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NOVEMBER 17, 2025

CONTRACT No. 1827

MISC. HVAC IMPROVEMENTS PROJECT

ADDENDUM No. 02

All bidders bidding **Contract No. 1827** shall read and take note of this **Addendum No. 02**. The Procurement Documents for **Contract No. 1827 MISC. HVAC IMPROVEMENTS PROJECT** are hereby revised and/or clarified as stated below.

Acknowledgement of Contract No. 1827 Addendum No. 02

The Acknowledgement attached to **Addendum No. 02** is to be signed and returned immediately via email at **contract.clerks@alcosan.org** and acknowledged with Bidder's Proposal.

Kimberly Kennedy, P.E.

Director – Engineering and Construction

ACKNOWLEDGEMENT OF
CONTRACT NO. 1827 G, E, H – MISC. HVAC IMPROVEMENTS
PROJECT

ADDENDUM NUMBER 02

FIRM NAME: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

November 17, 2025

CONTRACT NO. 1827

MISC. HVAC IMPROVEMENTS PROJECT

ADDENDUM NO. 02



ADDENDUM No. 02

ALLEGHENY COUNTY SANITARY

AUTHORITY

PITTSBURGH, PENNSYLVANIA

CONTRACT NO. 1827

MISC. HVAC IMPROVEMENTS PROJECT

November 17, 2025

ATTENTION

BID OPENING DATE

Wednesday, DEC 3, 2025

11:00 A.M.

DEADLINE FOR QUESTIONS IS NOVEMBER 21, 2025

This Addendum No. 02 consists of 54 pages including the following attachments:

Attachment A - Building 110 Asbestos Survey

Attachment B - Building 512 Asbestos Survey

Attachment C - Main Pump Station (500) Elevation M-6 and Admin Annex (110) K-3

Attachment D - Roof Warranties

Attachment E - 230900 - Instrumentation and Control for HVAC

Attachment F – Four drawings as shown below in 2.1 – 2.4.

Attachment G – Pre Bid Meeting Presentation

ATTENTION BIDDERS

The following additions to and modifications of the Contract Documents will be included in and become part of the Contract for the Allegheny County Sanitary Authority (ALCOSAN) Misc. HVAC Improvements Project. Bidders are instructed to take the following into account in rendering any Bid for this work

The Bidder is responsible for verifying that he/she has received and reviewed all of the pages of the Contract Documents as well as all of the pages and attachments of all addenda. The Bidder shall verify all pages with the table of contents in the Contract Documents and the first page of all Addenda. Receipt of this Addendum No. 02 must be noted on the Bid Form. These items modify the portions of the documents specifically noted; all other provisions of the Contract Documents shall remain in effect

1. CHANGES TO THE SPECIFICATIONS -

- 1.1 In Volume 2 of 3, Specification Section 01 11 00 SUMMMARY OF WORK Section 1.2 C add:
 - 11. Building 510, Disconnect existing heat trace circuits and prepare for connection to new replace in kind system.
- 1.2 In Volume 2 of 3, Specification Section 01 11 00 SUMMMARY OF WORK Section 1.2 D add:
 - 18. Building 510, Disconnect and remove heat trace system in its entirety. Replace in kind.
- 1.3 In Volume 2 of 3, Specification Section 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC, see Attachment E for revised sections 1.2 System Description, 1.11 Scope, 2.1 Controls System Architecture.

2. CHANGES TO THE DRAWINGS –

- 2.1 510-EDT-01-ELECTRICAL POWER FIRST FLOOR DEMOLITION PLAN
- 2.2 510-ET-01-ELECTRICAL POWER FIRST FLOOR NEW WORK PLAN
- 2.3 510-HDM-01-HVAC FIRST FLOOR DEMOLITION PLAN
- 2.4 510-HM-01-HVAC FIRST FLOOR NEW WORK PLAN

3. CHANGES TO REFERENCE FILES

- 3.1 Additional asbestos surveying has been completed at the west headworks (512) and annex buildings (110). No asbestos was found. See attachment A and B.
- 3.2 Add sheet M-6, referencing pump station (500) elevation. See attachment C.

4. Questions

Q1: Who holds the roof warranties for these buildings? What roofing company?

A1: Only the Operations and Maintenance building (300) has an active warranty. See attachment D

Q2: Can we get elevations for the buildings? Especially building 400 and 500

A2: Building 400 is approximately 60 feet, as shown on 400-A-01. Building 500 is approximately 26' 11" as shown on attached drawing M-6 being added to the reference folder. Building 110 is 2 stories and is approximately 30 feet. From Basement, elevation is 42 feet.

Q3: Drawing 510-HDM-01. This is asking us to inspect and reinstall existing if in proper working order. Can you clarify the heat trace amount we are to bid on within this area, or are we only to bid new back to tie in point?

A3: See Addendum 02 drawing sheets and specification summary of work for more information. Heat trace to be fully removed and replaced. Insulation and Jacketing to be salvaged and reinstalled.

Q4: Specification 015000 seems to indicate that each prime contractor is responsible for their own temporary heat/cooling & dehumidification, office trailers & sanitary facilities. Please confirm that it is at the discretion of each prime contractor to provide what temporary facilities are needed for their work.

A4: Yes, each Prime Contractor is responsible for their own temporary heat, cooling, and dehumidification needed to install work within their contract scope. Each Prime Contractor will also supply their own office trailers and sanitary facilities as needed for their own employees and subcontractors.

END OF ADDENDUM No. 02

Attachment A



REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

TESTED FOR: PSI, Inc.
850 Poplar Street
Pittsburgh, PA 15220
Attn: David Antis

Project ID: 08165545-5
Alcosan - Admin Annex
Pittsburgh, PA

Date Received: 10/24/2025

Date Completed: 10/31/2025

Date Reported: 10/31/2025

Analyst: Chris Kopar Work Order: 2510722 Page: 1 of 2

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) <i>Analyst's Comment</i>	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
01-1	001A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
01-2	002A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
01-3	003A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
02-1	004A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
02-2	005A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
02-3	006A	(1) Black, Insulation, Homogeneous <i>Foam</i>	NO ASBESTOS DETECTED	None Reported
03-1	007A	(1) Gray, Insulation, Homogeneous	NO ASBESTOS DETECTED	None Reported
03-2	008A	(1) Gray, Insulation, Homogeneous	NO ASBESTOS DETECTED	None Reported
04-1	009A	(1) White, Drywall, Homogeneous (2) White, Joint Compound, Homogeneous	NO ASBESTOS DETECTED NO ASBESTOS DETECTED	20% Cellulose Fiber None Reported

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested as received. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may be reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

Respectfully submitted,
PSI, Inc.


Approved Signatory
George Skarupa

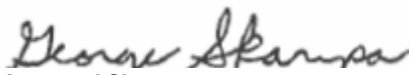
Analyst: Chris Kopar**Work Order:** 2510722**Page:** 2 of 2

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) <i>Analyst's Comment</i>	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
04-2	010A	(1) White, Drywall, Homogeneous (2) White, Joint Compound, Homogeneous	NO ASBESTOS DETECTED NO ASBESTOS DETECTED	20% Cellulose Fiber None Reported
05-1	011A	(1) White, Insulation, Homogeneous	NO ASBESTOS DETECTED	15% Cellulose Fiber
05-2	012A	(1) White, Insulation, Homogeneous	NO ASBESTOS DETECTED	15% Cellulose Fiber
05-3	013A	(1) White, Insulation, Homogeneous	NO ASBESTOS DETECTED	15% Cellulose Fiber
06-1	014A	(1) Brown, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass
06-2	015A	(1) Brown, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass

Report Notes: (PT) Point Count Results

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested as received. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

Respectfully submitted,
PSI, Inc.


Approved Signatory
George Skarupa

Attachment B



REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

TESTED FOR: PSI, Inc.
850 Poplar Street
Pittsburgh, PA 15220
Attn: David Antis

Project ID: 08165545-5
Alcosan - West Head Works
Pittsburgh, PA

Date Received: 10/24/2025

Date Completed: 10/31/2025

Date Reported: 10/31/2025

Analyst: Chris Kopar Work Order: 2510720 Page: 1 of 1

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) <i>Analyst's Comment</i>	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
01-1	001A	(1) Yellow, Insulation, Homogeneous	NO ASBESTOS DETECTED	5% Cellulose Fiber 90% Fibrous Glass
01-2	002A	(1) Yellow, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass
01-3	003A	(1) Yellow, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass
01-4	004A	(1) Yellow, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass
01-5	005A	(1) White, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass
01-6	006A	(1) Yellow, Insulation, Homogeneous	NO ASBESTOS DETECTED	100% Fibrous Glass

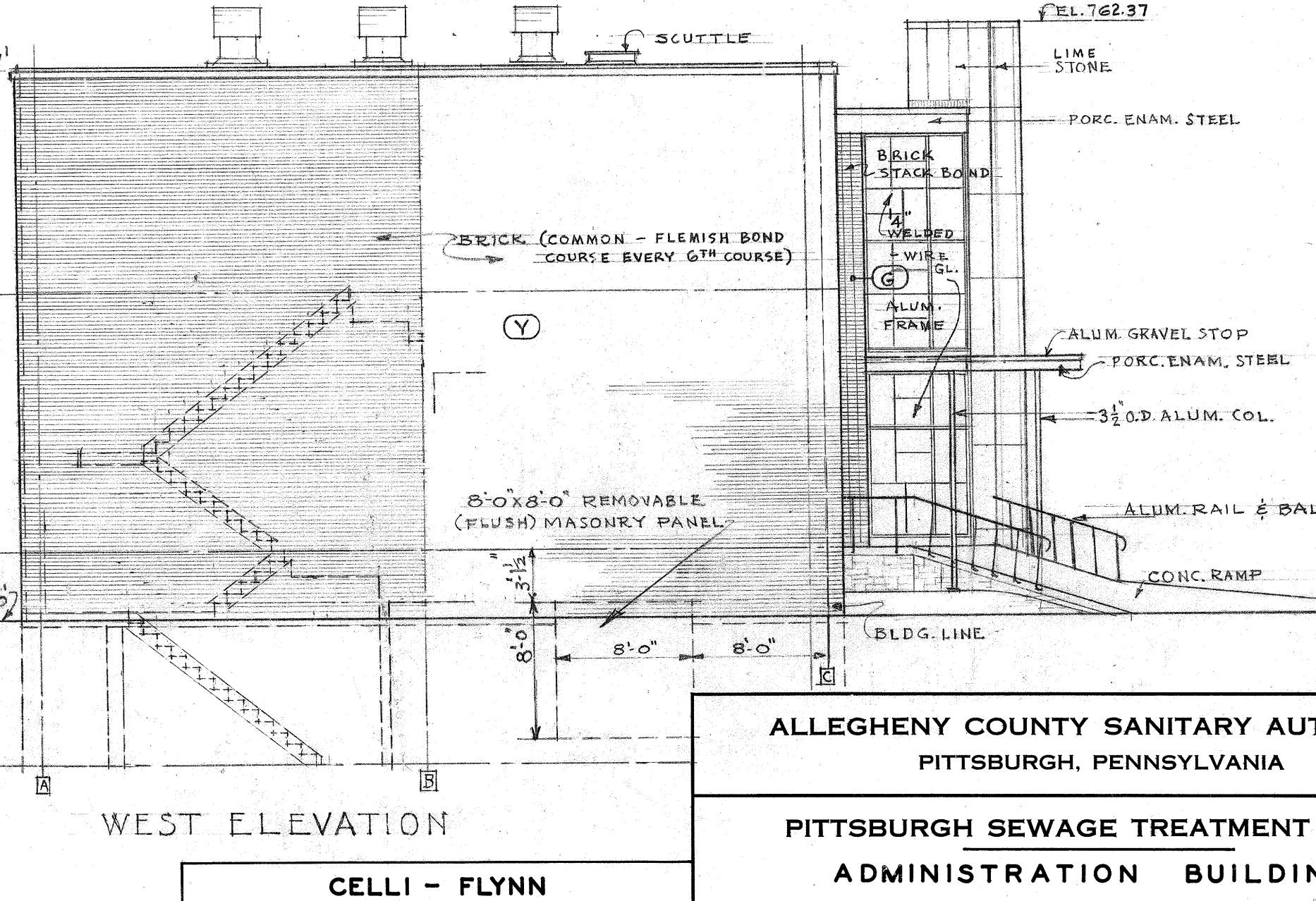
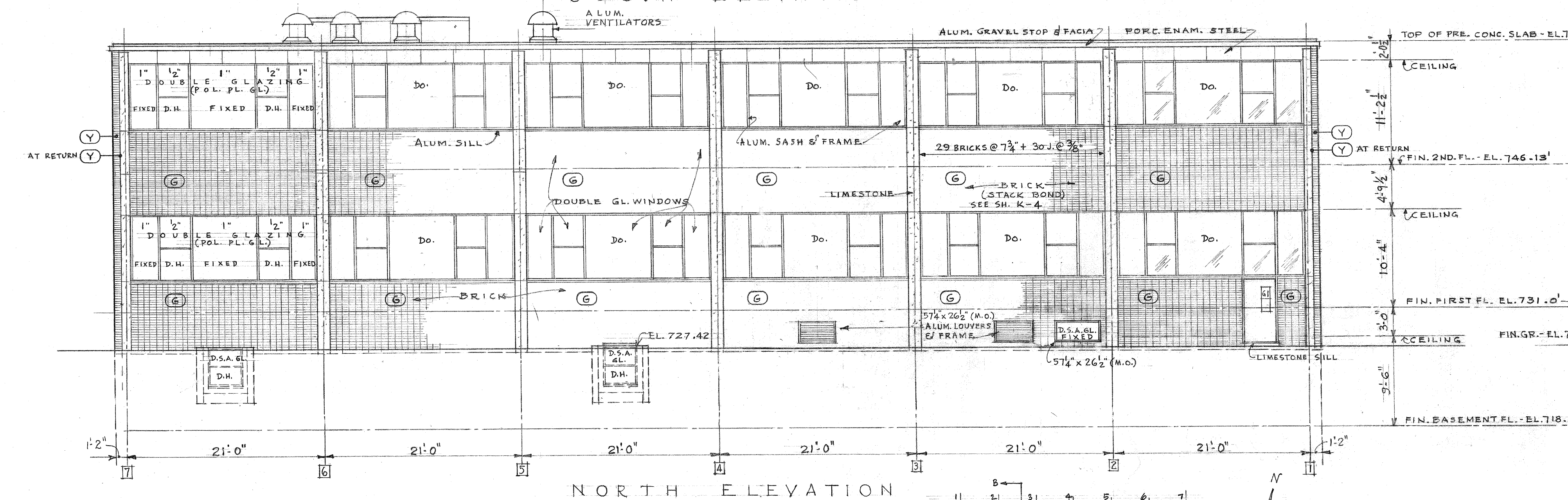
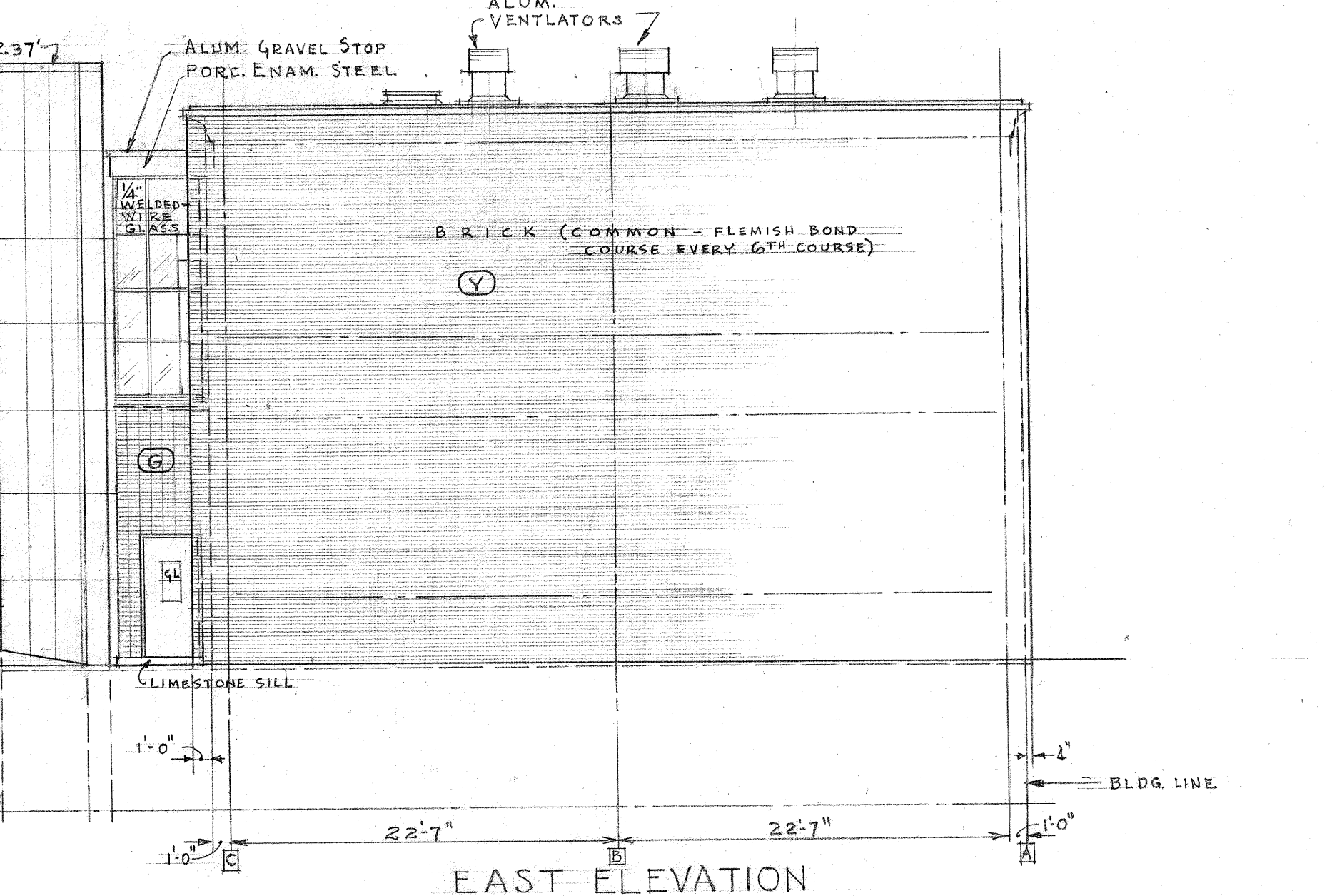
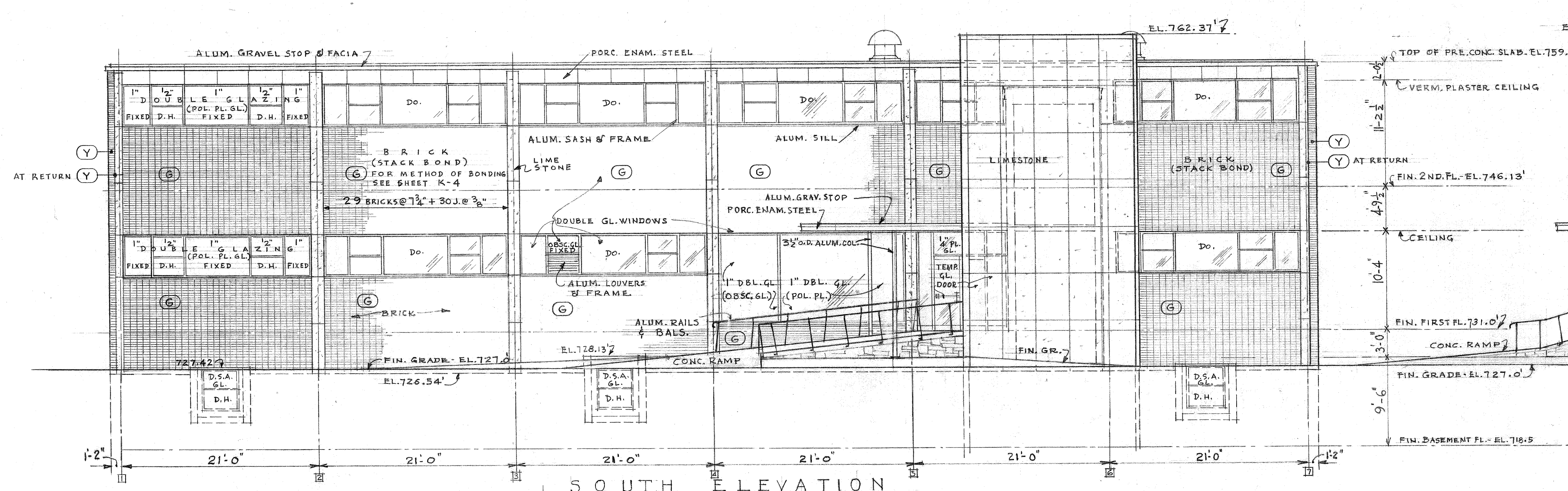
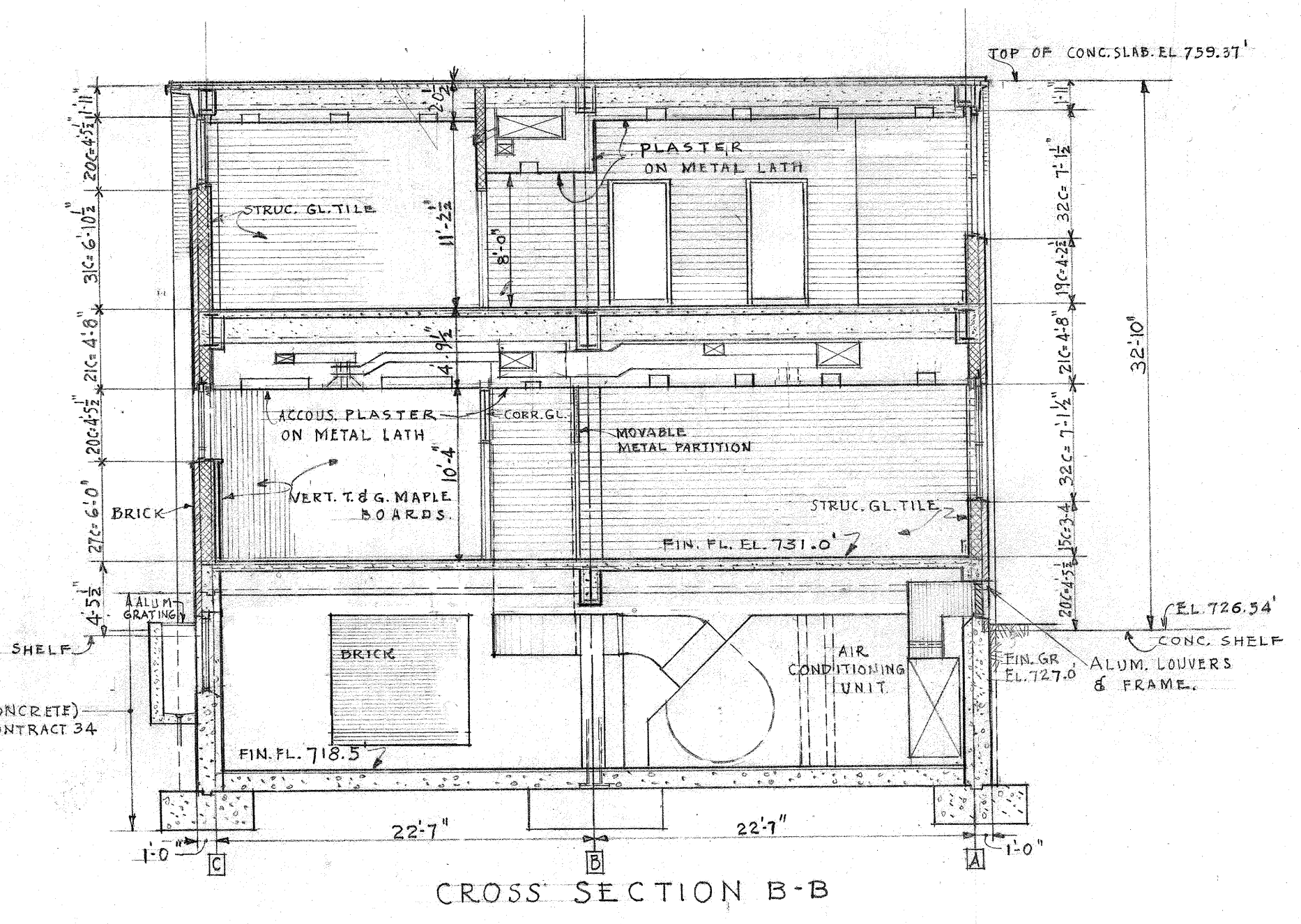
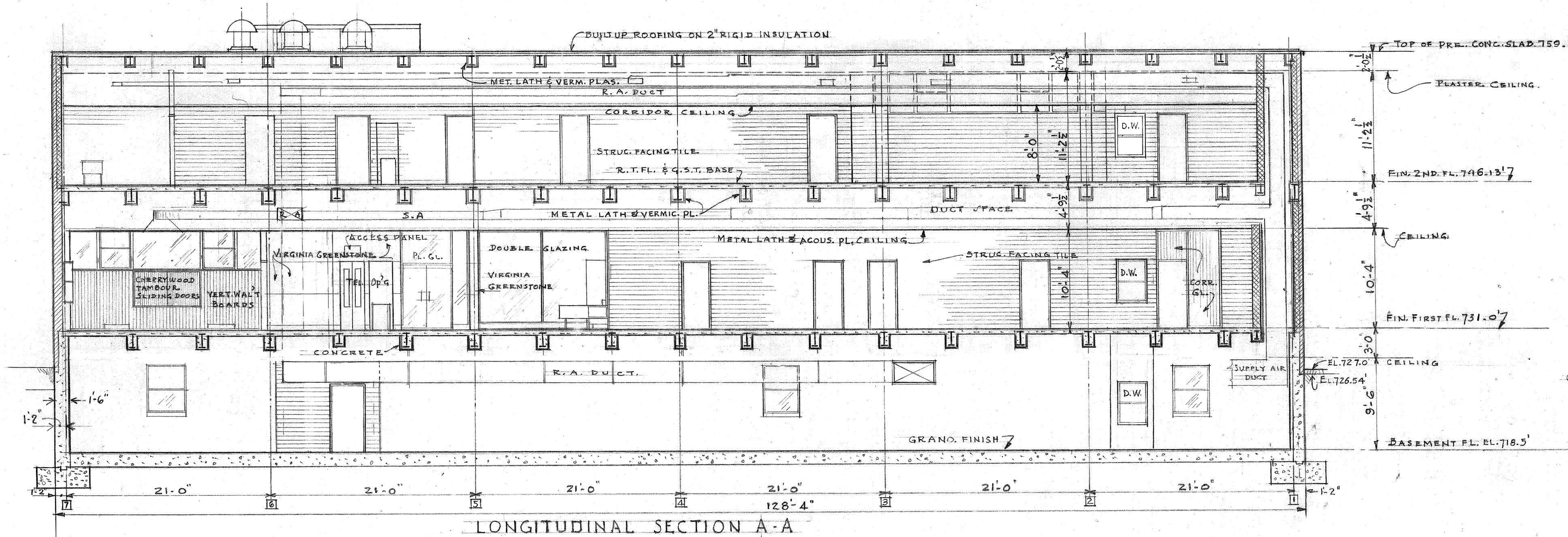
Report Notes: (PT) Point Count Results

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested as received. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may be reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

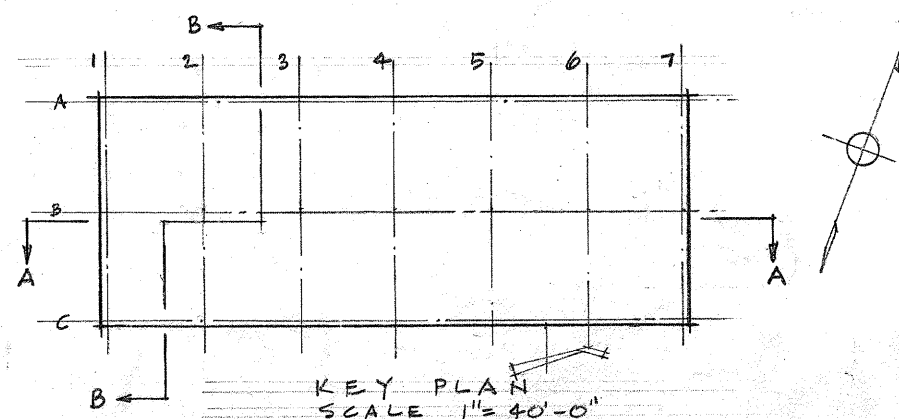
Respectfully submitted,
PSI, Inc.


Approved Signatory
George Skarupa

Attachment C

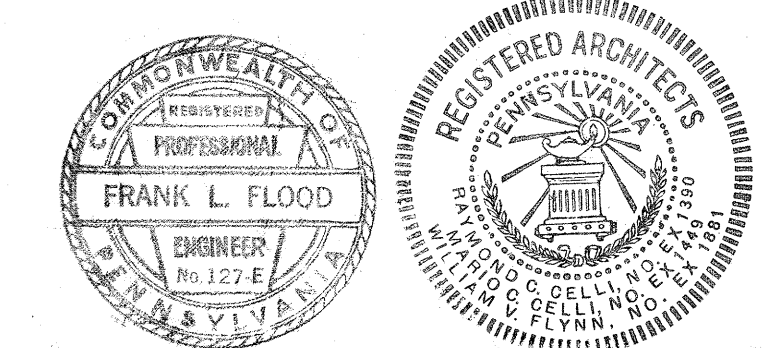


NOTE: O INDICATES COLOR OF GLAZED BRICK.
G = GREY; Y = YELLOW



DIVISION OF CONTRACTS NOT FULLY INDICATED ON THIS DRAWING

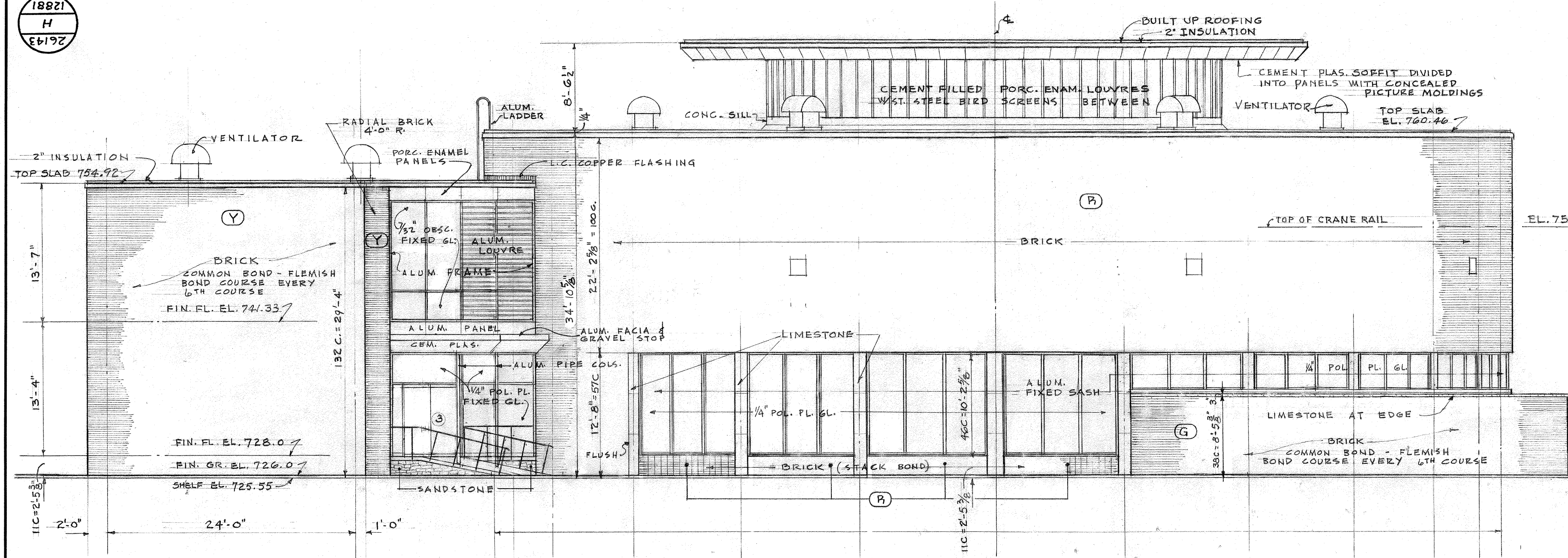
DRAWN BY AH
TRACED BY AH
CHECKED BY C.R.



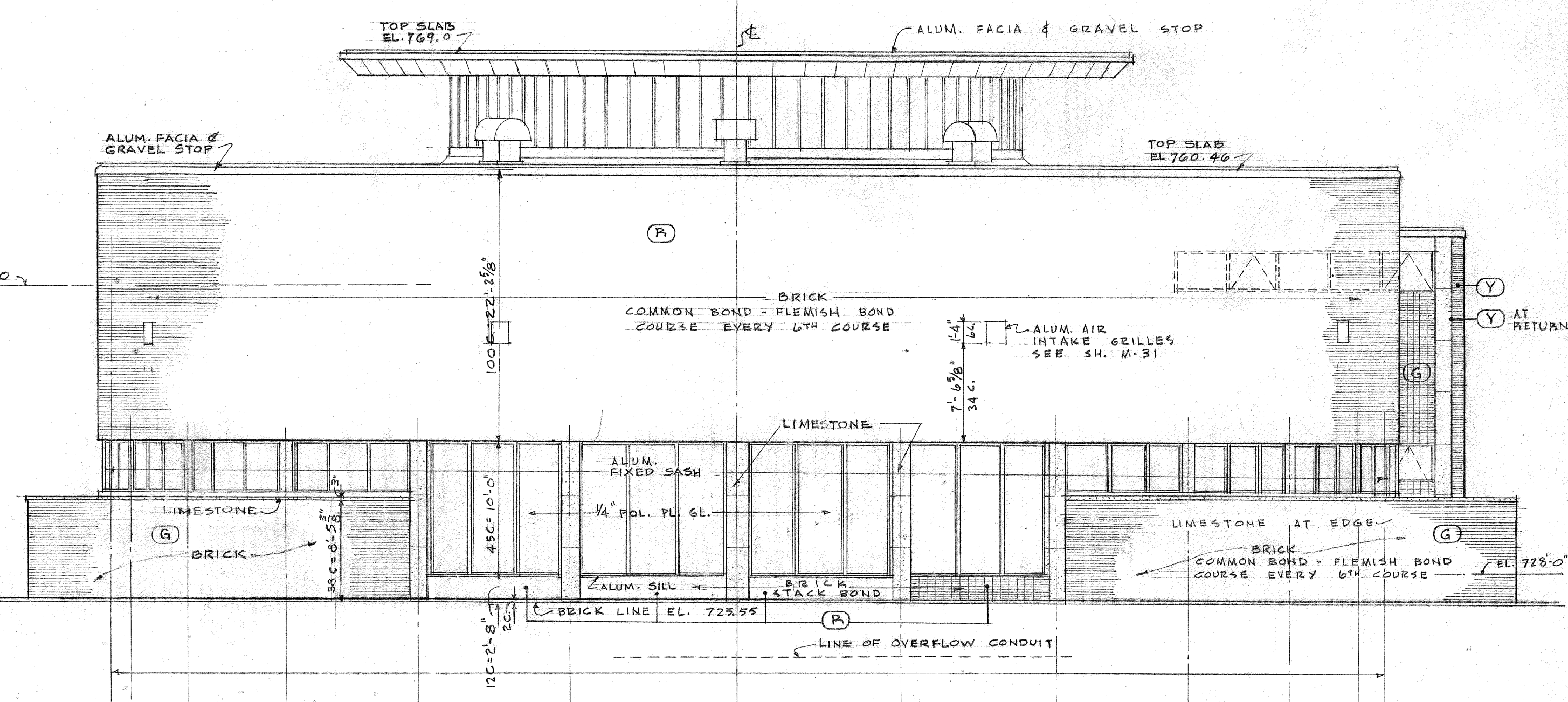
CELLI - FLYNN
CONSULTING ARCHITECTS
McKEESPORT, PENNA.
M. C. Celly
PENN. ARCH. REG. NO. 1449
APPROVED
FOR METCALF & EDDY, ENGINEERS
Frank L. Flood
REG. PROF. ENGR. PA. NO. 127-E
DATE 7/23/52

ALLEGHENY COUNTY SANITARY AUTHORITY
PITTSBURGH, PENNSYLVANIA
PITTSBURGH SEWAGE TREATMENT PLANT
ADMINISTRATION BUILDING
ARCHITECTURAL
ELEVATIONS AND SECTIONS
SCALE: 1/8" = 1'-0"
1952
METCALF & EDDY
ENGINEERS
BOSTON, MASS.

18821
H
EPI92

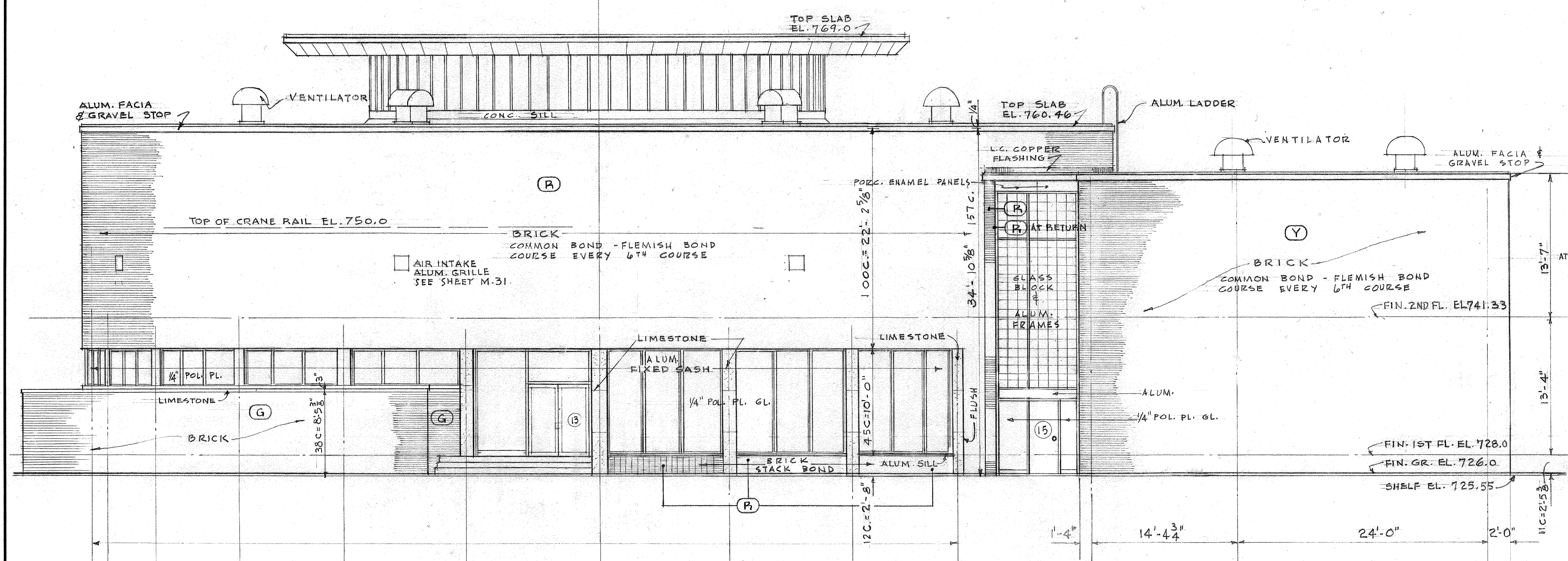


SOUTH ELEVATION

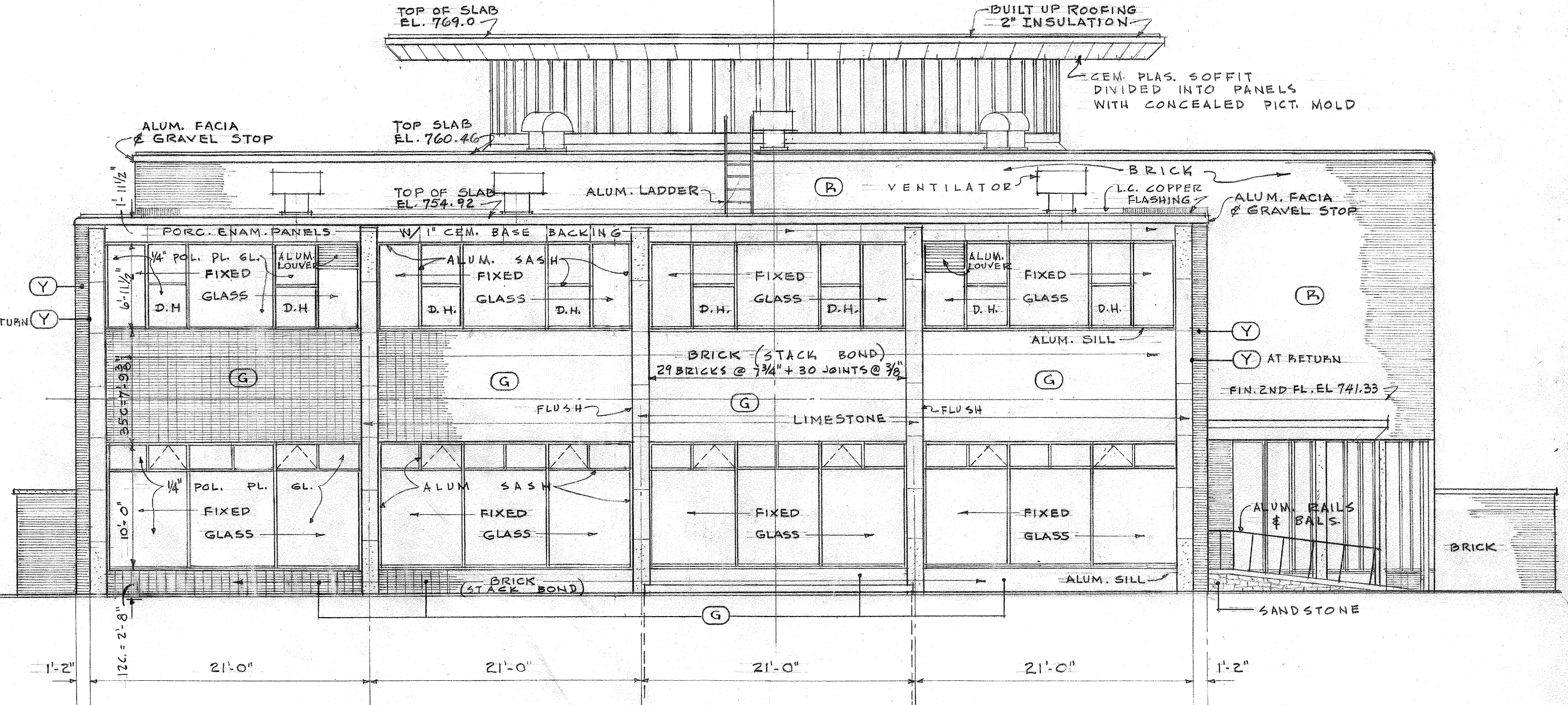


EAST ELEVATION

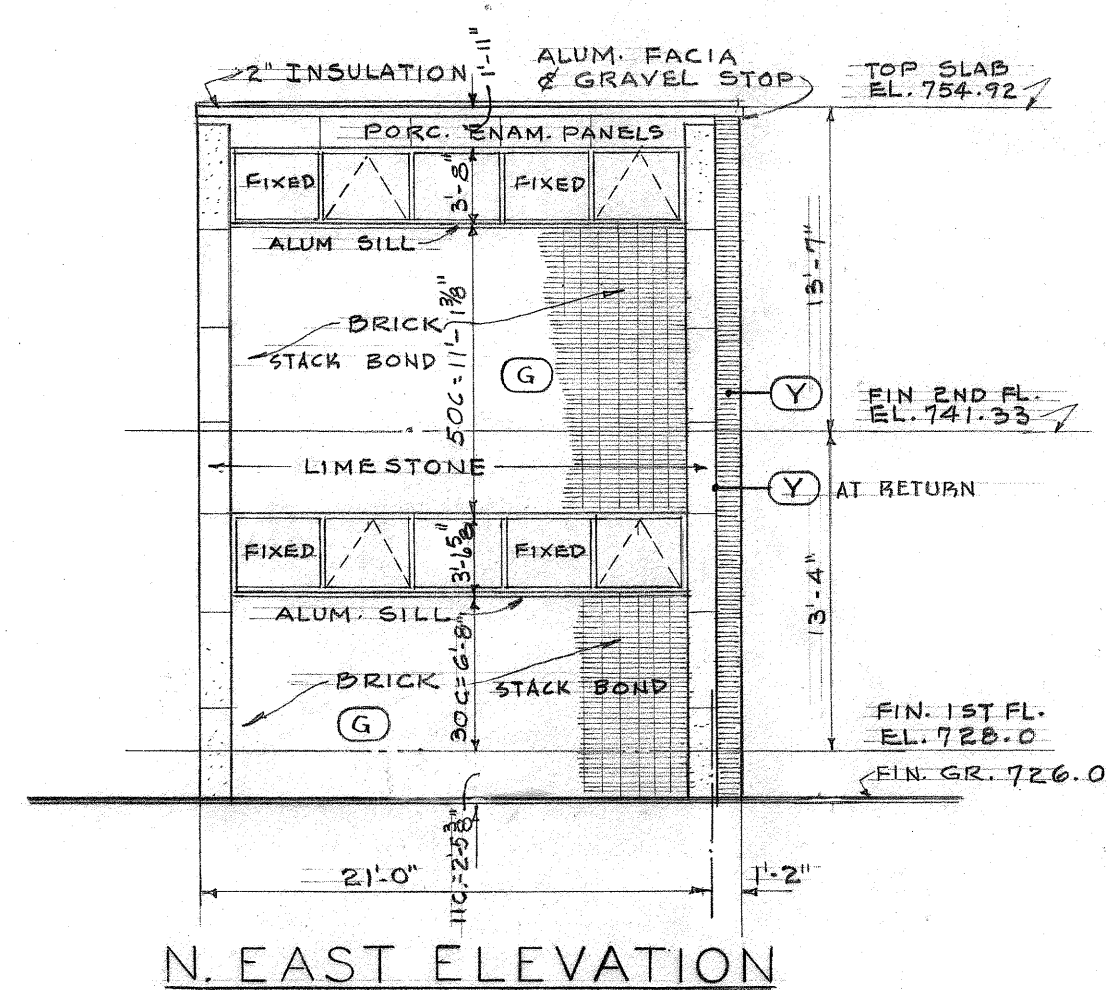
- INSECT SCREENS
SHALL BE REQUIRED FOR ALL WINDOWS IN FOLLOWING AREAS:
1. OFFICE
 2. WOMEN'S T.
 3. LOCKER ROOM
 4. LUNCH ROOM



NORTH ELEVATION

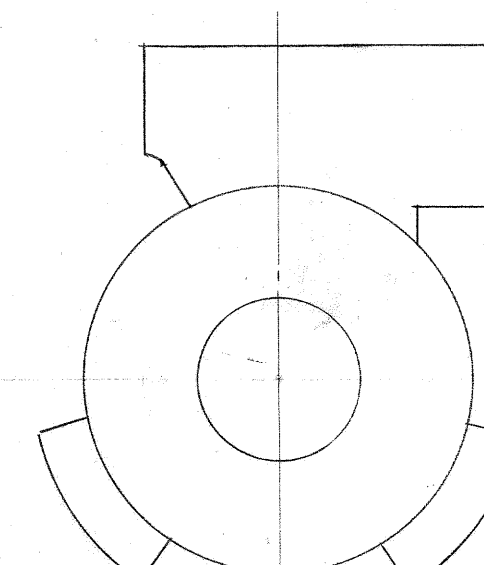
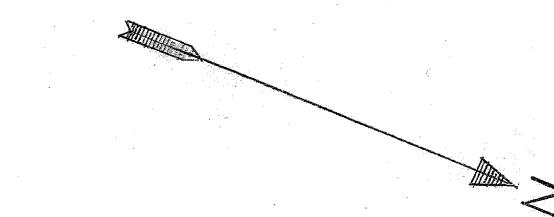


WEST ELEVATION

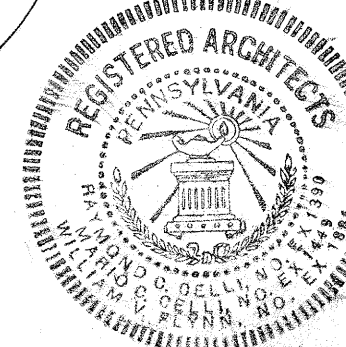
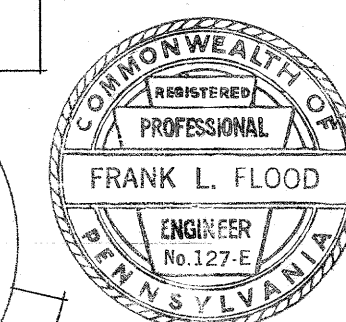


N. EAST ELEVATION

NOTE: Y INDICATES COLOR OF GLAZED BRICK
Y = YELLOW G = GRAY R = RED



KEY PLAN



DRAWN BY C. J. M.
TRACED BY C. J. M.
CHECKED BY C. J. M.

APPROVED	
FOR METCALF & EDDY, ENGINEERS	DATE 1/4/53
REG. PROF. ENGR. PA. NO. 127-E	DATE 6/17/53
FOR CELLI-FLYNN, CONSULTING ARCHITECTS	DATE
REG. ARCH. PA. NO. 1449	DATE

ALLEGHENY COUNTY SANITARY AUTHORITY
PITTSBURGH, PENNSYLVANIA

PITTSBURGH SEWAGE TREATMENT PLANT

SEWAGE PUMPING STATION
ARCHITECTURAL

ELEVATIONS

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

1953

METCALF & EDDY
ENGINEERS-BOSTON, MASS.
CELLI-FLYNN CONSULTING ARCHITECTS, MCKEESPORT, PA.

CONTRACT 40 SHEET M-6

26143
H
12981

26143 H 12981

Attachment D



**ROOF MEMBRANE/SYSTEM GUARANTEE
ADDENDUM**

ALCOSAN – New Operations & Maintenance Facility – Main,
Auditorium, Canopy, and Stairwell Areas
Pittsburgh, PA

The following items are hereby incorporated into and made a part of Siplast
Roof Membrane/System Guarantee No. 42759 dated September 29, 2012.

For purposes of this guarantee, the Roxul TopRock Mono Plus by Roxul,
Inc., is considered part of the membrane system; and is included under the
terms of the 20-year Roof Membrane/System Guarantee.

This Addendum, to be effective, must be properly executed by the Owner
and a certified copy returned to SIPLAST, INC.

Approved and accepted by:

D. J. Falsel
Owner

1/19/14
Date

Siplast, Inc.

By:

[Signature]
James N. Mollenhoff, President



PLAZA DECK MEMBRANE GUARANTEE

Guarantee No.: 42760

Guarantee Date: September 29, 2012

WHEREAS, SIPLAST, INC., Highway 67 South, Arkadelphia, Arkansas has sold materials which have been used in applying a Plaza Deck Membrane to a building, owned and described as follows:

OWNER: Allegheny County Sanitary Authority

ADDRESS OF OWNER: 3300 Preble Avenue
Pittsburgh, PA 15233

JOB NAME & AREA: ALCOSAN - New Operations &
Maintenance Facility - Terrace Area

ADDRESS OF BUILDING: 3300 Preble Avenue
Pittsburgh, PA 15233

USE OF BUILDING: City/County Facilities

**PLAZA DECK
MEMBRANE:**

DECK:

Paradiene 20 TG/TERANAP 1M
FILM

Metal

INSULATION:

DensDeck Prime

AREA:

25 Squares

CONTRACTOR:

Miller-Thomas-Gyekis, Inc.

COMPLETION DATE:

September 29, 2012

NOW, THEREFORE, SIPLAST, INC., HEREBY GUARANTEES TO THE ABOVE OWNER: (Subject to the following terms and conditions), that said Plaza Deck Membrane shall remain in a water-tight condition for a term of twenty (20) years, commencing with the date hereof; or SIPLAST, INC. shall repair the Plaza Deck Membrane at its own expense.

This Guarantee shall be subject to the following additional terms and conditions.

A. SIPLAST, INC., shall be liable under this guarantee only if:

1. The Plaza Deck Membrane is installed according to SIPLAST, INC. specifications;
2. The installation is by a contractor approved in advance by SIPLAST, INC.;
3. The use of SIPLAST, INC. materials has been approved in advance by SIPLAST, INC.;

B. NOTICE OF CLAIM

Any claim hereunder shall be deemed waived unless the owner shall have given SIPLAST, INC. written notice thereof within thirty (30) days after a leak is discovered or should by reasonable diligence have been discovered.

C. EXCLUSIONS FROM COVERAGE

This Guarantee does not cover leaks which result from either occurrences beyond the control of

SIPLAST, INC. or mistreatment both of which include but are not limited to the following:

1. Damage to the Plaza Deck Membrane caused by lightning, wind-storm, hail, earthquake, tornado, hurricane, vandalism or similar occurrences.
2. Damage to the Plaza Deck Membrane caused by any deliberate or negligent act in maintaining the membrane.
3. Damage to the Plaza Deck Membrane caused by unauthorized repairs, or subsequent work on or through the plaza deck done without prior written approval by SIPLAST, INC. of the methods and materials to be used.
4. Damage to the Plaza Deck Membrane caused by structural defects or failure of any substrate component, including defects in application of the substrate components.
5. Damage to the Plaza Deck Membrane caused by falling objects.
6. Damage to the Plaza Deck Membrane caused by movement of metal work used in conjunction with the Plaza Deck Membrane.
7. Damage to the Plaza Deck Membrane caused by installation of a sprinkler system, water or air conditioning equipment, radio or television antenna, framework for signs, water tower or other installation on the Plaza Deck System after the installation of the Plaza Deck Membrane without a prior written approval by SIPLAST, INC., of the methods and materials to be used.
8. Damage to the Plaza Deck Membrane caused by a change in use of the building without prior written approval of SIPLAST, INC.
9. Damage to the Plaza Deck Membrane caused by exposure to, or deposits of, organic or chemical matter that are not listed as acceptable in the Siplast Chemical Resistance Guide (applicable at time of installation).

D. LIMITATION OF LIABILITY

SIPLAST, INC. shall be liable only for the cost of repair of such existing Plaza Deck Membrane or installation of a replacement Plaza Deck Membrane by a SIPLAST, INC. approved roofing contractor. SIPLAST, INC., shall not be liable for damages to other components of the Plaza Deck System or the building or the contents or for consequential damages. The expense of removing and replacing traffic surfaces or other coverings placed over the Plaza Deck Membrane, i.e. pavers, tiles, poured concrete, planter systems, etc. shall be borne by the Owner.

It shall be a condition to the liability of SIPLAST, INC. hereunder that SIPLAST, INC. have access to the roof during business hours throughout the term of the Guarantee. This Guarantee shall be subject to all costs of installation being paid, including those of the roofing contractor.

THIS GUARANTEE SHALL BE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

SIPLAST, INC.

By:


James N. Mollenhoff, President

JOB NAME & AREA:	ALCOSAN - New Operations & Maintenance Facility - Main, Auditorium, Canopy, and Stairwell Areas	ROOF INSULATION:	Paratherm Polyisocyanurate, Paratherm Polyisocyanurate, Roxul Top Rock Mono Plus;
ADDRESS OF BUILDING:	3300 Preble Avenue Pittsburgh, PA 15233	ROOF AREA:	551 Squares
USE OF BUILDING:	City/County Facilities	ROOFING CONTRACTOR:	Miller-Thomas-Gyekis, Inc.
		COMPLETION DATE:	September 29, 2012

SIPLAST HEREBY GUARANTEES TO THE ABOVE OWNER, subject to the terms, conditions and limitations stated herein, that the Roof Membrane/System (comprised solely of the SIPLAST Roof Membrane, Paratherm and/or Wood Fiberboard and /or DensDeck, DensDeck Prime or DensDeck DuraGuard, Parafast Fasteners and/or Para-Stik Insulation Adhesive) at the above building will remain in a watertight condition for a period of 20 years, commencing with the date hereof; or SIPLAST, will repair the Roof Membrane/System at its own expense.

A. TERMS AND CONDITIONS

This Guarantee shall be subject to the following additional terms and conditions.

1. SIPLAST shall be liable under this Guarantee only if:
 - a. The Roof Membrane is installed according to SIPLAST specifications;
 - b. The Rigid Roof Insulation is installed according to SIPLAST specifications;
 - c. The installation of the Roof Membrane and Roof Insulation is by a roofing contractor approved in advance by SIPLAST;
 - d. The use of SIPLAST materials has been approved in advance by SIPLAST.

B. NOTICE OF CLAIM

Any claim hereunder shall be deemed waived unless the Owner shall have given SIPLAST written notice thereof within thirty (30) days after a leak is discovered or should by reasonable diligence have been discovered.

C. EXCLUSIONS FROM COVERAGE

This Guarantee does not cover leaks or failure of the Roof Membrane/System to perform as guaranteed herein resulting from occurrences beyond the control of SIPLAST including but not limited to:

1. Damage to the Roof Membrane/System caused by lightning, windstorm, hail, earthquake, tornado, hurricane, flood, malicious mischief, vandalism, chemical or organic deposits or other unusual occurrences.
2. Damage to the Roof Membrane/System caused by (i) abuse or abnormal use of the roof or Roof Membrane/System or (ii) any deliberate or negligent act in maintaining the roof.
3. Damage to the Roof Membrane/System caused by unauthorized repairs, alterations or modifications, or subsequent work on or through the roof done without prior written approval by SIPLAST of the methods and materials to be used.

4. Damage to the Roof Membrane/System caused by structural defects or failures (including, but not limited to, settling or shifting of the building, and cracking or movement of girders, beams, partitions or foundations) or defects or failure of any substrate component, including defects in application of any substrate component to which the Membrane/System is installed.
5. Damage to the Roof Membrane/System caused by falling objects.
6. Damage to the Roof Membrane/System caused by movement of metal work used in conjunction with the Roof Membrane/System.
7. Damage to the Roof Membrane/System caused by installation of a sprinkler system, water or air conditioning equipment, radio or television antenna, framework for signs, water tower or other installation on the roof after the installation of the Roof Membrane without a prior written approval by SIPLAST of the methods and materials to be used.
8. Damage to the Roof Membrane/System resulting from other than occasional traffic across its surface or from its use as a storage area or recreational surface or for any other similar purposes.
9. Damage to the Roof Membrane/System caused by a change in use of the building without prior written approval of SIPLAST.
10. Damage to the Roof Membrane caused by ponding of water or other conditions resulting from improper drainage.

D. LIMITATION OF LIABILITY

SIPLAST shall be liable only for the cost of repair of such existing Roof Membrane/System by a SIPLAST approved contractor and will not be liable for damages to other components of the roof assembly or the building or the contents or for consequential damages. The expense of removing and replacing traffic surfaces built over the roof shall be borne by the Owner. It shall be a condition to the liability of SIPLAST, hereunder that SIPLAST have access to the roof during business hours throughout the term of the Guarantee. This Guarantee will be subject to all costs of installation being paid, including those of the roofing contractor.

THIS GUARANTEE, AND THE STATEMENTS, OBLIGATIONS AND REPRESENTATIONS HEREIN CONTAINED, SHALL BE IN LIEU OF ANY AND ALL OTHER GUARANTEES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED GUARANTEE OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. SIPLAST SHALL NOT BE LIABLE FOR ANY DAMAGE TO THE BUILDING OR CONTENTS THEREOF, OR FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL OR PENAL DAMAGES. SIPLAST AGENTS HAVE NO AUTHORITY TO GIVE GUARANTEES BEYOND THOSE PROVIDED IN THIS GUARANTEE.

SIPLAST, INC.

By: 

James N. Mollenhoff, President

Siplast 1000 E. Rochelle Blvd. Irving, Texas 75062-3940 469-995-2200 www.siplast.com



An Icopal Group Company

Attachment E

SECTION 23 09 00
INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Other Division 23 Sections for factory mounted controls and communication interface gateways and DDC System Sub-Contractor led commissioning for equipment with factory controls packages.

1.2 SYSTEM DESCRIPTION

- A. The Direct Digital Control (DDC) System shall be entirely electronic utilizing microprocessor based direct digital temperature controllers and electric valve and damper actuators. System shall be complete in all respects including microprocessor, graphical user interface software, sensors, actuators, and other software in order to provide the functions described.
- B. The DDC system shall be a peer-to-peer networked, stand-alone, distributed control system that is an 'open system'.
 - 1. An 'open system' shall be defined as one that naturally facilitates and permits the Owner to engage the services of a future vendor different than that which provided this system under this Contract, to service, expand, and modify the system provided without requiring the services of, or future payment to, the controls vendor who initially provided the system.
 - 2. To ensure that an open system is provided, this Direct Digital Control System shall include, but not be limited to having, the following features:
 - a. Utilize a Tridium Niagara 4 software platform (Framework). No “brand-specific” software, applications, or utilities shall be installed on Niagara Framework-based devices unless accessible by any brand of Niagara tools.
 - b. Utilize only commonplace forms of ANSI/ASHRAE Standard 135 (latest version) BACnet technology communication protocols as further specified herein, and without the use of any proprietary gateways or routers.
 - c. Utilize only BACnet BTL listed controllers as further specified herein, and are configured in a manner consistent with the listing. Controllers used on the project shall be available through distributor channels so that replacement controllers are not available from a sole source. Controllers shall be programmable within the Niagara Workbench.
 - d. All hardware and field-level devices shall not be limited in their ability to only communicate with a specific brand of Niagara Framework or Niagara JACE.

- e. Provide a perpetual and 'unlocked' software license for all software furnished to the Owner, along with all Framework and workstation login credentials, including administration-level usernames, passwords, and passphrases.
 - f. Provide native format copies of all software tools, configuration files, control programs, etc. to the Owner.
 - g. Point naming and tagging conventions shall comply with Project Haystack to the greatest extent possible.
- B. The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate the ANSI/ASHRAE Standard 135 (latest version) BACnet technology communication protocols in one open, interoperable system. To ensure future interoperability with open systems by multiple manufacturers / suppliers, this Direct Digital Control System shall communicate utilizing BACnet open protocol as described herein. Proprietary gateways or routers used to communicate between Tier 1 controllers and/or building controllers, database server, or workstations, or web servers and Tier 2 controllers are unacceptable for the open system requirements.
- C. Access to the control system, either locally in the building, or remotely, shall be accomplished through the following:
 - 1. DDC system webserver, using standard web browsers, via the internet and/or local area network, via 3rd party interface.
- D. To ensure future interoperability with open systems by multiple manufacturers / suppliers, this Direct Digital Control System shall communicate utilizing Ethernet-ready direct digital controllers using internet protocol. KMC lan controllers using BACNET subplans are acceptable.
- E. The proposed system shall be backwards compatible so as to eliminate system obsolescence and provide seamless integration of future systems and software installed on future projects.

OWS	Operator's WorkStation
AN	Application Node (includes advanced application controllers and application specific controllers)
AAC	Advanced Application Controller
ASC	Application Specific Controller
HMI	Human-Machine Interface
Workstation	Generically refers to the HMI and associated software and graphics
HOA	Hand-Off-Auto (switch)
SPST	Single Pole, Single Throw
SPDT	Single Pole, Double Throw
DPDT	Double Pole, Double Throw
DPST	Double Pole, Single Throw
BC	Building Controller
BO	Binary Output (w/ respect to the DDC system)
BI	Binary Input
AO	Analog Output
AI	Analog Input
DO	Digital Output
DI	Digital Input
IP	Internet Protocol
NIST	National Institute of Standards and Technology

1.11 SCOPE

A. This Section of the Specifications covers execution of the temperature controls system.

1. Provide a complete Direct Digital Control System for all Division 23 systems and equipment, unless otherwise indicated.
2. Provide raceways and conduits as required by the installation. Provide wiring, cable, conduit, hangers, fittings, and couplings. Make final connections to control devices.
3. Provide water control valves and automatic control air dampers, complete with electric actuators, as individually specified (see sequence of operations).
4. Provide integration of factory mounted DDC controls furnished under other Sections as described herein.
5. Provide controls in pre-wired apparatus control panels. Internal components shall be fully pre-wired so that only external connections need to be made to these panels. Control panels shall be provided complete with controllers, relays, transformers, terminal strips, wire-way, convenience outlet, and fuses.
6. Furnish complete sets of submittals and installation drawings as described herein.

7. Provide complete start-up, 8 hours of commissioning and testing support and training services.
8. Provide floor plans and mechanical system graphics on the building automation server (if provided) or NAC.
9. Provide a complete set of DDC operating manuals, programming manuals, maintenance manuals and back up DVD/Software used to set up, and program the DDC system. Upon receipt of this information the customer shall sign the required software licensing agreement.
10. Provide Owner's Manual, complete operating instructions and spare parts lists.
11. Coordinate DDC work with the work of the other Contractors involved in this project.
12. Review the approved and finalized HVAC equipment submittals for control requirements of that equipment. Look for requirements related to minimum run times, temperature limits, minimum flow rates, and similar parameters. Modify control programming to implement the equipment manufacturer's recommendations and requirements. Direct questions regarding conflicts between manufacturer's requirements and the sequences of operation to the Architect / Engineer.
13. Review the Division 23 Contractor's preliminary ductwork and piping shop drawings and identify the required locations of all duct and piping system mounted input and output control devices. Identify conflicts for resolution prior to submission of the shop drawings.

B. Automatic Temperature Control System Coordination:

1. Factory Controls: The Division 23 Contractor (HVAC system installer) providing HVAC equipment shall coordinate with all of their equipment suppliers providing factory controllers to furnish the following to the DDC Contractor: The rooftop units shall be furnished with economizer actuators, VFD's and a terminal strip for DX cooling staging and fan control. The ATC contractor shall furnish DDC control panels, sensors, relays and programming to meet the sequence of operations.
 - a. Documentation identifying all addressable points available from the controller or gateway including device ID, detailed point descriptions and addresses.

- CC. Use averaging type temperature sensors in ductwork greater than 48" in any dimension, where air temperature stratification exists, such as a mixed air plenum, or immediately downstream of any heat exchanging element (coil, furnace, etc.).
- DD. HMI System Graphics: For each piece of controlled equipment / system display all points indicated in the points list (if one has been included in the Documents), as well as all operating modes, set-points, high limit settings, time out periods, run times, temperature and pressure reset schedules, and active alarm conditions. Graphics of equipment and systems shall reflect the 'as-built' condition (i.e. do not use generic graphics). Locate all instruments and control objects as actually installed in the completed building.
- EE. Warm-Up and Cool-Down Modes: Air handling units with time of day schedules (i.e. not continuous operation) shall incorporate warm up and cool down cycles. The units shall be operated in advance of an occupancy period, with a minimum outdoor airflow rate of zero (0) cfm. The duration of this warm up / cool down period shall be auto-adaptive and dependent on the outdoor air temperature and at least one representative space temperature input signal.

PART 2 - PRODUCTS

2.1 CONTROLS SYSTEM ARCHITECTURE

A. General:

1. The Controls System shall consist of a complete peer-to-peer networked, distributed Direct Digital Control System of automatic temperature control as specified herein and as shown on the Drawings.
2. All system controllers shall be BACnet Testing Laboratories (BTL) listed (certified). Non-listed / certified devices are not acceptable. Controllers shall be configured for this project in a manner that is wholly consistent with the BTL listing.
3. Niagara-based System Requirements:
 - a. All controllers shall be programmable within the Niagara Workbench.
 - b. All hardware and field-level devices shall not be limited in their ability to only communicate with a specific brand of Niagara Framework or Niagara JACE.
4. The system shall utilize ASHRAE BACnet Standard 135 as the communication protocol (Tier 1) to the workstation and the web browser interface.
 - a. Building level controllers shall conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L, and shall be listed as a certified B-BC in the BACnet Testing Laboratories (BTL) Product Listing.
 - b. Building controllers shall support firmware upgrades without the need to replace hardware and shall have a minimum of 15 percent spare expansion capacity in total

- system points and programming functions, and minimum of 15 percent expansion capability in the number of Tier 2 controllers connected.
- c. The building controller shall utilize the Niagara 4 Framework, and shall be a Vykon JACE series controller, or equivalent from a Tridium OEM partner, as elsewhere listed in this Section.
 - d. The ATC contractor shall supply one or more building controllers as part of this contract. The number and exact model of building controllers required is dependent on the type and quantity of devices required. It is the responsibility of the ATC contractor to configure the architecture to determine the quantity and type of devices to meet the project requirements and provide the expansion capabilities specified above.
5. The system shall utilize ASHRAE BACnet Standard 135 as the communication protocol (Tier 2) from controller-to-controller. Tier 2 proprietary controllers are not acceptable. Controllers at the Tier 2 level include both advanced application controllers (AACs) and application specific controllers (ASCs).
- a. All Tier 2 (field level) controllers used on the project shall be available through distributor channels so that replacement controllers are not available from a sole source. Any controllers that are only available through manufacturer's factory offices or factory authorized offices with non-competitive sales territories are not acceptable.
 - b. Advanced application controllers shall conform to BACnet Advanced Application Controller (B-AAC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-AAC in the BACnet Testing Laboratories (BTL) Product Listing.
 - 1) Such controllers shall be provided for each major system or piece of equipment, such as air handling units, rooftop units, chilled water system, hot water system, etc., and where application specific controllers cannot meet the project requirements or sequence of operation.
 - 2) Provide point expansion modules where required so that each AAC shall have the following minimum spare point capacities available for future field device connections:
 - c. Application specific controllers (ASCs) shall conform to BACnet Application Specific Controller (B-ASC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-ASC in the BACnet Testing Laboratories (BTL) Product Listing.
 - 1) Such controllers (ASCs) shall only be acceptable for smaller room-level equipment such as radiant panels, fan coil units, unitary heat pumps, fin tube radiators, VAV boxes, cabinet heaters, chilled beams, etc., but only when all required control points are provided and the sequence of operation can be met.
6. The building automation database servers and principal network computer equipment shall be standard products of recognized major manufacturers available through normal PC and computer vendor channels - not "Clones" assembled by a third-party subcontractor.

7. Provide licenses for all software residing on and used by the Controls Systems and transfer these licenses to the Owner prior to completion.
8. The networks shall, at minimum, comprise, as necessary, the following:
 - a. Web Browser Interface
 - b. Network computer processing, data storage and communication equipment including building automation database servers and digital data processors.
 - c. Routers, bridges, switches, hubs, modems, interfaces and the like communication equipment as required for the BAS system network.
 - d. Active processing network controllers including programmable field panels and controllers together with their power supplies and associated equipment.
 - e. Addressable elements, sensors, transducers and end devices.
 - f. Third-party equipment interfaces using BACnet MS/TP or BACnet IP protocol as required by the Contract Documents, either by explicit provision, or by consequence of another explicit Contract provision.
 - g. Other components required for a complete and working Control Systems as specified.

B. Networks:

1. The Controls Systems shall incorporate a primary Tier 1 (aka "host" level or "automation" level) network, and an integrated secondary Tier 2 (aka "field" level / controller/unitary level) network, as described herein.
2. Communication Protocols: Tier 1 network communications shall be limited to BACnet Ethernet TCP/IP and BACnet IP. Tier 2 network communications shall be BACnet Ethernet TCP/IP, BACnet MS/TP, or BACnet IP.
 - a. Ethernet TCP/IP and BACnet IP communications shall occur over Ethernet cabling. Minimum data transfer speed shall be 10 Mbps.
 - b. Individual BACnet MS/TP sub-nets shall be limited to a total of 35 devices / controllers. Establish additional MS/TP subnets using additional Tier 1 controllers as required for projects with more than 35 Tier 2 controllers, or utilize BACnet IP at the Tier 2 level.
 - c. The use of ARCNET or ARC156 is not acceptable.
 - d. The use of BACnet PTP / EIA-232 is not acceptable.
 - 1) Exception: When communicating to an existing, separate BACnet network, router to router.
 - e. The use of BACnet over LonTalk, native LonTalk, and Fox are not acceptable.
 - f. The use of any proprietary communication protocol is not acceptable.
3. IP topology at the Tier 2 level shall be 'home run/star' or bidirectional communication RSTP 'ring' types, or a combination of these two topologies. Daisy chains with a single point of failure are not acceptable. Network switches and Tier 2 controllers shall support and implement RSTP (rapid spanning tree protocol) and IPv4 or IPv6 communication. Tier 2 controllers shall have two (2) Ethernet ports.

4. BACnet IP and TCP/IP communication routers shall support BACnet Secure Connect (BACnet/SC) communication using TLS v1.3 security and HTTPS / port 443.
5. The networks shall utilize only copper and optical fiber communication media.
6. Internet Network Access and Use of the Owner's WAN/LAN:
 - a. The ATC Contractor shall provide access to the Tier 1 LAN from a remote location, via the internet. To enable this access, the Owner will provide a connection to the internet via high speed cable modem, asynchronous digital subscriber line (ADSL) modem, ISDN line, T1 Line or via the Owner's intranet to a corporate server providing access to an Internet Service Provider (ISP). The Owner will agree to pay monthly access charges for the connection and ISP.
 - b. The DDC system networks shall be completely independent from the Owner's WAN/LAN.
 - c. Only a single point of connection per building to the owner's WAN/LAN will be provided to the ATC Contractor for their use.
 - d. The ATC Contractor shall identify the specific Internet] access requirements, including location[s], in the primary submittal. The ATC Contractor shall provide the IT interfacing equipment and shall coordinate on configuration and interfacing arrangements with.
 - e. The DDC system Tier 2 network shall be completely independent of the Owner's building WAN/LAN. The networking between ASCs, AACs, and other Tier 2 controllers and the Tier 1 network shall be the responsibility of the ATC Contractor.
 - f. The DDC system communications shall be separated from the rest of the Owner's IT network devices by way of a firewall / VLAN. Coordinate requirements with the Owner's IT staff.
7. BAS IP network routers and switches shall be provided with a wall mounted, ventilated server cabinet with a hinged and lockable doors.

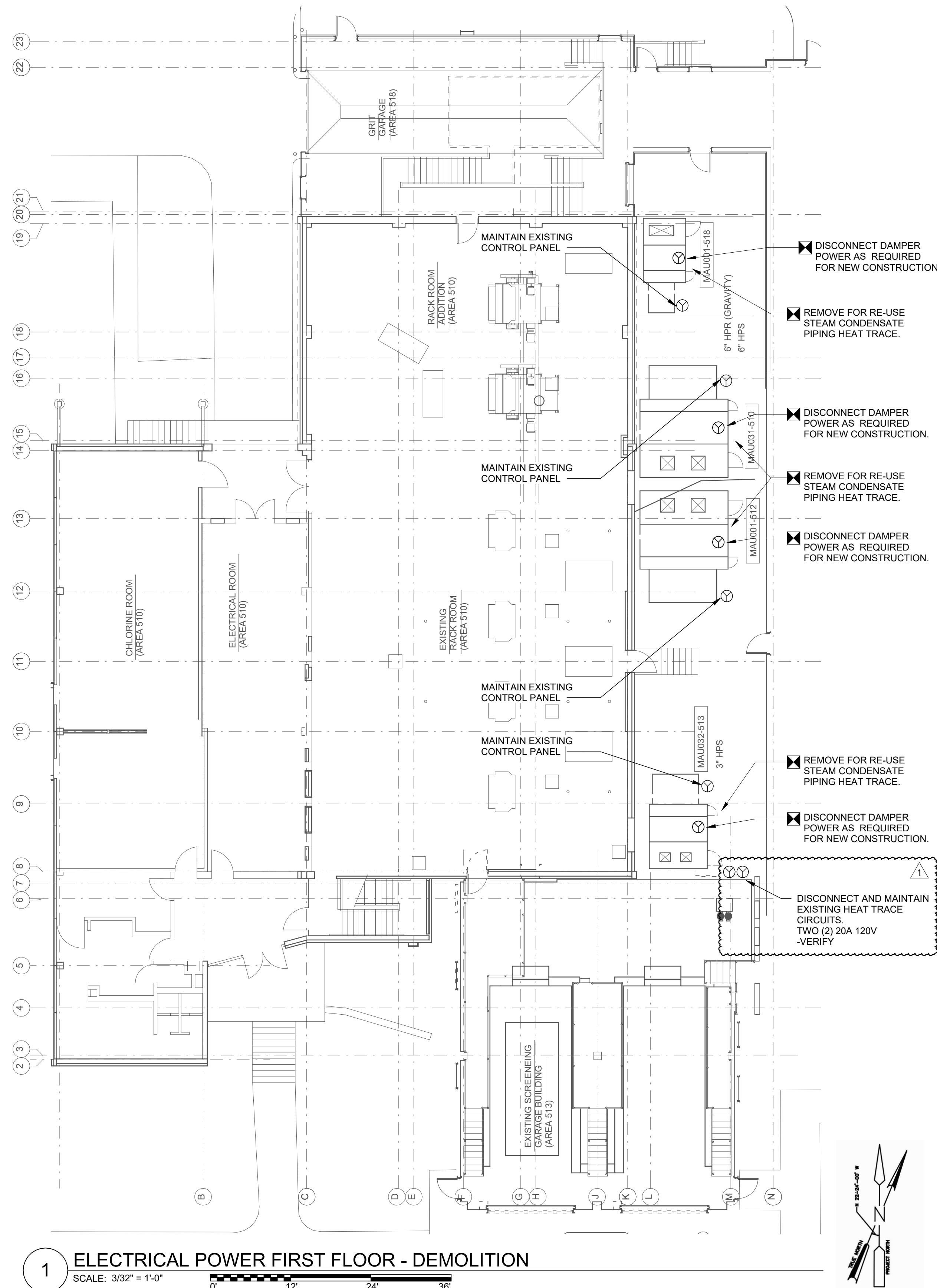
C. Third-Party Interfaces:

1. DDC Contractor shall integrate real-time data from building systems by other trades and databases originating from other trades as specified and required by the Contract Documents.
2. The Controls Systems shall include necessary hardware, equipment and software to allow data communications between the Controls Systems and building systems supplied by other trades. All other devices shall be definable digital inputs, analog inputs, or BACnet MS/TP or BACnet IP communication capable supplied by the source provided trades.

2.2 MANAGEMENT LEVEL SYSTEM

- A. General: The servers and principal network computer equipment, as applicable shall be standard products of recognized major manufacturers available through normal PC and computer vendor channels – not “Clones” assembled by a third-party subcontractor. Provide licenses for all software residing on and used by the Controls Systems and

Attachment F



GENERAL NOTES:

1. ALL EXISTING POWER SHOWN AS DEMOLISHED SHALL HAVE BRANCH CIRCUITS, PULLED AND PROTECTED FOR REUSE, UNLESS OTHERWISE NOTED.
2. NOT ALL DEVICES SHOWN - FIELD VERIFY PRIOR TO SUBMITTING BID.
3. THE CONTRACTOR SHALL VISIT THE FACILITY AND MAKE THEMSELVES AWARE OF ANYTHING WHICH MAY AFFECT THEIR WORK PRIOR TO SUBMITTING BIDS. ALERT ENGINEER / ARCHITECT IN WRITING OF ANY OBSERVED CONDITION WHICH MAY AFFECT CONTRACTORS WORK PRIOR TO SUBMITTING BID.

1

ELECTRICAL POWER FIRST FLOOR - DEMOLITION

SCALE: 3/32" = 1'-0"



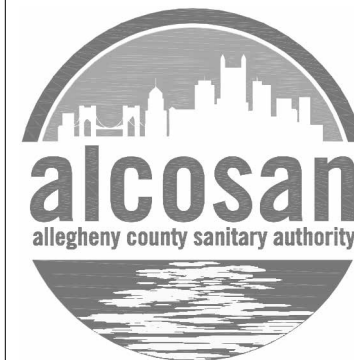
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C, Everly	REV No.	DATE	DESCRIPTION	APPV
Drawn by:	1	11/17/2025	ADDENDUM 02	
C, Everly				
Checked by:				
R, Buff				

H.F. LENZ

ENGINEERING
H.F. Lenz Company

MEP ENGINEER
HF LENZ COMPANY

1051 BRINTON RD #100 D// 412 371.9073
PITTSBURGH, PA 15221



ARLETTA SCOTT WILLIAMS
EXECUTIVE DIRECTOR, ALCOSAN

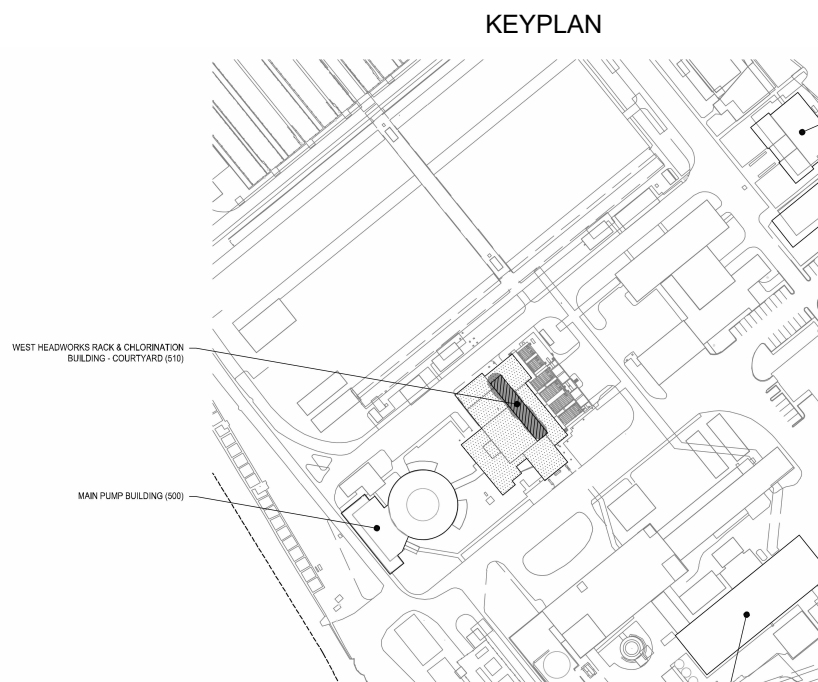
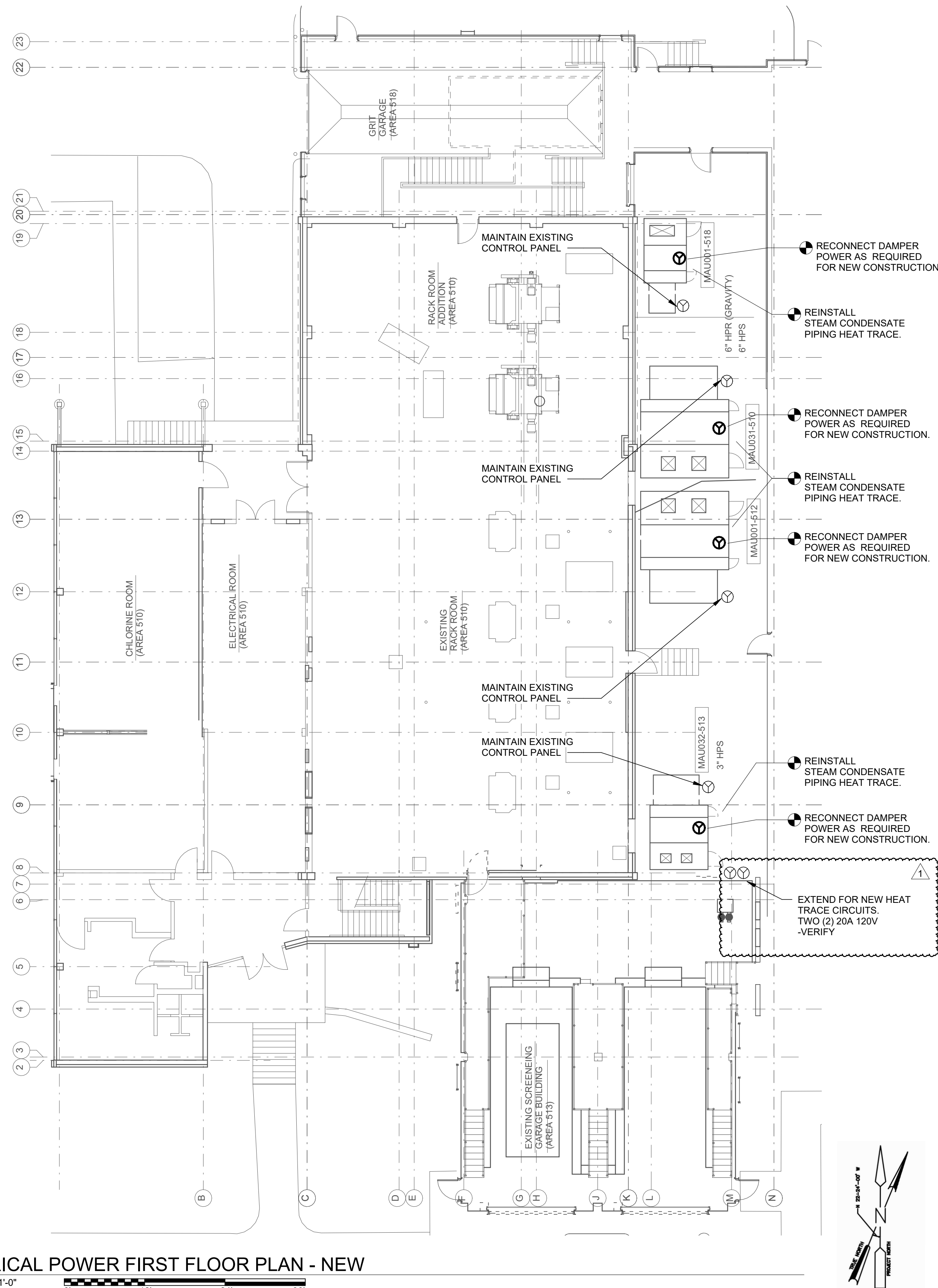
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ALLEGHENY COUNTY SANITARY AUTHORITY
WASTE WATER TREATMENT PLANT
MISC. HVAC IMPROVEMENTS PROJECT - WEST HEADWORKS

510-EDT-01
ELECTRICAL POWER FIRST FLOOR
DEMOLITION PLAN

Contract:	1827
CAD File Name:	510-EDT-001.DGN
Date:	09/23/2025
Sheet:	144 of 152



GENERAL NOTES:

1. ALL EXISTING POWER SHOWN AS DEMOLISHED SHALL HAVE BRANCH CIRCUITS, PULLED AND PROTECTED FOR REUSE, UNLESS OTHERWISE NOTED.
2. NOT ALL DEVICES SHOWN - FIELD VERIFY PRIOR TO SUBMITTING BID.
3. THE CONTRACTOR SHALL VISIT THE FACILITY AND MAKE THEMSELVES AWARE OF ANYTHING WHICH MAY AFFECT THEIR WORK PRIOR TO SUBMITTING BIDS. ALERT ENGINEER / ARCHITECT IN WRITING OF ANY OBSERVED CONDITION WHICH MAY AFFECT CONTRACTORS WORK PRIOR TO SUBMITTING BID.

1 ELECTRICAL POWER FIRST FLOOR PLAN - NEW
SCALE: 3/32" = 1'-0"

Designed by:		REVISION			
C, Everly		REV No.	DATE	DESCRIPTION	APPV
Drawn by:		1	11/17/2025	ADDENDUM 02	
C, Everly					
Checked by:					
R, Buff					

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EXECUTIVE DIRECTOR, ALCOSAN

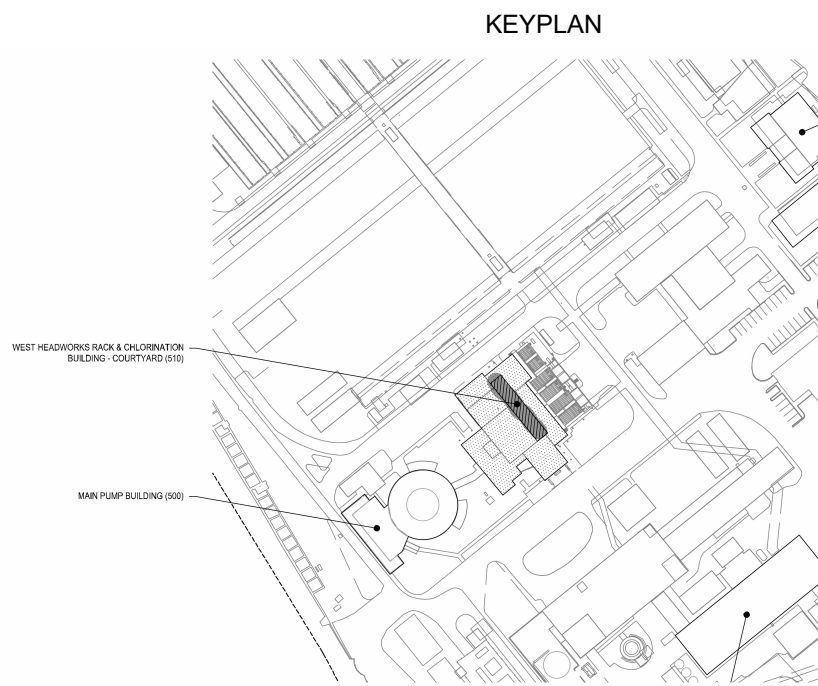
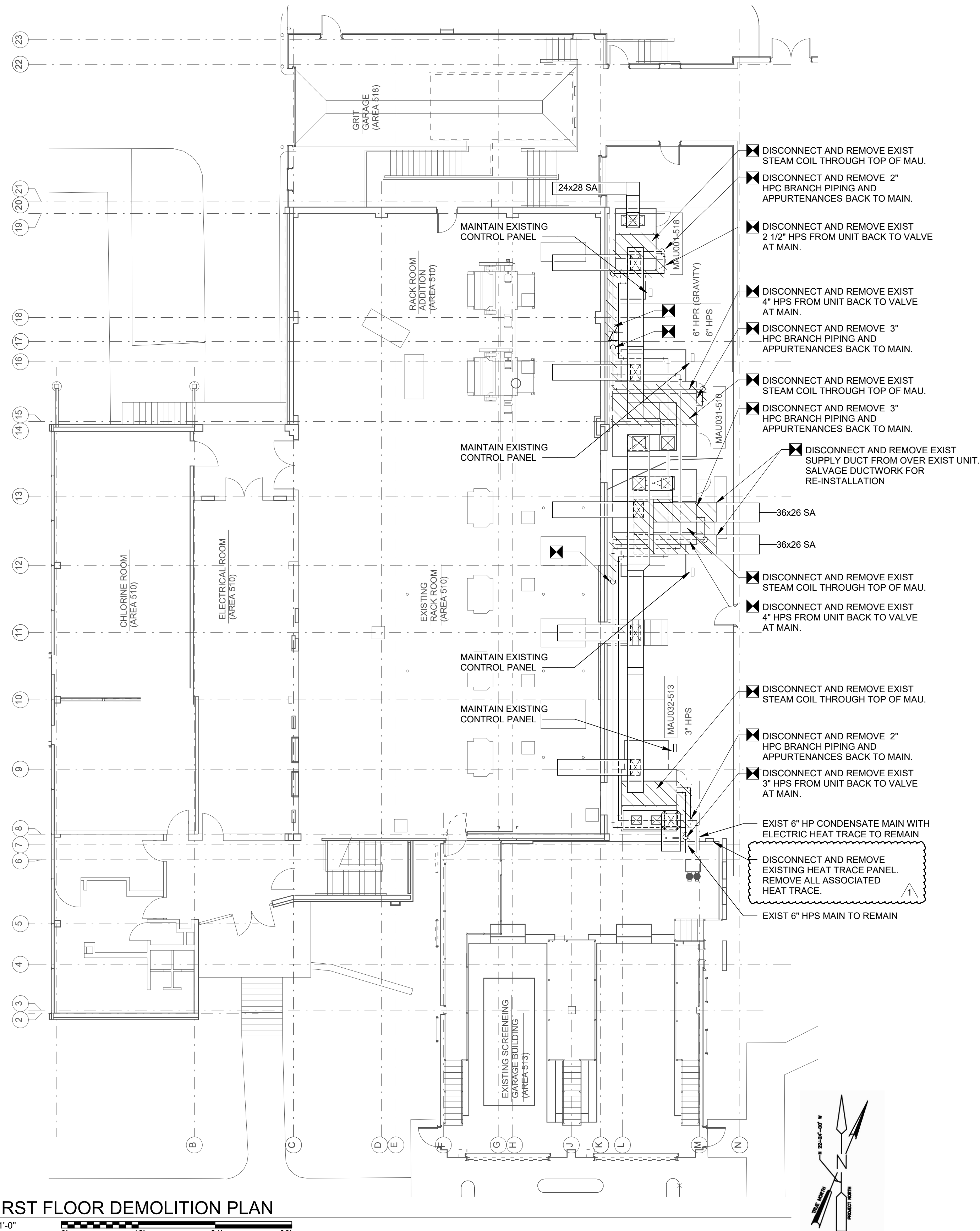
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510-ET-01
ELECTRICAL POWER FIRST FLOOR NEW
WORK PLAN

Contract: 1827
CAD File Name: 510-ET-001.DGN
Date: 09/23/2025
Sheet: 145 of 152



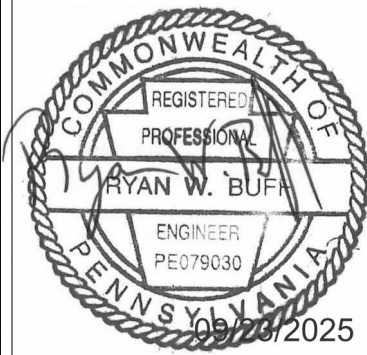
- CONSTRUCTION PHASING:
1. CONTRACTOR SHALL COORDINATE EQUIPMENT TRAVEL PATH ACCESS TIMELINE.
 2. MINIMAL DISRUPTION SHALL OCCUR AT THE GRIT RECEIVING DOCK.
 3. CONTRACTOR SHALL PHASE WORK TO ACCOMMODATE USE OF FACILITY DURING CONSTRUCTION. OFF-HOURS MAY BE REQUIRED.

NOTE:
REMOVE PIPING INSULATION AND HEAT TRACE BACK TO TIE IN POINT. INSPECT HEAT TRACE FOR FUNCTIONALITY. REINSTALL EXISTING HEAT TRACE IF IN PROPER WORKING ORDER. ALERT OWNER IF HEAT TRACE IS BEYOND USEFUL LIFE.

1 HVAC FIRST FLOOR DEMOLITION PLAN
SCALE: 3/32" = 1'-0"

Designed by:	C, Everly Drawn by: C, Everly Checked by: R, Buff	REVISION			
		REV No.	DATE	DESCRIPTION	APPV
		1	11/17/2025	ADDENDUM 02	

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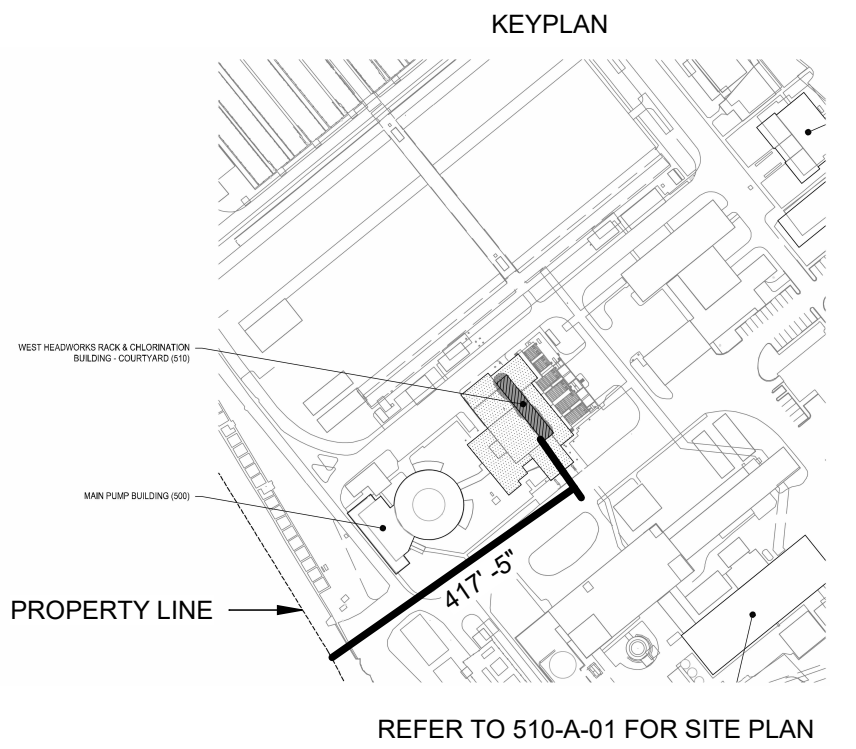
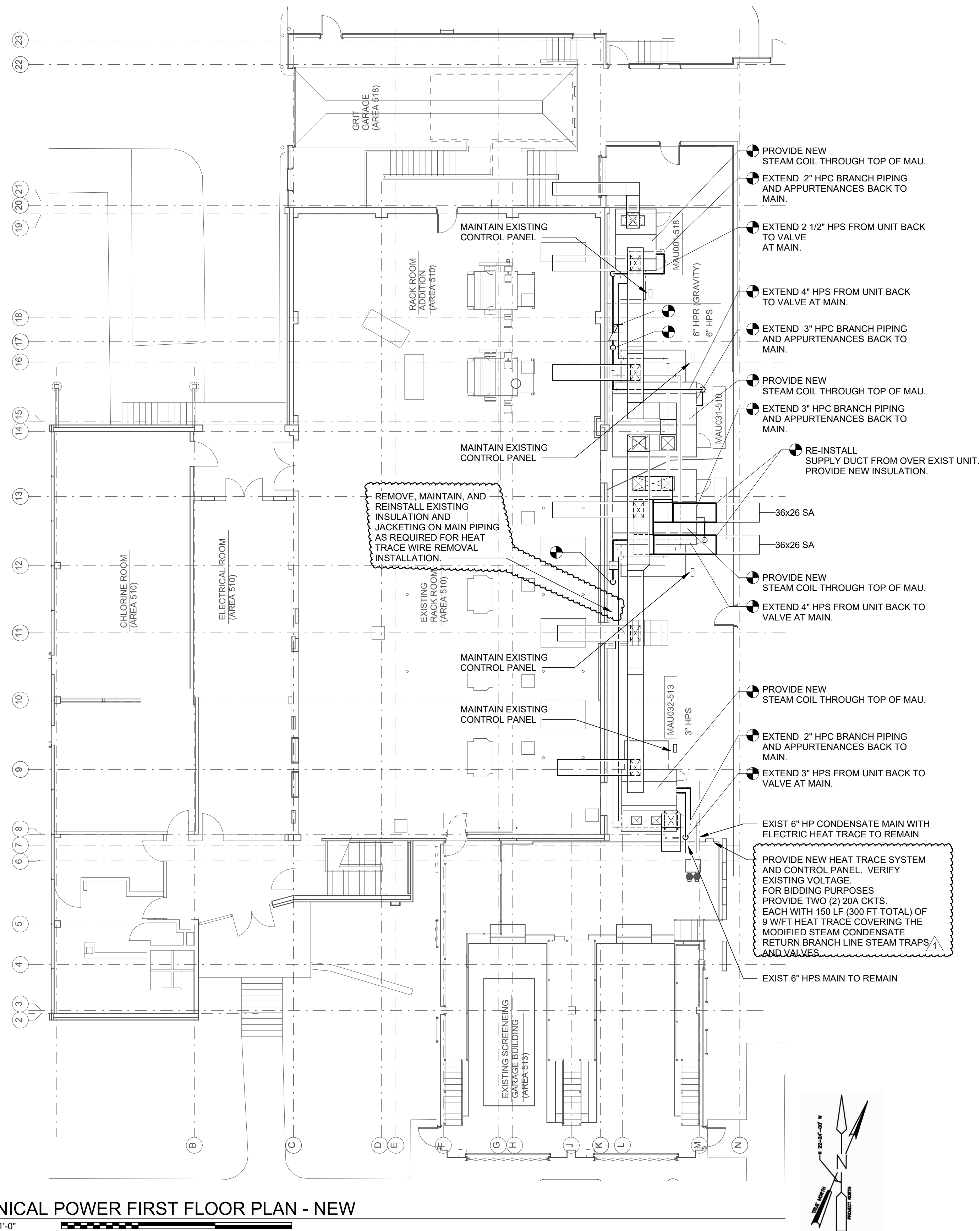
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MISC. HVAC IMPROVEMENTS PROJECT - WEST HEADWORKS

510-HDM-01
HVAC FIRST FLOOR DEMOLITION PLAN

Contract: 1827
CAD File Name: 510-HDM-001.DGN
Date: 09/23/2025
Sheet: 150 of 152

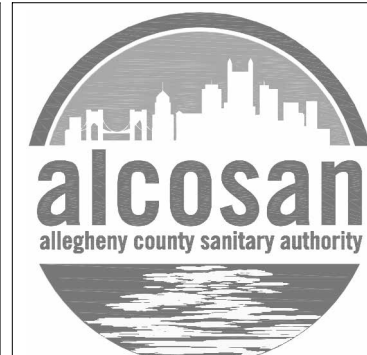
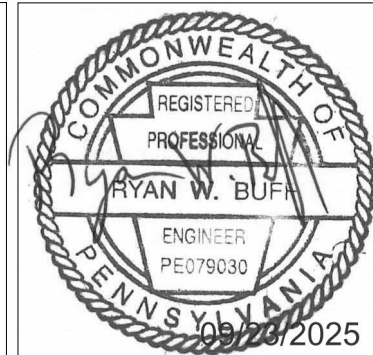


- CONSTRUCTION PHASING:
1. CONTRACTOR SHALL COORDINATE EQUIPMENT TRAVEL PATH ACCESS TIMELINE.
 2. MINIMAL DISRUPTION SHALL OCCUR AT THE GRIT RECEIVING DOCK.
 3. CONTRACTOR SHALL PHASE WORK TO ACCOMMODATE USE OF FACILITY DURING CONSTRUCTION. OFF-HOURS MAY BE REQUIRED.

NOTE:
PROVIDE PIPING INSULATION BACK TO TIE IN POINT. INSPECT HEAT TRACE FOR FUNCTIONALITY. REINSTALL EXISTING HEAT TRACE IF IN PROPER WORKING ORDER. ALERT OWNER IF HEAT TRACE IS BEYOND USEFUL LIFE.

1 MECHANICAL POWER FIRST FLOOR PLAN - NEW
SCALE: 3/32" = 1'-0"

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H.F. Lenz Company
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WASTE WATER TREATMENT PLANT
MISC. HVAC IMPROVEMENTS PROJECT - WEST HEADWORKS

510-HM-01
HVAC FIRST FLOOR NEW WORK PLAN

Contract: 1827
CAD File Name: 510-HM-001.DGN
Date: 09/23/2025
Sheet: 151 of 152

Designed by:	REVISION			
C, Everly	REV No.	DATE	DESCRIPTION	APPV
Drawn by:	1	11/17/2025	ADDENDUM 02	
C, Everly				
Checked by:				
R, Buff				

Attachment G

CONTRACTS 1827
Miscellaneous HVAC Improvements
PRE-BID MEETING AGENDA

WEDNESDAY 10-15-2025, 10:00 AM
WEDNESDAY 10-29-2025, 12:30 PM
O&M BUILDING AUDITORIUM

Dustin Copenhaver – ALCOSAN Project Manager
Ray Stasny – Construction Manager
Ryan Buff – HF Lenz - Engineer

1. INTRODUCTION

- a. Opening comments from Construction Manager
- b. All attendees shall sign the pre-bid meeting attendance roster
- c. Introductions
- d. Encourage a target goal of WBE/MBE participation. (10% to 25% of contract value)
- e. Scope of Work & Construction Sequencing by ALCOSAN (Engineer)
- f. QUESTIONS

BID DOCUMENTS

2. Legal Notice

- a. Bid security 10% of bid price by certified check or bid bond. (2.19)
- b. All bids to be submitted to ALCOSAN Engineering Department clerks (2nd floor of the O&M Building) on or before bid opening date and time. If the bid package is sent to ALCOSAN by land courier (UPS, FedEx, etc.), allow enough time for delivery to the clerks.
- c. Bid opening on **WEDNESDAY December 3, 2025** at **10:00 AM** sharp!
- d. Anticipation of a recommendation for the **DECEMBER 11, 2025** ALCOSAN Board meeting.
- e. All questions about contract documents shall be submitted to Dustin Copenhaver by email to Dustin.Copenhaver@alcosan.org.
- f. Any questions by phone or in-person are considered informal and without legal or binding effect on the contract or to the Owner.
- g. The last day for questions is **Friday November 21, 2025 at 5:00 PM**
- h. Responses will be distributed as addenda, as soon as possible, as deemed applicable.
- i. Pre-bid meeting is encouraged for bidders.
- j. QUESTIONS

3. Bidding Documents [Article One]

- a. Bid Form - fill in
 - i. Addenda acknowledgement (2.16)
 - ii. BASE BID SUMMARY 1827 = Lump Sum (Item #1) (pp. 1-2G)

- iii. All bids submitted with all bid forms complete and signed by authorized representative of the Company.
- iv. Only the bid forms need to be submitted (Article 1 → pages 1-1 through 1-23.
- v. Include in each Bid the Solicitation and Commitment Statement MBE and WBE pages 1 of 4 through 4 of 4). Include Certificate of M/WBE Participation. (2.25)
- vi. Contractor Qualification Statement Items 5 & 6. Follow directions carefully. (2.24)
- b. Provide a contact for your company in the space designated for receipt of any communications necessary for the bid evaluation.
- c. No Alternates with Bids
- d. Bid Bond - Certified check or Bid Bond.
- e. Non-collusion Affidavit
- f. Certificate of Compliance with Steel Products Procurement Act (3.79)
- g. Certificate of Safety Procedures Compliance
- h. Signed Letter of Assent
- i. Don't need to submit the entire Volume I with Bid
- j. QUESTIONS

4. Information for Bidders [Article Two]

- a. Carefully review Bid Documents and location and conditions of Job site. (2.02, 2.03, 2.13)
- b. Submission of Bids (2.04); Sealed Bid to be submitted to ALCOSAN Engineering Department (2nd floor of the O&M Building) on or before bid opening date and late bids (anything received after **December 3, 2025 AT 10:00AM**) and will be treated as "non-responsive" and returned to the Bidder unopened
- c. Contract execution typically requires 4 weeks to process paperwork (including bonds and certificates of insurance). Anticipate a Notice to Proceed to be issued in **January 2025**
- d. Reference Information concerning the existing facilities and the Job Site will, upon request, be made available to prospective Bidders (2.12); No guarantee on their accuracy.
- e. Bidders to Investigate (2.13); Bidders may coordinate additional site visits through the Project Manager at 412-732-8012 or Dustin.Copenhaver@alcosan.org
- f. Alterations of Bids and Documents (2.22)
- g. Tax Exemptions (2.18) (3.22)
- h. Project Labor Agreement and Letter of Assent. Sign and include in Bid. (2.33) Subs later.
- i. QUESTIONS

5. Contract Provisions [Article Three]

- a. Rights and Duties of the Contractor (3.5 – 3.7; 3.27)
- b. Subcontractors (3.19)
- c. Owner shall issue to Contractor tax exemption certificate(s). (3.22)
- d. Rights and Duties of the Owner (3.23 to 3.27)

- e. RFI's, Change Orders, FI's, Pay Apps, Submittals, etc.to be submitted through Trimble Unity Construct (formerly eBuilder) (3.31 to 3.37).
- f. Retainage: 10% to start. Reduced to 5% at 50% completion and possibly less in the latter stages of a job. (3.37, Act 317)
- g. Bonds: Performance Bond and Labor and Material Payment Bond to be provided with the executed Contract Agreement in the amount (100%) of the Contract Sum. Also, Maintenance Bond (100% of Contract sum) required upon final acceptance of the completed work. (3.58)
- h. Compliance with Health, Safety, and Environmental Laws requires a project-specific written safety program, tailored specifically for the work on this Contract to be submitted to the Construction Manager and reviewed by ALCOSAN Safety Department prior to performing any work on-site. (3.75).
- i. Working hours/Holidays: Normally for an 8-hour period between 7:00 AM to 5:00 PM, Monday through Friday. Work performed after hours, during ALCOSAN holidays and weekends shall be overseen by the Construction Manager, at the sole expense of the Contractor. (3.77)
- j. Pennsylvania Prevailing Wage Rates (3.78); Minimum wage rates as set forth by the PA Prevailing Wage Act. **(Article Seven)**
- k. Compliance to the Buy American (3.79)
- l. EXHIBIT A, B, C
- m. QUESTIONS

6. Contract Agreement [Article Four]

- a. Contract Milestones: Substantial completion **520** Calendar Days from NTP; Final Completion **550** Calendar Days from NTP.
- b. Liquidated Damages (\$250/day for Substantial completion and \$100/day for Final Completion)
- c. QUESTIONS

7. Bonds, Certificates and Statements [Article Five]

- a. Contractor's Certificate of Satisfaction (At completion of contract)
- b. QUESTIONS

8. Project Specifications [Article Six]

- a. Summary of Work (01 11 00)
 - i. Scope of Work (1.2)
 - ii. Project Personnel & Responsibilities (1.15)
- b. Job Conditions (01 11 20)
 - i. Coordination and Project Conditions (1.3)
 - ii. Working Hours (3.1)
- c. Measurement and Payment (01 22 00)
 - i. Application for Payment (1.6)
 - ii. Partial Payment for Materials & Equipment (1.8)

- iii. Progress Payment to Contractor by ALCOSAN within 30 days of Board Approval
- d. Construction Progress Schedule (01 32 16)
 - i. Project Schedule Requirements during project
 - ii. Contractors (Input); CM (Prep & Updating)
- e. Submittals (01 33 00 and 01 33 04)
 - i. Engineer's Review Action (1.7)
 - ii. Close out submittals (1.12)
 - iii. O&M Manuals & Data (01 33 04)
- f. Project MIS – (Trimble Unity Construct (eBuilder)) (01 33 16)
 - i. Overview (ALCOSAN); Training (Contractor) (1.7B)
- g. Construction Facilities, Temporary Controls & Utilities (01 50 00)
- h. Maintenance of Plant Operations (MOPO) (01 52 00)
 - i. Constraints, Sequencing, Responsibilities
- i. Commissioning (01 71 16, 01 75 00)
- j. Contract Closeout (01 78 39 and article 3.37-3.40)
- 9. Prevailing Minimum Wage Pre-Determination [Article Seven]**
 - a. Prevailing Wage Project Rates' Tables/Certified Payrolls
 - b. QUESTIONS
- 10. Contract Drawings**
 - a. One set of drawings and two specification volumes
- 11. Open Discussion / Questions / Virtual/Physical Site Tour**
 - a. QUESTIONS

◆ ◆ ◆ ◆ END OF AGENDA ◆ ◆ ◆ ◆

Miscellaneous HVAC



Dustin Copenhaver – Alcosan Project Manager

Dustin.Copenhaver@alcosan.org

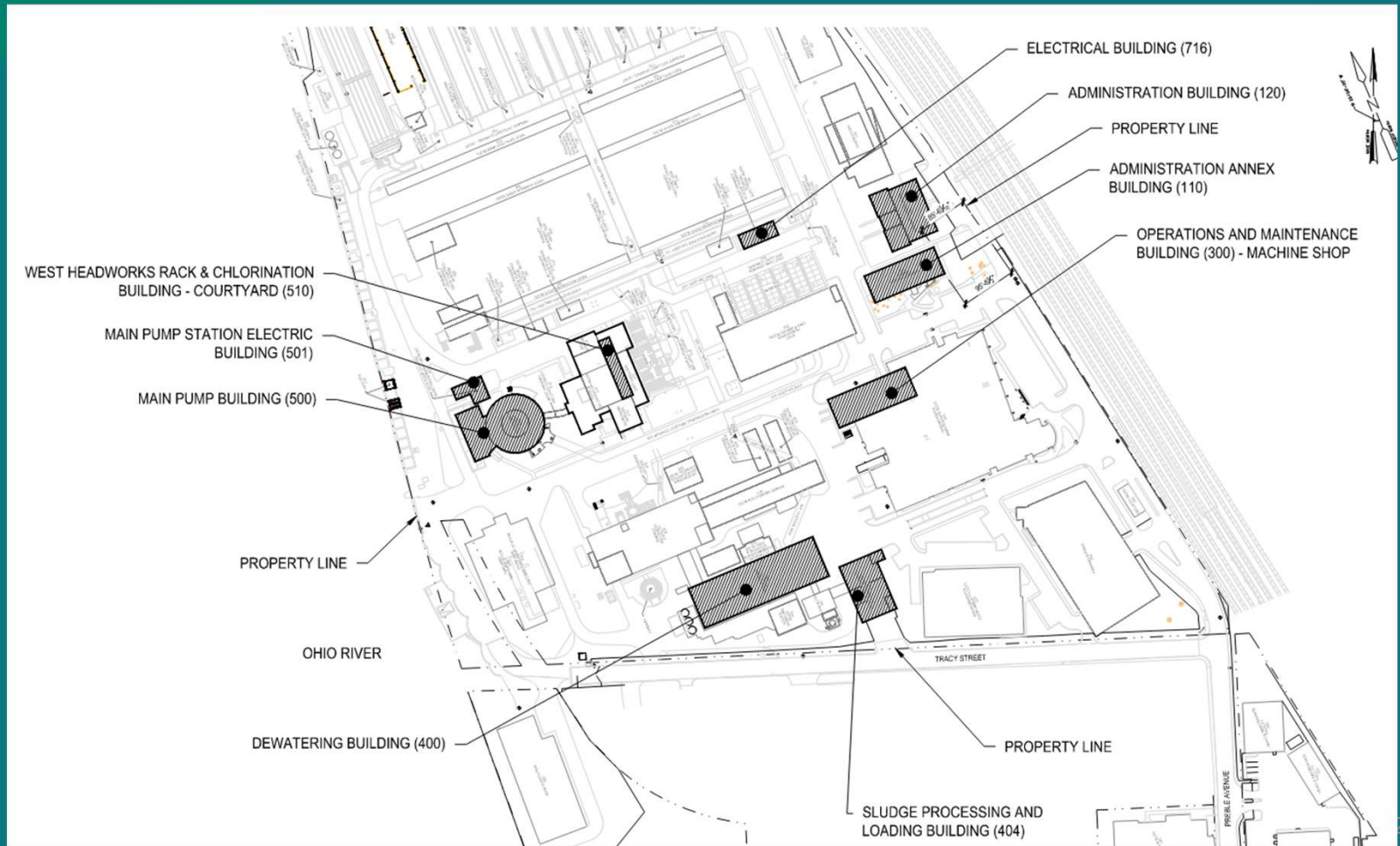
October 15, 2025

and

October 29, 2025



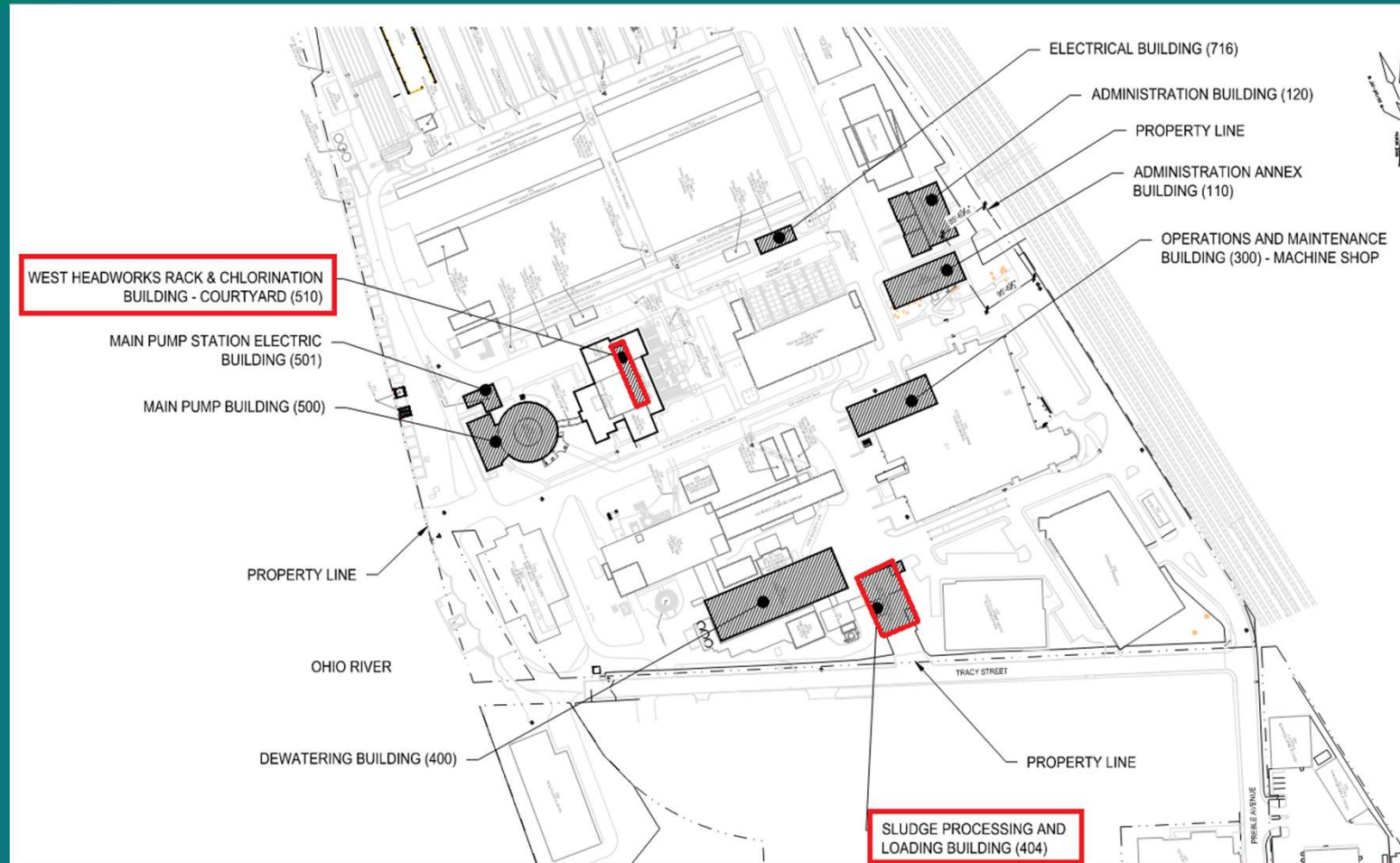
Work Areas





Steam Coil Work

- Owner pre-purchased direct replacement coils
- Contractor to remove existing and replace





404 Steam Coils

DOOR HEATER SCHEDULE (STEAM)											OWNER FURNISHED ITEM	
UNIT SYMBOL	LOCATION	AIR VOLUME CFM	MOTOR			STEAM COIL DATA			EAT °F	AIR TEMP RISE °F	UNIT WEIGHT	REMARKS
			DRIVE	No AT HP	ELECT CHAR	PSIG	BTUH	COND LBS/HR				
HTB451-404	TRUCK BAY NO 1	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB452-404	TRUCK BAY NO 1	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB453-404	TRUCK BAY NO 1	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB454-404	TRUCK BAY NO 1	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB551-404	TRUCK BAY NO 2	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB552-404	TRUCK BAY NO 2	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB553-404	TRUCK BAY NO 2	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ
HTB554-404	TRUCK BAY NO 2	8,700	DIRECT	1 @ 1 1/2	460 / 3 / 60	80	556,900	625	60	59	387	LJ WING MODEL: DH-33-VJ

NOTES:

1. PROVIDE OSHA FAN GUARDS.
2. PROVIDE BAKED EPOXY COATING TO ENTIRE UNIT FOR CORROSION PROTECTION.
3. PROVIDE NEMA 1 FUSED DISCONNECT.
4. HEATERS TO BE INSTALLED IN VERTICAL ARRANGEMENT. PROVIDE ALL THREAD RODS.
5. HEATERS TO BE INSTALLED IN A MANNER TO MAINTAIN THE 12'-2" DOOR CLEARANCE.
6. PROVIDE STAINLESS STEEL HARDWARE.
7. PROVIDE VARI-JET TWO POSITION DISCHARGE WITH DAMPER ACTUATOR AND LINKAGE.
8. PROVIDE CONTROL TRANSFORMER AND REMOTE WALL MOUNTED THERMOSTAT FOR ACTIVATION.
9. REFER TO DIVISION 23 SPECIFICATION AND DIVISION SECTION 01 71 16 FOR MANUFACTURER PROVIDED ON-SITE SERVICES FOR FACILITY START-UP TO BE INCLUDED IN HVAC CONTRACTOR SCOPE OF WORK.
10. HVAC CONTRACTOR TO PROVIDE ONSITE OFF-LOADING AND TRANSPORT TO FINAL LOCATION.

FACE AND BYPASS COIL SCHEDULE (STEAM)											OWNER FURNISHED ITEM		
SYMBOL	LOCATION	CFM	STEAM HEATING COIL DATA							CONT VALVE LBS/HR	CASING SIZE L x W x H	APPROX. WEIGHT LBS	REMARKS
			No ROWS	EAT °F DB	LAT °F DB	SP IN	TOT MBH	STEAM PSIG					
								ENT VALVE	ENT COIL				
CTB461-404	TRUCK BAY 1	19,600	1	0	55	0.09	1176.42	125	80	1320	89 3/4" x 22" x 80"	950	LJ WING
CTB462-404	TRUCK BAY 1	19,600	1	0	55	0.09	1176.42	125	80	1320	89 3/4" x 22" x 80"	950	LJ WING
CTB561-404	TRUCK BAY 2	19,600	1	0	55	0.09	1176.42	125	80	1320	89 3/4" x 22" x 80"	950	LJ WING
CTB562-404	TRUCK BAY 2	19,600	1	0	55	0.09	1176.42	125	80	1320	89 3/4" x 22" x 80"	950	LJ WING

NOTES:

1. FACE AND BYPASS COILS SCHEDULED ARE REPLACEMENT COILS. FIELD VERIFY SIZES PRIOR TO ORDERING.
2. HEATING CAPACITIES BASED ON 0°F EAT.
3. PROVIDE FACTORY MOUNTED, TOP ANGLE IRON LIFTING LUGS ON COILS. LUGS TO BE FIELD REMOVED ONCE COIL IS INSTALLED.
4. PROVIDE BAKED EPOXY COATING FOR CORROSION PROTECTION.
5. PROVIDE ELECTRIC DAMPER ACTUATION IN NEMA 4X HOUSING WITH RESIN ENCAPSULATED TRANSFORMER.
6. PROVIDE AIRSTREAM ELECTRONIC THERMOSTAT (0-10 VDC CONTROL SIGNAL) - SELF CONTAINED CONTROL.
7. PROVIDE STAINLESS STEEL HARDWARE.
8. REFER TO DIVISION 23 SPECIFICATION AND DIVISION SECTION 01 71 16 FOR MANUFACTURER PROVIDED ON-SITE SERVICES FOR FACILITY START-UP TO BE INCLUDED IN HVAC CONTRACTOR SCOPE OF WORK.
9. HVAC CONTRACTOR TO PROVIDE ONSITE OFF-LOADING AND TRANSPORT TO FINAL LOCATION.



510 Steam Coils

FACE AND BYPASS COIL SCHEDULE (STEAM)										OWNER FURNISHED ITEM		
SYMBOL	CFM	STEAM HEATING COIL DATA							CONT VALVE LBS/HR	CASING SIZE W x H x D	APPROX. WEIGHT LBS	REMARKS
		No ROWS	EAT °F DB	LAT °F DB	SP IN	TOT MBH	STEAM PSIG					
							ENT VALVE	ENT COIL				
MAU031-510	24,700	3	0	118.3	0.72	3169.6	125	80	3410	121.906" x 56" x 22"	1,676	LJ WING MODEL: VB-11TX STEAM
MAU001-512	18,900	3	0	119.6	0.65	2452.2	125	80	2490	100.500" x 56" x 22"	1,420	LJ WING MODEL: VB-9TX STEAM
MAU032-513	9,400	3	0	115.5	0.39	1177.6	125	80	1345	68.313" x 56" x 22"	1,021	LJ WING MODEL: VB-6TX STEAM
MAU001-518	6,500	3	0	114.5	0.42	807.9	125	80	930	46.875" x 56" x 22"	733	LJ WING MODEL: VB-4TX STEAM

NOTES:

1. FACE AND BYPASS COILS SCHEDULED ARE REPLACEMENT COILS. FIELD VERIFY SIZES PRIOR TO ORDERING.
2. HEATING CAPACITIES BASED ON 0°F EAT.
3. PROVIDE FACTORY MOUNTED, TOP ANGLE IRON LIFTING LUGS ON COILS. LUGS TO BE FIELD REMOVED ONCE COIL IS INSTALLED.
4. PROVIDE BAKED EPOXY COATING ON COIL FINS AND CASING FOR CORROSION PROTECTION.
5. REFER TO DIVISION 23 SPECIFICATION AND DIVISION SECTION 01 71 16 FOR MANUFACTURER PROVIDED ON-SITE SERVICES FOR FACILITY START-UP TO BE INCLUDED IN HVAC CONTRACTOR SCOPE OF WORK.
6. HVAC CONTRACTOR TO PROVIDE ONSITE OFF-LOADING AND TRANSPORT TO FINAL LOCATION.



Air Handler Replacement at Building 400

- ~~Owner pre-purchased direct replacement air handlers~~
- **Changed to Contractor purchased in addendum 1**
- Contractor to remove existing and replace





400 Air Handler Schedule

MAKEUP AIR UNIT SCHEDULE (GAS)

~~OWNER FURNISHED ITEM~~

SYMBOL	LOCATION	SERVES	TOTAL CFM	% OA	EXT SP	SUPPLY FAN DATA								GAS FURNACE DATA						PRE-FILTER	PRE-FILTER	ELECT CHAR	MCA	MAXIMUM BREAKER	UNIT WEIGHT LBS	REMARKS	
						CFM	WHEEL DIA	DRIVE	TYPE	RPM	BHP	HP	TOT SP	VFD	EAT °F DB	LAT °F DB	MIN CFM	INPUT MBH	TOT OUTPUT MBH	DIRECT FIRE / INDIRECT FIRE	TYPE						TYPE
MUW001-400	ROOF	-	20,400	100	0.70	20,400	25/25	BELT	FC DIDW	674	16.91	20	3.0	NO	0	75	20,400	1805.4	1444	DIRECT FIRE	2" MERV 8 PLEAT	2" CARBON	460 / 3 / 60	31.1	50	4,370	BASIS OF DESIGN: ENGINEERED AIR MODEL: HE221/O/R
MUW002-400	ROOF	-	20,400	100	0.70	20,400	25/25	BELT	FC DIDW	674	16.91	20	3.0	NO	0	75	20,400	1805.4	1444	DIRECT FIRE	2" MERV 8 PLEAT	2" CARBON	460 / 3 / 60	31.1	50	4,370	BASIS OF DESIGN: ENGINEERED AIR MODEL: HE221/O/R
MUW004-400	ROOF	-	11,000	100	0.75	11,000	20/18	BELT	FC DIDW	970	10.95	15	3.9	NO	0	50	11,000	750	600	INDIRECT FIRE	2" MERV 8 PLEAT	2" CARBON	460 / 3 / 60	23.6	40	4,331	BASIS OF DESIGN: ENGINEERED AIR MODEL: DJE100/O/R

NOTES:

1. UNITS TO BE INSTALLED ON STEEL DUNNAGE. PROVIDE SOLID 22 GAUGE LINER ON BOTTOM OF UNITS.
2. EXTERIOR OF UNITS SHALL BE EPOXY COATED FOR CORROSION PROTECTION.
3. UNIT MANUFACTURER TO PROVIDE FUSED DISCONNECT.
4. UNIT MANUFACTURER TO PROVIDE A REMOTE MOUNTED CONTROL PANEL, SWITCHES AND LIGHTS WITH A NEMA 4X RATING. CONTROL PANEL SHALL HAVE AN ENGRAVED LABEL.
5. PROVIDE INTERLOCK FOR EXISTING EXHAUST FANS. COORDINATE LOCATION OF EXISTING FANS.
6. PROVIDE SMOKE DETECTOR FOR SUPPLY DUCT. COORDINATE WITH EXISTING FIRE ALARM SYSTEM.
7. UNITS SHALL BE HORIZONTAL AIRFLOW.
8. PROVIDE UNITS WITH OUTSIDE AIR HOOD.
9. GAS FURNACE BASED ON 14"W.C. PRESSURE.
10. PROVIDE STAINLESS STEEL DAMPERS AND FILTER FRAMES.
11. PROVIDE THERMOSTAT. REPLACE INKIND AT EXISTING LOCATION.
12. REFER TO DIVISION 23 SPECIFICATION AND DIVISION SECTION 01 71 16 FOR MANUFACTURER PROVIDED ON-SITE SERVICES FOR FACILITY START-UP TO BE INCLUDED IN HVAC CONTRACTOR SCOPE OF WORK.
13. HVAC CONTRACTOR TO PROVIDE ONSITE OFF-LOADING AND TRANSPORT TO FINAL LOCATION.

FLUE



New Chillers at Building 500

- Furnish and install two new chillers
- Demolish old chiller
- New chillers on existing roof
- Critical item – submit for approval and order as soon as possible





500 Chiller Schedule

AIR COOLED CHILLER/W PUMP PACKAGE SCHEDULE

SYMBOL	NOM TONS	GPM	PD FT	COMPRESSORS		CONDENSOR FANS		PUMP QTY	OPERATION DUTY/STAND-BY	FLUID TYPE	MOTOR KW	VARIABLE FREQ DRIVE	OPERATING CONDITIONS		IMPELLAR SIZE	UNIT DIMENSIONS	UNIT WEIGHT	KW INPUT	MCA	MOP	ELEC CHAR	IPLV/NPLV EER	REMARKS
				TONS	QTY	DRIVE	QTY FANS						GPM	200									
ACC001-500	100	200	10.4	100 (93.17)	4	DIRECT	8	2	DUTY/STANDBY	35% GLYCOL	7.456	YES	FT HD	84.7	5.512"	169.2"L x 88.4"W x 92.5"H	7909 LB	128.5	219	300	460 / 3 / 60	16.12/14.62	TRANE CGAM
ACC002-500	100	200	10.4	100 (93.17)	4	DIRECT	8	2	DUTY/STANDBY	35% GLYCOL	7.456	YES	EFF	62	5.512"	169.2"L x 88.4"W x 92.5"H	7909 LB	128.5	219	300	460 / 3 / 60	16.12/14.62	TRANE CGAM

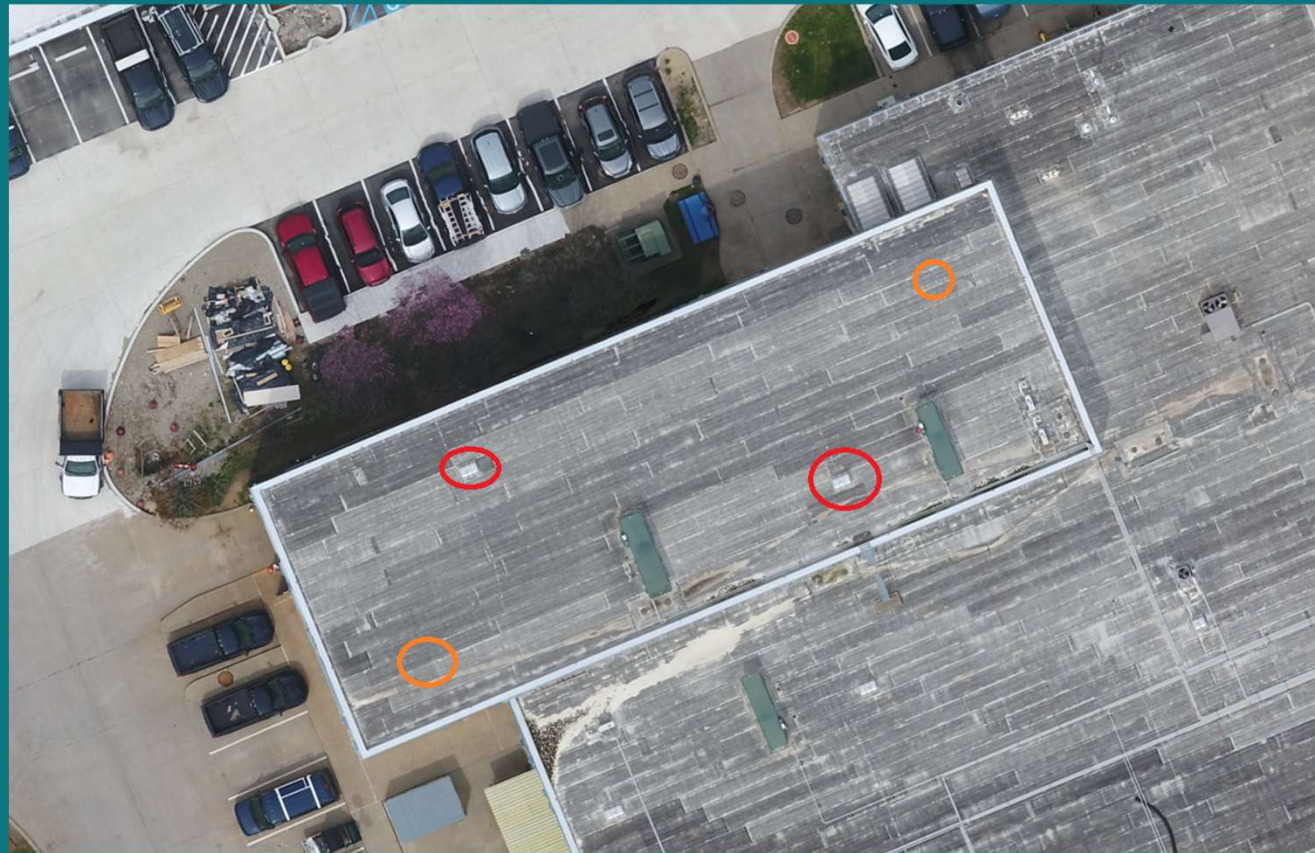
NOTES:

1. PROVIDE UNIT MOUNTED CONTROL PANEL WITH STARTER ACROSS THE LINE CONFIGURATION. PRE-WIRED WITH NECESSARY CONTROL POWER TRANSFORMER - SCCR 65KAIC.
2. PROVIDE BACNET CARD AND INTERFACE FROM FACTORY CONTROLS TO INTEGRATE WITH EXISTING CONTROL SYSTEM.
3. PROVIDE MOLDED CASE HIGH INTERRUPTING CAPACITY CIRCUIT BREAKER WITH LOCKABLE DISCONNECT.
4. CAPACITIES BASED ON 105°F AMBIENT, 57° EWT AND 45°F LWT, AND EVAPORATOR TEMP DROP OF 12°F.
5. CAPACITIES BASED ON 35% PROPYLENE GLYCOL SOLUTION.
6. PROVIDE PUMP PACKAGE COMPLETE WITH VARIABLE SPEED DRIVES AND 6 GAL EXPANSION TANK.
7. PROVIDE BAKED EPOXY COATING FOR CORROSION PROTECTION.
8. PROVIDE SPRING VIBRATION ISOLATORS. COORDINATE LOCATION OF SPRINGS ISOLATORS WITH STEEL SUPPORT.
9. REFRIGERANT CIRCUITS - 2 (R-454B).
10. PROVIDE UNITS WITH LOW AMBIENT COOLING DOWN TO -20°F.
11. ACC001-500 AND ACC002-500 SHALL BE INSTALLED, AND PROVED TO BE WORKING AS DESIGNED PRIOR TO EXIST ACC001-500 BEING TAKEN OUT OF SERVICE AND DEMOED.



300 Relief Fans

- Furnish and install 4 air relief fans
 - 2 in existing penetrations
 - 2 new penetrations





300 Relief Fan Schedule

RELIEF AIR FAN SCHEDULE

SYMBOL	LOCATION	SERVES	TYPE	SYSTEM CFM	FAN CFM	RPM	ESP	TIP SPEED	DRIVE	STATIC EFF %	BHP	HP	ELECT CHAR	VFD	CONTROL TYPE	INLET SOUND POWER LEVELS (DB)								WEIGHT	BASIS OF DESIGN
																62.5	125	250	500	1000	2000	4000	8000		
EF001-330	ROOF	OM WORKSHOP	RE	3,600	4,000	1,436	0.65	6,251	DIRECT	33	1.13	2	3/60/480V	NO	NOTE 5	79	83	87	79	75	72	68	63	99 LBS	GREENHECK - G-160-VG
EF002-330	ROOF	OM WORKSHOP	RE	3,600	4,000	1,436	0.65	6,251	DIRECT	33	1.13	2	3/60/480V	NO	NOTE 5	79	83	87	79	75	72	68	63	99 LBS	GREENHECK - G-160-VG
EF003-330	ROOF	OM WORKSHOP	RE	3,600	4,000	1,436	0.65	6,251	DIRECT	33	1.13	2	3/60/480V	NO	NOTE 5	79	83	87	79	75	72	68	63	99 LBS	GREENHECK - G-160-VG
EF004-330	ROOF	OM WORKSHOP	RE	3,600	4,000	1,436	0.65	6,251	DIRECT	33	1.13	2	3/60/480V	NO	NOTE 5	79	83	87	79	75	72	68	63	99 LBS	GREENHECK - G-160-VG

NOTES:

1. PROVIDE FACTORY-MOUNTED DISCONNECT SWITCHES BY DIVISION 23.
2. PROVIDE FAMILY OF FAN CURVES ON SHOP DRAWINGS.
3. SYSTEM CFM IS FOR BALANCING PURPOSES. PROVIDE UNIT BASED ON CFM DENOTED IN PERFORMANCE DATA. THE FINAL BALANCED CFM FOR AHU'S SHALL BE DETERMINED THROUGH TESTING AND BALANCING OPERATIONS.
4. MOTORIZED DAMPERS SHALL BE POWERED FROM A 120 V CIRCUIT PROVIDED BY THE DIV 26. CONTROL POWER SHALL BE FROM A 120V CIRCUIT PROVIDED BY THE DIV 26.
5. PROVIDE WITH HOA CONTROLLER TO RUN EXHAUST FAN AT "FULL-ON" VOLUME (4,000 CFM) AND "STANDBY" VOLUME (1,000 CFM). REFER TO CONTROL DIAGRAM.

RETURN/EXHAUST AIR REGISTER SCHEDULE

SYMBOL	TYPE	CFM		MAX APD (IN WG)	MOUNTING	PANEL/FRAME SIZE (IN) x (IN)	NECK SIZE (IN) x (IN)	NC	DAMPER	FINISH	NOTES	BASIS OF DESIGN
		MIN	MAX									
20x20 ERW	DUCT EXH REGISTER	515	2,055	0.17	DUCT	22x22	20x20	34	OBD	WHITE	35" DEFLECT, 3/4" SPACE	TITUS 350RL
26x28 ERW	DUCT EXH REGISTER	1,030	4,125	0.17	DUCT	30x30	26x28	38	OBD	WHITE	35" DEFLECT, 3/4" SPACE	TITUS 350RL

OBD = OPPOSED BLADE DAMPER

DUCT CONSTRUCTION SCHEDULE

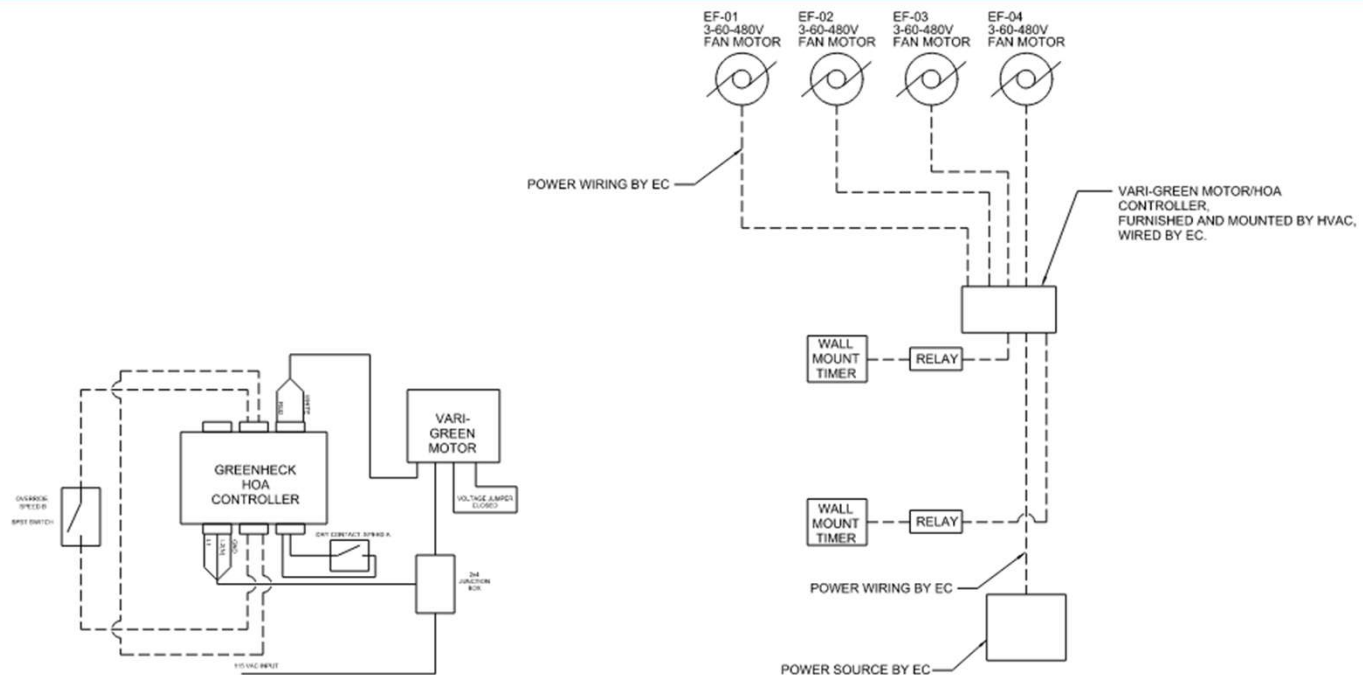
SYSTEM	USE	EXTENT OF DUCTWORK	SMACNA CLASS		NOTE
			PRESS. (WG)	SEAL	
EF	EXHAUST AIR	FROM REGISTER TO FAN	-2"	A	-

DUCTWORK CONSTRUCTION NOTES:

1. ALL DUCTWORK SHALL BE CONSTRUCTED PER THE SMACNA 'HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE', 3RD EDITION (2005) UNLESS OTHERWISE NOTED.
2. MINIMUM SHEET METAL GAUGE FOR ALL DUCTWORK SHALL BE 24 UNLESS OTHERWISE NOTED.
3. REFER TO GENERAL NOTES FOR ADDITIONAL DUCT CONSTRUCTION INFORMATION.
4. ALL FLEXIBLE DUCT SHALL BE INSTALLED PER ADC "FLEXIBLE DUCT PERFORMANCE AND INSTALLATION STANDARDS", 4TH EDITION.
5. ALL OTHER DUCTWORK NOT EXPLICITLY NOTED HEREIN SHALL BE AS FOLLOWS:
SUPPLY: +2" W.G., SEAL CLASS A
RETURN: -2" W.G., SEAL CLASS B
EXHAUST AND RELIEF: -2" W.G., SEAL CLASS A



300 Relief Fan Control



NOTE:

ACTIVATION FOR ALL EXHAUST FANS (EF-01, -02, -03, -04) SHALL BE AUTOMATICALLY OPERATED BY MEANS OF A WALL MOUNT TIMER (2 LOCATIONS) IN CONJUNCTION WITH INTERLOCK AT HVU-2 AND HVU-3. WHEN THE BUILDING IS DETERMINED TO BE IN OCCUPIED MODE, THE EXHAUST FAN SHALL BE RUN AT ITS "STANDBY" RATE. WHEN THE WALL MOUNT TIMER IS ACTIVATED AT EITHER LOCATION, THE EXHAUST FAN SHALL BE RAMPED UP TO THE "FULL-ON" MODE, AND SHALL BE RUN FOR 1-6 HOURS. AT THE END OF THE TIMER MODE, THE EXHAUST FAN SHALL BE SWITCHED BACK TO "STANDBY" MODE. AUTOMATIC OPERATION SHALL CYCLE THE VENTILATION SYSTEM BETWEEN THE FOLLOWING TWO MODES OF OPERATIONS:

1. "FULL-ON": 4,000 CFM
2. "STANDBY": 1,000 CFM

1

EXHAUST FAN (EF-01, -02, -03, -04) CONTROL SEQUENCE

NOT TO SCALE



110 and 120 Upgrades

- Remove old steam heat equipment
- Replace with new gas fired units
- VAV Boxes
- New gas line





110 Schedule

AIR HANDLING UNIT SCHEDULE (DX/HOT WATER)

SYMBOL	SERVES	DESIGN TOTAL CFM	OA CFM	SUPPLY FAN DATA										DX COOLING COIL DATA						HOT WATER HEATING COIL						SYMBOL	REMOTE CONDENSING UNIT DATA												
				QTY	CFM/ FAN	DRIVE	TYPE	RPM	BHP	HP	EXT SP	TOT SP	VFD	EAT °F		LAT °F		TOT MBH	SENS MBH	NOM TONS	CFM	EAT °F		LAT °F			GPM	EWT °F	LWT °F	TOT MBH	FAN QTY	RTD OPR TEMP °F	MAX OPR TEMP °F	TYPE	COMP QTY	TOT STAGES	MCA	MOCP	WT. LBS
														DB	WB	DB	WB					DB	WB	°F DB	°F DB														
AHU001-110	BSMT	2,800	520	1	2,800	DIRECT	FC	2390	2.24	3	1.75	2.77	YES	78.7	64.7	52.8	52.6	96.1	74.3	8	2,800	57.0	103	15	140	120	137.5	ACCU001-110	2	95	115	SCROLL	2	2	20	25	1069		
AHU002-110	1ST FLR	5,200	1,040	2	2,600	DIRECT	FC	2064	2.22	3	1.95	3.22	YES	79.0	64.9	52.7	52.3	185.2	140.2	15	5,200	60.0	96.6	20	140	120	202.3	ACCU002-110	2	95	115	SCROLL	2	2	34	45	1335		
AHU003-110	2ND FLR	4,000	800	1	4,000	DIRECT	FC	3044	4.49	5	1.80	3.50	YES	80.0	67.0	54.1	53.7	155.8	106.2	12	4,000	56.0	97.6	18	140	120	177.6	ACCU003-110	2	95	115	SCROLL	2	2	30	40	1125		

NOTES:

- CAPACITIES BASED ON 95°F AMBIENT TEMPERATURE.
- CAPACITIES BASED ON R-454B REFRIGERANT.
- PROVIDE OA AND RA FILTERS.
- PROVIDE HOT GAS REHEAT DEHUMIDIFICATION CONTROLS.
- HIGH STATIC OPTION.
- PROVIDE FACTORY RETURN AIR SMOKE DETECTOR BY DIVISION 26 (FIELD WIRE).
- PROVIDE FACTORY MOUNTED NON-FUSED DISCONNECT AND VFD.
- SYSTEM CFM IS FOR BALANCING PURPOSES. PROVIDE UNIT BASED ON CFM DENOTED IN PERFORMANCE DATA.
- PROVIDE FAMILY OF FAN CURVES ON SHOP DRAWINGS.
- PROVIDE PRESSURE GAUGES TO READ PRESSURE DROP ACROSS FILTERS.

FILTER DATA				AHU MCA	AHU MOCP	ELECT CHAR	AHU WEIGHT	UNIT DIMENSIONS	BASIS OF DESIGN
PRE		SP							
MERV	TYPE	INITIAL	FINAL						
8	2" PLTD	0.14	0.65	4	15	3/60/480V	625 LBS	33"x 42"x73"H	AAON
8	2" PLTD	0.23	0.48	8	15	3/60/480V	750 LBS	35"x 56"x75"H	AAON
8	2" PLTD	0.25	0.50	7	15	3/60/480V	625 LBS	35"x 56"x75"H	AAON

SINGLE DUCT VAV BOX SCHEDULE

TAG	MODEL	SIZE		CFM		STATIC PRESSURE			NC LEVELS		ELECTRIC HEAT COIL						ELECTRICAL		UNIT INFORMATION
		UNIT	OUTLET	MAX	MIN	INLET	DOWN	MIN	RAD.	DISCH.	CFM	KW	VOLTS/PH	STEPS	EAT	LAT	MCA	MOP	
VAV-01	DESV	06	12x8	125	80	1	0.25	0.01	-	15	80	1.0	208/1	S	55	94.5	6	20	
VAV-02	DESV	08	12x10	300	100	1	0.25	0.04	25	28	100	1.0	208/1	S	55	96.2	6	20	
VAV-03	DESV	10	14x12.5	500	150	1	0.25	0.2	28	28	150	1.5	208/1	S	55	86.6	9	20	
VAV-04	DESV	12	16x15	700	250	1	0.25	0.04	18	23	250	2.5	208/1	S	55	86.6	15	20	
VAV-05	DESV	14	20x17.5	1300	250	1	0.25	0.04	18	23	250	2.5	208/1	S	55	86.6	15	20	
VAV-06	DESV	06	12x8	125	80	1	0.25	0.01	-	15	80	1.0	277/1	S	55	98.2	4.5	20	
VAV-07	DESV	08	12x10	300	100	1	0.25	0.04	25	28	100	1.0	277/1	S	55	96.2	4.5	20	
VAV-08	DESV	10	14x12.5	500	150	1	0.25	0.2	28	28	350	1.5	277/1	S	55	86.6	6.8	20	
VAV-09	DESV	12	16x15	700	250	1	0.25	0.04	18	23	250	2.5	277/1	S	55	86.6	11.3	20	

NOTES:

- SELECTIONS ARE BASED ON TITUS AS MANUFACTURER.
- ALL PERFORMANCE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ASHRAE 130-2008 AND AHRI 880-2011.
- ALL NC LEVELS DETERMINED USING AHRI 885-2008 APPENDIX E.
- ALL AIRFLOW, PRESSURE LOSSES AND HEATING PERFORMANCE VALUES HAVE BEEN CORRECTED FOR ALTITUDE.
- UNITS OF MEASURE: DIMENSIONS (IN), AIRFLOW (CFM), AIR PRESSURE (IN WG), AND TEMPERATURES (DEGF).
- IN THE "STEPS" COLUMN, CODE "S" DENOTES A MODULATING SCR HEATER.
- THE MINIMUM SUPPLY CIRCUIT AMPACITY (MCA) AND MAXIMUM OVERCURRENT PROTECTION (MOP) RATINGS WERE CALCULATED IN ACCORDANCE WITH UL STANDARDS BASED ON MOTOR AND ELECTRIC COIL FULL LOAD CURRENT RATINGS.



110 Schedule Continued

RELIEF FAN SCHEDULE

SYMBOL	LOCATION	SERVES	ROOF/WALL OPENING	SYSTEM CFM	FAN CFM	FAN RPM	STATIC PRESSURE (IN)	TIP SPEED	DRIVE	STATIC EF %	BHP	HP	ELECT CHAR	WEIGHT	CONTROL TYPE	BASIS OF DESIGN
PRV001-110	ROOF	AHU-002 & AHU-003	36.5 x 36.5	9200	10000	1139	1.9	-	DIRECT	47.4	6.31	7.5	3/60/480V	253 lbs	ECM	GREENHECK CUE-300HP-VG
ILF001A-110	MECH RM	AHU-001	19 x 19	2800	3000	1304	0.75	5109	DIRECT	45	0.79	2	3/60/480V	122 lbs	ECM	GREENHECK SQ-160VG

NOTES:

1. PROVIDE AND INSTALL ROOF MOUNTED FANS ON 16" HIGH CURBS.
2. PROVIDE FACTORY MOUNT DISCONNECT, NEMA 12 INDOORS AND NEMA 3R OUTDOORS.
3. PROVIDE FACTORY MOUNTED TRANSFORMER AND SPEED DIAL FOR CONTROL AND BALANCE.

PUMP SCHEDULE

PUMP No	TYPE FLR MTD/IN-LINE	SYSTEM	OPERATION DUTY/STAND-BY	FLUID TYPE	MOTOR HP	MAX RPM	DUTY-POINT RPM	MOTOR BHP	ELECTRICAL CHAR	EMERGENCY POWER	SPEED CONTROL	OPERATING CONDITIONS		IMPELLER SIZE	MAX IMPELLER SIZE	BASIS OF DESIGN
HWP001-110	IN-LINE	HOT WATER BOILER RUN- AROUND PUMP	DUTY	WATER	1/6	-	3,300	-	1/60/120V	YES	ECM	GPM	19	N/A	N/A	B & G - PL-50
												FT HD	5.0			
												EFF	-			
HWP002-110	IN-LINE	HOT WATER BOILER RUN- AROUND PUMP	DUTY	WATER	1/6	-	3,300	-	1/60/120V	YES	ECM	GPM	19	N/A	N/A	B & G - PL-50
												FT HD	5.0			
												EFF	-			
HWP003-110	END SUCTION	HOT WATER BUILDING SYSTEM PUMP	DUTY	WATER	2.0	1,800	1,675	1.35	3/60/460V	YES	VFD	GPM	66	7"	7.5"	B & G - E-1532 - 1.5BC - 143-SS
												FT HD	42			
												EFF	60.5%			
HWP004-110	END SUCTION	HOT WATER BUILDING SYSTEM PUMP	STAND-BY	WATER	2.0	1,800	1,675	1.35	3/60/460V	YES	VFD	GPM	66	7"	7.5"	B & G - E-1532 - 1.5BC - 143-SS
												FT HD	42			
												EFF	60.5%			

NOTES:

1. VFD'S FURNISHED, MOUNTED, AND WIRED BY DIVISION 23.
2. REFER TO DETAIL SHEET FOR ADDITIONAL COMPONENTS AND INSTALLATION METHOD.
3. MAX IMPELLER SIZE AVAILABLE. IS THE MAXIMUM SIZE IMPELLER PUMP MODEL HAS AVAILABLE.
4. PROVIDE SUCTION DIFFUSER ON ALL END SUCTION PUMPS.
5. PROVIDE 4" CONCRETE PAD UNDER PUMPS LOCATED IN THE MECHANICAL ROOM.

HIGH EFFICIENCY BOILER SCHEDULE

SYMBOL	FIRE RATING	GAS PRESSURE INCHES WC		INPUT BTU	GROSS OUTPUT BTU	FLOW GPM		EWT °F	LWT °F	BOILER HP	CURRENT AMPS	APPROX OPERATING WT	ELEC CHAR	BASIS OF DESIGN
	GAS CFH	MIN	MAX			MIN	MAX							
BLR001-110	399	4"	14"	399,999	375,000	15.2	38	120	140	-	4.2	175 lbs	1/60/120V	LOCHINVAR WHB399
BLR002-110	399	4"	14"	399,999	375,000	15.2	38	120	140	-	4.2	175 lbs	1/60/120V	LOCHINVAR WHB399

NOTES:

1. PROVIDE BOILERS WITH 30 PSI RELIEF VALVES.
2. PROVIDE BOILERS WITH 24V VOLTAGE CONTROL CONNECTION.
3. GAS PRESSURE TO THE BURNER MAX AT 0.5 PSI BASED ON EQUIPMENT SELECTED (4"wc-14"wc). PRESSURE REQUIREMENTS MAY VARY ACCORDING TO ACTUAL EQUIPMENT USED.
4. CONTRACTOR TO VERIFY EXHAUST STACK AND COMBUSTION INTAKE DUCT SIZES PER MANUFACTURERS RECOMMENDATION PRIOR TO INSTALLATION.
5. CONTRACTOR TO VERIFY UNIT DIMENSIONS AND CLEARANCES PRIOR TO INSTALLATION.
6. PROVIDE DRAIN TRAP AND CONDENSATE NEUTRALIZING KITS - ONE PER BOILER



120 Schedule

AIR HANDLING UNIT SCHEDULE (DX/GAS)

SYMBOL	SERVES	DESIGN TOTAL CFM	ACTUAL TOTAL CFM	OA CFM	SUPPLY FAN DATA										DX COOLING COIL DATA						MODULATING NATURAL GAS FURNACE DATA						POWER EXHAUST FAN DATA										MERV			
					QTY	CFM/ FAN	DRIVE	TYPE	RPM	BHP	HP	EXT SP	TOT SP	VFD	EAT °F		LAT °F		TOT MBH	SENS MBH	NOM TONS	CFM	EAT °F		LAT °F		STAGES	INPUT MBH	TOT OUTPUT MBH	QTY	TOTAL CFM	CFM/ FAN	DRIVE	TYPE	BHP	HP		EXT SP	TOT SP	VFD
															DB	WB	DB	WB					DB	WB	DB	WB														
AHU001-120	BLDG	8,000	7,000	1,200	1	8,000	DIRECT	FC	1,432	8.87	15	3.75	3.92	YES	80.0	64.2	55.2	52.7	256	202	21	8,000	51.0	90.1	13:1	405	328	1	7,000	7,000	DIRECT	FC	4.36	7.5	1.32	1.35	YES	8		

NOTES:

1. CAPACITIES BASED ON 95°F AMBIENT TEMPERATURE.
2. CAPACITIES BASED ON R-454B REFRIGERANT.
3. PROVIDE POWERED CONVENIENCE GFI OUTLET.
4. PROVIDE OA AND RA FILTERS.
5. PROVIDE HOT GAS REHEAT DEHUMIDIFICATION CONTROLS.

6. HIGH STATIC OPTION.
7. PROVIDE FACTORY RETURN AIR SMOKE DETECTOR (FIELD WIRE).
8. PROVIDE FACTORY MOUNTED NON-FUSED DISCONNECT AND VFD.
9. SYSTEM CFM IS FOR BALANCING PURPOSES. PROVIDE UNIT BASED ON CFM DENOTED IN PERFORMANCE DATA.
10. PROVIDE INTAKE WEATHER HOOD.

11. PROVIDE FAMILY OF FAN CURVES ON SHOP DRAWINGS.
12. PROVIDE PRESSURE GAUGES TO READ PRESSURE DROP ACROSS FILTERS.
13. 38" MAX CUSTOM CURB (30-36" PREFERRED) WITH DUCTED CONNECTIONS PROVIDED BY UNIT MANUFACTURER.
14. PROVIDE VAV CONTROLLER WITH SUPPLY TEMPERATURE AND STATIC PRESSURE SENSOR FOR INDEPENDENT CONTROL.

FILTER DATA				MCA	MOCp	ELECT CHAR	MIN EER/IEER	UNIT WEIGHT	UNIT DIMENSIONS	BASIS OF DESIGN
PRE		SP								
MERV	TYPE	INITIAL	FINAL							
8	4" PLTD	-	-	82	100	3/60/480V	11.07 / 13.20	3338 LBS	138" x 100.75" x 60"H	AAON - RN SERIES C 16-30 TON



120 Schedule Continued

SINGLE DUCT VAV BOX SCHEDULE

TAG	MODEL	SIZE		CFM		STATIC PRESSURE			NC LEVELS		ELECTRIC HEAT COIL						ELECTRICAL		UNIT INFORMATION
		UNIT	OUTLET	MAX	MIN	INLET	DOWN	MIN	RAD.	DISCH.	CFM	KW	VOLTS/PH	STEPS	EAT	LAT	MCA	MOP	
VAV-01	DESV	06	12x8	350	80	1	0.25	0.01											
VAV-02	DESV	08	12x10	300	100	1	0.25	0.04	25	28	100	1.0	208/1	S	55	96.2	6	20	
VAV-03	DESV	10	14x12.5	500	190	1	0.25	0.2	28	28	350	1.5	208/1	S	55	87.6	9	20	
VAV-09	DESV	12	16x15	1200	250	1	0.25	0.04	18	23									
VAV-10	DESV	14	20x17.5	1600	380	1	0.25	0.04	18	23									
VAV-11	DESV	24x16	38x18	3600	850	1	0.25	0.04	18	23									

NOTES:

1. SELECTIONS ARE BASED ON TITUS AS MANUFACTURER.
2. ALL PERFORMANCE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ASHRAE 130-2008 AND AHRI 880-2011.
3. ALL NC LEVELS DETERMINED USING AHRI 885-2008 APPENDIX E.
4. ALL AIRFLOW, PRESSURE LOSSES AND HEATING PERFORMANCE VALUES HAVE BEEN CORRECTED FOR ALTITUDE.
5. UNITS OF MEASURE: DIMENSIONS (IN), AIRFLOW (CFM), AIR PRESSURE (IN WG), AND TEMPERATURES (DEGF).
6. IN THE "STEPS" COLUMN, CODE "S" DENOTES A MODULATING SCR HEATER.
7. THE MINIMUM SUPPLY CIRCUIT AMPACITY (MCA) AND MAXIMUM OVERCURRENT PROTECTION (MOP) RATINGS WERE CALCULATED IN ACCORDANCE WITH UL STANDARDS BASED ON MOTOR AND ELECTRIC COIL FULL LOAD CURRENT RATINGS.

HORIZONTAL UNIT HEATER SCHEDULE (ELECTRIC)

SYMBOL	CFM	RPM	BTUH	ELECT CHAR	AMPS	KW	RISE °F	MOUNTING HEIGHT	REMARKS
HUH01-120	270	1400	17	1/60/208	20.8	5	60	8'-0"	QMARK HUH-520SA

NOTE:

1. CAPACITIES BASED ON 60°F EAT.