

# ADDENDUM No. 1

## RFP No. 25-05

### Wheeler Service Center Rooftop Air Handling Unit Replacement

**Due: January 30, 2025 by 2:00 P.M. (local time)**

The information contained herein shall take precedence over the original documents and all previous addenda (if any) and is appended thereto. **This Addendum includes twenty-seven (27) pages.**

**The Proposer is to acknowledge receipt of this Addendum No. 1 by signing and submitting Attachment B, including all attachments in its Proposal by so indicating in the proposal that the addendum has been received. Proposals submitted without acknowledgement of receipt of this addendum may be considered non-conforming.**

**The following forms provided within the RFP Document should be included in submitted proposal:**

- **Attachment B - General Declarations**
- **Attachment D - Prevailing Wage Declaration of Compliance**
- **Attachment E - Living Wage Declaration of Compliance**
- **Attachment G - Vendor Conflict of Interest Disclosure Form**
- **Attachment H - Non-Discrimination Declaration of Compliance**

**Proposals that fail to provide these completed forms listed above upon proposal opening may be rejected as non-responsive and may not be considered for award.**

#### I. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Respondents are directed to take note in its review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: Is the City open to contracting HVAC controls separately?  
Answer 1: No, The City of Ann Arbor is seeking a single solution and does not have a desire to contract the controls separately.

Question 2: Is the intent to integrate to an OEM RTU BACnet controller, or install Automated Logic controls?  
Answer 2: The intent is to have the new unit operate in a similar fashion as the previous unit, with the ability to control from the platform displayed during the pre-bid meeting.

Question 3: Does the City of Ann Arbor have a current controls contract?  
Answer 3: No, The City does not have a controls contract for this unit.

Question 4: Does the new air handling unit have to be a Carrier unit?  
Answer 4: No, any unit can be used long as it's equivalent to the replaced unit and passes inspection.

- Question 5: Will the controls panel be re-used?  
Answer 5: It could be, as it's not very old, but it is not necessary.
- Question 6: Are there limits for where the crane is set up?  
Answer 6: Yes, it cannot be set up in the allys between the front and back parts of Wheeler Center building
- Question 7: Are there specific work hours?  
Answer 7: The City of Ann Arbor has standard working hours during weekdays that we would prefer, however weekend and after hours work can be done with prior authorization
- Question 8: Will the disconnect be reused or replaced?  
Answer 8: Either option is fine as long as it passes inspection
- Question 9: Are engineered controls submittals and controls as-builts required? If yes, who is responsible for approving submittals?  
Answer 9: No. The intent will be to simply connect the new unit to the existing system.
- Question 10: Are there any controls training requirements?  
Answer 10: No. If integrated as the prior unit was, not additional training will be required.
- Question 11: Is it possible for the controls contractor to access the BMS remotely or in-person prior to the proposal due date? If yes, who do we coordinate with?  
Answer 11: No remote access will be provided to the BMS. Please reach out to Megan Seay if additional information is desired regarding the BMS controls.
- Question 12: Will the sign-in sheet from the pre-bid meeting, pictures discussed at the pre-bid meeting and the mechanical plans be provided?  
Answer 12: Yes, see attached.

Offerors are responsible for any conclusions that they may draw from the information contained in the Addendum.



**City of Ann Arbor Purchasing  
Request for Proposal (RFP) Pre-Proposal Meeting**

**RFP# 25-05 - Wheeler Service Center Rooftop Air Handling Unit Replacement**

First /Last Name	Department/Entity	Phone #	E-Mail Address
1. MARK Paparelli	Conti Corp.	586-453-3292	mpaparelli@conticorporation.com
2. Bob Bushnoman	Hiller-Baldy	248-240-7538	robertb@Miller-Baldy.com
3. KEITH HUNT	ALLIED BUILDING	810-217-4030	KEITH@TEAMALLIED.COM
4. JIM KANTZ	Capital City Group	734/344/2222	Jkantz@BayCrane.com
5. KEVIN BOYD	LHM	(248)653-8335	Kboyd@LHM.US
6. JASON CHASE	AF SMITH ELECTRIC	(517) 795-0141	JCHASE@AFSMITH.COM
7. Jon Maurer	Automated Logic	248-226-0685	jonatman.maurer@carrier.com
8. Tabitha Traycik	Allied Building Service	248-706-8347	TTraycik@TeamAllied.com
9. Terrence Howe	FM-Sylvan	313-304-9640	Thowe@Sylvan-inc.com
10. Jeff Horn	Connelly Crane	734 637-3252	Jeff@connellycrane.com
11. Jon Meyer	Rob Mor	734-249-2561	Jon@rob-mor.com
12. MONICA RENTZ	metro controls	586-212-6801	mentze@metrocontrols.com
13.			
14.			
15.			
16.			

Opened By: \_\_\_\_\_





















Aux Power Out

BACnet<sup>®</sup>  
Over ARCNET156 Kbaud

Class 2  
24 Vac, 50-60 Hz  
20VA, 0.83A  
Use Copper  
Conductors Only

On Off Gnd  
24V-ac

+5V  
Select  
+24V

IN-1, IN-2: Pulse Count Ability

- 1 + IN-1
- 2 + IN-2
- 3 Gnd
- 4 + IN-3
- 5 + IN-4
- 6 Gnd
- 7 + IN-5
- 8 + IN-6
- 9 Gnd
- 10 + IN-7
- 11 + IN-8
- 12 Gnd

CM-20  
Automated  
Logic

SE 6166

CONTROL MODULE

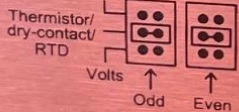
Batt CR2032  
Tx  
BACnet  
Shield  
Net -  
Net +  
BT485

- DO-6 12
- DO-5 11
- DO-4 10
- DO-3 9
- DO-2 8
- DO-1 7
- DO-6 6
- DO-5 5
- DO-4 4
- DO-3 3
- DO-2 2
- DO-1 1

Outputs  
24V Max, 3A Max

CAUTION:  
To Reduce The Risk of Fire  
or Electric Shock, Do Not  
Interconnect the Outputs of  
Different Class 2 Circuits.

- Universal Input  
Mode Select
- 1 + IN-9
  - 2 + IN-10
  - 3 Gnd
  - 4 + IN-11
  - 5 + IN-12
  - 6 Gnd
  - 7 + IN-13
  - 8 + IN-14
  - 9 Gnd
  - 10 + IN-15
  - 11 + IN-16
  - 12 Gnd



Inputs: All  
10V Max, 20mA Max

Open Energy  
Management Equipment



Auto Off On

LogiStat  
Stat Select

LogiStat Port

Gnd  
Temp  
Sw  
LS5v  
Gnd  
Rnet +  
Rnet -  
+12V  
Rnet

MSTP Baud

76.8k  
38.4k  
19.2k  
9600

BACnet Mode  
MSTP  
ARC156

Run  
Error

Local Access

Gnd Rnet+ Rnet- +12V Sense

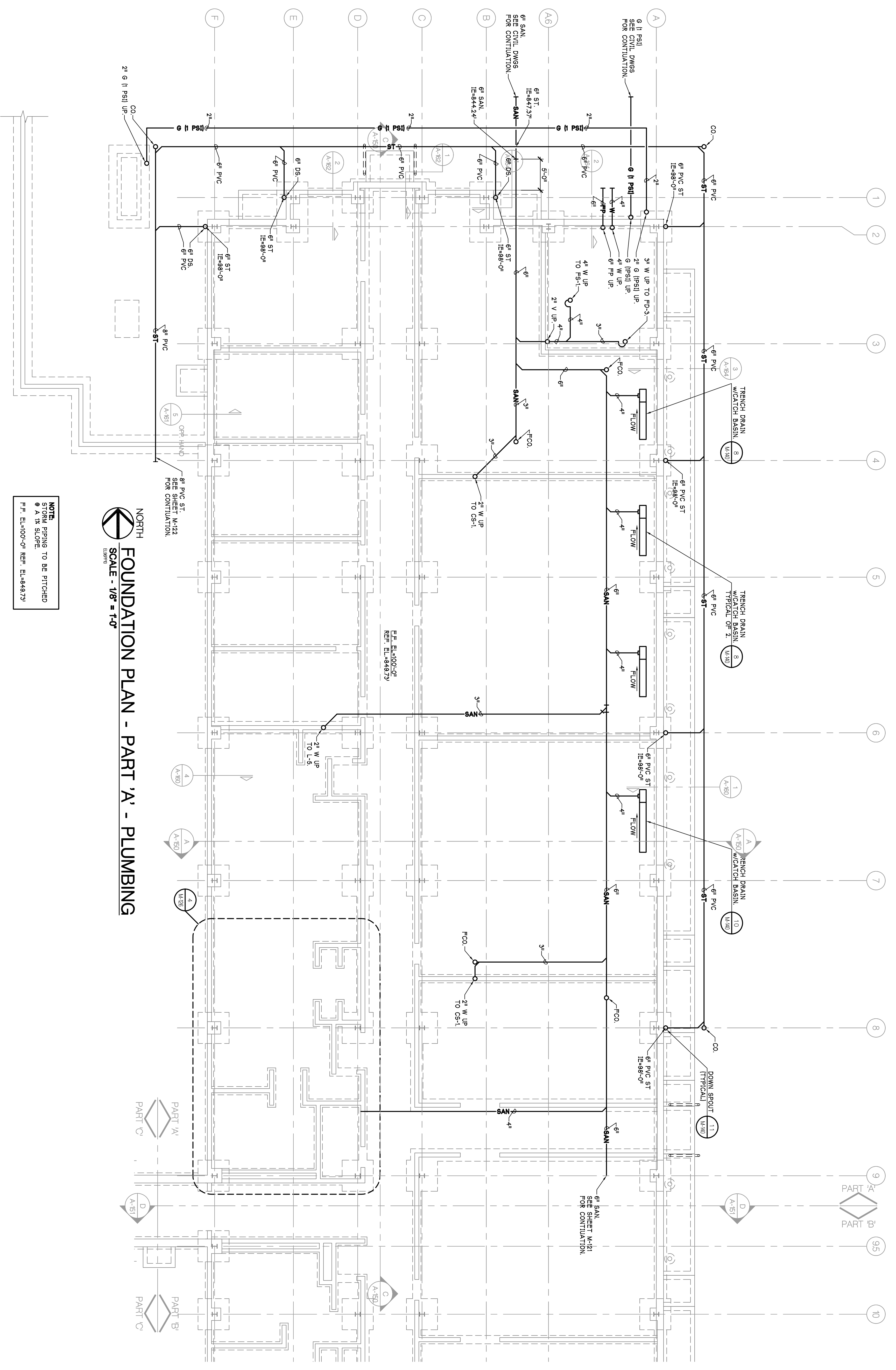
Module Address  
10's 1's

Format

- AO-6 Gnd 12
- AO-5 Gnd 10
- AO-4 Gnd 8
- AO-3 Gnd 6
- AO-2 Gnd 4
- AO-1 Gnd 2
- AO-6 Gnd 11
- AO-5 Gnd 9
- AO-4 Gnd 7
- AO-3 Gnd 5
- AO-2 Gnd 3
- AO-1 Gnd 1

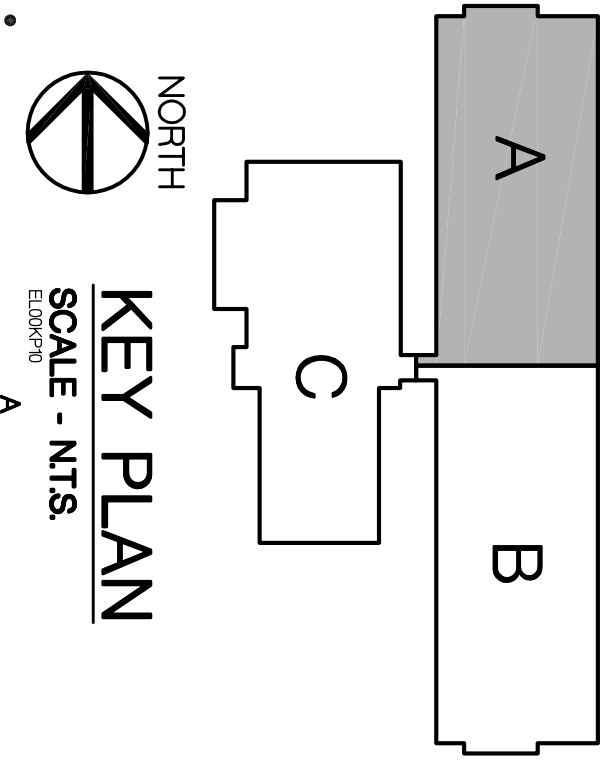
Assembled in USA





NORTH  
**FOUNDATION PLAN - PART 'A' - PLUMBING**  
 SCALE - 1/8" = 1'-0"

**NOTE:**  
 STORM PIPING TO BE PITCHED  
 @ A 1% SLOPE.  
 F.F. EL.100'-0" REF. EL.484.97'



AS BUILTS	8-10-2006
PROPOSAL REQUEST 1	10-3-2006
PROPOSAL REQUEST 3	6-3-2006
CONTRACT SET	2-8-2006
CONSTRUCTION	11-2-2006
60% OWNER REVIEW	8-29-2006
50% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	
DRAWN BY	AMS
CHECKED BY	AMS, MK

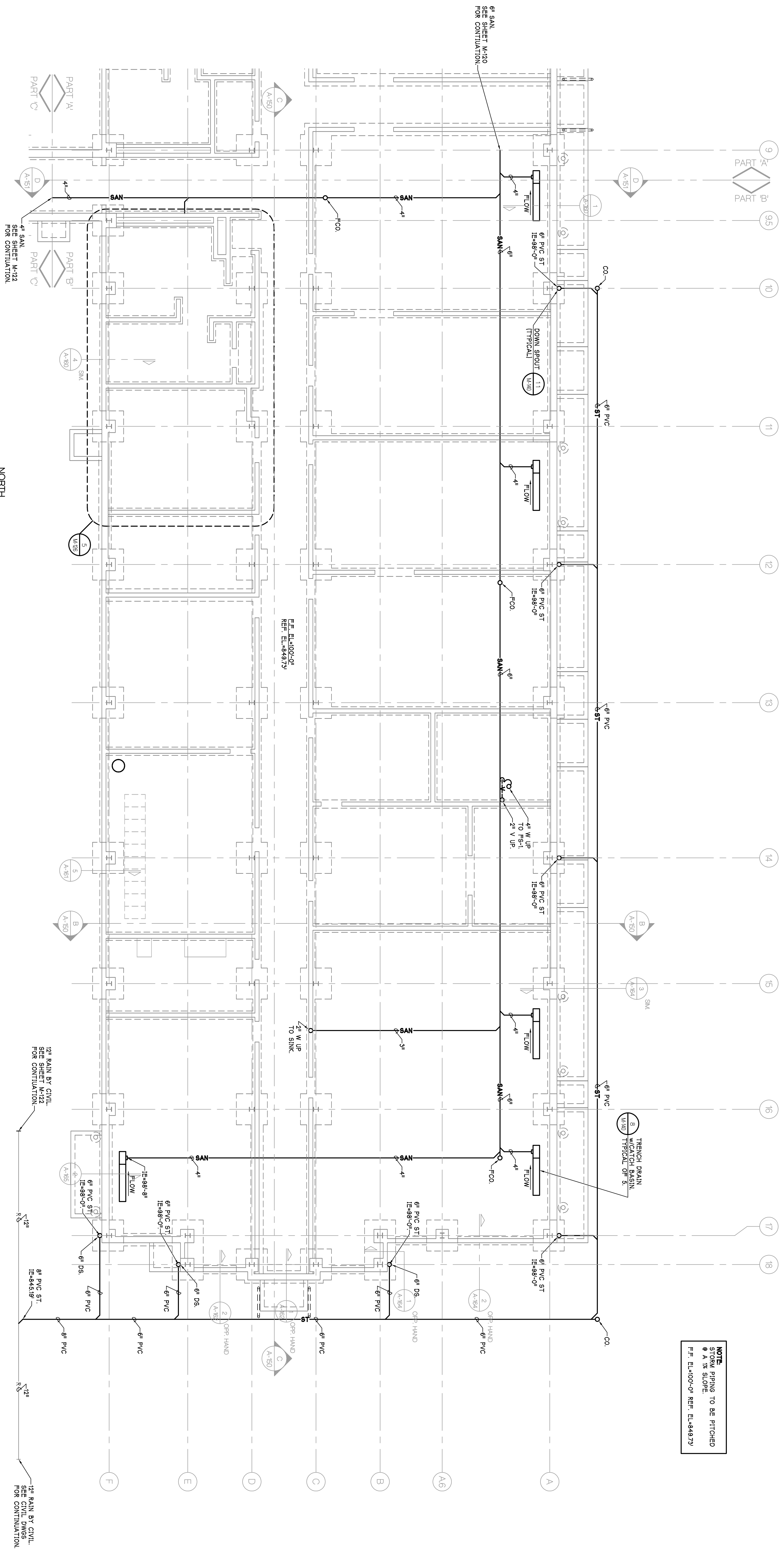
**PARSONS BRINCKERHOFF**  
 QUADE & DOUGLAS, INC.  
 Fleet & Facilities Division  
 11757 Katy Freeway #600,  
 Houston, (281) 558-7273  
 1831 Chestnut Street #700,  
 St. Louis, (314) 421-1476  
**100 YEARS**

**HOBBS+BLACK ARCHITECTS**  
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 Ann Arbor, Michigan 48104  
 P. 734.463.1170  
 F. 734.463.1770  
 www.hobbsblack.com

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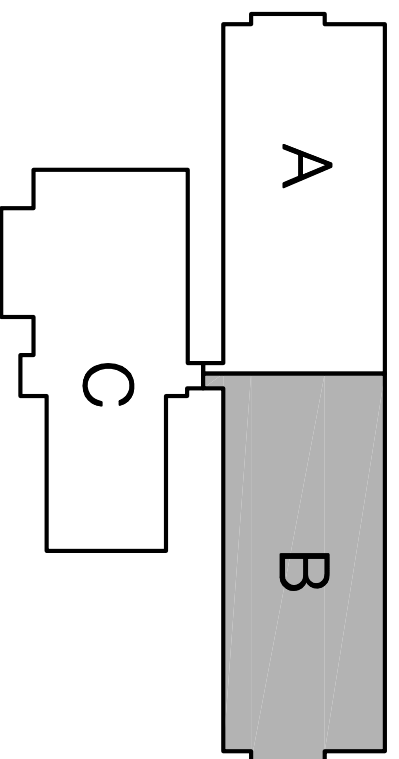
**CITY OF ANN ARBOR**  
 OPERATIONS AND  
 MAINTENANCE FACILITY  
 STONE SCHOOL ROAD  
 ANN ARBOR, MICHIGAN 48108


PROJECT  
 CONSULTANT  
 OPERATIONS BUILDING  
 FOUNDATION  
 PART 'A' PLAN  
 PLUMBING  
 SHEET TITLE  
**05-309**  
 PROJECT NUMBER  
**M-120**  
 SHEET NUMBER



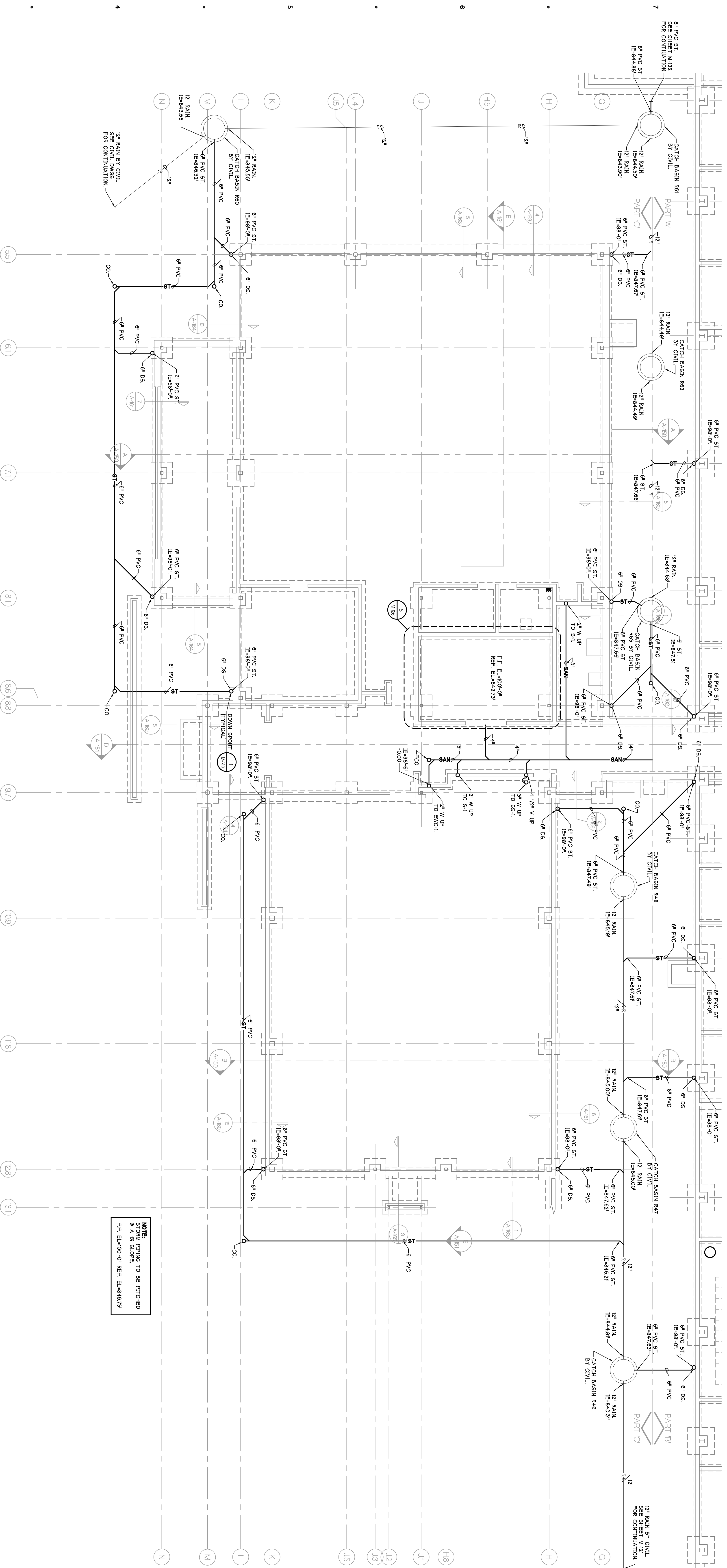
**NOTE:**  
 STORM PIPING TO BE PITCHED  
 @ 1/8" SLOPE  
 F.F. EL:400'-0" REF. EL:484'7"

**FOUNDATION PLAN - PART B' - PLUMBING**  
 SCALE - 1/8" = 1'-0"



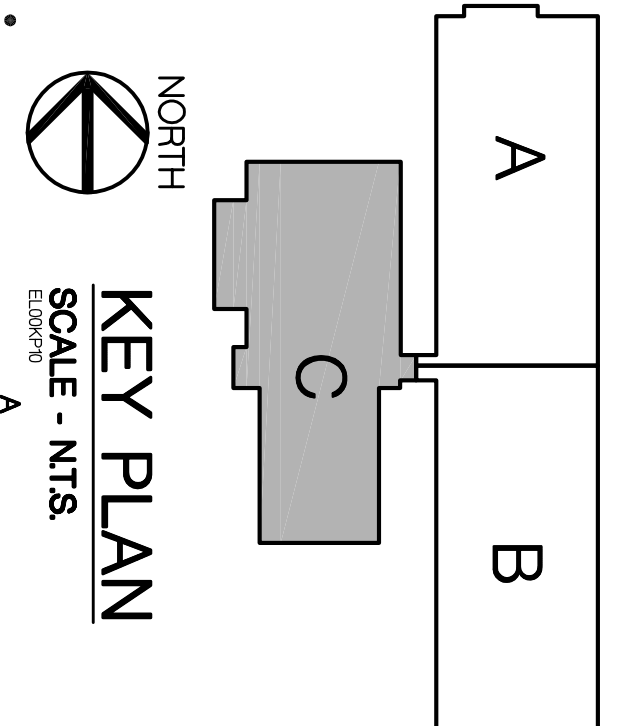
 <p>CITY OF ANN ARBOR                  OPERATIONS AND MAINTENANCE FACILITY                  STONE SCHOOL ROAD                  ANN ARBOR, MICHIGAN 48108</p>		<p>© Overmyer 2008, HOBBS + BLACK, INC.                  ALL RIGHTS RESERVED.</p> <p><b>HOBBS+BLACK ARCHITECTS</b>                  100N. State Street                  Ann Arbor, Michigan 48104                  P. 734.463.1170                  www.hobbsblack.com</p>	<p><b>PARSONS BRINCKERHOFF                  QUADE &amp; DOUGLAS, INC.</b>                  Fleet &amp; Facilities Division                  11757 Katy Freeway #600,                  Houston, (281) 558-7273                  1831 Chestnut Street #700,                  St. Louis, (314) 421-1478</p>
<p>CONSULTANT</p>	<p>PROJECT</p>	<p>DATE ISSUED                  5-27-2008</p>	
<p>OPERATIONS BUILDING                  FOUNDATION                  PART B'                  PLUMBING</p>	<p>PROJECT NUMBER</p>	<p>DRAWN BY                  P.M. BK</p>	
<p>SHEET TITLE</p>	<p>05-309</p>	<p>CHECKED BY</p>	
<p>PROJECT NUMBER</p>	<p>M-121</p>	<p>AS BUILTS                  9-10-2008</p>	
<p>SHEET NUMBER</p>	<p>M-121</p>	<p>CONTRACT SET                  2-8-2008</p>	
		<p>CONSTRUCTION                  11-2-2008</p>	
		<p>60% OWNER REVIEW                  8-29-2008</p>	
		<p>50% OWNER REVIEW                  7-18-2008</p>	





NORTH  
**FOUNDATION PLAN - PART 'C' - PLUMBING**  
 SCALE - 1/8" = 1'-0"

**NOTE:**  
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AS BUILTS	9-10-2006
CONTRACT SET	2-8-2006
CONSTRUCTION	11-12-2006
60% OWNER REVIEW	8-29-2006
50% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	
DRAWN BY	MAE
CHECKED BY	PAH, BK

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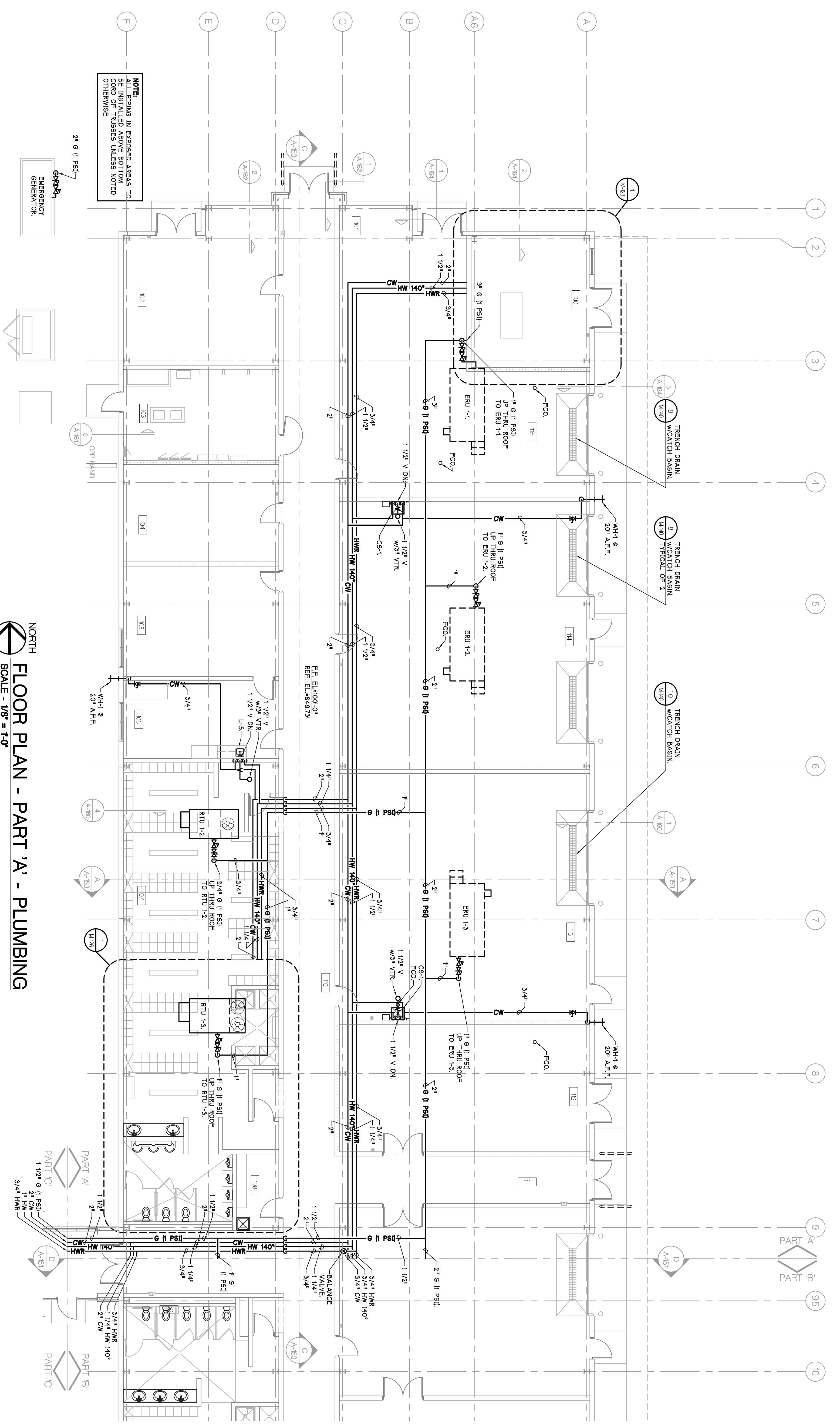
  

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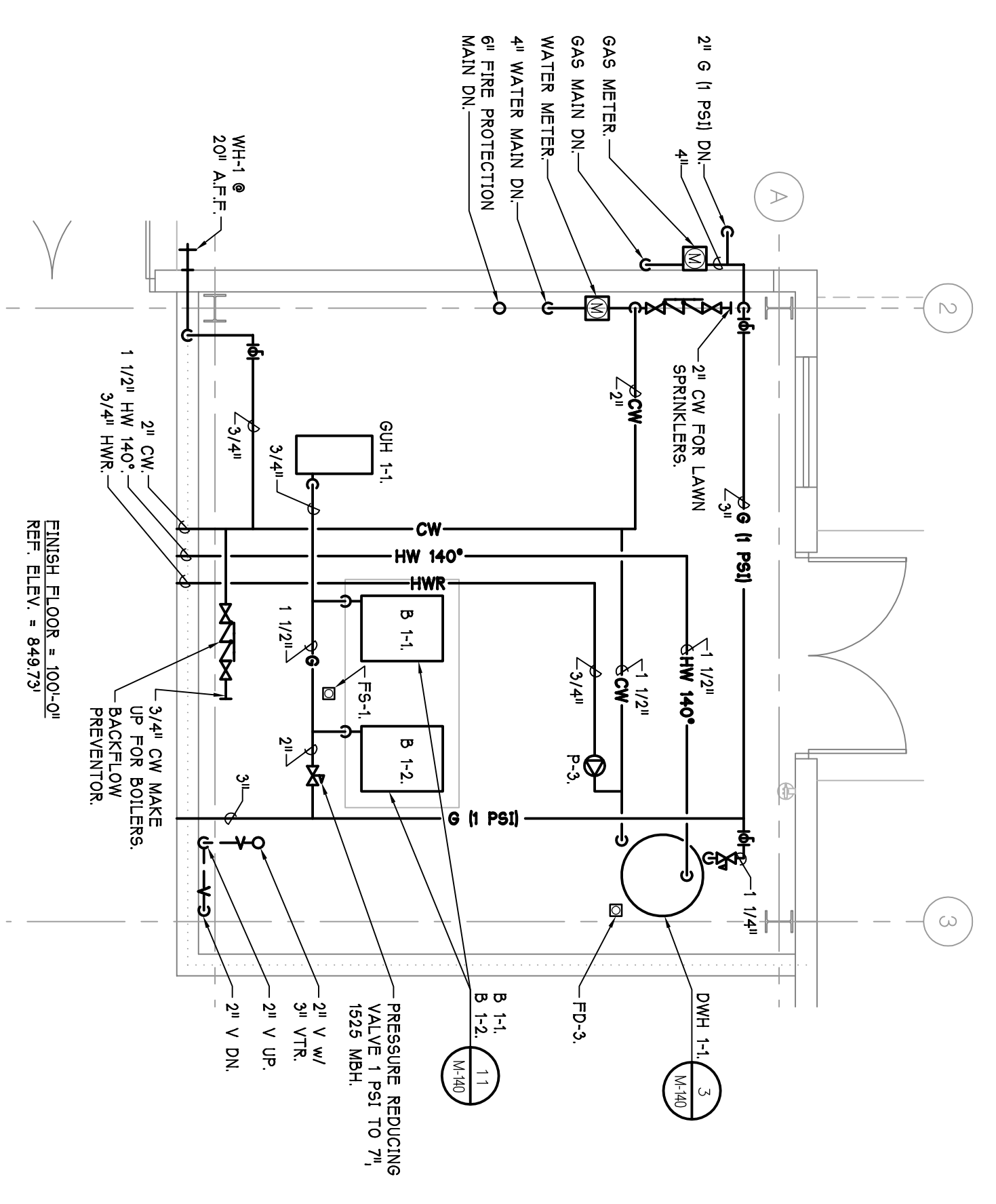
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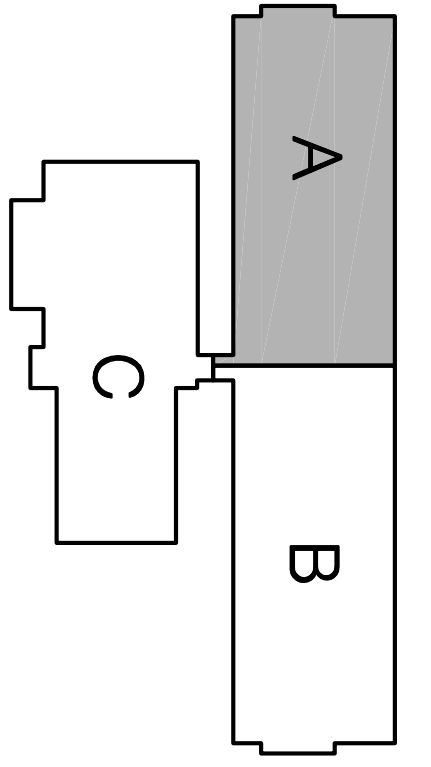


**NOTE:**  
 ALL PIPING IN EXPOSED AREAS TO BE FINISHED TO MATCH THE FINISH OF THE SURFACE UNLESS NOTED OTHERWISE.

**NORTH**  
**FLOOR PLAN - PART 'A' - PLUMBING**  
 SCALE - 1/8" = 1'-0"



**1**  
**ENLARGED PLAN - PLUMBING**  
 SCALE - 1/4" = 1'-0"



**NORTH**  
**KEY PLAN**  
 SCALE - N.T.S.

AS BUILTS	8-10-2008
SUPP. INSTR. 13	2-8-2007
SUPP. INSTR. 11	1-04-2007
PROPOSAL REQUEST 3	6-3-2006
CONTRACT SET	2-8-2006
CONSTRUCTION	11-2-2005
60% OWNER REVIEW	8-29-2005
50% OWNER REVIEW	7-18-2005
DD OWNER REVIEW	5-27-2005
DATE ISSUED	
DRAWN BY	M.A.E.
CHECKED BY	P.A.H. SK

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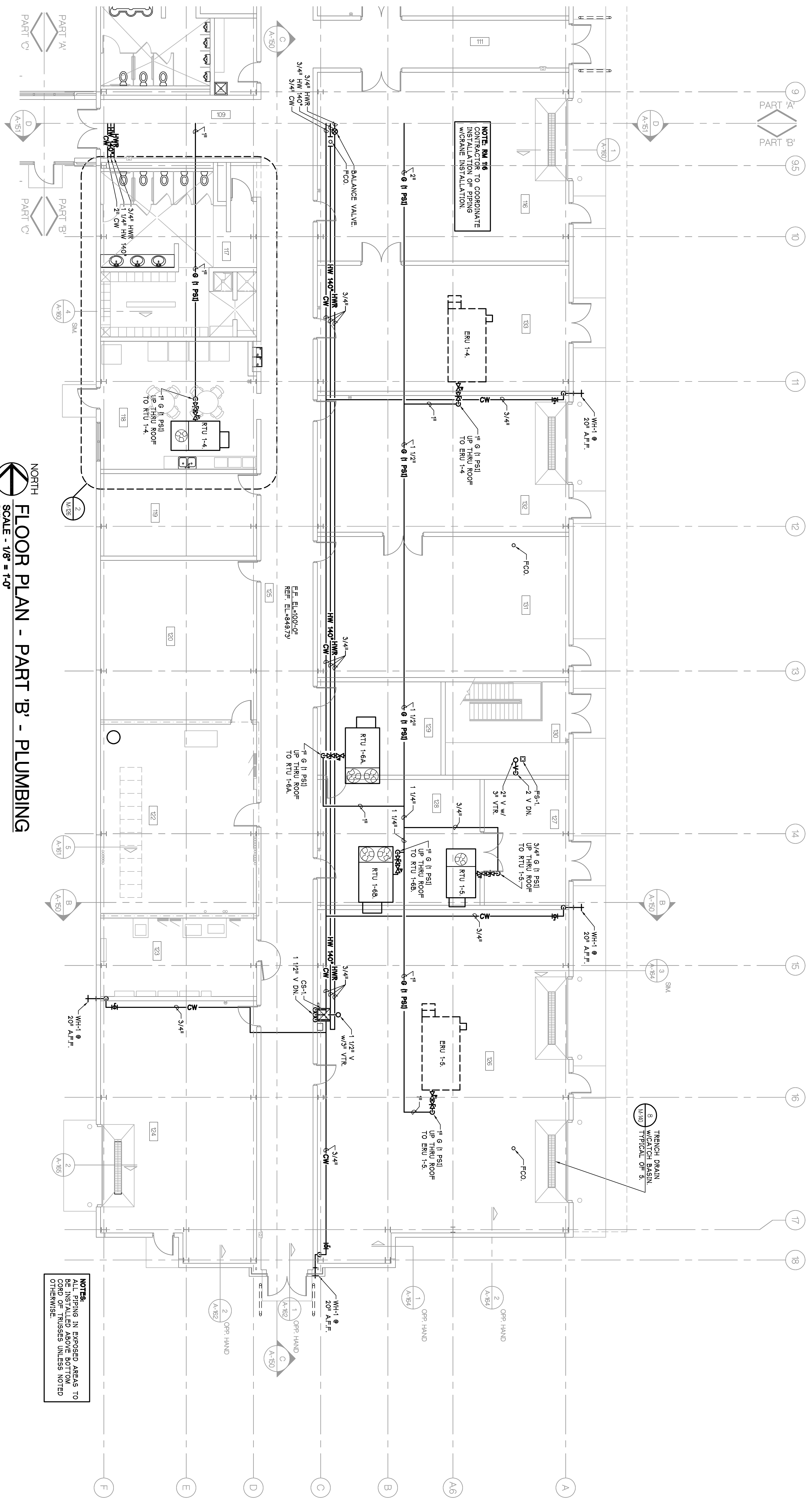
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<p>PROJECT</p> <p>CONSULTANT</p> <p>OPERATIONS BUILDING          FLOOR PLAN          PART 'A'          PLUMBING</p> <p>SHEET TITLE</p>	<p>PROJECT NUMBER</p> <p>05-309</p>
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<p>PROJECT NUMBER</p> <p>M-123</p>	<p>SHEET NUMBER</p> <p>M-123</p>
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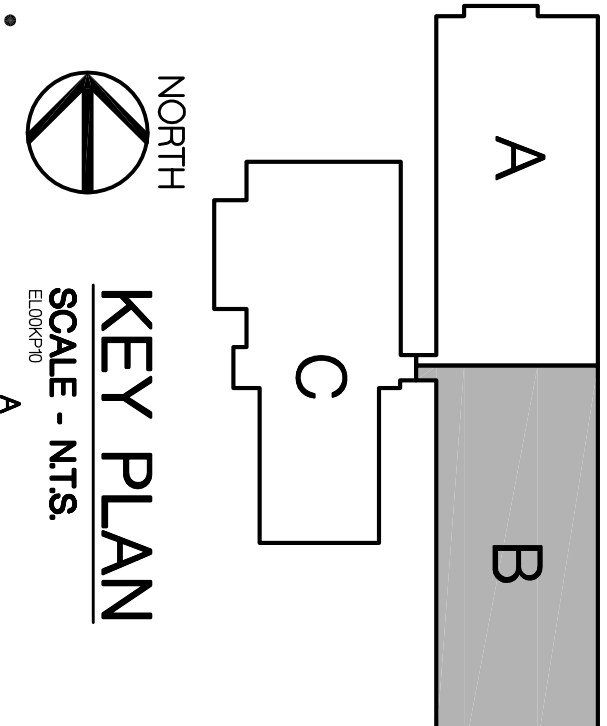


NORTH  
**FLOOR PLAN - PART 'B' - PLUMBING**  
 SCALE - 1/8" = 1'-0"

**NOTES:**  
 ALL PIPING IN EXPOSED AREAS TO BE INSTALLED ABOVE BOTTOM OF CEILING UNLESS NOTED OTHERWISE.

**NOTE: THE CONTRACTOR TO COORDINATE INSTALLATION OF PIPING WITH OTHER TRADES.**

TRENCH DRAIN TYPICAL SEE S1



AS NOTED	8-10-2006
SUPP. INSTR. 13	2-23-2007
SUPP. INSTR. 11	1-04-2007
CONTRACT SET	2-23-2006
CONSTRUCTION	11-12-2005
60% OWNER REVIEW	8-29-2005
50% OWNER REVIEW	7-18-2005
DD OWNER REVIEW	5-27-2005
DATE ISSUED	
DRAWN BY	MAE
CHECKED BY	PJM, BK

<p>CITY OF ANN ARBOR                  OPERATIONS AND MAINTENANCE FACILITY                  STONE SCHOOL ROAD                  ANN ARBOR, MICHIGAN 48108</p>	<p>PROJECT</p>
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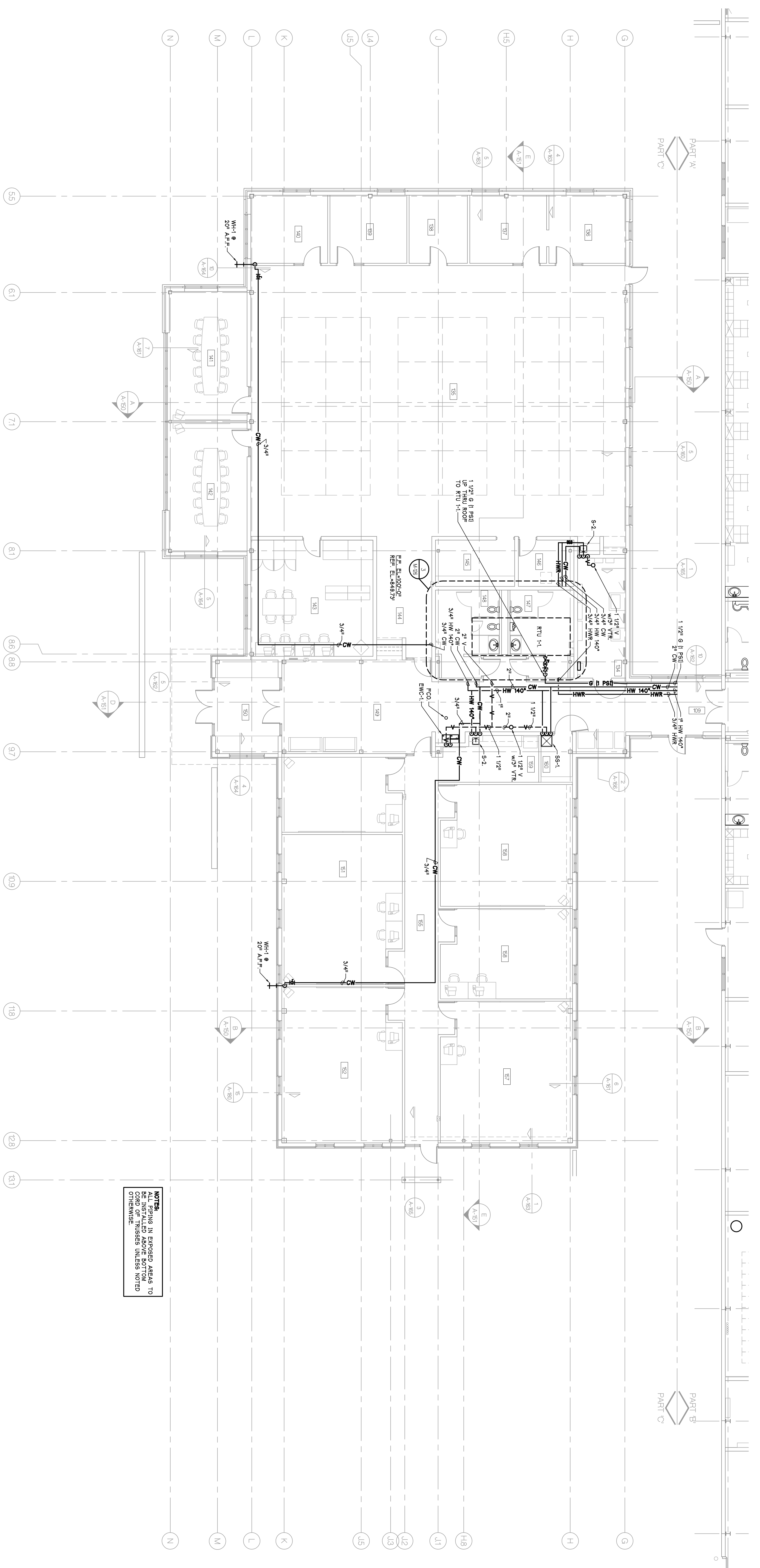
  

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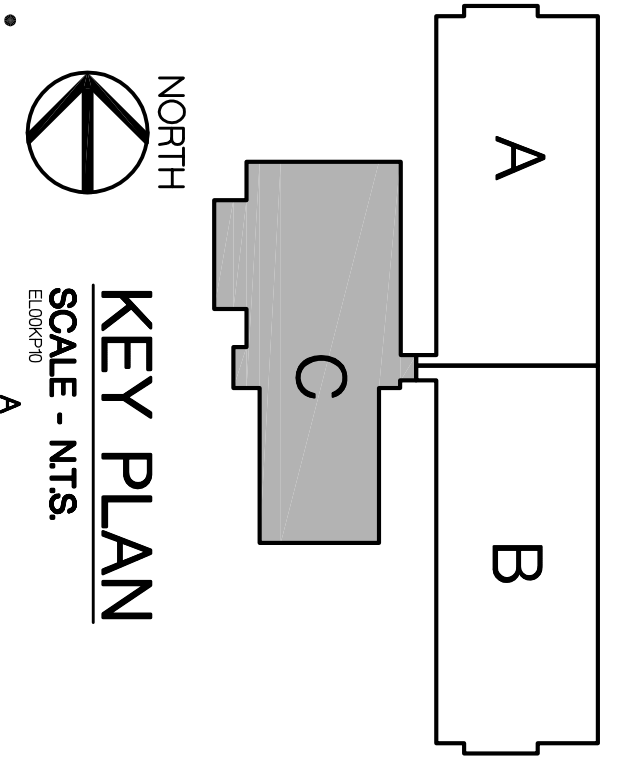
<p>M-124</p>	<p>SHEET NUMBER</p>
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**NOTE:**  
 PLUMBING IN EXPOSED AREAS TO  
 BE INSTALLED ABOVE BOTTOM  
 CHORD OF TRUSSES UNLESS NOTED  
 OTHERWISE.

**NORTH**  
**FLOOR PLAN - PART 'C' - PLUMBING**  
 SCALE - 1/8" = 1'-0"



AS BUILTS	8-30-2006
SUPP. NOTES 13	2-4-2007
CONTRACT SET	2-6-2006
CONSTRUCTION	11-2-2006
60% OWNER REVIEW	8-29-2006
90% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	
DRAWN BY	MAE
CHECKED BY	PAH, BEC

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 ANN ARBOR, MICHIGAN 48108

**CONSULTANT**

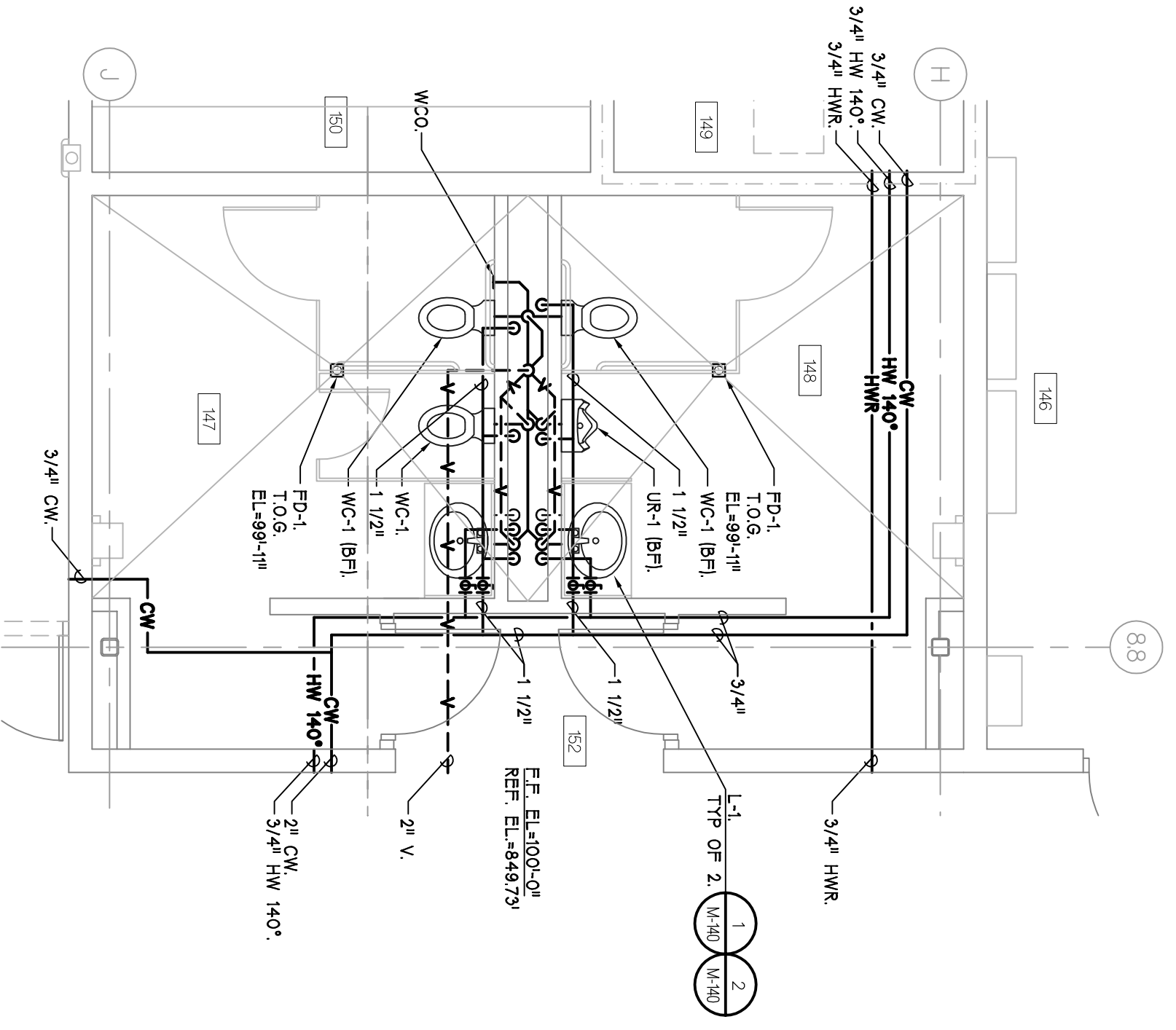
**PROJECT**

**OPERATIONS BUILDING  
 FLOOR PLAN  
 PART 'C'  
 PLUMBING**  
 SHEET TITLE

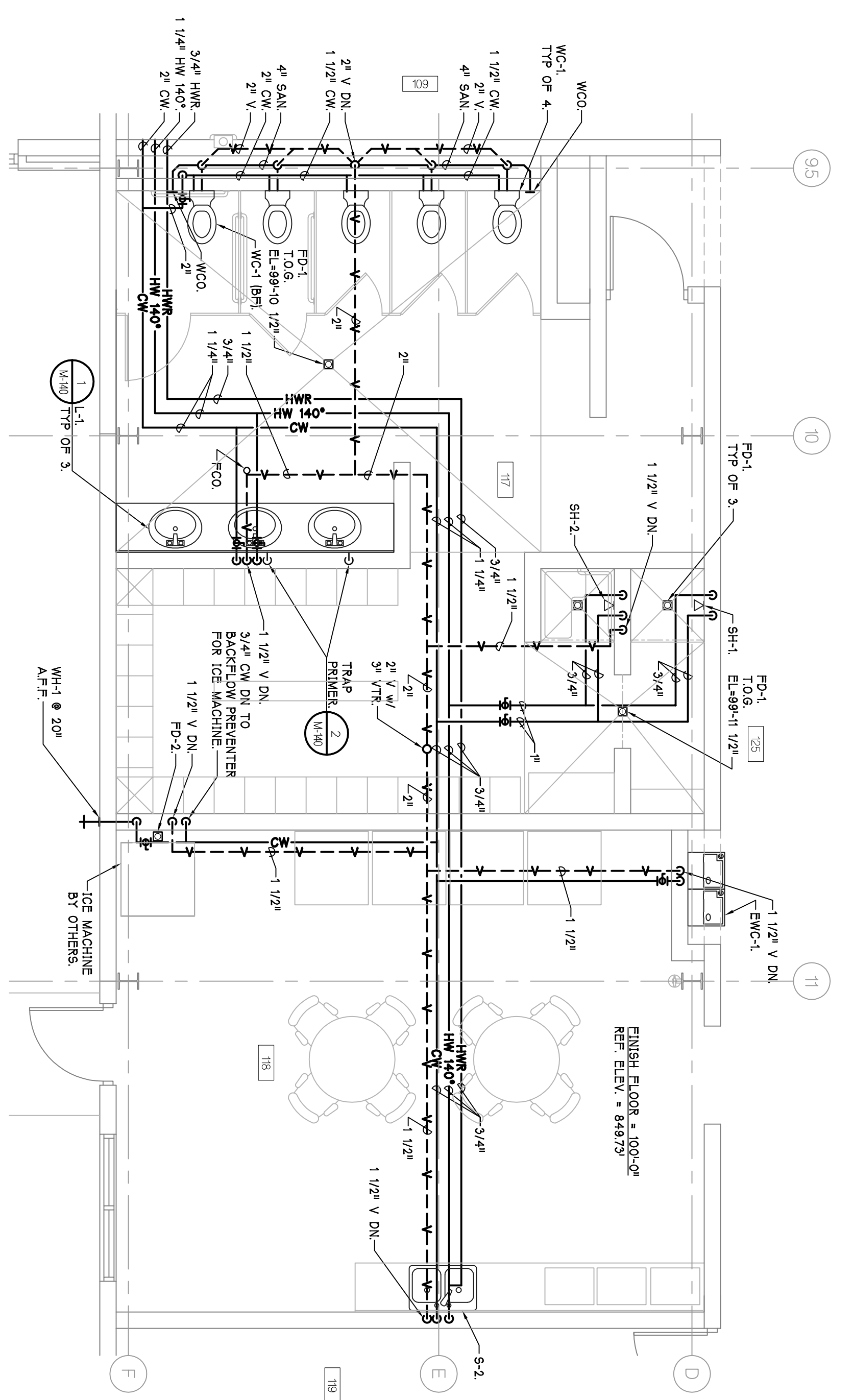
**05-309**  
 PROJECT NUMBER

**M-125**  
 SHEET NUMBER

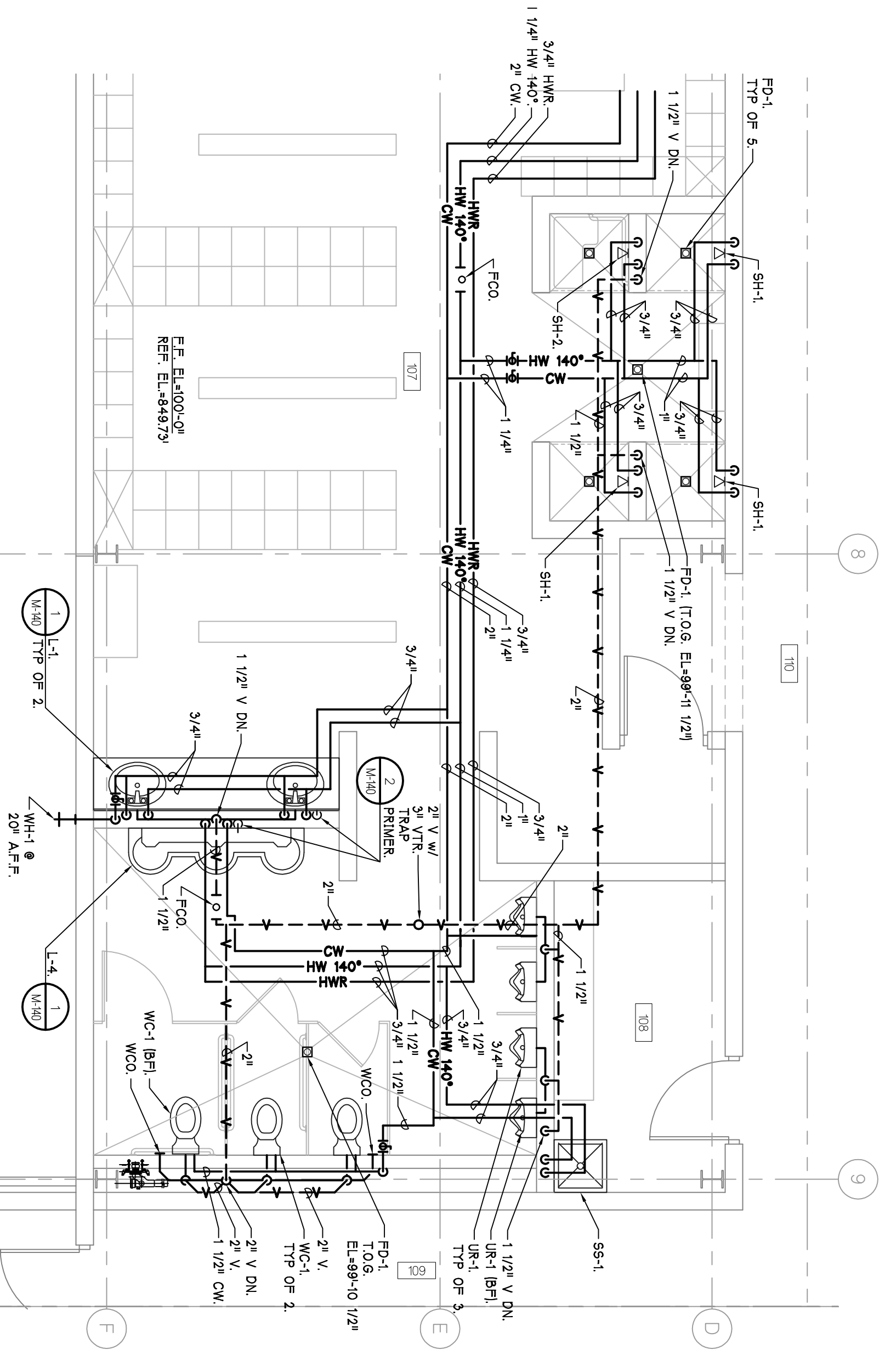




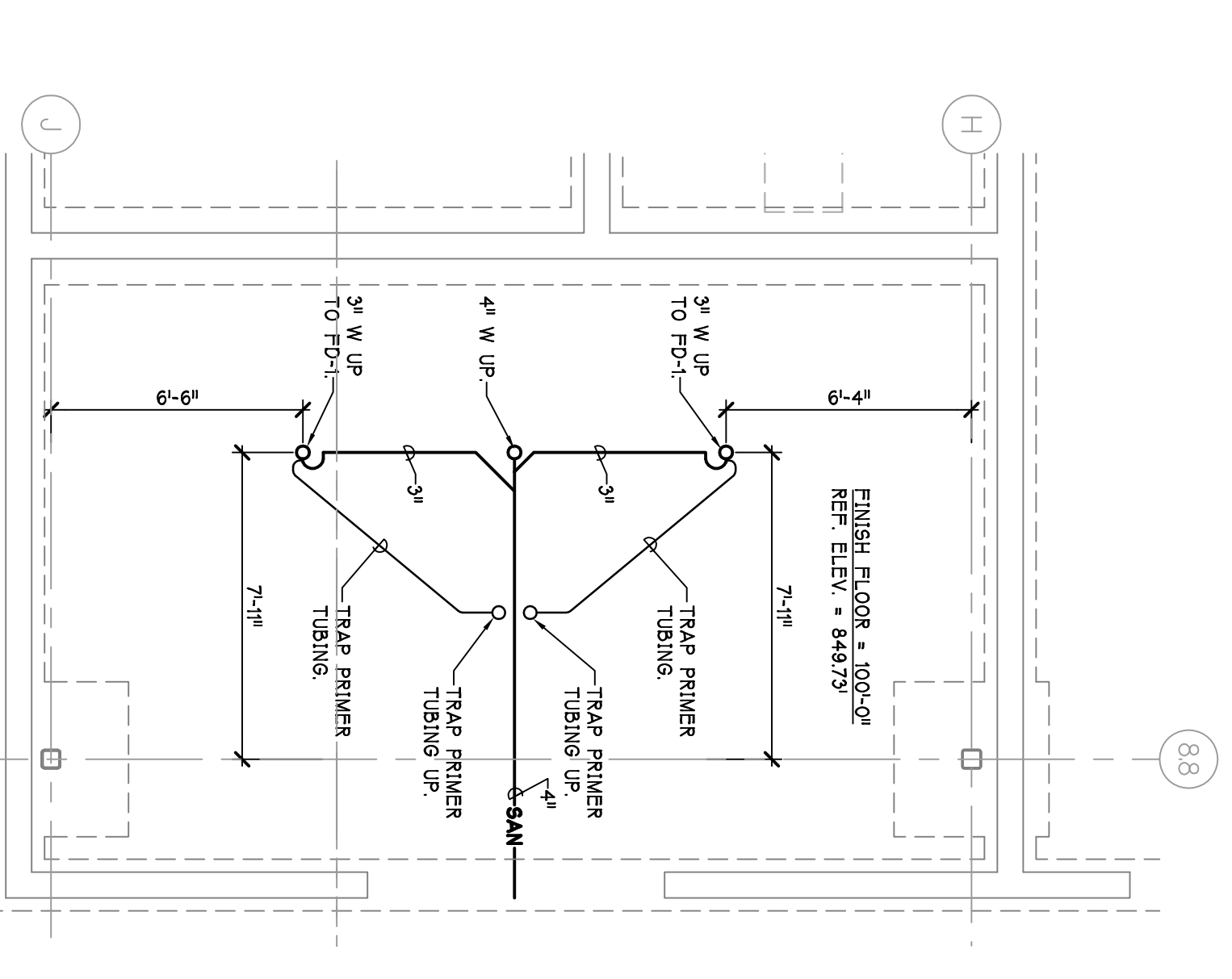
3 ENLARGED PLAN - PLUMBING  
 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



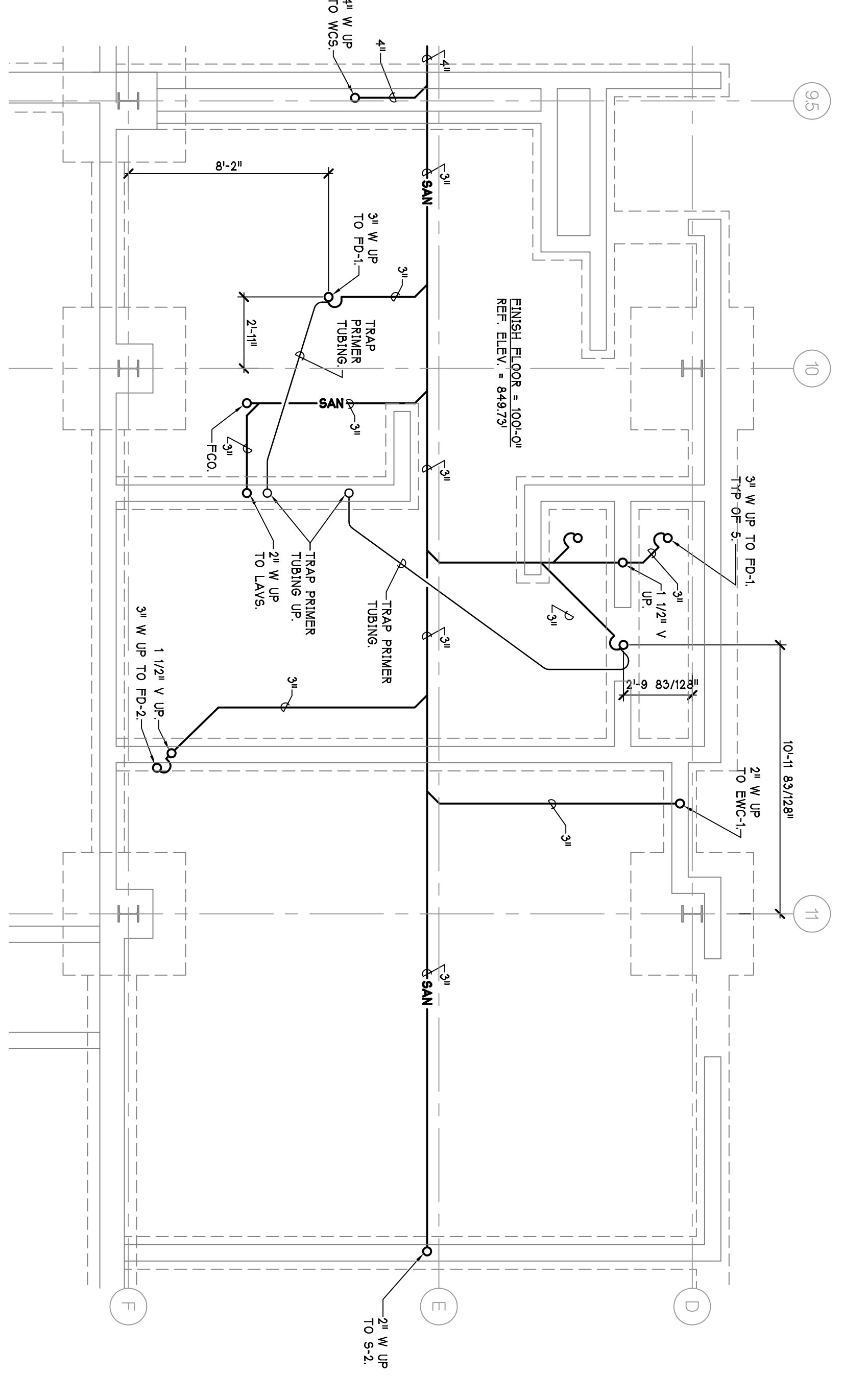
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 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



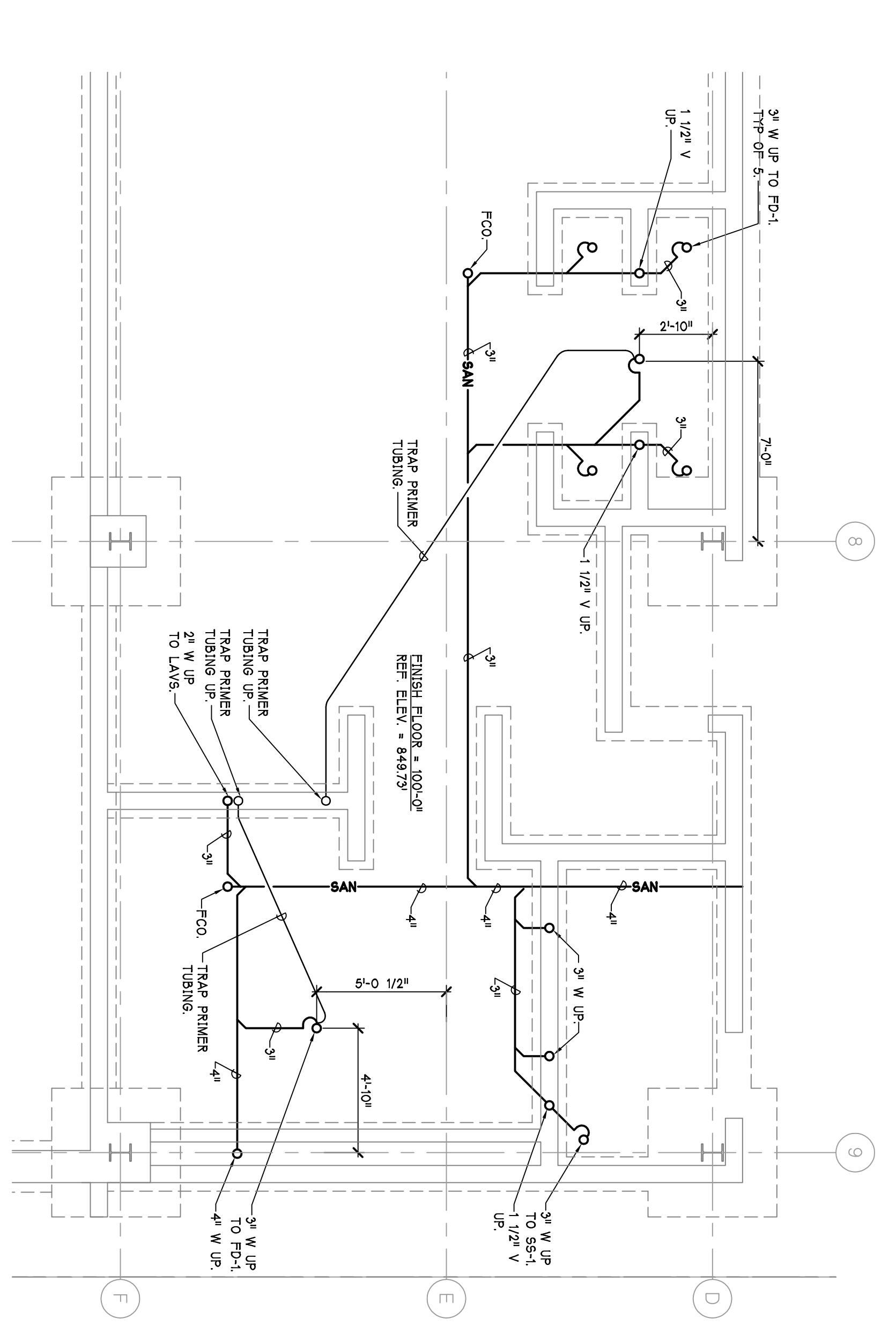
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 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



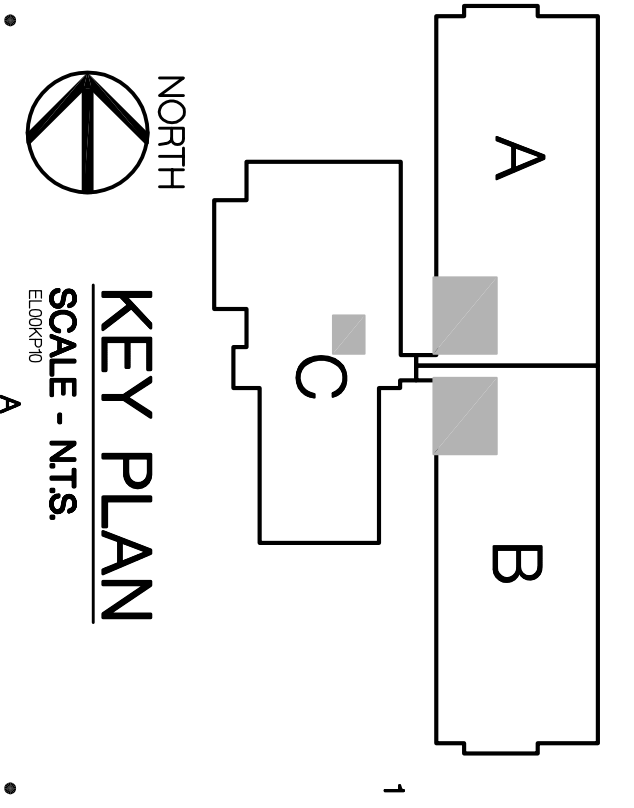
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 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



5 ENLARGED PLAN - PLUMBING  
 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



4 ENLARGED PLAN - PLUMBING  
 SCALE - 1/4" = 1'-0"  
 M-126 (Level)



PROJECT NUMBER  
**05-309**

PROJECT TITLE  
**OPERATIONS BUILDING  
 PART A - E - C  
 PLUMBING**

SHEET NUMBER  
**M-126**

CONSULTANT

CITY OF ANN ARBOR  
 OPERATIONS AND  
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PROJECT

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 1831 Chestnut Street #700,  
 St. Louis, (314) 421-1478

100 YEARS

DATE ISSUED  
 5-27-2006

DD OWNER REVIEW  
 7-18-2006

60X OWNER REVIEW  
 8-29-2006

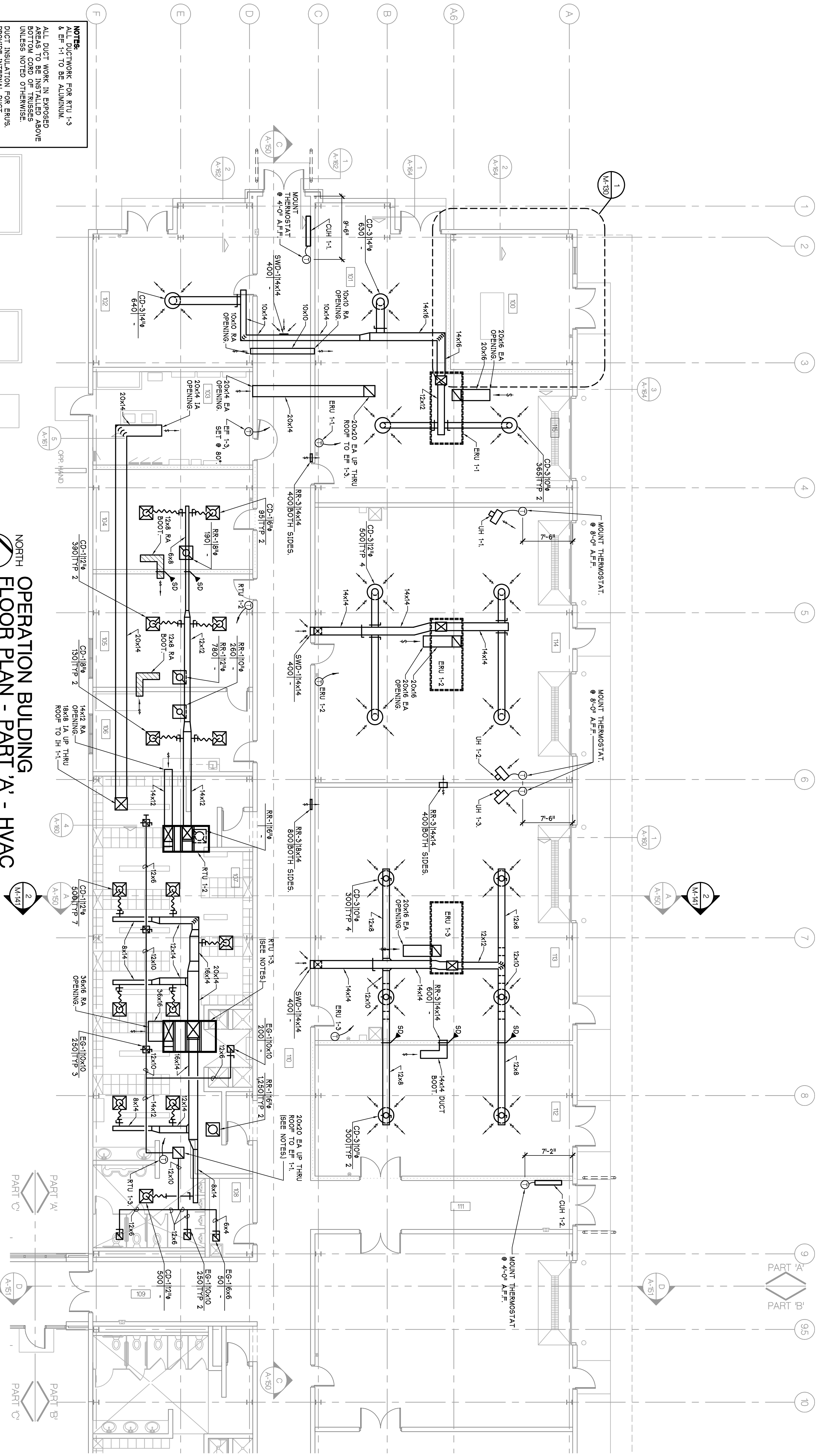
CONTRACT SET  
 2-28-2006

AS BUILTS  
 9-30-2006

DRAWN BY  
 P.M. BEK

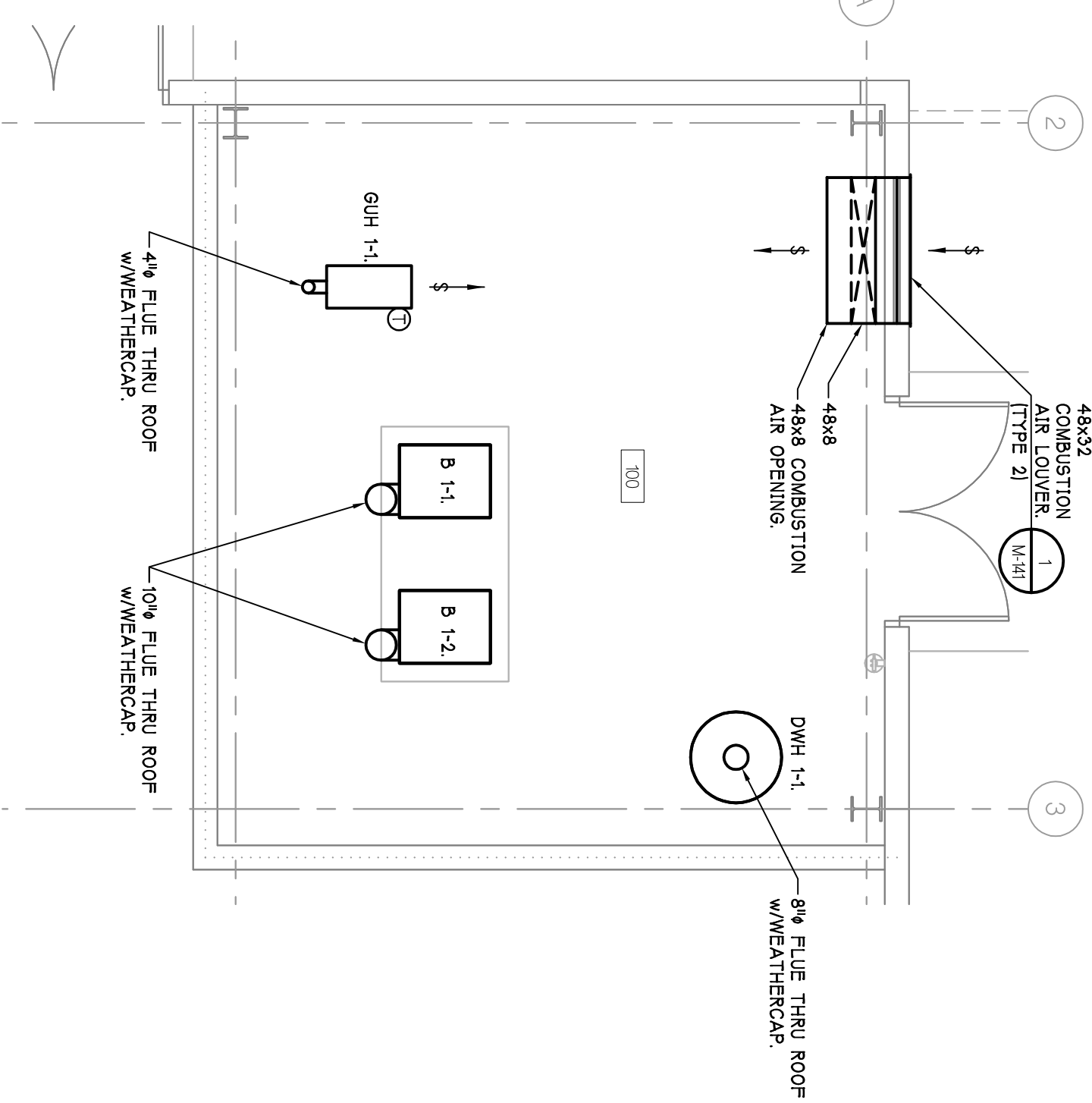
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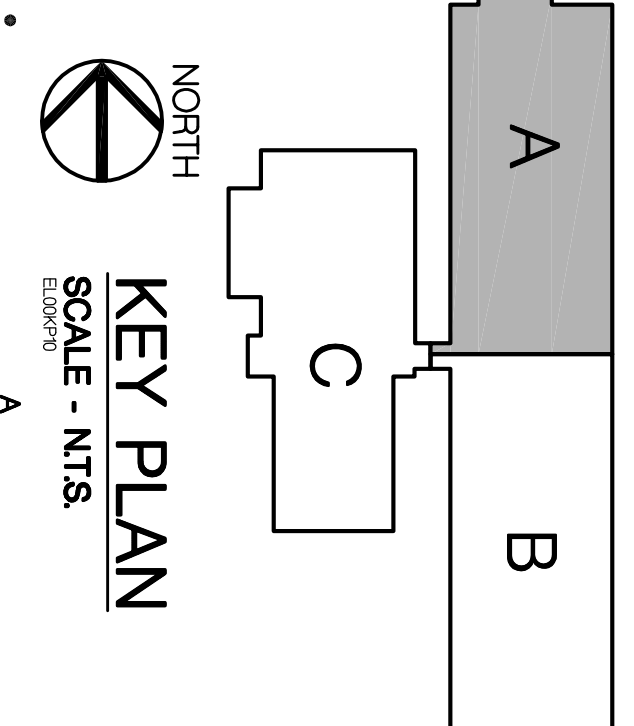


**NOTES:**  
 ALL DUCTWORK FOR RTU-1-3 & EF-1-1 TO BE ALUMINUM.  
 ALL DUCT WORK IN EXPOSED BOTTOM CAB OF THESE UNITS UNLESS NOTED OTHERWISE.  
 DUCT INSULATION FOR ENUS PROVIDE INTERNAL DUCT FLEXIBLE AND THE 1ST 4'-0" ON THE EXTERIOR DUCT WORK HAVE FITTERMAN INSULATION.

**NORTH OPERATION BUILDING**  
**FLOOR PLAN - PART 'A' - HVAC**  
 SCALE - 1/8" = 1'-0"



**1 ENLARGED PLAN - HVAC**  
 SCALE - 1/4" = 1'-0"



**KEY PLAN**  
 SCALE - NTS

AS BUILTS	8-10-2008
SUPP. INSTR. 12	1-8-2007
REVISIONAL REQUEST 3	6-3-2006
CONTRACT SET	1-4-2006
POS. BID 202.1	12-12-2005
CONSTRUCTION	11-12-2005
50% OWNER REVIEW	8-29-2005
50% OWNER REVIEW	7-18-2005
DD OWNER REVIEW	5-27-2005
DATE ISSUED	
DRAWN BY	MAE
CHECKED BY	PAH, BK

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<p>CITY OF ANN ARBOR          OPERATIONS AND          MAINTENANCE FACILITY          STONE SCHOOL ROAD          ANN ARBOR, MICHIGAN 48108</p>	<p>PROJECT</p>
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<p>CONSULTANT</p>	<p>OPERATIONS BUILDING          FLOOR PLAN          PART 'A'          HVAC</p>
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<p>PROJECT NUMBER</p>	<p>05-309</p>
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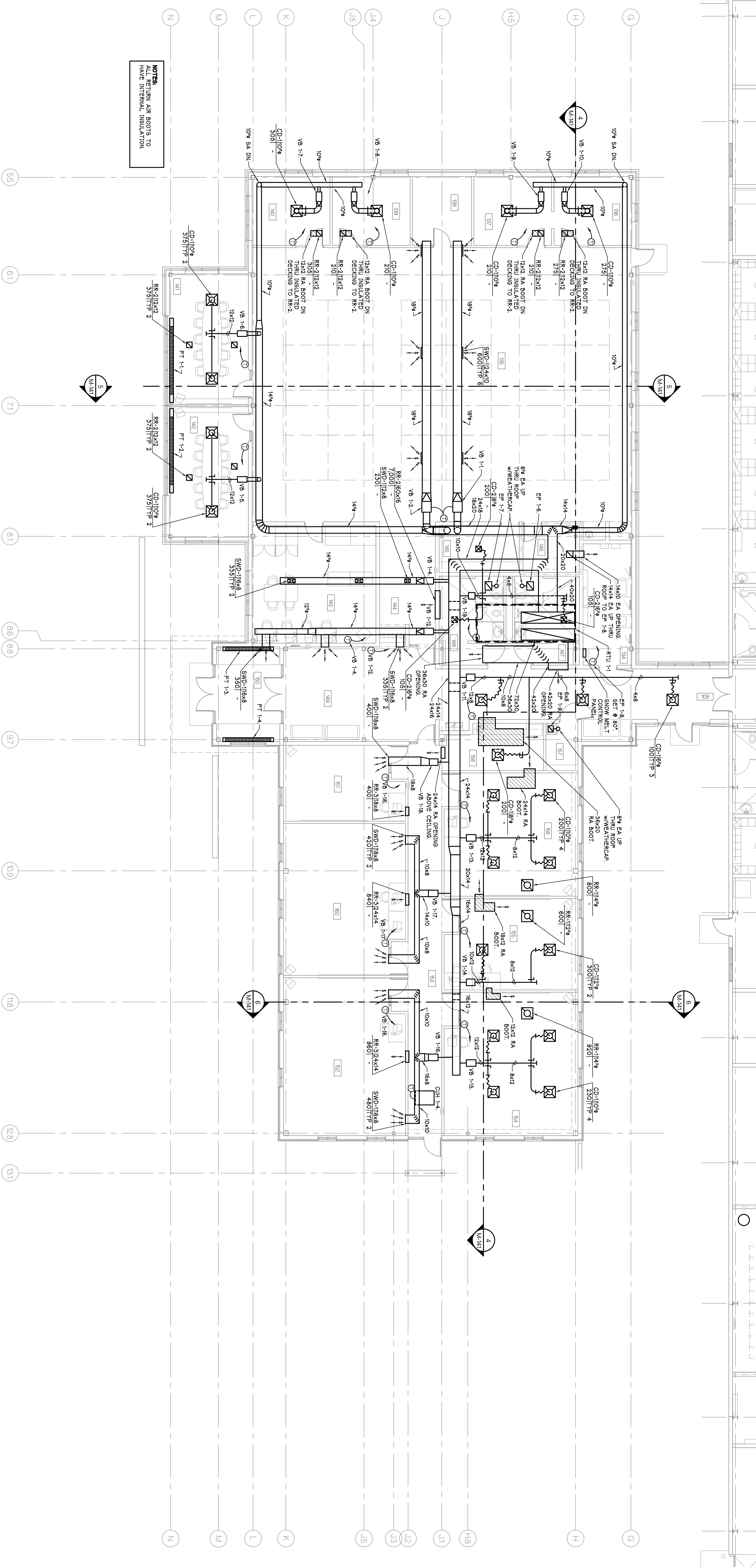
  

<p>SHEET TITLE</p>	<p>M-130</p>
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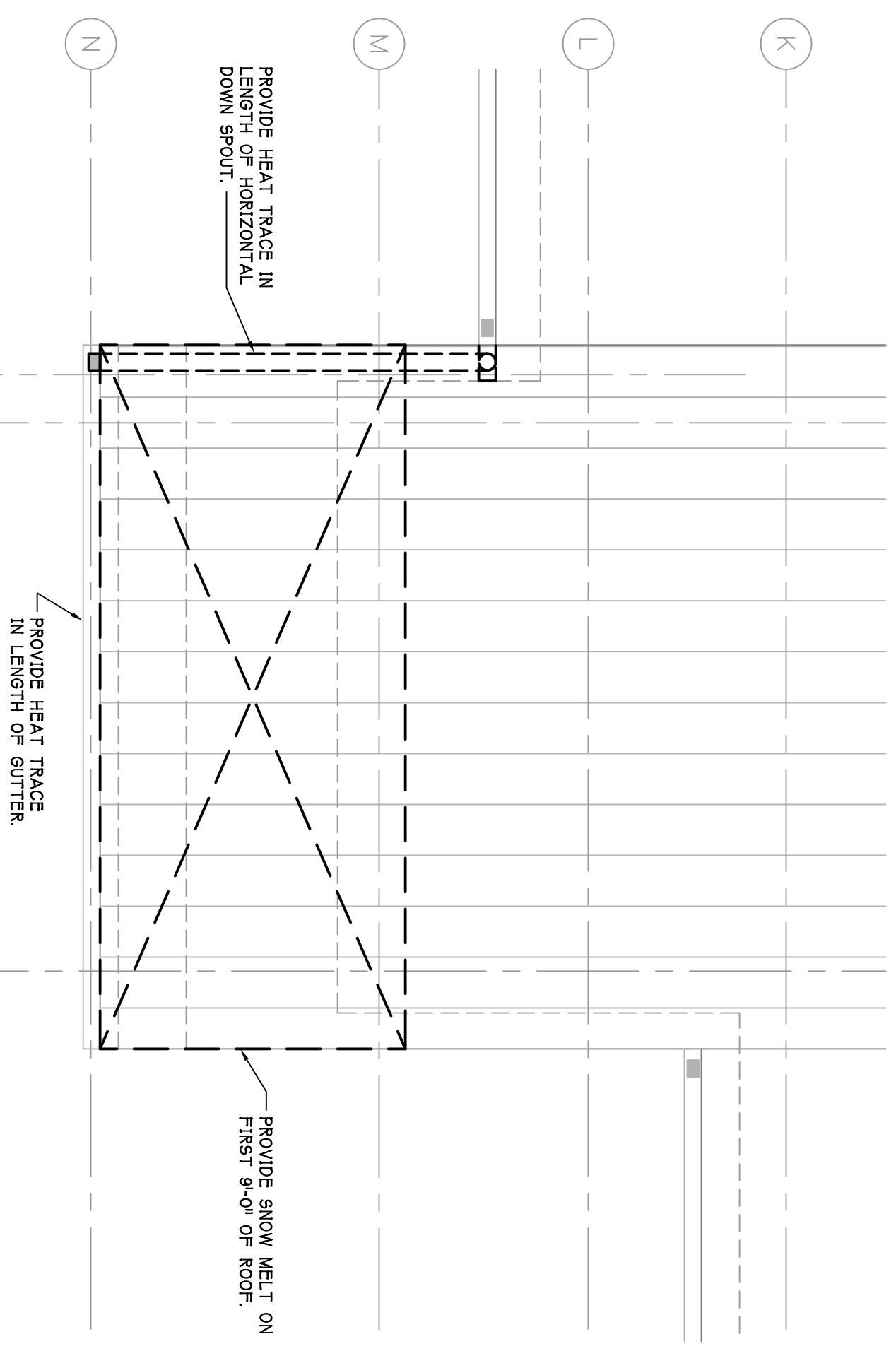




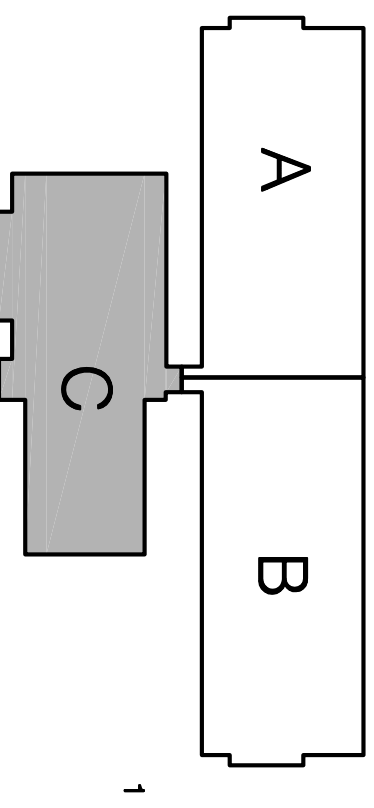


NOTE:  
 ALL RETURN AIR BOOTS TO  
 HAVE INTERNAL INSULATION.


NORTH  
**FLOOR PLAN - PART 'C' - HVAC**  
 SCALE - 7/8" = 1'-0"



1  
**SNOW MELT SYSTEM**  
 SCALE - 1/4" = 1'-0"

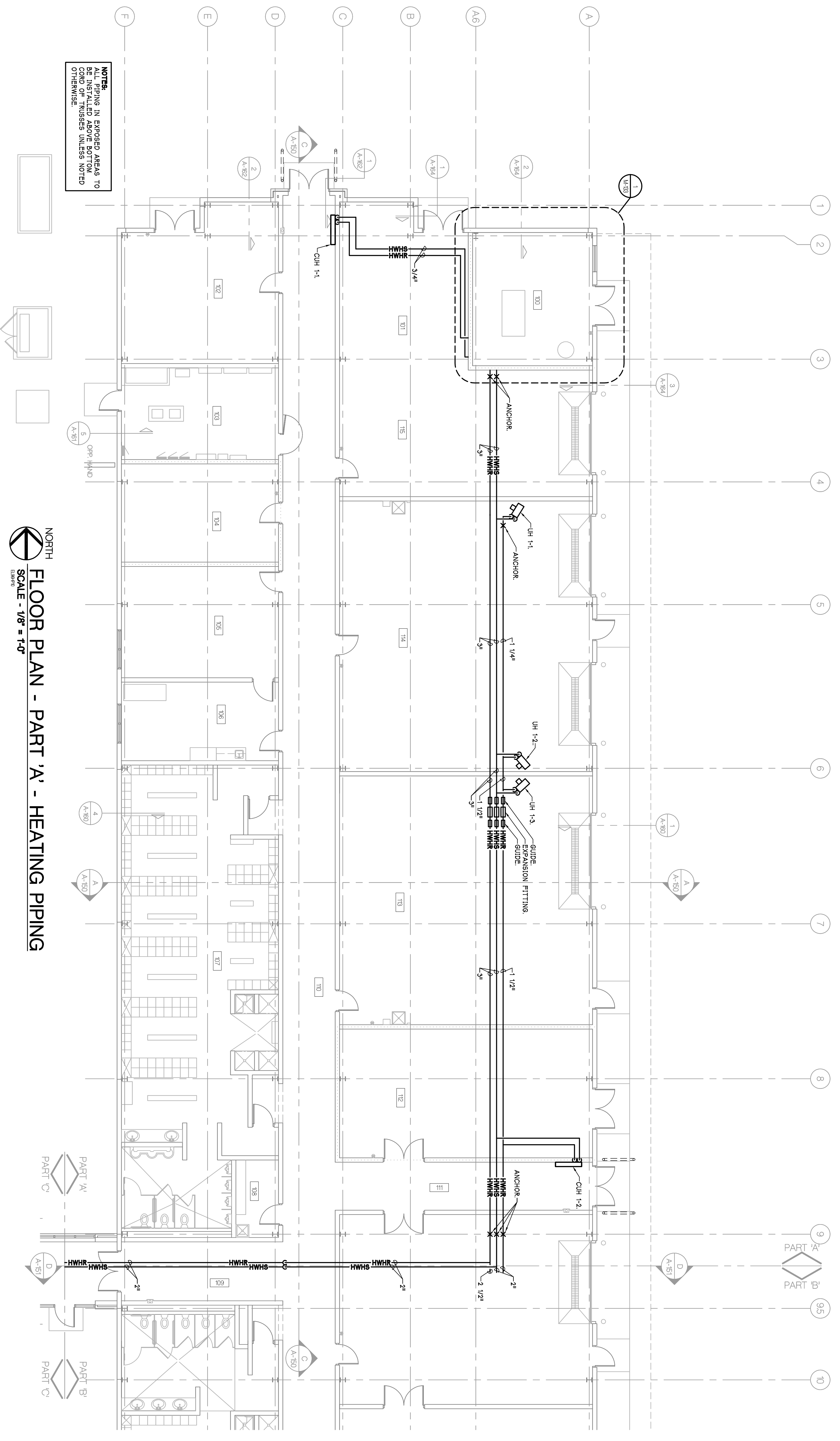


NORTH  
**KEY PLAN**  
 SCALE - NTS

 CITY OF ANN ARBOR OPERATIONS AND MAINTENANCE FACILITY STONE SCHOOL ROAD ANN ARBOR, MICHIGAN 48108	PROJECT CONSULTANT OPERATIONS BUILDING FLOOR PLAN PART 'C' HVAC SHEET TITLE <b>05-309</b> PROJECT NUMBER	© copyright 2006, HOBBS + BLACK, INC. ALL RIGHTS RESERVED. HOBBS+BLACK ARCHITECTS 1070 N. State Street Ann Arbor, Michigan 48104 P. 734.463.1170 F. 734.463.1770 www.hobbsblack.com	PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC. Fleet & Facilities Division 11757 Katy Freeway #600, Houston, (281) 558-7273 1831 Chestnut Street #700, St. Louis, (314) 421-1478
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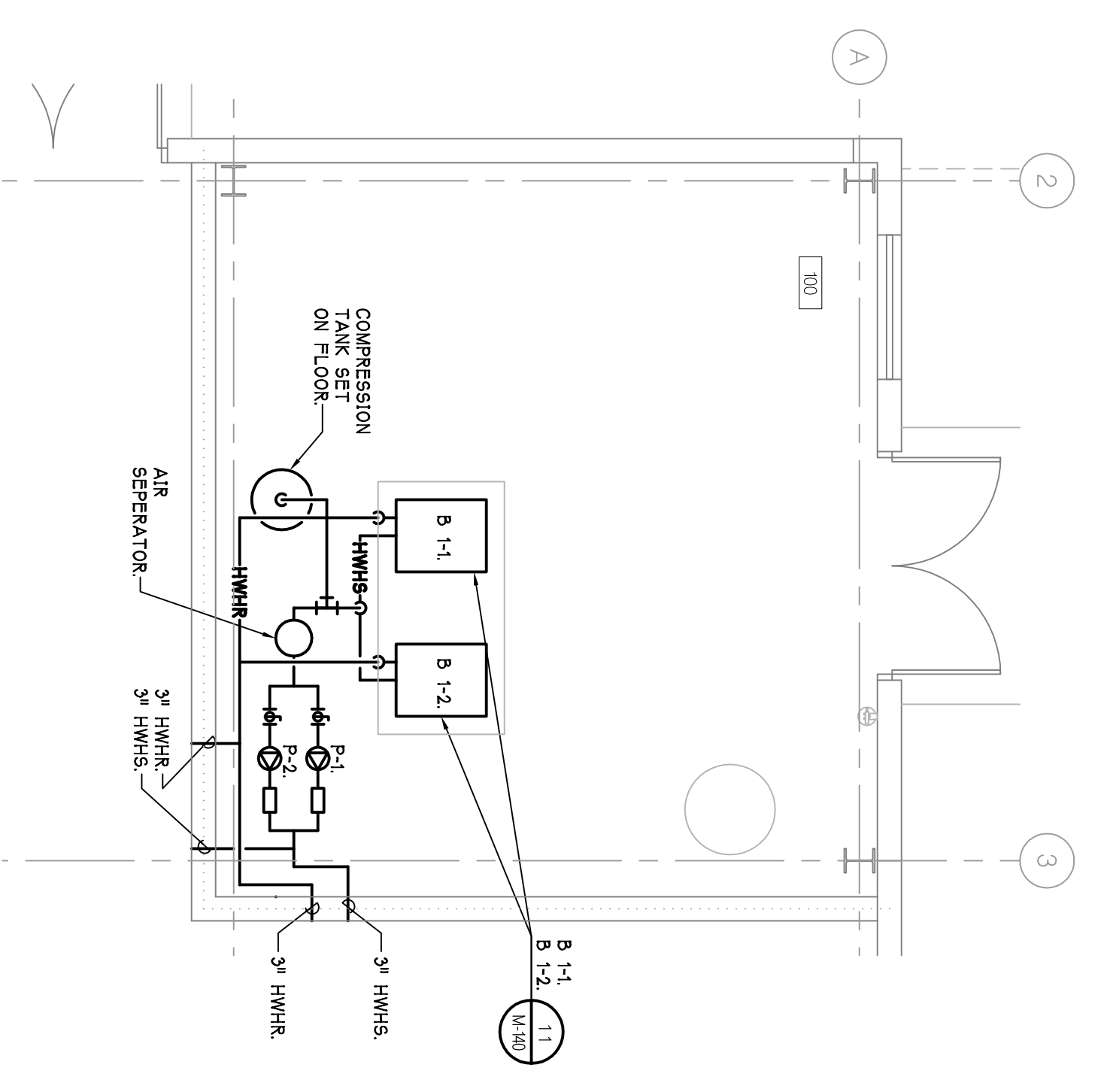
AS BUILTS	R-0-2006
CONTRACT SET	2-4-2006
CONSTRUCTION	11-1-2006
60% OWNER REVIEW	8-29-2006
90% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	
DRAWN BY	MAE
CHECKED BY	PAH, BEK



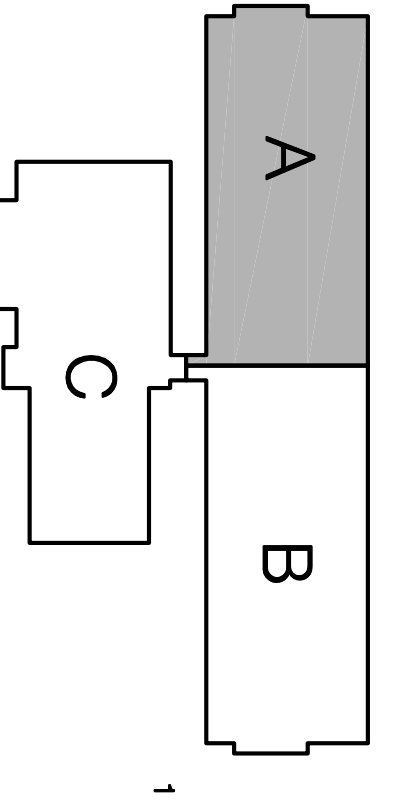


**NOTES:**  
 ALL PIPING IN EXPOSED AREAS TO BE INSTALLED ABOVE BOTTOM UNLESS OTHERWISE NOTED

**FLOOR PLAN - PART 'A' - HEATING PIPING**  
 SCALE - 1/8" = 1'-0"



**ENLARGED PLAN - HEATING PIPING**  
 SCALE - 1/4" = 1'-0"



**KEY PLAN**  
 SCALE - N.T.S.

AS NOTED	8-10-2006
SUPP. INSTR. 13	2-23-2007
SUPP. INSTR. 10	12-19-2006
CONTRACT SET	2-23-2006
CONSTRUCTION	11-12-2005
60% OWNER REVIEW	8-29-2005
50% OWNER REVIEW	7-18-2005
DD OWNER REVIEW	5-27-2005
DATE ISSUED	
DRAWN BY	M.A.E.
CHECKED BY	P.A.H. BK

**PAR**  
 100 YEARS

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PROJECT

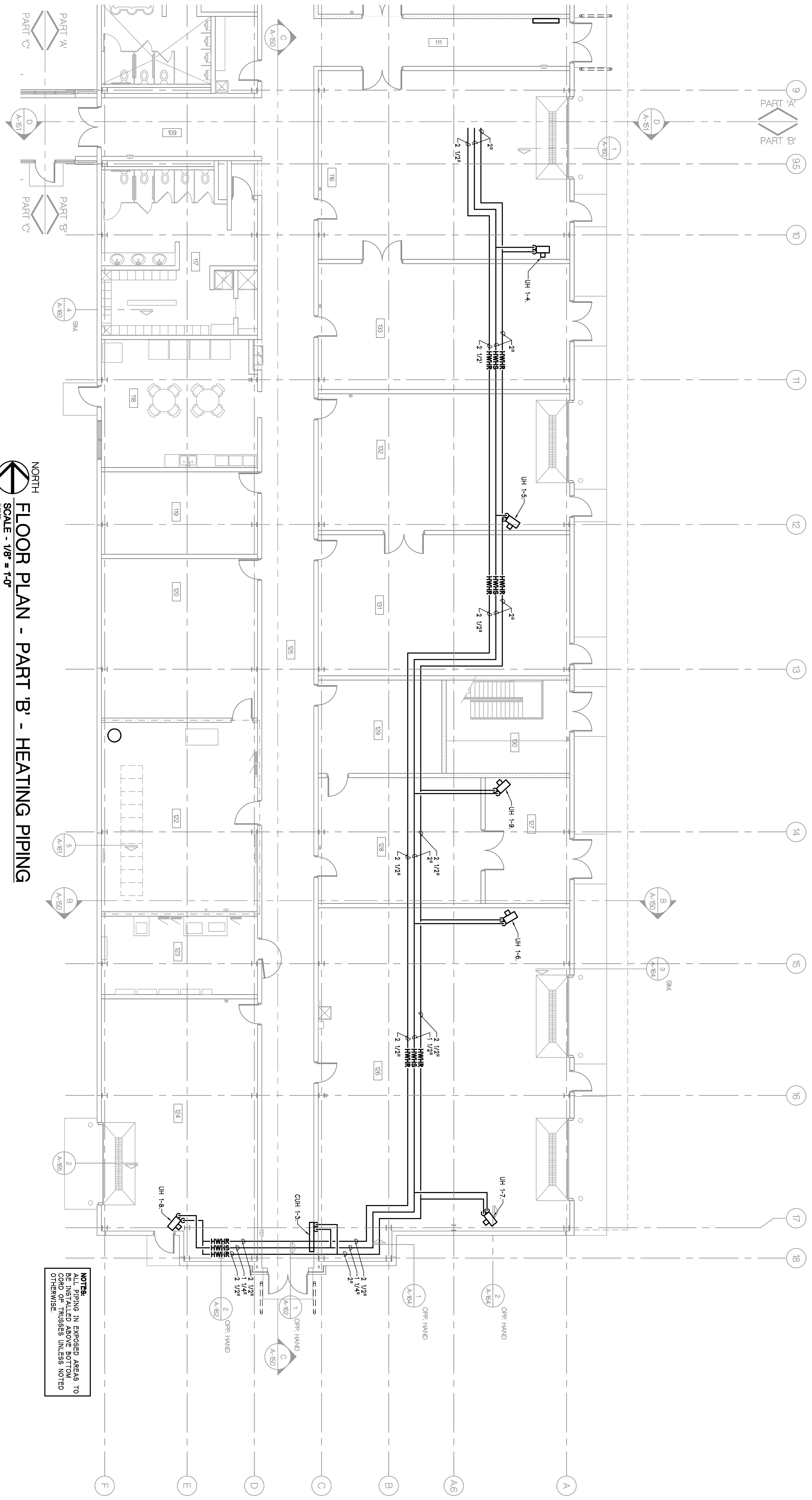
CONSULTANT

OPERATIONS BUILDING  
 FLOOR PLAN  
 PART 'A'  
 HEATING PIPING  
 SHEET TITLE

05-309  
 PROJECT NUMBER

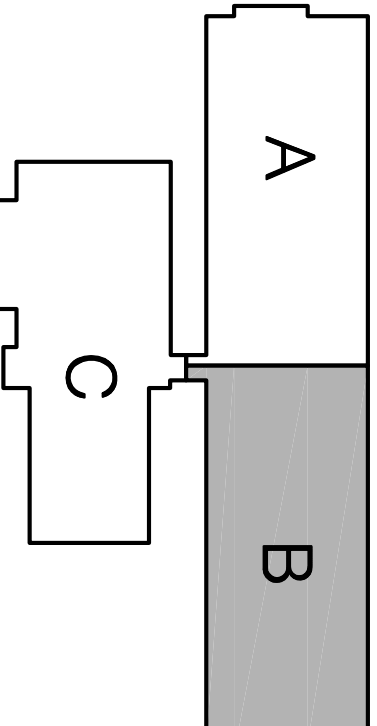
M-133  
 SHEET NUMBER





NORTH  
 FLOOR PLAN - PART 'B' - HEATING PIPING  
 SCALE - 1/8" = 1'-0"

NOTES:  
 PIPING IN EXPOSED AREAS TO  
 BE INSTALLED ABOVE BOTTOM  
 CHASE UNLESS NOTED  
 OTHERWISE.



NORTH  
 KEY PLAN  
 SCALE - N.T.S.

AS BUILTS	8-30-2006
OWNER NOTICE 13	2-4-2007
CONTRACT SET	2-8-2006
CONSTRUCTION	11-2-2006
60% OWNER REVIEW	8-29-2006
90% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	
M.A.S.	
DRAWN BY	P.M. SK
CHECKED BY	

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**100 YEARS**

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 STONE SCHOOL ROAD  
 ANN ARBOR, MICHIGAN 48108

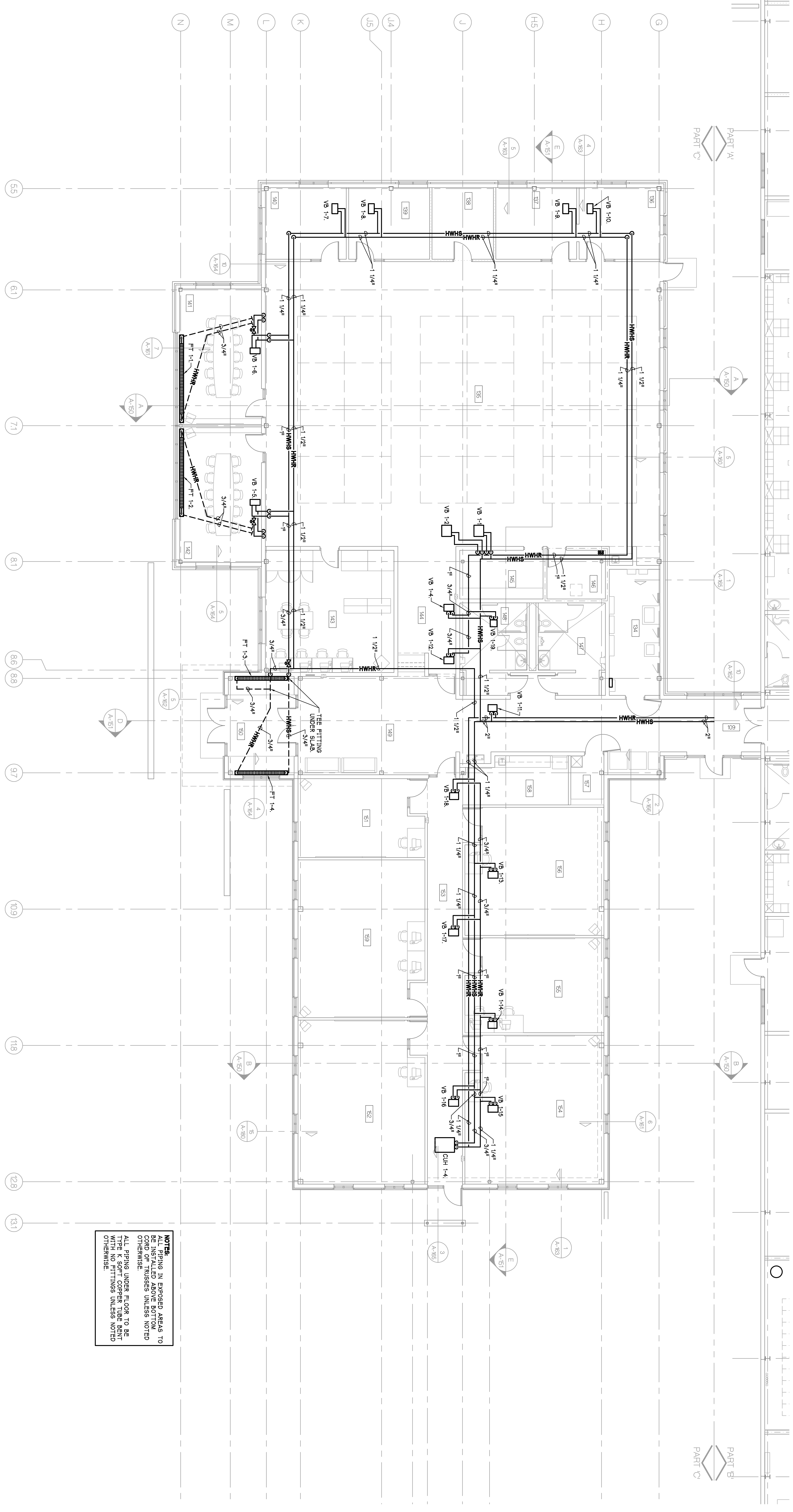
PROJECT

CONSULTANT

OPERATIONS BUILDING  
 FLOOR PLAN  
 PART 'B'  
 HEATING PIPING  
 SHEET TITLE

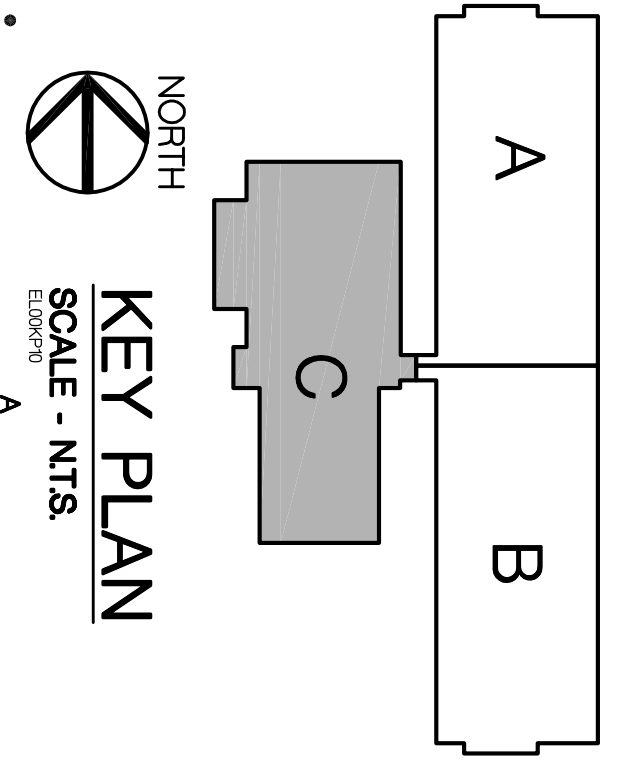
05-309  
 PROJECT NUMBER

M-134  
 SHEET NUMBER



**NOTES**  
 PIPING IN SUSPECT AREAS TO  
 BE SHOWN IN ABOVE BOTTOM  
 CORNER OF TRISSES UNLESS NOTED  
 OTHERWISE.  
 ALL PIPING UNDER FLOOR TO BE  
 SHOWN IN ABOVE BOTTOM CORNER  
 WITH NO FITTINGS UNLESS NOTED  
 OTHERWISE.

NORTH  
**FLOOR PLAN - PART 'C' - HEATING PIPING**  
 SCALE - 1/8" = 1'-0"



AS BUILTS	8-0-2006
SUPP. NOTES 13	2-4-2007
CONTRACT SET	2-8-2006
CONSTRUCTION	11-2-2006
60% OWNER REVIEW	8-29-2006
90% OWNER REVIEW	7-18-2006
DD OWNER REVIEW	5-27-2006
DATE ISSUED	

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**PAR 100 YEARS**

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PROJECT

CONSULTANT

OPERATIONS BUILDING  
 FLOOR PLAN  
 PART 'C'  
 HEATING PIPING  
 SHEET TITLE

PROJECT NUMBER  
**05-309**  
**M-135**  
 SHEET NUMBER

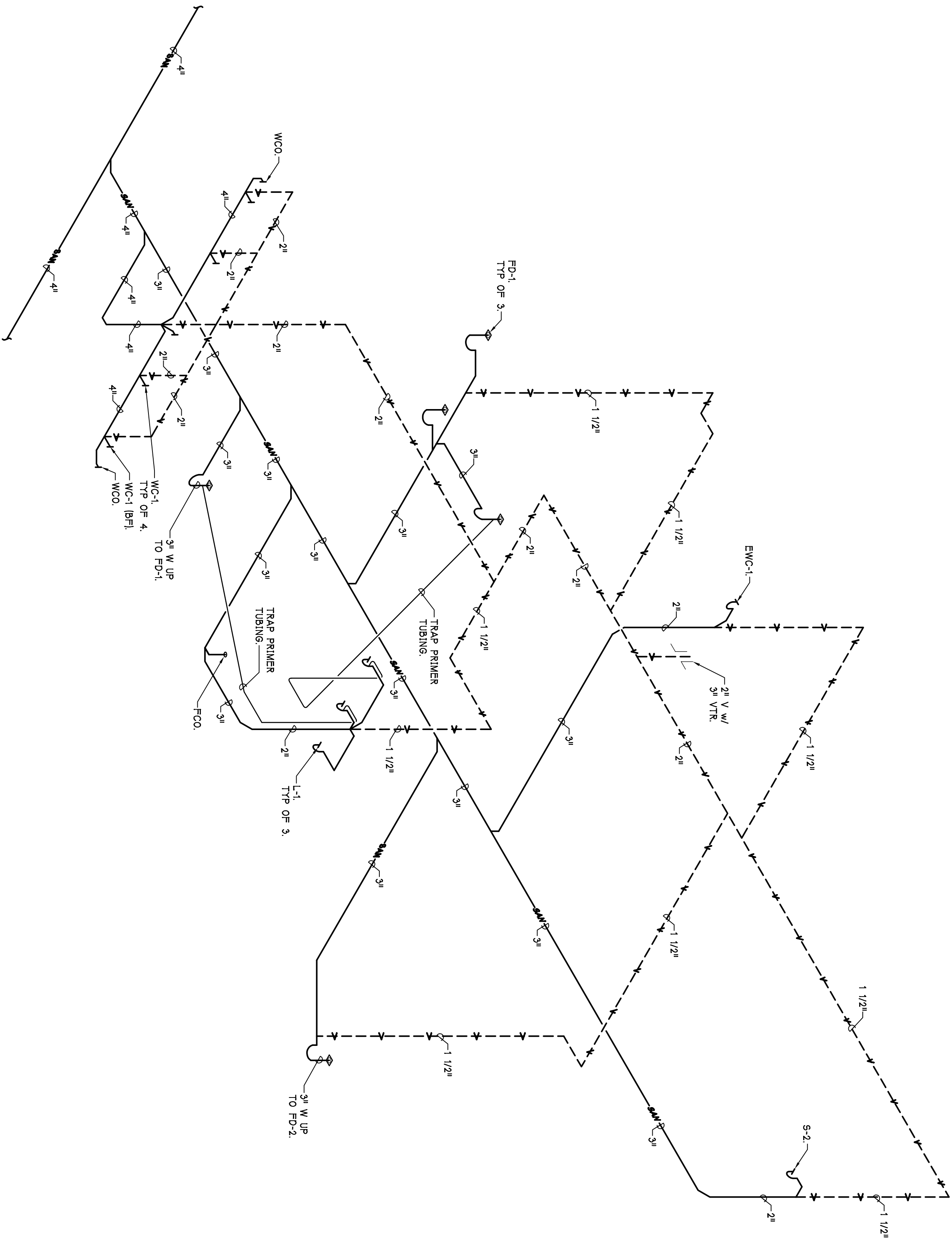




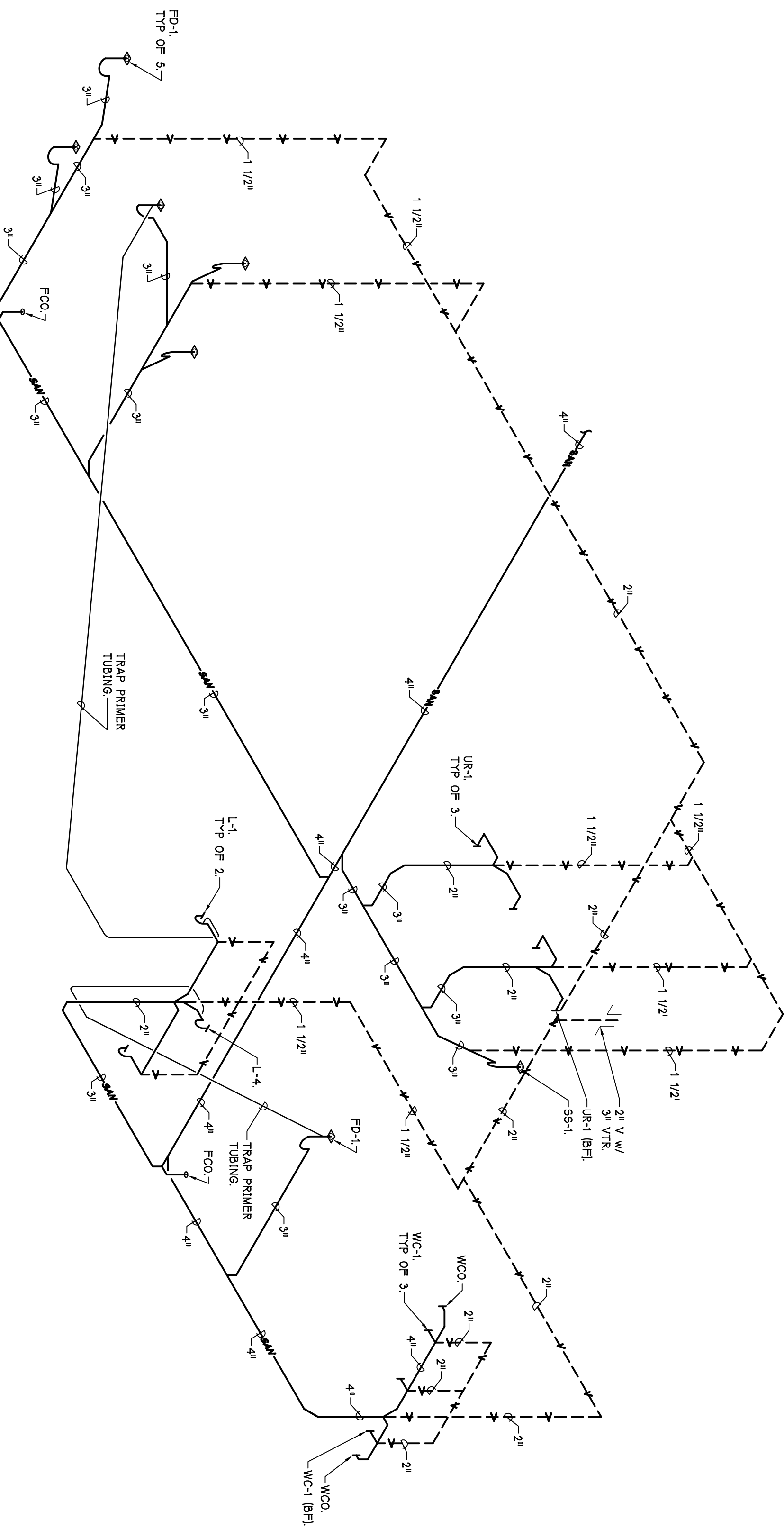




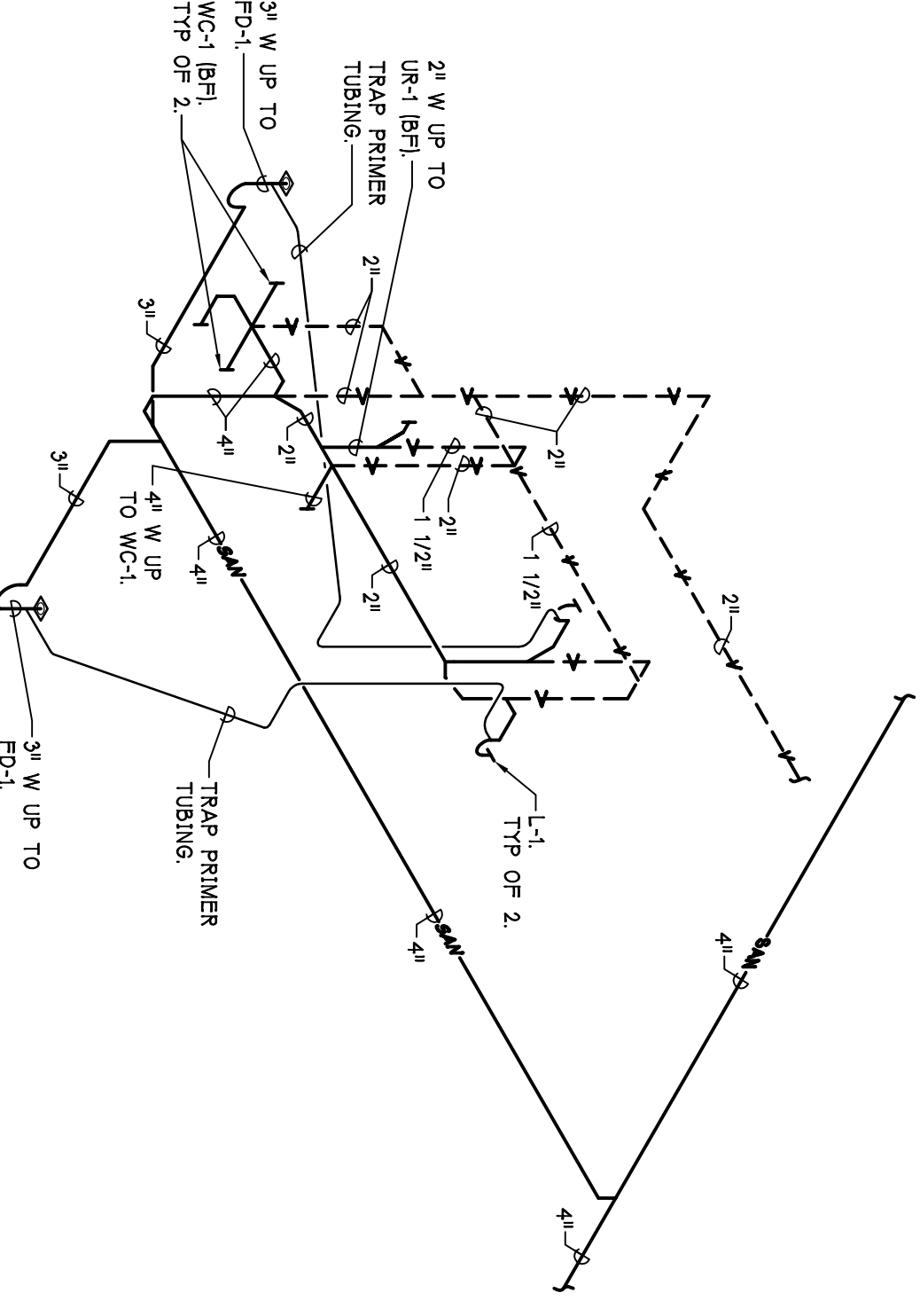




**SANITARY ISOMETRIC - RM 117 & 118**  
 NOT TO SCALE  
 NOTE: TRAP PRIMER, SEE DETAIL 20M-140



**SANITARY ISOMETRIC - RM 107 & 108**  
 NOT TO SCALE  
 NOTE: TRAP PRIMER, SEE DETAIL 20M-140



**SANITARY ISOMETRIC - RM 147 & 148**  
 NOT TO SCALE  
 NOTE: TRAP PRIMER, SEE DETAIL 20M-140

AS BUILTS	9-10-2006
CONTRACT SET	2-8-2006
CONSTRUCTION	11-1-2005
60% OWNER REVIEW	8-29-2005
50% OWNER REVIEW	7-18-2005
DD OWNER REVIEW	5-27-2005
DATE ISSUED	

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PROJECT  
 CONSULTANT

**OPERATIONS BUILDING  
 SANITARY ISOMETRICS**  
 SHEET TITLE

**05-309**  
 PROJECT NUMBER

**M-142**  
 SHEET NUMBER



DIFUSER AND GRILLE SCHEDULE

MARK	MANUF.	MODEL #	FACE SIZE	FRAME	MAT'L	FINISH	REMARKS
CD-1	TT106	TM6	24x24	43	STEEL	OFF WHITE	
CD-2	TT106	TM6	12x12	41	STEEL	OFF WHITE	
CD-3	TT106	XC-310	16	16	STEEL	OFF WHITE	
CD-4	TT106	TM6-PR	24x24	43	STEEL	OFF WHITE	
SW-1	TT106	272 FL	272 FL	41	ALUMINUM	OFF WHITE	
RR-1	TT106	50 F	50 F	47	ALUMINUM	OFF WHITE	
RR-2	TT106	50 F	50 F	41	ALUMINUM	OFF WHITE	
RR-3	TT106	3 FL	3 FL	41	ALUMINUM	OFF WHITE	
RR-4	TT106	PAK-PR	24x24	43	STEEL	OFF WHITE	
ES-1	TT106	50 F	50 F	41	ALUMINUM	OFF WHITE	

UNIT HEATER SCHEDULE

MARK	MANUF.	MODEL #	C.F.M.	M.B.H.	LAT.	G.P.M.	PRESS. DROP	H.P.	VOLT.	PH.	MOTOR	REMARKS
UH-1-1	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-2	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-3	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-4	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-5	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-6	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-7	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-8	RITTLING	HR-86	1340	60.2	30'	6.3	1.0	1/8	115	14	2.3 AMPS	
UH-1-9	RITTLING	HR-24	162	100	17	0.8	1/32	115	14	1.6 AMPS		

BASED ON 60° DAT & 200° ENF.

GAS FIRED UNIT HEATER SCHEDULE

MARK	MANUF.	MODEL #	C.F.M.	M.B.H.	LAT.	G.P.M.	INPUT	OUTPUT	LAT.	H.P.	VOLT.	PH.	MOTOR	REMARKS
GUH-1-1	REZONOR	F 25	380	250	200	120	1/50	120	14	60	WATTS			

INTAKE & RELIEF VENT SCHEDULE

MARK	MANUF.	MODEL #	SIZE	LENGTH	WIDTH	C.F.M.	STATIC PRESS.	DAMPER TYPE	REMARKS
IH-1-1	GREENHECK	FH1	18"	18"	2240	23	MOTORIZED		
IH-1-2	GREENHECK	FH1	18"	18"	1340	17	MOTORIZED		
IH-1-3	GREENHECK	FH1	12"	12"	750	07	MOTORIZED		
IH-1-4	GREENHECK	FH1	20"	20"	2050	128	MOTORIZED		

PUMP SCHEDULE

MARK	MANUF.	MODEL #	G.P.M.	HEAD	RPM	INLET / OUTLET INCHES	OUTLET / INLET INCHES	H.P.	VOLT.	PHASE	MOTOR	REMARKS
P-1-1	BELL & GOSSETT	SERIES 60 2 X 2 X 6 1/4	48	1750	30	2	2	3/4	480	3		
P-1-2	BELL & GOSSETT	SERIES 60 LITTLE RED	48	1750	30	2	2	3/4	480	3		
P-1-3	BELL & GOSSETT	LR-18-B	8	10	10	3/4	3/4	1/2	120	1		

PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	FIXTURE	CONNECTIONS	CW	HW	SN.	VENT	REMARKS
WC-1	WATER CLOSET (WALL MOUNTED)	1"	-	-	4"	2"	STANDARD AND BARRIER FREE.
UR-1	URINAL (WALL MOUNTED)	3/4"	-	-	2"	1 1/4"	STANDARD AND BARRIER FREE.
L-2	LAVATORY (COUNTER TOP)	1/2"	1/2"	1 1/4"	1 1/4"	1 1/4"	
L-4	3 COMPARTMENT LAVATORY UNIT	1/2"	1/2"	1 1/2"	2"	1 1/2"	
CS-1	COMMERCIAL SQUELLEY SINK	1/2"	1/2"	1 1/2"	2"	1 1/2"	
SH-1	SHOWER	1/2"	1/2"	-	-	-	
SH-2	SHOWER	1/2"	1/2"	-	-	-	
S-1	SINK (COUNTER TOP)	1/2"	1/2"	1 1/2"	2"	1 1/2"	
S-2	SINK (COUNTER TOP)	1/2"	1/2"	1 1/2"	2"	1 1/2"	
SS-1	SERVICE SINK	1/2"	1/2"	3"	1 1/2"	1 1/2"	
EW-C-1	ELECTRIC WATER COOLER	1/2"	-	-	1 1/4"	1 1/4"	HI / LOW BARRIER FREE.

FINNED TUBE RADIATION SCHEDULE

MARK	MANUF.	BTUH / FT	TOTAL BTUH	GPM	EWT	LWT	TUBE FIN	FIN/FT	LENGTH	ROWS	TYPE	ENCLOSURE	END CAP	ACCESS	REMARKS
FT-1-1	RITTLING	860	11560	12	200	180	3/4" K	4 1/2	32	12	12	12	19	19	
FT-1-2	RITTLING	860	11560	12	200	180	3/4" K	4 1/2	32	12	12	19	19	19	
FT-1-3	RITTLING	1280	10320	11	200	180	3/4" K	4 1/2	48	8	8	8	8	8	
FT-1-4	RITTLING	1280	10320	11	200	180	3/4" K	4 1/2	48	8	8	8	8	8	

ROOF TOP UNIT SCHEDULE

MARK	MANUF.	MODEL #	SUPPLY CFM	O.A.L. E.S.P.	H.P.	TOTAL SENSIBLE ENT. AIR	LEAVING AIR TEMP.	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	HEATING CAPACITY	REMARKS
RTU-1-1	CARRIER	48R0040	14000	128	20	480	331	80°	4000	3880	480	34	106	126	ELECTRICAL UNIT	
RTU-1-2	CARRIER	48R0004	1200	50	1/2	360	281	80°	67°	560	392	34	9	15	ELECTRICAL UNIT	
RTU-1-3	CARRIER	48R0012	4000	1500	2	1236	393	80°	67°	2160	1853	34	241	30	ELECTRICAL UNIT	
RTU-1-4	CARRIER	48R0006	2000	50	1/2	624	459	80°	67°	1130	915	34	13.0	15	ELECTRICAL UNIT	
RTU-1-5	CARRIER	48R0006	2000	50	1	624	459	80°	67°	1130	915	34	13.0	15	ELECTRICAL UNIT	
RTU-1-6A	CARRIER	48R0008	3400	700	1 1/2	924	782	80°	67°	1810	1464	34	19.4	23	ELECTRICAL UNIT	
RTU-1-6B	CARRIER	48R0008	3400	700	1 1/2	924	782	80°	67°	1810	1464	34	19.4	25	ELECTRICAL UNIT	

ENERGY RECOVERY AIR HANDLING UNIT SCHEDULE

MARK	MANUF.	MODEL #	WINTER RECOVERY			SUMMER RECOVERY			FANS			HEAT CAPACITY			ELECTRICAL			REMARKS
			ENT. AIR	LEAV. AIR	TEMP. DIFF.	ENT. AIR	LEAV. AIR	TEMP. DIFF.	SUPPLY	EXHAUST	HEAT CAP.	HEAT CAP.	HEAT CAP.	HEAT CAP.	HEAT CAP.	HEAT CAP.	HEAT CAP.	
ERU-1-1	ANNEKAR	ERH-102-PP-140	-10.0°	42.8°	2400	2	21	2400	2	64	173	138	138	138	480	34	MO-7.4 MOP-10.5	
ERU-1-2	ANNEKAR	ERH-102-PP-140	-10.0°	42.8°	2400	2	18	2400	2	15	173	138	138	138	480	34	MO-7.4 MOP-10.5	
ERU-1-3	ANNEKAR	ERH-102-PP-140	-10.0°	42.8°	2400	2	21	2200	2	13	173	138	138	138	480	34	MO-7.4 MOP-10.5	
ERU-1-4	ANNEKAR	ERH-102-PP-140	-10.0°	37.6°	2400	3	21	2870	3	13	262	210	210	210	480	34	MO-11.0 MOP-15.3	
ERU-1-5	ANNEKAR	ERH-102-PP-140	-10.0°	37.6°	2400	3	24	3480	3	04	262	210	210	210	480	34	MO-11.0 MOP-15.3	

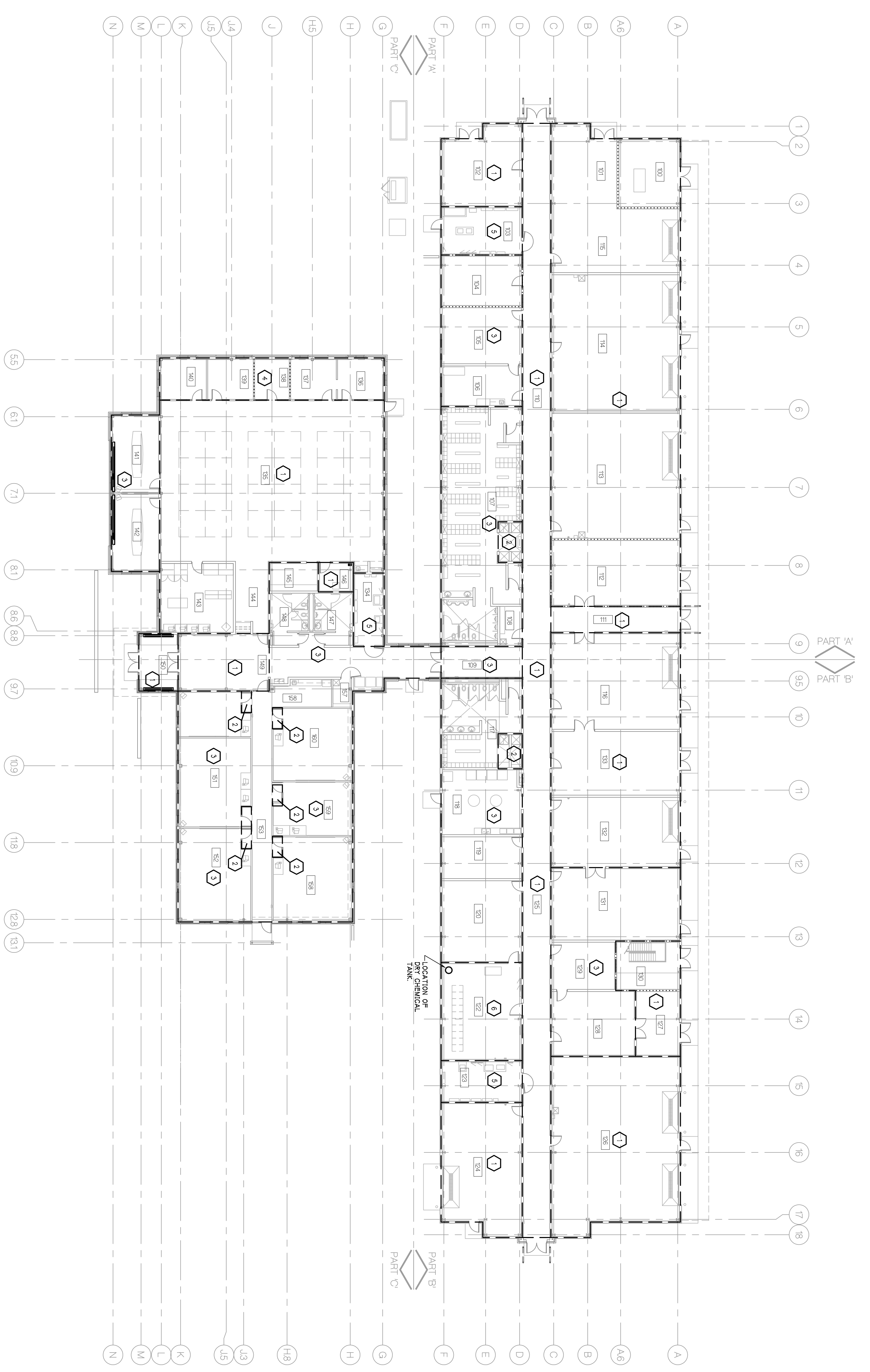
VARIABLE AIR VOLUME BOX SCHEDULE

MARK	MANUF.	MODEL #	INLET SIZE	OUTLET SIZE	MIN. S.P.	MAX. CFM	COOLING CFM	HEATING CFM	#ROWS	M.B.H.	G.P.M.	EWT	WTD	ENT	LAT	APD	CONTROL PACKAGE	REMARKS
VB-1-1	CARRIER	35E-00C-10	10"	14x12	23	900	256	900	2	34.0	1.0	200	126	17	55	90	28	
VB-1-2	CARRIER	35E-00C-14	14"	20x17	36	1600	600	1680	2	68.0	1.7	200	115	40	55	90	28	
VB-1-3	CARRIER	35E-00C-10	10"	14x12	23	900	256	900	2	34.0	1.0	200	126	17	55	90	28	
VB-1-4	CARRIER	35E-00C-10	10"	14x12	23	900	256	900	2	34.0	1.0	200	126	17	55	90	28	
VB-1-5	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-6	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-7	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-8	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-9	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-10	CARRIER	35E-00C-08	8"	12x10	34	750	160	750	2	28.3	1.0	200	133	27	55	90	41	
VB-1-11	CARRIER	35E-00C-07	7"	12x10	36	500	155	500	2	20.1	0.55	200	122	11	55	90	24	
VB-1-12	CARRIER	35E-00C-09	9"	14x12	57	1000	260	1000	2	37.8	1.2	200	123	13	55	90	23	
VB-1-13	CARRIER	35E-00C-10	10"	14x12	28	800	255	800	2	30.1	0.8	200	122	13	55	90	23	
VB-1-14	CARRIER	35E-00C-07	7"	12x10	36	500	155	500	2	22.7	0.7	200	124	14	55	90	27	
VB-1-15	CARRIER	35E-00C-09	9"	14x12	37	920	255	920	2	34.8	1.0	200	127	18	55	90	3	
VB-1-16	CARRIER	35E-00C-10	10"	14x12	40	920	255	920	2	36.3	1.0	200	128	21	55	90	23	
VB-1-17	CARRIER	35E-00C-09	9"	14x12	41	840	210	840	2	31.7	1.3	200	127	28	55	90	25	
VB-1-18	CARRIER	35E-00C-06	6"	12x8	32	400	80	400	2	16.6	0.6	200	135	08	55	90	22	
VB-1-19	CARRIER	35E-00C-06	6"	12x8	34	400	80	400	2	16.65	1.1	200	130	21	55	90	33	

EXHAUST FAN SCHEDULE

MARK	MANUF.	MODEL #	DRIVE	CFM	STATIC PRESS.	RPM	SONES	H.P.	VOLT.	PHASE	ELECTRICAL	DISCONNECT	STARTER	REMARKS
EF-1-1	GREENHECK	GB-1814	BELT	1500	5	842	8.4	1/4	120	19	MANUFACTURER	---	---	
EF-1-2	GREENHECK	GB-2114	BELT	700	5	1002	6.4	1/4	1					





**OPERATIONS BUILDING  
 FIRE PROTECTION PLAN**  
 NORTH  
 SCALE - VMS = 1'-0"

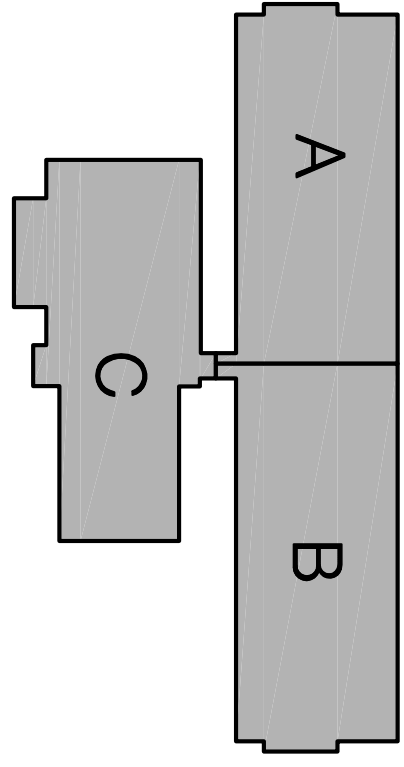
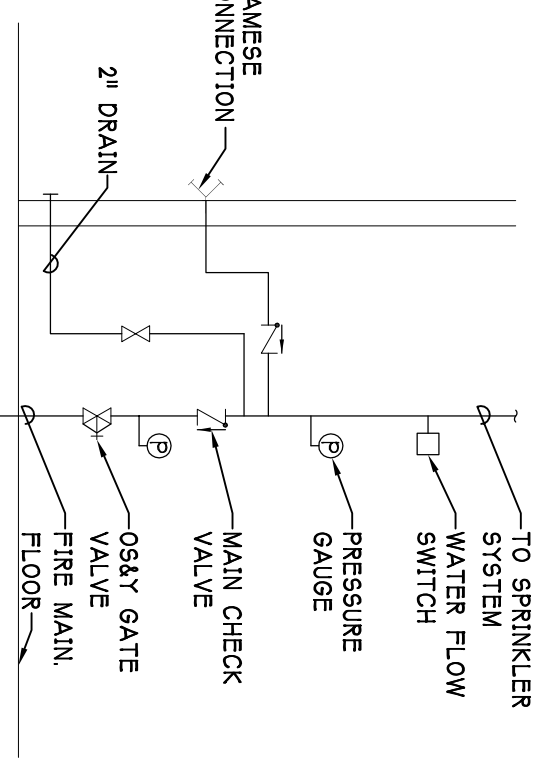
**FIRE PROTECTION PLAN NOTES**

1. EXPOSED CONSTRUCTION PROVIDE SPRINKLER SYSTEM IN THIS AREA WITH BRASS UPRIGHT HEADS. CONTRACTOR TO BAG ABOVE EXPOSED AREA IS PIPING IN THESE AREAS IS TO BE INSTALLED IN EXPOSED AREA WITH BRASS UPRIGHT HEADS AND TWO PIECE ESCUTCHEONS.
2. EXPOSED CONSTRUCTION PROVIDE SPRINKLER SYSTEM IN THIS AREA WITH WHITE PENDENT HEADS AND TWO PIECE ESCUTCHEONS.
3. LAY-IN CEILING ABOVE SPRINKLER SYSTEM IN THESE AREAS WITH WHITE PENDENT HEADS AND TWO PIECE ESCUTCHEONS.
4. LAY-IN CEILING IN ROOMS BELOW EXPOSED AREA PROVIDE WHITE PENDENT HEADS AND TWO PIECE ESCUTCHEONS IN ROOMS WITH LAY-IN CEILING AND BRASS UPRIGHT HEADS IN EXPOSED AREA ABOVE. CONTRACTOR TO BAG HEADS IN EXPOSED AREA BEFORE AREA IS PAINTED.
5. ELECTRICAL EQUIPMENT ROOM WITH EXPOSED CONSTRUCTION PROVIDE SYSTEM WITH BRASS UPRIGHT HEADS AND PIPING TO MEET INSTALLATION AND CLEARANCE REQUIREMENTS AS PER SECTION 2105.
6. COMPLETE AREA ABOVE WITH APPROVED FM 200 DRY CHEMICAL FIRE PROTECTION SYSTEM OR APPROVED EQUAL.

**FIRE PROTECTION NOTES**

1. PROVIDE A COMPLETE FIRE PROTECTION SYSTEM IN THE BUILDING SYSTEM SHALL BE A LIGHT OR ORDINARY HAZARD AS REQUIRED. IT SHALL BE A WET PIPE TYPE SYSTEM WITH ALL REQUIRED HEADS, SHOCK-LOW PRESSURE, SHARED CONNECTION, FLOOR STAND AND ORNSTEIN.
2. IT IS THE FIRE PROTECTION CONTRACTORS RESPONSIBILITY TO DESIGN THE SYSTEM REQUIRED FOR THIS FACILITY. THE CONTRACTOR SHALL VERIFY THE CAPACITY OF THE PUBLIC WATER AVAILABLE AND DESIGN HIS SYSTEM USING THESE CAPACITIES.
3. ANY INFORMATION ON THIS DESIGN IS STRICTLY FOR REFERENCE ONLY. IT IS THE CONTRACTORS RESPONSIBILITY FOR FINAL DESIGN OF THE SYSTEM TO BE INSTALLED.
4. HEAD TEMPERATURES SHALL BE 40 DEGREES F UNLESS OTHERWISE NOTED ON THE PLANS OR DECIDED TO BE OTHER BY THE DESIGN ENGINEER.
5. DESIGN SHALL BE BASED ON NFPA 703 THE OWNERS INSURANCE UNDERWRITER AND ALL FEDERAL, STATE AND LOCAL CODES. DESIGN SHALL BE DONE BY A PERSON REGISTERED WITH THE STATE OF MICHIGAN AS A PROFESSIONAL ENGINEER IN MECHANICAL ENGINEERING. THE DESIGN SHALL BE APPROVED AND RETURNED BEFORE THE ACTION IS BEGUN.

**FIRE PROTECTION  
 WATER SUPPLY DETAIL  
 NOT TO SCALE**



**KEY PLAN**  
 NORTH  
 SCALE - NTS  
 DRAWN

AS BUILTS	8-10-2006
CONTRACT SET	2-15-2006
CONSTRUCTION	1-11-2006
90% OWNER REVIEW	8-29-2006
DATE ISSUED	1-11-2006
DRAWN BY	MAS
CHECKED BY	PAH, BK

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 MAINTENANCE FACILITY  
 STONE SCHOOL ROAD  
 ANN ARBOR, MICHIGAN 48108

PROJECT  
 CONSULTANT  
 OPERATIONS BUILDING  
 FIRE PROTECTION  
 SHEET TITLE  
**05-309**  
 PROJECT NUMBER  
**M-160**  
 SHEET NUMBER