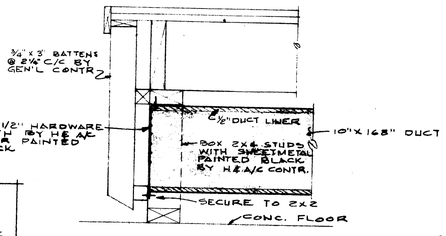
103 SECTION
SCALE: 1/4"=1'-0"



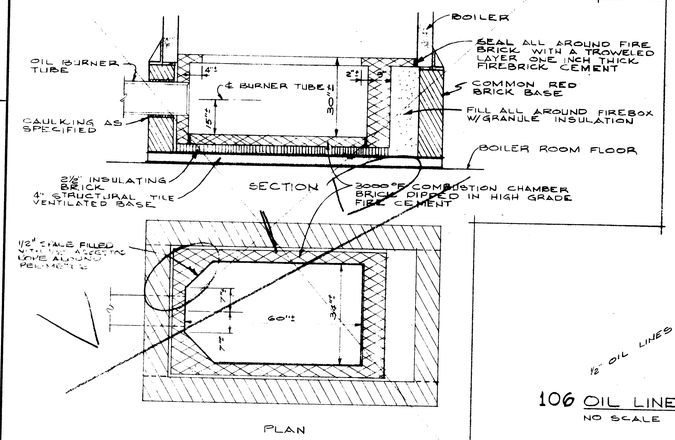
102 CHILLER & BOILER RM PLAN
SCALE: 1/4"=1'-0"

LEGEND

	FLOW DIRECTION
H.B.	HOSE BIBB
	THERMOMETER
	PRESSURE GAUGE
	AIR EXTRACTORS
	TURNING VANES
T	THERMOSTAT
	COLD WATER
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
D	DRAIN
	GATE VALVE
	GLOBE VALVE
	THREE-WAY CONTROL VALVE
	RELIEF VALVE (PIPE DISCHARGE TO F.D.)
	BALANCING VALVE
	CHECK VALVE
	STRAINER
	THERMOMETER WELL
	UNION OR FLANGED CONNECTION
	MANUAL AIR VENT
A	GRILLE DATA (SEE GRILLE SCHEDULE)
S.D.	SPLITTER DAMPER WITH LOCK
S.A.	SUPPLY AIR
R.A.	RETURN AIR
F.A.	FRESH AIR
EX.A.	EXHAUST AIR
	GAS COCK

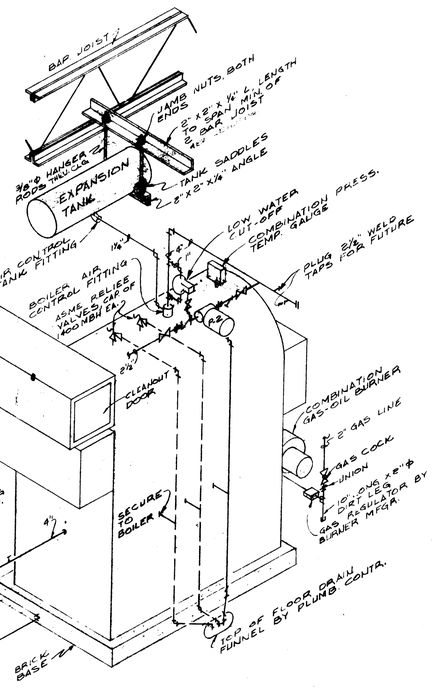


109 SECTION
NO SCALE

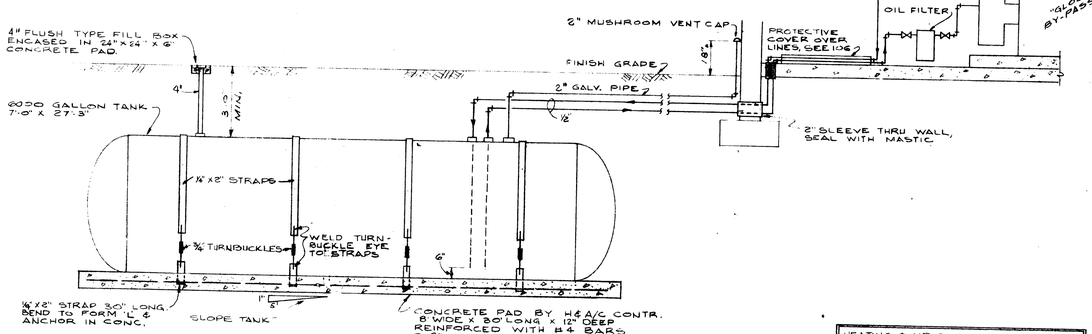


104 FIREBOX DETAILS

106 OIL LINE COVER DETAIL
NO SCALE

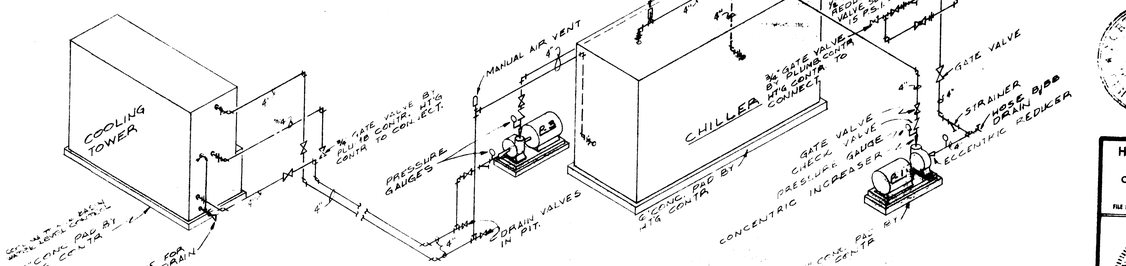


107 BOILER PIPING ISOMETRIC
NO SCALE



105 OIL PIPING & TANK DETAIL
NO SCALE

HEATING & AIR CONDITIONING LOADS		
SBN NET BOILER CAP.	1677	MBH
BLD'G HEATING LOAD	900	MBH
SPARE CAPACITY	777	MBH
TOTAL BUILDING COOLING LOAD	90	TON



108 TOWER & CHILLER PIPING ISOMETRIC
NO SCALE

"AS-BUILT" DRAWING

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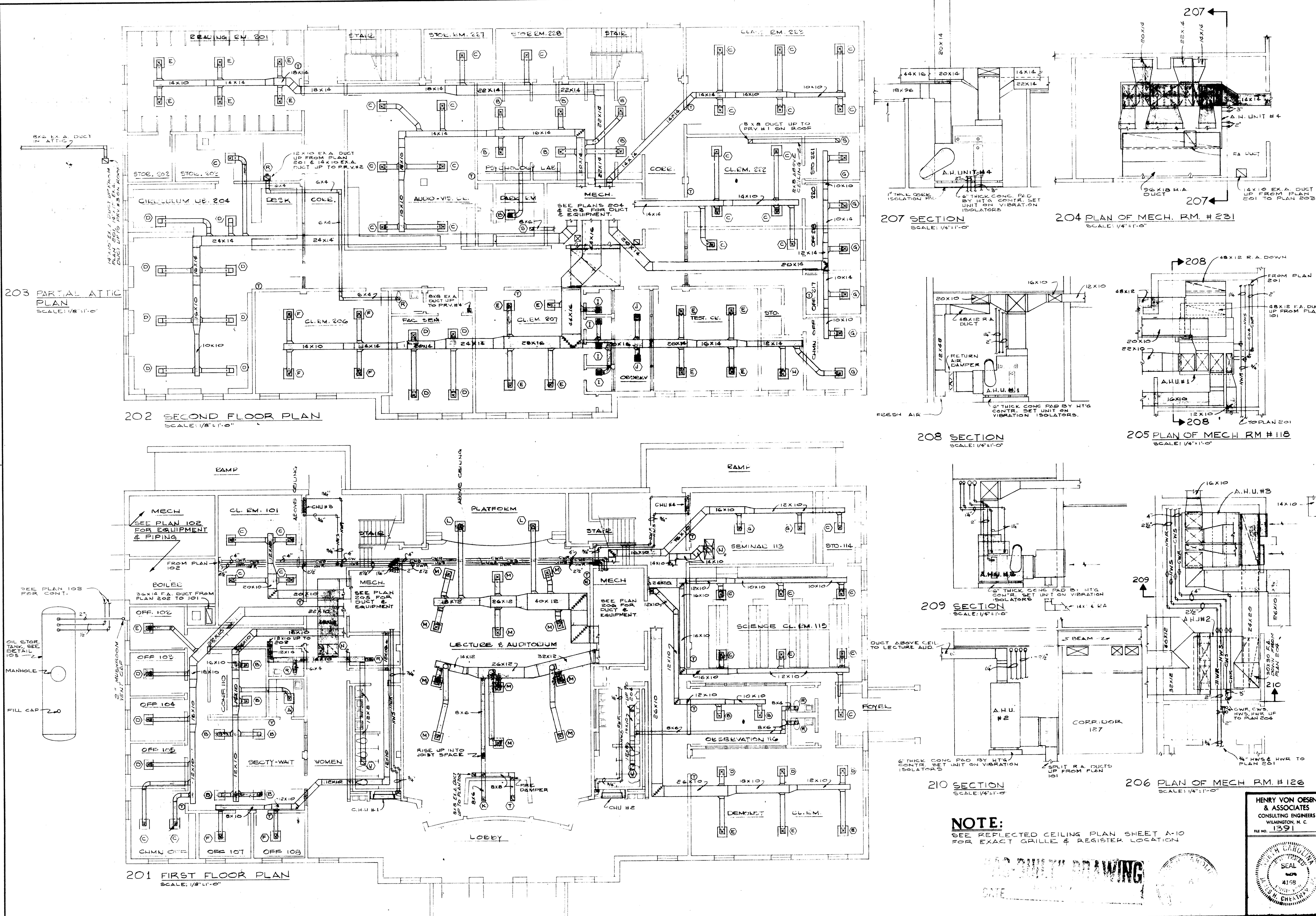
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 1391

NORTH CAROLINA REGISTERED SEAL NO. 4168 ENGINEER JAMES H. SWEATHAM, JR.

DRAWN BY: J.G.L.W.
CHECKED BY: J.H.S., JR.
DATE: 8/17/63
SHEET NO. M-1

Southern Photo Print & Supply Co., Greensboro, N. C. 1100 1-67



202 SECOND FLOOR PLAN
SCALE: 1/8"=1'-0"
201 FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"
203 PARTIAL ATTIC PLAN
SCALE: 1/8"=1'-0"
207 SECTION
SCALE: 1/4"=1'-0"
204 PLAN OF MECH. RM. # 231
SCALE: 1/4"=1'-0"
208 SECTION
SCALE: 1/4"=1'-0"
205 PLAN OF MECH RM # 118
SCALE: 1/4"=1'-0"
209 SECTION
SCALE: 1/4"=1'-0"
210 SECTION
SCALE: 1/4"=1'-0"
206 PLAN OF MECH. RM. # 126
SCALE: 1/4"=1'-0"
LECTURE & AUDITORIUM
PLATFORM
LOBBY
SCIENCE CL. RM. 115
SEMINAR 113
OBSERVATION 116
CORRIDOR 127
PSYCHOLOGY LAB
AUDIO-VIS. CL.
CL. RM. 206
CL. RM. 207
CL. RM. 101
MECH
BOILER
OIL STOR. TANK, SEE DETAIL 103
MANHOLE
FILL CAP

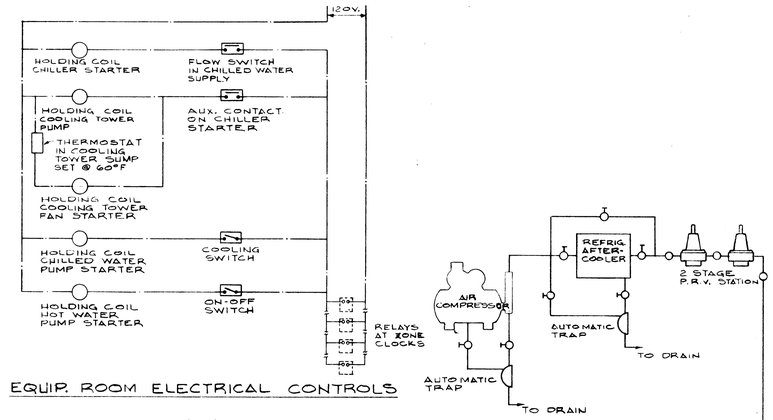
NOTE:
SEE REFLECTED CEILING PLAN SHEET A-10 FOR EXACT GRILLE & REGISTER LOCATION

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 1391

WILMINGTON COLLEGE EDUCATION & PSYCHOLOGY BUILDING
WILMINGTON, NORTH CAROLINA
BOARD OF TRUSTEES - L. BRADFORD TILLERY, JR. CHAIRMAN - DR. WILLIAM M. RANDALL, PRESIDENT
CODE 66737 - ITEM 6

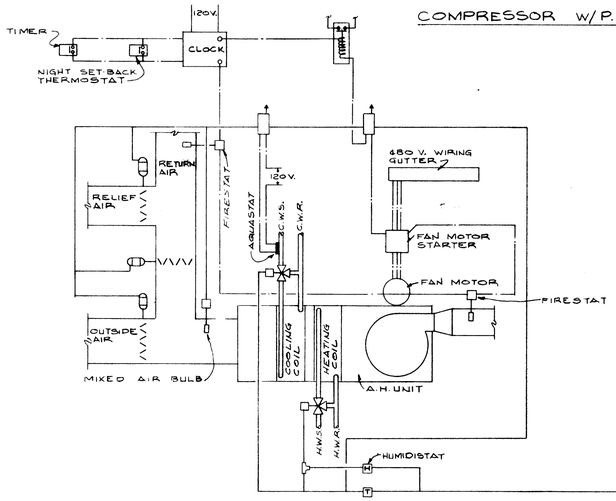
BALLARD, McKIM, & SAWYER, AIA
612 SOUTH SEVENTEENTH STREET
WILMINGTON, NORTH CAROLINA

DRAWN BY: J.E.W.
CHECKED BY:
SHEET NO. M-
OF 3

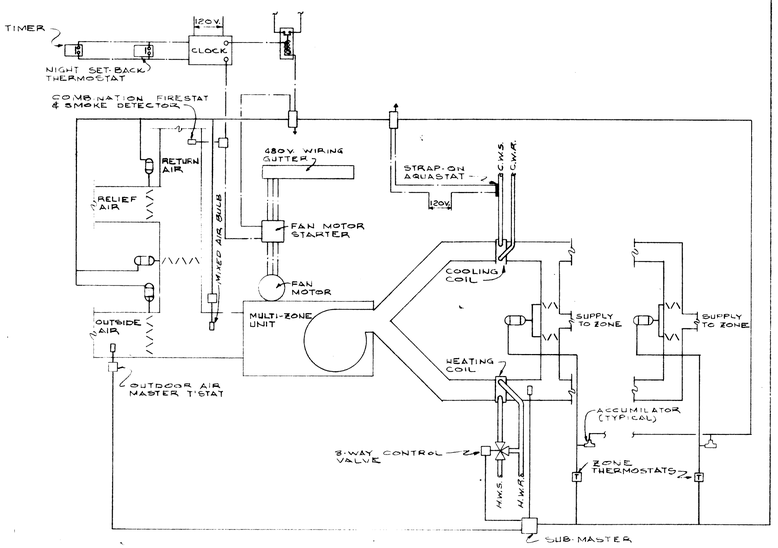


EQUIP. ROOM ELECTRICAL CONTROLS

COMPRESSOR w/P.R.V. STATION



SINGLE ZONE A.H. UNIT CONTROLS
(A.H. UNIT # 2)



MULTI-ZONE A.H. UNIT CONTROLS
(A.H. UNITS # 1, 3 & 4)

CONTROL DIAGRAM
NO SCALE

SCHEDULE OF METAL GAUGE, JOINTS AND BRACING FOR DUCT WORK

U.S. STD. GA. FOR GALV. IRON	MAX. MUM SIDE IN INCHES	TYPE OF TRANSVERSE JOINT CONNECTIONS:	BRACING
26	UP TO 12"	S, DRIVE, POCKET OR BAR SLIPS ON 7'-10" CENTERS	NONE
24	13" TO 24"	S, DRIVE, POCKET OR BAR SLIPS ON 7'-10" CENTERS	NONE
	25" TO 30"	S DRIVE, 1" POCKET OR 1" BAR SLIPS ON 7'-10" CENTERS *	1"x1"x⅛" L'S 4'-0" FROM JOINT
22	31" TO 60"	DRIVE, 1" POCKET OR 1" BAR SLIPS ON 7'-10" CENTERS *	1"x1"x⅛" L'S 4'-0" FROM JOINT.
	41" TO 60"	1½" L CONNECTIONS OR 1½" POCKET OR 1½" BAR SLIPS WITH 1⅜" x 1⅛" BAR REINFORCING ON 7'-10" CENTERS. *	1½"x1½"x⅛" L'S 4'-0" FROM JOINT
20	61" & UP	1⅜" L CONNECTIONS OR 1½" POCKET OR 1½" BAR SLIPS, 3'-4" MAX CENTERS WITH 1⅜" x ⅛" BAR REINFORCING.	1½"x1½"x⅛" DIAGONALS OR 1½"x1½"x⅛" L'S. 2'-0" FROM JOINT.

* DUCT SECTIONS OF 3'-9" MAY BE USED WITH BRACING L'S OMITTED INSTEAD OF 7'-10" LENGTH'S WITH JOINTS INDICATED
ALL UNINSULATED DUCTS 18" AND LARGER TO BE CROSS BROKEN. CROSS BREAKING MAY BE ELIMINATED IF TWO GAUGES HEAVIER METAL IS USED.

NOTE: THE DUCT WORK CONTRACTOR SHALL TAKE PROPER MEASUREMENTS ON THE JOB AND CHECK SPACE FOR CLEARANCES, OBSTRUCTIONS, ETC., BEFORE FABRICATING DUCT WORK. DUCTS MAY BE ADJUSTED SLIGHTLY IN SIZE IN ORDER TO FIT CONSTRUCTION CONDITIONS AS LONG AS THE CROSS SECTIONAL AREA OF THE DUCTS REMAIN THE SAME IN SIZE AS GIVEN ON THE PLANS.

AIR HANDLING UNIT SCHEDULE

SYM.	AIR QUANITY - CFM TOTAL	OUTSIDE	EXT. S.P.	MAX H.P.	ELECTRIC SERVICE	COOLING COIL EDB	EWB	LDB	LWB	G.T.H.	GPM	HEATING COIL STEAM PRESS.	G.T.H.	G.P.M.	REMARKS
AHU # 1	4,300	550	⅜"	3	480 V., 3Φ	79.5	66.4	58.1	57.6	119,700	24	[illegible]	80,000	8	MULTI-ZONE
AHU # 2	7,000	2,500	¾"	5	480 V., 3Φ	84.1	70.3	61.9	57.7	291,400	58	[illegible]	220,000	22	SNGLE ZONE
AHU # 3	4,350	800	⅝"	3	480 V., 3Φ	81.8	68.0	58.1	56.9	155,200	31	5 [illegible]	130,000	13	MULTI ZONE
AHU # 4	17,450	2,500	1"	15	480 V., 3Φ	80.6	67.0	58.5	56.9	559,300	112	61.6	450,000	45	MULTI-ZONE

CHILLER SCHEDULE

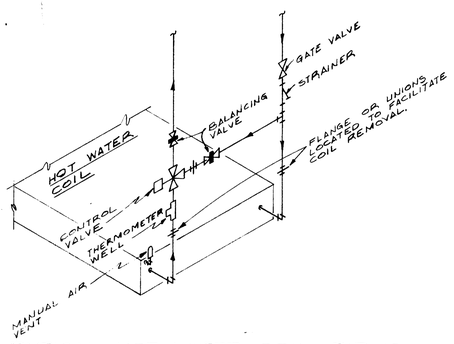
SYM.	CAPACITY TONS REF.	TOTAL HEAT REJECTION TONS OF REF	COOLER L.W.T (°F)	G.P.M	MAX. P.D.	CONDENSER E.W.T (°F)	G.P.M	ELECTRICAL MAX. VOLTAGE & PHASE	AMPS*	REMARKS
CHILLER	90	115	44	226	15'	85	270	20'	480V, 3Φ	300	MULTIPLE COMPRESSORS

* AMPS - MAX. INSTANTANEUOUS CURRENT FLOW DURING STARTING.

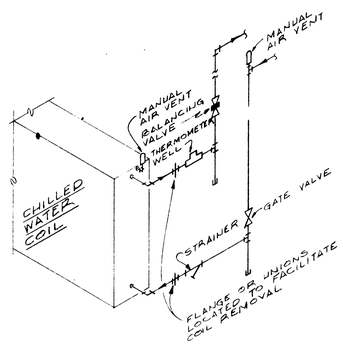
COOLING TOWER SCHEDULE

SYM	CAPACITY TONS*	WATER GPM	MAX. SPRAY PRESSURE REQUIRED AT INLET HEADERS	WATER TEMP.(°F) IN	OUT	OUTSIDE WET BULB	FAN MOTOR H.P.	ELECTRICAL	C.F.M.	REMARKS
COOLING TOWER	115	270	5 PSIG	95	85	80°	10	480V, 3Φ	19,500	CENTRIFUGAL FANS

* BASED ON TOTAL HEAT REJECTION OF THE CHILLER

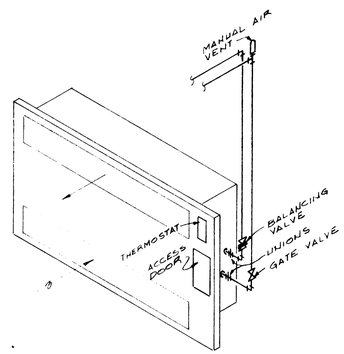


TYPICAL HOT WATER COIL PIPING
NO SCALE



TYPICAL CHILLED WATER COIL PIPING NO SCALE

NOTE:
CHILLED WATER CO[illegible] FOR SINGLE ZONE UNIT TO BE PIPED SAME AS FOR HOT WATER COIL



TYPICAL CABINET UNIT HEATER PIPING DETAIL PIPING
NO SCALE

GRILLE & DIFFUSER SCHEDULE

SYM.	C.F.M.	NECK SIZE	TYPE	RUNOUT SIZE	REMARKS
A	50	6 Φ	CEILING SUPPLY DIFFUSER	6" Φ	4-WAY BLOW
B	150	8 Φ		8" Φ	
C	200	8 Φ		8" Φ	
D	250	8 Φ		8" Φ	
E	300	10 Φ		10" Φ	
F	350	10 Φ		10" Φ	
G	400	10 Φ		10" Φ	
H	500	12 Φ		12" Φ	
I	50	6 Φ		6" Φ	
J	100	6 Φ		6" Φ	
K	200	8 Φ		8" Φ	
L	400	10 Φ		10" Φ	
M	500	12 Φ		12" Φ	
N	VARIES	TWO 24"x24"	RETURN AIR GRILLE		FOR INVERTED T-BAR
O	VARIES	FOUR 24"x24"			
P	4,500	–	⅛ GALV HARDWARE CLOTH		
Q	3,750	TWO 24"x24"	RETURN AIR GRILLE		FOR INVERTED T-BAR
R	75	4X6	EXHAUST GRILLE		EQUIP WITH FLANGE
S	200	8X6	EXHAUST GRILLE		
T	250	8X8	EXHAUST GRILLE		
U	500	12X12	EXHAUST GRILLE		

PUMP SCHEDULE

SYM.	G.P.M FLOW	FEET HEAD	H.P.	R.P.M.	ELEC. SERVICE VOLTAGE	PHASE	REMARKS
P 1	225	50	5	1750	480	3	CHILLER PUMP
P 2	94	20	1½	1750	480	3	BOILER PUMP
P-3	270	50	5	1750	480	3	COOLING TOWER PUMP

POWER VENTILATOR SCHEDULE

SYM.	C.F.M.	S.P.	R.P.M.	H.P	MAX. TIP SPEED	ELECTRICAL	TYPE	REMARKS
PRV #1	680	¼"	1550	1/20	3676	120 VOLT	ROOF VENT	
PRV #2	850	¼	1143	1/2	3320	120 VOLT	ROOF VENT	
PRV #3	850	¼"	675	1/18	2562	120 VOLT	ROOF VENT	
PRV #4	250	¼"	1550	1/40	3019	120 VOLT	ROOF VENT	

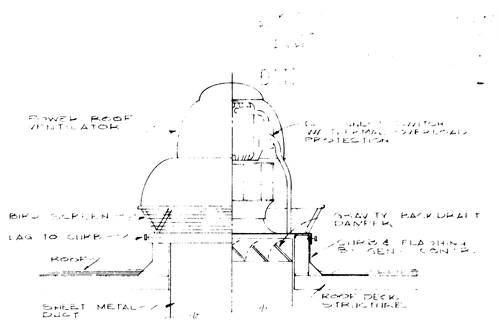
BOILER SCHEDULE

SYM.	SBI GROSS RATING	FIRING RATE OIL	GAS	HEATING SURFACE WATER SIDE	FIRE SIDE	TRIM	REMARKS
BOILER	4,120 MBH	26 GPH	3,500 CFH	429 ft²	347 ft²	HOT WATER	

CABINET UNIT HEATER SCHEDULE

SYM	BTU/HR.	GPM*	HIGH SPEED RPM	WATTS	ELECTRICAL	REMARKS
CHU #1	45,000	4.5	775	130	115V.-1Φ	SEMI-RECESSED
CHU #2	45,000	4.5	775	130	115V.-1Φ	
CHU #3	15,000	1.5	1050	85	115V.-1Φ	
CHU #4	15,000	1.5	1050	85	115V.-1Φ	

* MAX. WATER PRESSURE DROP 2'



POWER ROOF VENTILATOR DETAIL
NO SCALE

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.
FILE NO. 1391

NORTH CAROLINA SEAL 4168 ENGINEER

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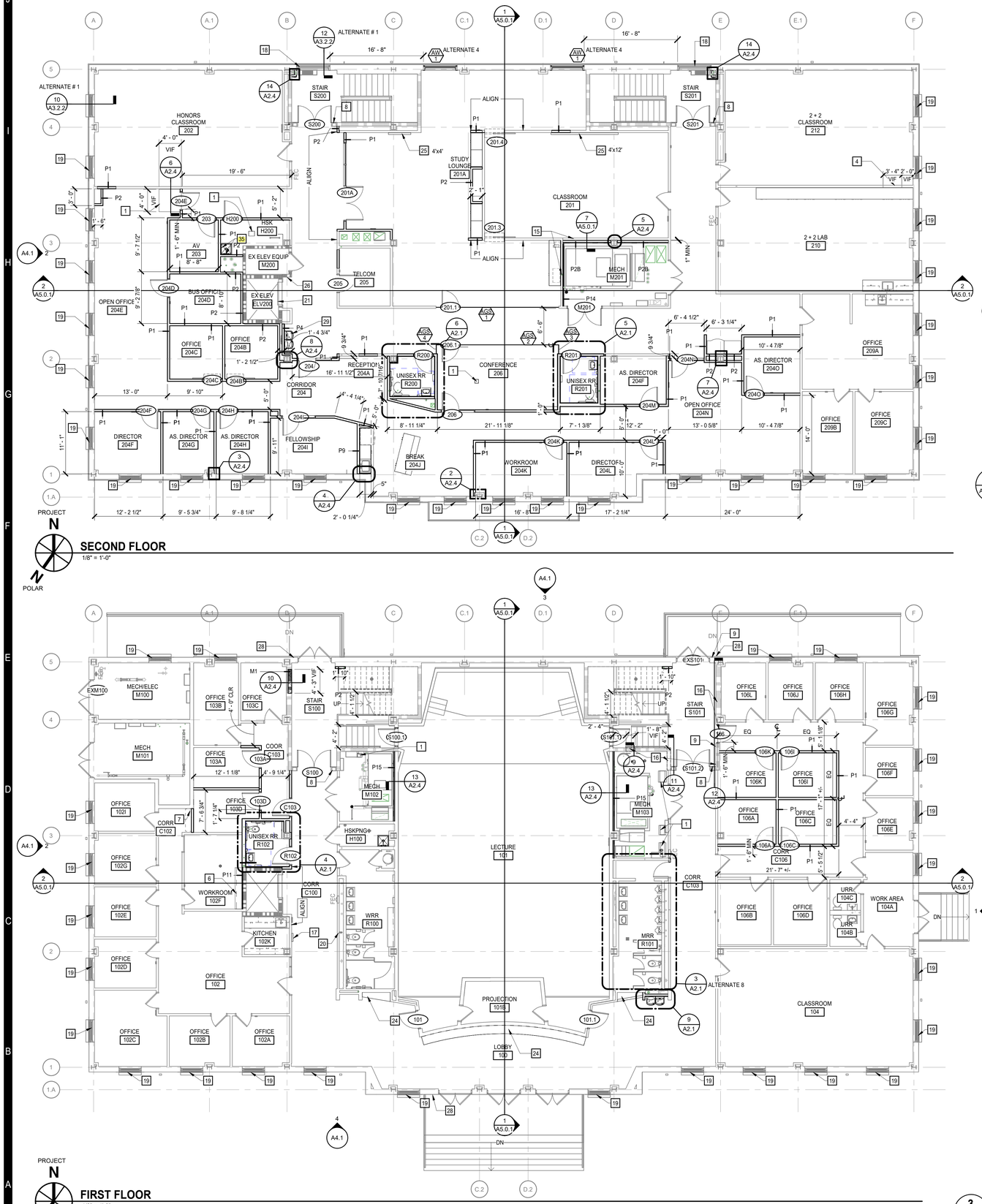


KING HALL ALTERNATE SUMMARY

ALTERNATE #1: REPLACE EXISTING WINDOWS AND WINDOW SHADES
REFER TO A1.1, A2.1, A3.1.1, AND A3.2.2

ALTERNATE #2: RECOAT FLATROOF
REFER TO A2.2

ALTERNATE #3: PROVIDE CARPET PAINT AND BASE IN FIRST FLOOR OFFICES
REFER TO A1.1 AND A3.0.1

ALTERNATE #3A: PROVIDE CARPET PAINT AND BASE IN FIRST FLOOR CLASSROOM 104
REFER TO A1.1 AND A3.0.1

ALTERNATE #4: PROVIDE 2 NEW EXTERIOR WINDOWS AND WINDOW SHADES AT ROOM 201A
REFER TO A1.1, A2.1, A3.1.1, A3.2.1, AND A4.1

ALTERNATE #5: SCRAPE AND PAINT EXTERIOR TRIM
REFER TO A4.1

ALTERNATE #6: REPLACE HOLLOW METAL FRAMES @ DOORS S100, S101.2, S200, AND S201
REFER TO A2.1, A3.1.1, AND A3.2.1

ALTERNATE #7: CUSTOM WAYFINDING
REFER TO A3.0.1

ALTERNATE #8: RECONFIGURE AND UPDATE MENS TOILET ROOM
REFER TO A1.1, A2.1, AND A2.3

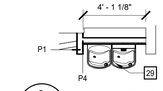
FLOOR PLAN GENERAL NOTES

A. REFER TO A3.0.1 FOR FINISH SCHEDULE AND PLANS FOR CASEWORK AND FINISH INFORMATION
B. REFER TO LS2.1 FOR RATED ASSEMBLIES LEGEND INDICATED BY (Xn)

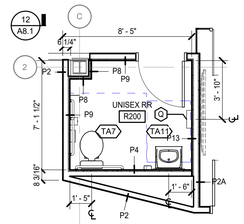
FLOOR PLAN KEYNOTES

REPRESENTED BY (n)
APPLIES TO DRAWINGS A2.1 - A2.nn

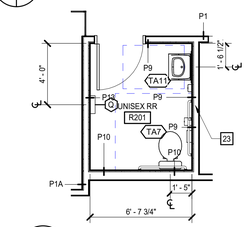
1 CONCRETE SLAB INFILL; REFER TO FLOOR INFILL SUPPORT DETAIL S1.1 FOR ADDITIONAL INFORMATION
2 PATCH ROOF; REFER TO DETAIL 3/A2.2
3 6" CFSF-S FILLED WITH BATT INSULATION
4 REPAIR GYP WALL PATCH; FINISH TO MATCH EXISTING ADJACENT
5 EXISTING RATED HORIZONTAL ASSEMBLIES TO REMAIN
6 REINSTALL SHELVING
7 REINSTALL SHELVING
8 ALTERNATE #6 INSTALL NEW 45 MIN HOLLOW METAL FRAME REFER TO A3.1.1 FOR ADDITIONAL INFORMATION
9 AUTO OPERATOR
10 ROOF MEMBRANE
11 1/2" COVER BOARD
12 1 1/2" MIN TAPERED POLYISOCYANURATED INSULATION
13 2 1/2" CORRUGATED METAL DECK; REFER TO ROOF INFILL DETAIL ON S1.1 FOR ADDITIONAL INFORMATION
14 UNISTRUT, REFER TO ROOF INFILL DETAIL ON S1.1 FOR ADDITIONAL INFORMATION
15 FILL EXISTING STUD CAVITY WITH SOUND ATTENTUATION BLANKETS
16 PATCH CMU WALL ABOVE WHERE DUCTWORK WAS REMOVED; VERIFY DIMENSIONS AND LOCATIONS OF OPENINGS IN FIELD
17 OFCI SEMI RECESSED AED CABINET; 3'-8" AFF MAX TO LATCH
18 ALTERNRATE #1 REPLACE EXISTING WINDOW WITH AW 1; REFER TO A3.1.1 AND 12/A3.2.2 FOR ADDITIONAL INFORMATION
19 ALTERNRATE #1 REPLACE EXISTING WINDOW WITH AW 1; REFER TO A3.1.1 AND 10/A3.2.2 FOR ADDITIONAL INFORMATION
20 PATCH AND REPAIR WALL WHERE PIPE INSTALLATION OCCURS
21 INSTALL DOOR REOPENING DEVICE
22 EXISTING COLUMN WRAP TO REMAIN
23 VERIFY LOCATION OF JOISTS BELOW AND COORDINATE PLUMBING PENITRATIONS
24 BENCH REFER TO B/A8.1 FOR ADDITIONAL INFORMATION
25 MARKER BOARD
26 SIGN TYPE 5; REFER TO A3.3.0
28 KNOX BOX
29 MOUNTING HEIGHT FOR ACCESSIBLE SPOUT SHALL BE 36" MAX ABOVE FLOOR
30 EXISTING CATWALK
31 NEW CATWALK
32 1 1/2" PAINTED STEEL PIPE POST 4'-0" OC MAX
33 1 1/2" PAINTED STEEL PIPE RAIL
34 PAINTED STEEL GUARD AROUND PERIMETER OF CATWALK
35 4' HIGH BY 4' LONG FRP AT WALLS ADJACENT TO SINK



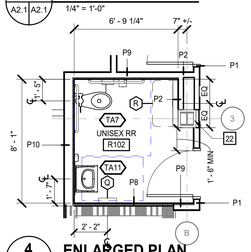
9 A2.1 A2.1 ENLARGED PLAN
1/4" = 1'-0"



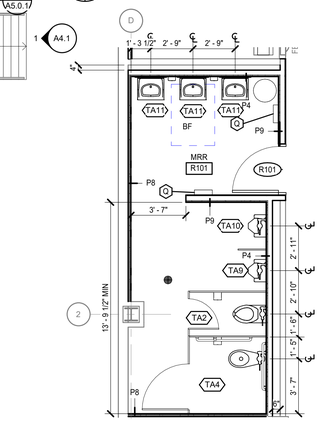
6 A2.1 A2.1 ENLARGED PLAN
1/4" = 1'-0"



5 A2.1 A2.1 ENLARGED PLAN
1/4" = 1'-0"



4 A2.1 A2.1 ENLARGED PLAN
1/4" = 1'-0"



3 A2.1 A2.1 ALTERNATE 8 MENS TOILET ROOM PLAN
1/4" = 1'-0"

TOILET ASSEMBLIES

APPLIES TO DRAWING A2.1
REPRESENTED BY (TAn)

MARK	REMARKS	PLAN
TA1		2'-10" CLEAR, UNO; 5'-0" CLEAR; * 1'-3" MIN; TOILET PARTITION OR WALL; WATER CLOSET
TA2	OMIT (E)	
BARRIER FREE TA3		5'-0" CLEAR; 4" MAX; 5'-0" CLEAR; TOILET PARTITION OR WALL; WATER CLOSET
BARRIER FREE TA4	OMIT (E)	
BARRIER FREE TA7		WATER CLOSET
BARRIER FREE TA8	OMIT (E)	WATER CLOSET

MARK	REMARKS	PLAN
TA9	NOTE D	URINAL SCREEN; 2'-8" CLR UNO; 16" MIN; WALL, TOILET PARTITION, OR URINAL SCREEN; 1'-10" MIN; 1'-4"; 1'-4"; URINAL
BARRIER FREE TA10	(G) NOTE D	URINAL SCREEN; 3'-0" CLEAR; WALL, TOILET PARTITION, OR URINAL SCREEN; 1'-10" MIN; 16" MIN; 1'-6" MIN; 1'-6" MIN; URINAL
TA11	CENTER OVER LAVATORY	(G) (F); 1'-3" MIN; LAVATORY

LEGEND NOTES:

A. HANDING/ORIENTATION MAY VARY. REFER TO PLANS FOR PROPER ORIENTATION.

B. PLUMBING FIXTURE GRAPHICS IN THIS LEGEND ARE REPRESENTATIVE ONLY. ACTUAL PLUMBING FIXTURES MAY VARY.

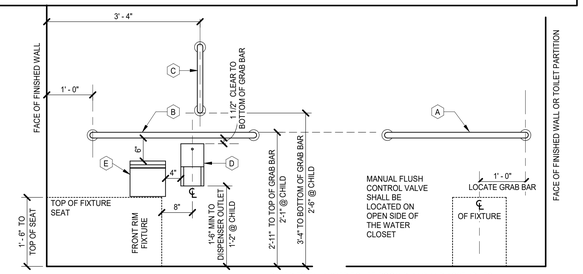
C. COAT/ROBE HOOKS INDICATED ON THE BACK OF TOILET COMPARTMENT DOORS ARE PART OF THE TOILET COMPARTMENT ASSEMBLY AND ARE NOT CONSIDERED A TOILET ACCESSORY.

D. URINAL PARTITIONS SHALL EXTEND NOT LESS THAN 1'-10" OR TO A POINT NOT LESS THAN 6" BEYOND THE OUTERMOST FRONT LIP OF THE URINAL AS MEASURED FROM THE FINISHED BACK WALL SURFACE, WHICHEVER IS GREATER

TOILET ACCESSORIES SCHEDULE

MARK	DESCRIPTION	MOUNTING HEIGHT	REMARKS
A	36" HORIZONTAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
B	42" HORIZONTAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
C	18" VERTICAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
D	TOILET TISSUE DISPENSER	REFER TO WATER CLOSET ELEVATIONS	OWNER FURNISHED CONTRACTOR INSTALLED
E	SANITARY NAPKIN DISPOSAL	REFER TO WATER CLOSET ELEVATIONS	OWNER FURNISHED CONTRACTOR INSTALLED
F	SOAP DISPENSER	3'-4" AFF TO DISPENSING OUTLET	OWNER FURNISHED CONTRACTOR INSTALLED
G	MIRROR (24" x 48"), OVER LAV AND CONTERTOP	3'-4" AFF TO BOTTOM OF REFLECTIVE SURFACE	
Q	PAPER TOWEL DISPENSER	3'-4" AFF TO DISPENSING OUTLET	OWNER FURNISHED CONTRACTOR INSTALLED
R	CHANGING STATION	3'-8" MAX AFF TO LATCH	

1. ACCESSORY ITEMS ARE IDENTIFIED BY (n) ON PLANS. LETTERS CORRESPOND TO SCHEDULE ABOVE.
2. ACTUAL DIMENSIONS OF ACCESSORIES MAY VARY. COORDINATE DIFFERENCES, IF ANY.
3. REFER TO ALL CASEWORK ELEVATIONS FOR ADDITIONAL TOILET ACCESSORY LOCATIONS.
4. PROVIDE MOP AND BROOM HOLDER W/ SHELF (n) AT ALL CUSTODIAL/JANITORIAL SINKS. MOUNT AT 5'-0" AFF TO CENTERLINE AND LOCATE ON SIDE WALL OF SINK (NOT ON WALL ABOVE FAUCET).
5. PROVIDE ROBE HOOK ON INTERIOR FACE OF ALL TOILET ROOM DOORS WHEREIN ONLY ONE WATER CLOSET IS PROVIDED. MOUNT AT 3'-11" AFF TO TOP.



REFER TO ENLARGED TOILET ROOM PLANS AND ASSEMBLIES LEGEND FOR FIXTURE LOCATIONS

WATER CLOSET ELEVATIONS

NO SCALE

0' 2' 4' 8' 16' — 1/8" = 1'-0"
0' 1' 2' 4' 8' — 1/4" = 1'-0"

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ALDERMAN AND KING HALL RENOVATIONS - KING HALL

University of North Carolina Wilmington
SCO#22-24639-01A
601 Hamilton Drive, Wilmington, NC 28403

PROJECT NO: 820589
DATE: FEBRUARY 10, 2023

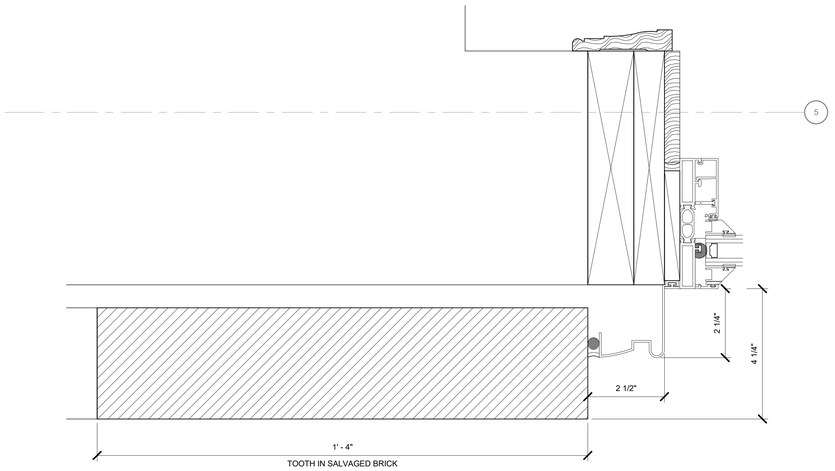
REVISIONS

DATE	DESCRIPTION

FLOOR PLANS AND ENLARGED PLANS

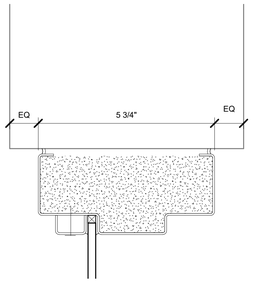
A2.1

6/28/2023 10:14:43 AM

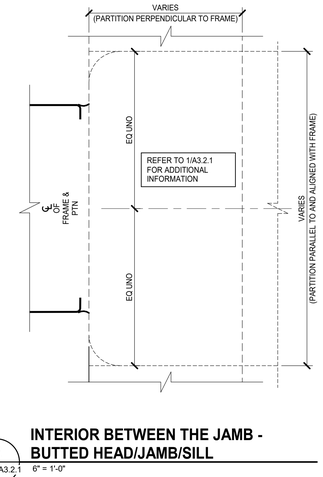


9 ALTERNATE #4 JAMB
A3.1.1 A3.2.1 — 6" = 1'-0"

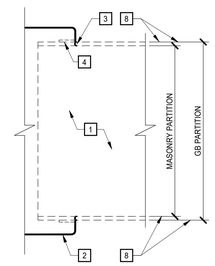
NOTE: REFER TO 8/A3.2.1 FOR ADDITIONAL NOTES



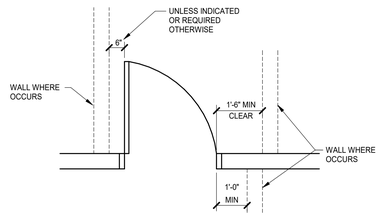
6 HEAD/JAMB DETAIL ALTERNATE # 6
A3.1.1 A3.2.1 — 6" = 1'-0"



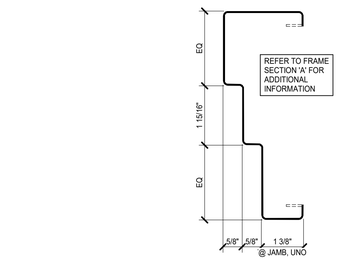
2 INTERIOR BETWEEN THE JAMB - BUTTED HEAD/JAMB/SILL
A3.2.1 — 6" = 1'-0"



1 INTERIOR WRAP HEAD/JAMB/SILL
A3.2.1 — 6" = 1'-0"



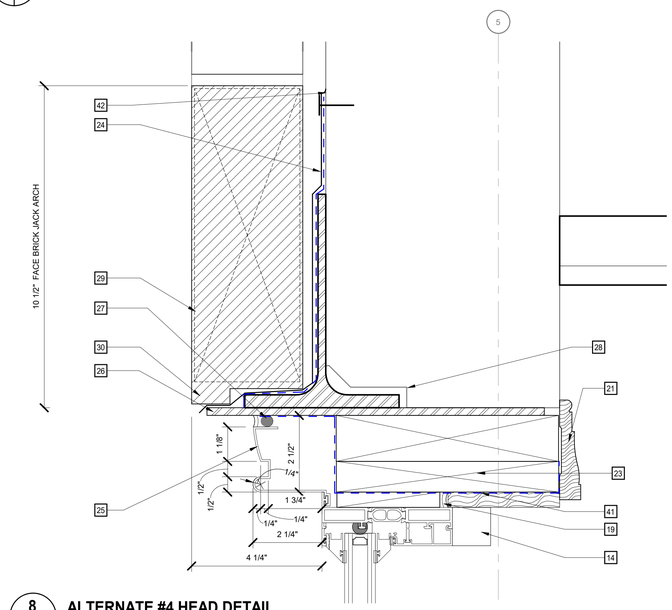
MANEUVERING CLEARANCE AT DOORS



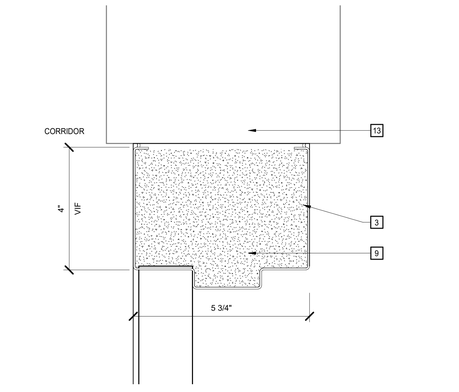
1. ALL FRAME/JAMB DEPTHS, OTHER THAN WRAP CONDITIONS, SHALL BE 5 3/4", UNO.
2. ALL FRAME/JAMB DEPTHS AT WRAP CONDITIONS SHALL BE SIZED TO SUIT PARTITION.
3. DOORS, PANELS, GLAZING, STOPS, AND OTHER FRAME INFILLS ARE NOT SHOWN IN FRAME SECTIONS AS THEY VARY - PROVIDE SAME WHERE INDICATED.

STEEL FRAME SECTIONS

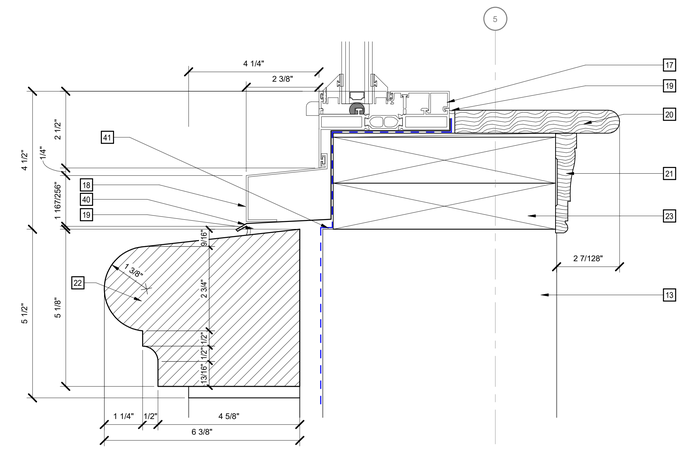
0" ½" 1" 2" 4"
6" = 1'-0"



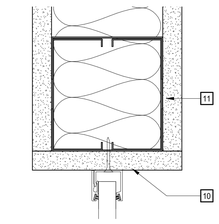
8 ALTERNATE #4 HEAD DETAIL
A3.1.1 A3.2.1 — 6" = 1'-0"



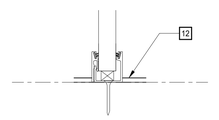
5 HEAD/JAMB DETAIL
A3.1.1 A3.2.1 — 6" = 1'-0"



7 ALTERNATE # 4 SILL
A3.1.1 A3.2.1 — 6" = 1'-0"



4 HEAD/JAMB DETAIL
A3.1.1 A3.2.1 — 6" = 1'-0"



3 SILL DETAIL
A3.1.1 A3.2.1 — 6" = 1'-0"

DOOR AND FRAME DETAIL KEYNOTES

REPRESENTED BY n

APPLIES TO DRAWINGS A3.2.1 - A3.2.n

1	ANCHORAGES, REINFORCING, SPECIFIC PARTITION CONSTRUCTION AND/OR LINTELS ARE NOT SHOWN FOR CLARITY.
2	REFER TO FRAME SECTION IN DOOR SCHEDULE FOR TYPE.
3	SEALANT, ALL SIDES - TOOL TO 90°.
4	BACKBEND RETURN @ GB LOCATIONS ONLY.
5	9/16" @ MAS; 1/2" @ GB.
6	1/4" @ JAMBS, UNO; DIMENSION @ HEAD & SILL VARIES.
7	BULLNOSE @ CMU JAMBS & SILLS.
8	0" @ GB LOCATIONS; 1/16" @ MAS LOCATIONS.
9	GROUT SOLID
10	5/8" GYPSUM BOARD
11	PARTITION AS SCHEDULED REFER TO PLAN
12	FINISH FLOOR; TYPE VARIES REFER TO FINISH SCHEDULE AND PLANS
13	EXISTING CMU WALL
14	LOUVER BLIND
15	ROLLER BLINDS REFER TO A2.3 RCP PLANS FOR LOCATIONS
16	LOUVER BLIND LOCATION VARIES
17	ALUMINUM WINDOW
18	CUSTOM ALUMINUM SILL EXTENSION
19	CONTINUOUS SEALANT
20	WOOD SILL
21	WOOD TRIM
22	FACE BRICK SILL, COLOR AND PROFILE TO MATCH EXISTING
23	WOOD BLOCKING
24	METAL FLASHING
25	CUSTOM ALUMINUM TRIM
26	STEEL LINTEL; REFER TO STRUCTURAL DRAWINGS
27	CONTINUOUS SEALANT AND BACKER ROD
28	NOTCH EXISTING CMU TO ACCOMODATE LINTEL
29	WEEP
30	NOTCH BRICK
31	REMOVE AND PATCH GYPSUM AS REQUIRED TO FINISH OPENING AND INSTALL DOOR HARDWARE
32	ALTERNATE # 6: REMOVE DOOR FRAME REFER TO ALTERNATE 6 DEMOLITION PLAN A1.1 FOR ADDITIONAL INFORMATION
33	WOOD BLOCKING AS REQUIRED TO MOUNT DOOR TRACK
34	CFSF-NS
35	EXISTING MASONRY WALL
36	BARN DOOR TRACK
37	EXISTING BRICK SILL TO REMAIN
38	EXISTING LINTEL TO REMAIN
39	EXISTING FLASHING TO REMAIN
40	METAL FLASHING
41	PEEL AND STICK AIR BARRIER TRANSITION MEMBRANE
42	CONTINUOUS TERMINATION BAR AND SEALANT

GENERAL NOTES

A. UNLESS INDICATED OTHERWISE, ALL DETAIL NUMBERS IN THE DOOR AND FRAME SCHEDULE FOR HEAD, JAMB AND SILL CONDITIONS REFER TO DRAWINGS A3.2.1 - A3.2.n.

B. DOOR AND FRAME DETAILS INDICATE GENERAL CHARACTERISTICS OF DOOR AND FRAME SIZES AND COMPONENTS AND MAY NOT INDICATE EXACT FIELD CONDITIONS OR REQUIREMENTS. COORDINATE DETAILS WITH OTHER DRAWINGS AND SPECS TO DETERMINE ALL COMPONENTS (E.G., SEALANTS, ANCHORS, HARDWARE, LINTELS, CLIPS) REQUIRED FOR COMPLETE AND FUNCTIONAL INSTALLATION.

C. DOOR SWINGS ON FLOOR PLANS TAKE PRECEDENCE OVER SWINGS INDICATED ELSEWHERE (E.G., ELEVATIONS).

MOSELEY ARCHITECTS
911 N. WEST STREET, SUITE 205 RALEIGH, NORTH CAROLINA 27603
PHONE (919) 840-0091
MOSELEYARCHITECTS.COM

BRADLEY J LOCKWOOD
REGISTERED ARCHITECT
14206
NORTH CAROLINA
RALEIGH, NC

MOSELEY ARCHITECTS, P.C.
REGISTERED ARCHITECTURAL CORPORATION
50149
NORTH CAROLINA
RALEIGH, NC

ALDERMAN AND KING HALL RENOVATIONS - KING HALL

University of North Carolina Wilmington
SCO#22-24639-01A
601 Hamilton Drive, Wilmington, NC 28403

PROJECT NO: 620589
DATE: FEBRUARY 10, 2023

REVISIONS	
DATE	DESCRIPTION

DOOR AND FRAME DETAILS

A3.2.1

6/28/2023 2:51:08 PM

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

Project: UNCW King Hall Renovations

Bid Package: BP09A – Drywall, Metal Studs, Insulation, FRP

Bidder: _____

NC License # (if applicable)_____

Date: _____

Bid Time: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

BID PACKAGE(s): BP09A – Drywall, Metal Studs, Insulation, FRP

Base Bid:

_____Dollars ($)_____

ALLOWANCES (included in base bid)

1. None

ALTERNATES

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

1. Alternate No. 1 – Replace existing windows and window shades
   _____Dollars ($) (Add/Deduct)
2. Alternate No. 4 – Provide 2 new exterior windows at Room 201A
   _____Dollars ($) (Add/Deduct)
3. Alternate No. 6 – Replace hollow metal frames @ doors S100, S101.2, S200, and S201
   _____Dollars ($) (Add/Deduct)
4. Alternate No. 8 – Reconfigure and update men's toilet room
   _____Dollars ($) (Add/Deduct)
5. Voluntary Alternate No. V1 – Add Scope of work from BP09C – Acoustic Ceilings
   _____Dollars ($) (Add/Deduct)

UNIT PRICES (not included in base bid)

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

1. None

MINORITY BUISNESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. Also list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (B) to that effect in lieu of Affidavit (A) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit D is not necessary;

* OR *

If less than the 10% goal, Affidavit (D) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit with their bid the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A or Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

UNCW

PROPOSAL SIGNATURE PAGE

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

_____

(Name of firm or corporation making bid)

WITNESS:

_____

_____
(Proprietorship or Partnership)

By:_____
Signature

Name: _____
Print or type

Title_____
(Owner/Partner/Pres./V.Pres)

Address_____

_____

ATTEST:

By:_____

Title:_____
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

License No._____

Federal I.D. No. _____

Email Address: _____

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 ____ Addendum No. 5____ Addendum No. 7____

Addendum No. 2 _____ Addendum No. 4 ____ Addendum No. 6 ___ Addendum No. 8____

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

UNCW

Project: UNCW King Hall Renovations

Bid Package: BP09E – Painting and Wall Coverings

Bidder: _____

NC License # (if applicable)_____

Date: _____

Bid Time: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

BID PACKAGE(s): BP09E – Painting and Wall Coverings

Base Bid:

_____Dollars ($)_____

ALLOWANCES (included in base bid)

1. Include $2,500 for paint and repairs at window in room “Stair 201” _____(initial)

ALTERNATES

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

1. Alternate No. 1 – Replace existing windows and window shades
   _____Dollars ($) (Add/Deduct)
2. Alternate No. 3 – Provide carpet, paint, and base in first floor offices
   _____Dollars ($) (Add/Deduct)
3. Alternate No. 3A – Provide carpet, paint and base in first floor Classroom 104
   _____Dollars ($) (Add/Deduct)
4. Alternate No. 4 – Provide 2 new exterior windows at Room 201A
   _____Dollars ($) (Add/Deduct)
5. Alternate No. 5 – Scrape and paint exterior trim
   _____Dollars ($) (Add/Deduct)
6. Alternate No. 6 – Replace hollow metal frames (painting)
   _____Dollars ($) (Add/Deduct)
7. Alternate No. 8 – Reconfigure and update men’s toilet room
   _____Dollars ($) (Add/Deduct)

UNIT PRICES (not included in base bid)

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

1. None

MINORITY BUISNESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. Also list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (B) to that effect in lieu of Affidavit (A) required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit D is not necessary;

* OR *

If less than the 10% goal, Affidavit (D) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit with their bid the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A or Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

UNCW

PROPOSAL SIGNATURE PAGE

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

_____

(Name of firm or corporation making bid)

WITNESS:

_____

_____
(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

_____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

License No. _____

Federal I.D. No. _____

Email Address: _____

Addendum received and used in computing bid:

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

UNCW

Addendum No. 1 _____Addendum No. 3 ____ Addendum No. 5____ Addendum No. 7____

Addendum No. 2 _____Addendum No. 4 ____ Addendum No. 6 ___ Addendum No. 8____

MUTER CONSTRUCTION
CUSTOMERS FOR LIFE

Form of Proposal

UNCW

Project: UNCW King Hall Renovations

Bid Package: BP23 – HVAC Installation

Bidder: _____

NC License # (if applicable)_____

Date: _____

Bid Time: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

BID PACKAGE(s): BP23 – HVAC Installation

Base Bid:

_____Dollars ($)_____

ALLOWANCES (included in base bid)

1. Include $9,000 for AHU storage fees _____(initial)
2. Include $5,000 for extended warranty _____(initial)

ALTERNATES

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

1. Alternate No. 8 – Reconfigure and update men's toilet room
   _____Dollars ($) (Add/Deduct)
2. Owner Preferred Alternate No. 11 – Building Automation Controller and Flow Meter
   _____Dollars ($) (Add/Deduct)
3. Owner Preferred Alternate No. 14 – Fire Alarm System (duct detector work)
   _____Dollars ($) (Add/Deduct)

UNIT PRICES (not included in base bid)

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

1. None

MINORITY BUISNESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. Also list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit (B) to that effect in lieu of Affidavit (A) required above. The MB Participation Form must still be submitted even if there is zero participation.

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* OR *

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PROPOSAL SIGNATURE PAGE

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Respectfully submitted this day of _____

_____

(Name of firm or corporation making bid)

WITNESS:

_____

_____
(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

_____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

License No. _____

Federal I.D. No. _____

Email Address: _____

Addendum received and used in computing bid:

Addendum No. 1 _____Addendum No. 3 ____ Addendum No. 5____ Addendum No. 7____

Addendum No. 2 _____Addendum No. 4 ____ Addendum No. 6 ___ Addendum No. 8____