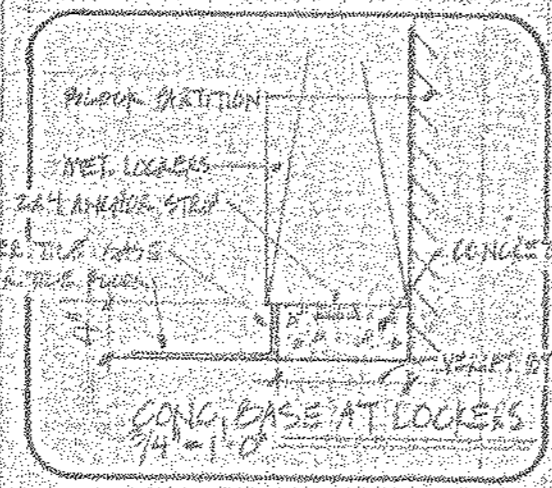
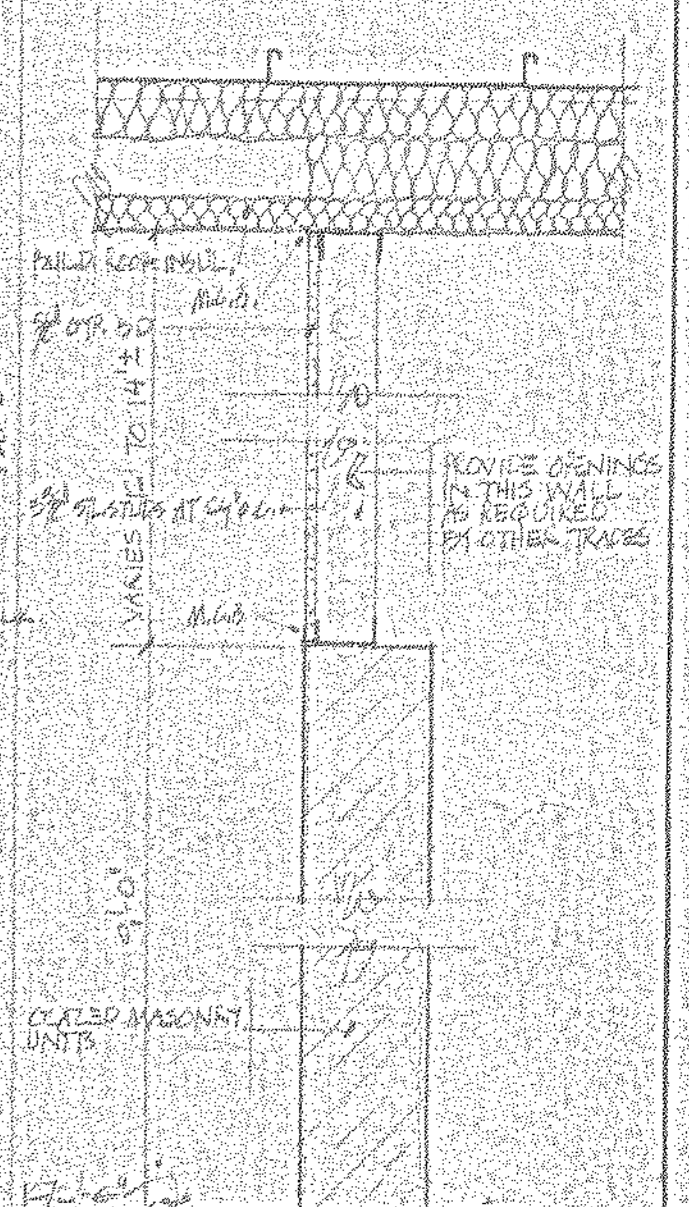


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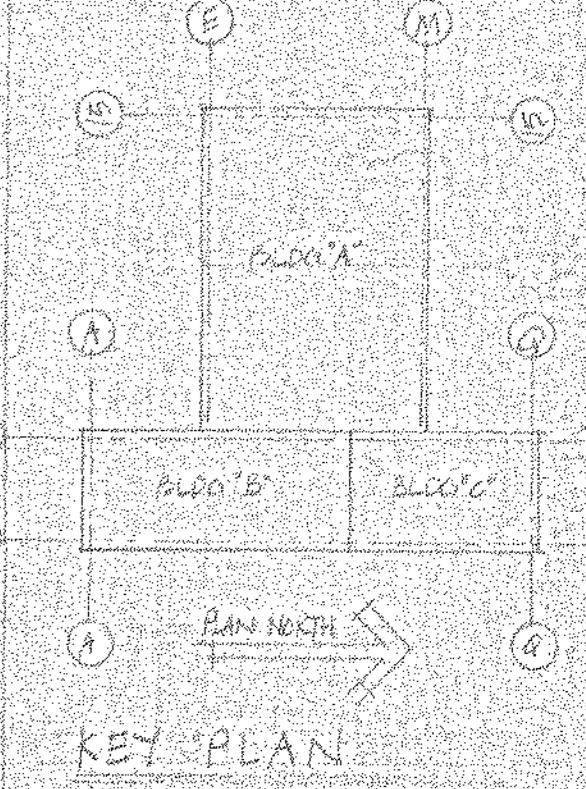


**NOTES:**  
 1. MASONRY PARTITIONS AROUND THE FOLLOWING ROOMS SHALL BE 12" MIN. THICK AND SHALL BE CONSTRUCTED WITH FULL BRICK OR BLOCK WITH 2" HIGH STRUTTERS UNITS, UNLESS NOTED ON THE DRAWING.  
 2. MASONRY PARTITIONS AROUND THE FOLLOWING ROOMS SHALL BE 8" MIN. THICK AND SHALL BE CONSTRUCTED WITH FULL BRICK OR BLOCK WITH 2" HIGH STRUTTERS UNITS, UNLESS NOTED ON THE DRAWING.  
 3. REINFORCE ALL INTERIOR MASONRY WALLS AS FOLLOWS:  
 a. ALL INTERIOR MASONRY WALLS SHALL BE REINFORCED AT EVERY CORNER.  
 b. ALL OTHER WALLS USE REINF. AT EVERY OTHER CORNER.  
 c. ALL FLOOR WALLS WITH REINFORCED CONCRETE PARTITION FLOOR SHALL BE REINFORCED WITH 2" HIGH STRUTTERS UNITS, UNLESS NOTED ON THE DRAWING.  
 d. SILL AT SHOWERS SHALL BE REINFORCED 4" HIGH WITH GLAZED CAP.

SOUND ATTENUATION BARRIER EXTEND EACH SIDE OF PARTITION MINIMUM 4" O.C. OF CONCR.  
 4" O.C. SOUND INSULATION  
 AT CEILING  
 PARTITION INSULATION UP TO HIGHEST ADJACENT CEILING  
 TYPE 'A' PARTITION  
 CEILING SOUND ATTENUATION INSULATION AT ALL PARTITIONS, TYPE 'A'  
 ABOVE DETAIL SIMILAR WHEN ADJACENT CEILING ARE AT SAME HEIGHT



SECTION A-A



KEY PLAN

NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.

NEW RESEARCH CENTER, OFFICES AND LABORATORY STATE COLLEGE, PENNA.

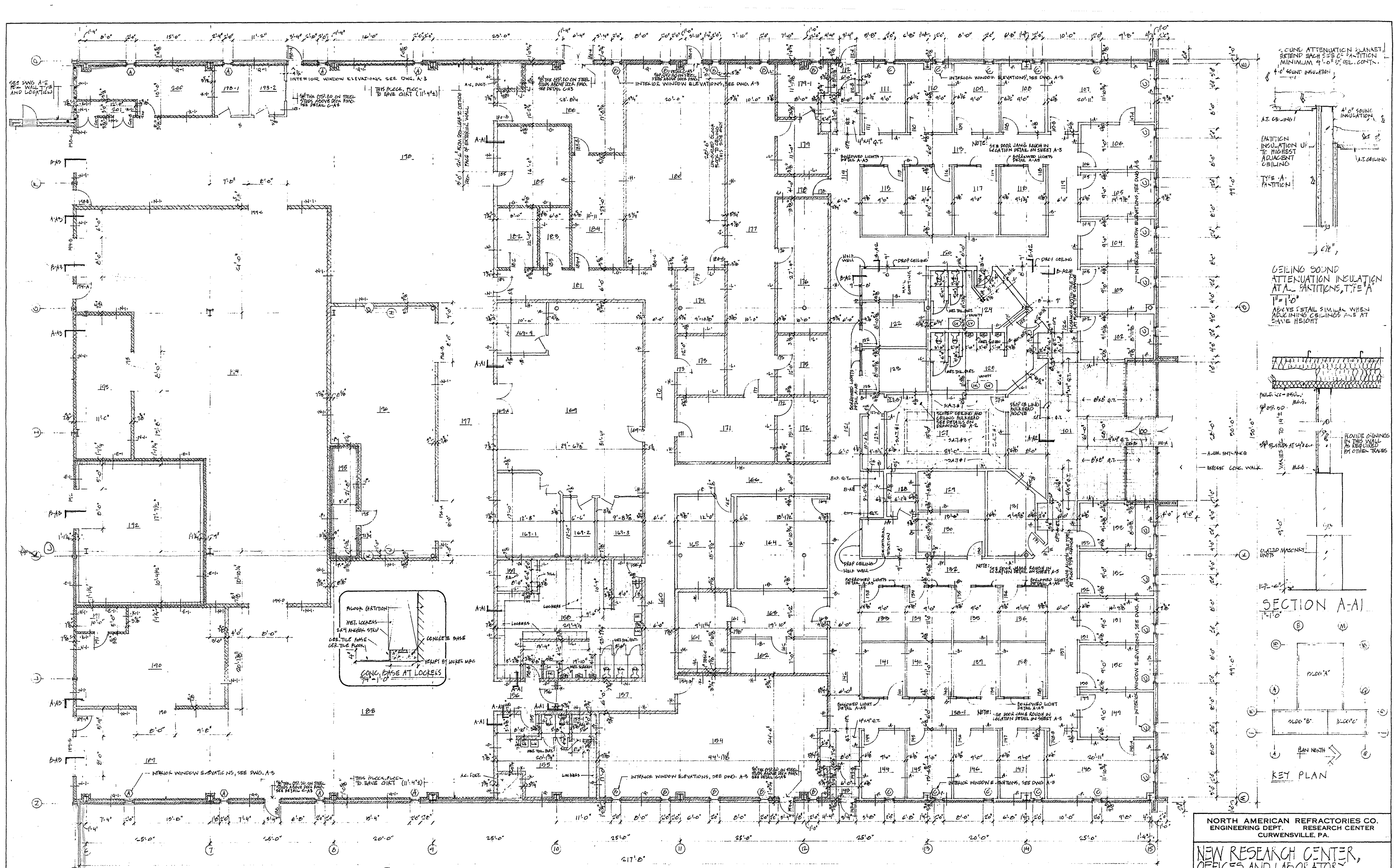
FLOOR PLAN, BUILDING 'A'

DRAWN BY: G.W.H. C.O. NO. 55-110-D-23  
 CHECKED: DATE: 10-11-51  
 SCALE: AS NOTED DWG. NO. A-1

OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

#0064 A-1 Fl. Pn "A" Area 1981 NONE 010107





CEILING SOUND ATTENUATION BLANKET, EXTEND EACH SIDE OF PARTITION MINIMUM 4'-0" SEE DET. CONT.

4'-0" SOUND INSULATION

AT. CEILING

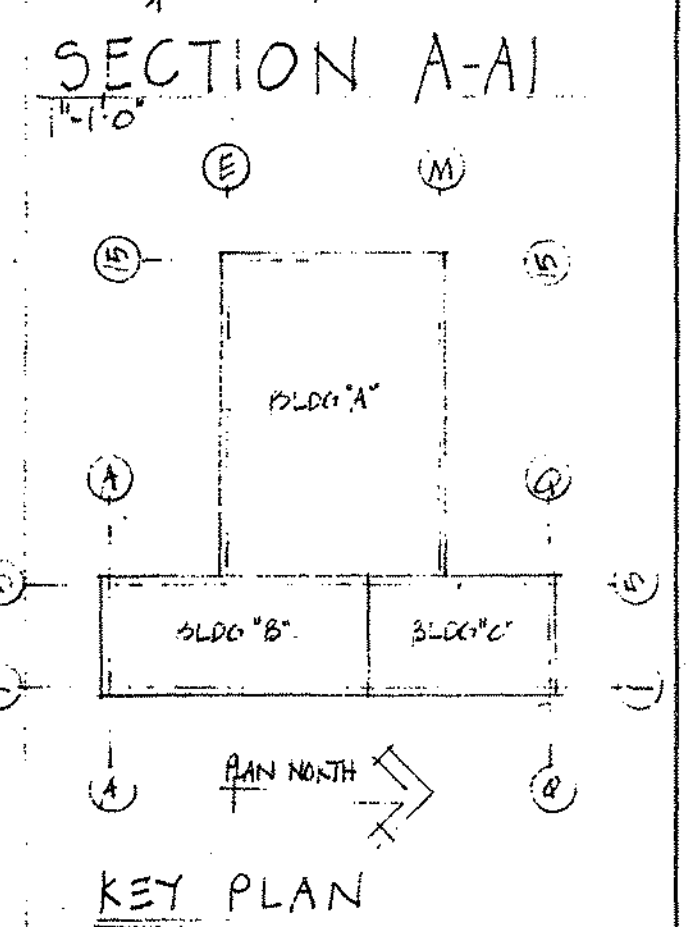
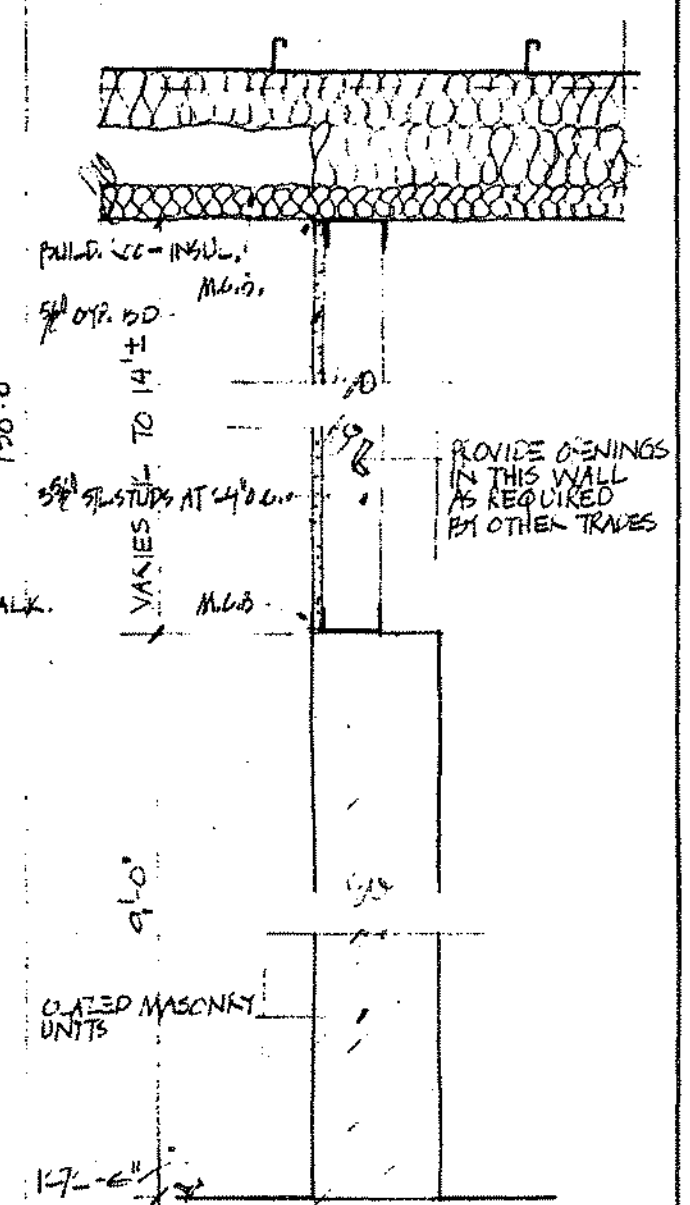
PARTITION INSULATION UP TO HIGHEST ADJACENT CEILING

TYPE A PARTITION

CEILING SOUND ATTENUATION INSULATION AT A PARTITIONS, TYPE A

1" = 1'-0"

APPLY SETAIL SIMILAR WHEN ADJACENT CEILING IS AT SAME HEIGHT



FLOOR PLAN, BUILDING A

NOTES:

1. MASONRY PARTITIONS AROUND THE FOLLOWING ROOMS SHALL BE MIN. 8" MASONRY UNITS: 154-155, 167-168, 198-199, 161-162, 171-172, 173-174, 175-176, 177-178, 179-180, 181-182, 183-184, 185-186, 187-188, 189-190, 191-192, 193-194, 195-196, 197-198, 200-201
2. MASONRY PARTITIONS AROUND THE FOLLOWING ROOMS SHALL BE MIN. 8" MASONRY UNITS: 100-101, 102-103, 104-105, 106-107, 108-109, 110-111, 112-113, 114-115, 116-117, 118-119, 120-121, 122-123, 124-125, 126-127, 128-129, 130-131, 132-133, 134-135, 136-137, 138-139, 140-141, 142-143, 144-145, 146-147, 148-149, 150-151, 152-153, 156-157, 158-159, 160-161, 163-164, 165-166, 169-170, 172-173, 174-175, 176-177, 178-179, 180-181, 182-183, 184-185, 186-187, 188-189, 190-191, 192-193, 194-195, 196-197, 198-199, 200-201
3. REINFORCE ALL INTERIOR MASONRY WALLS AS FOLLOWS: ALL FREE STANDING WALLS USE REIN. AT EVERY COURSE.
4. ALL BLOCK WALLS (BOTH REGULAR CONCRETE AND CLATED) START ON FLOOR SLAB WITH 2" HIGH STRETCHER UNITS, UNLESS NOTED ON THE DRAWING. B. JILLS AT SHOWERS SHALL BE APPROX. 4" HIGH WITH GLAZED CAP.

OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

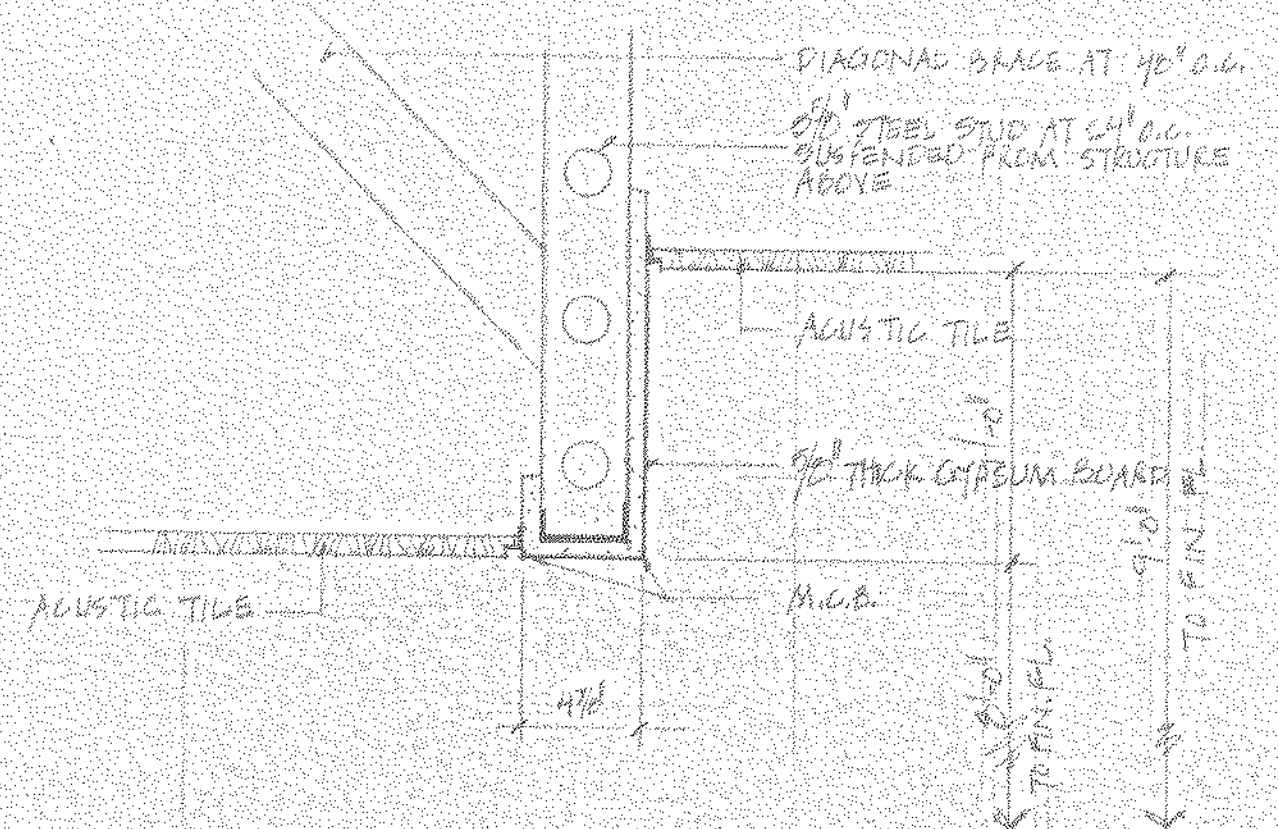
  

DRAWN BY G.W.H.		C. O. NO.	
CHECKED		DATE	
SCALE AS NOTED		55-110-D-23	
		DWG. NO.	

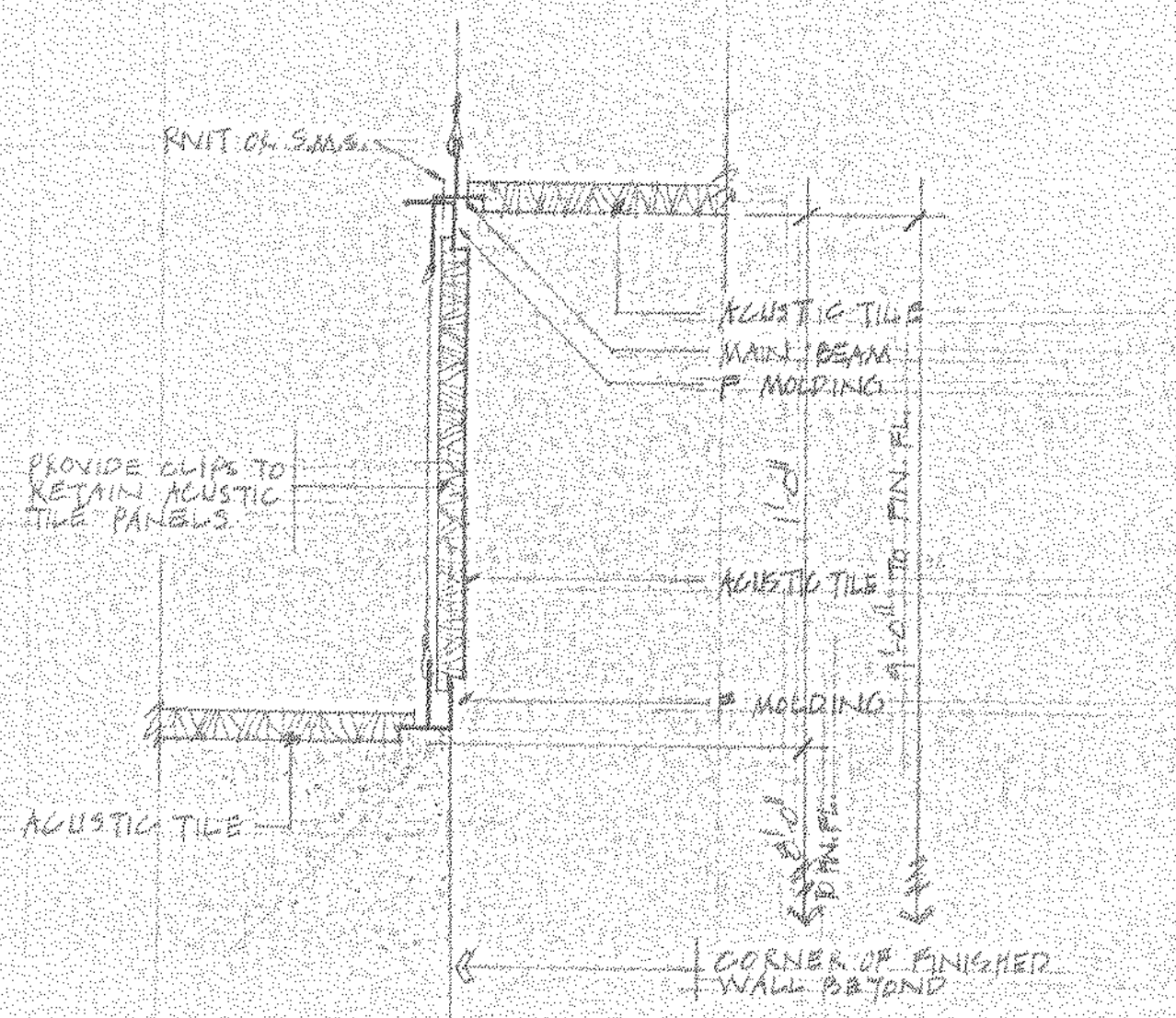
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(A-4. 11)

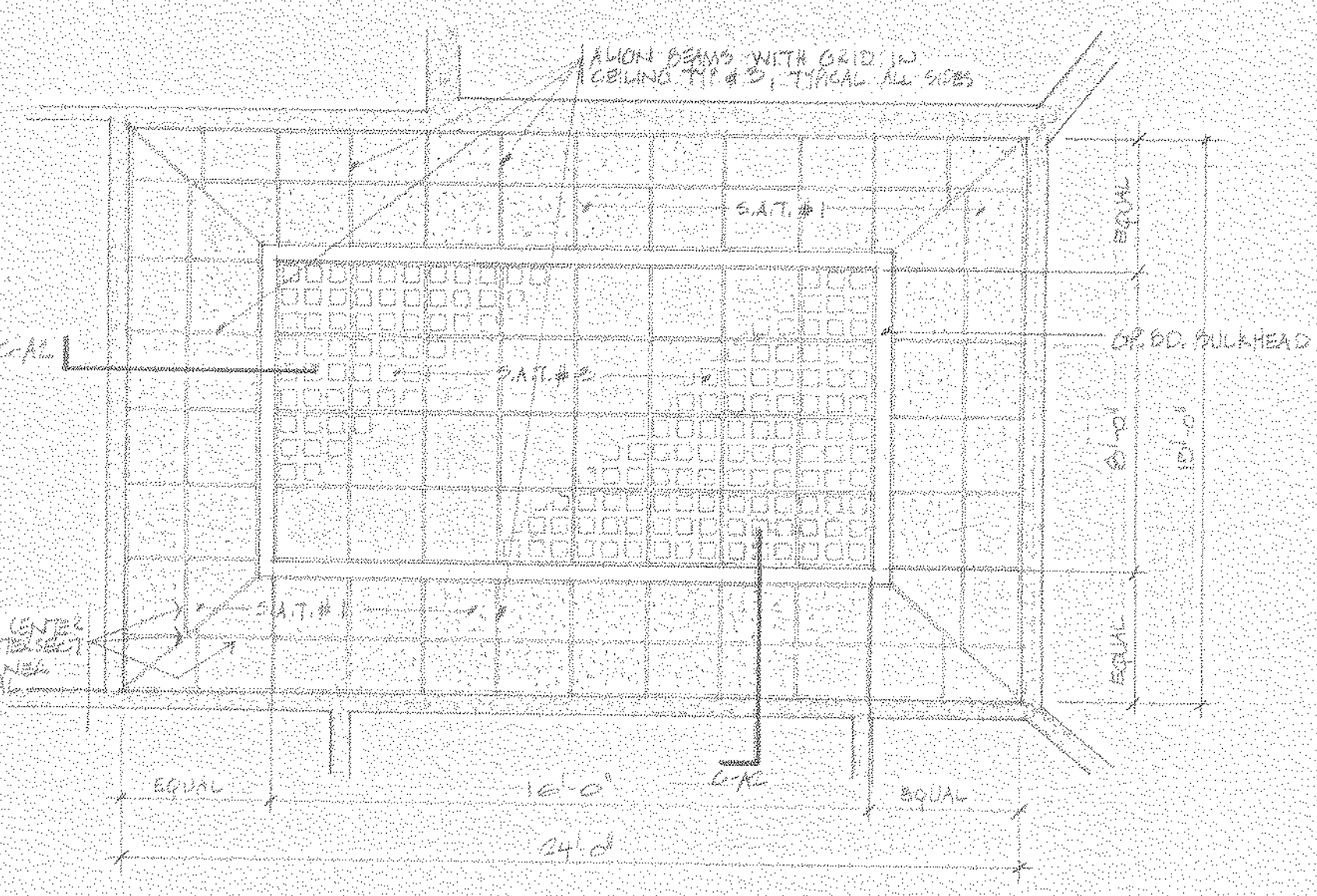




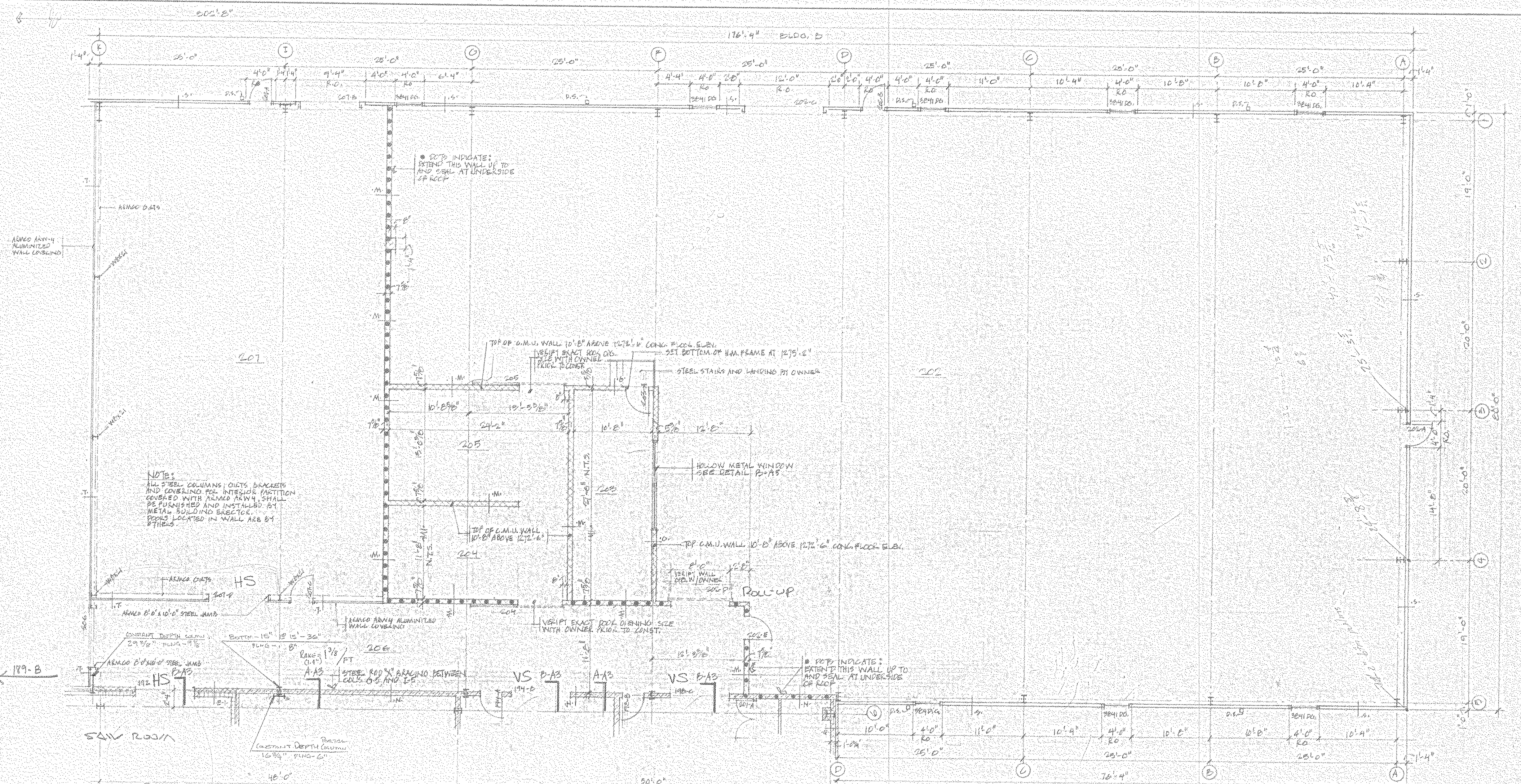
DROP CEILING SECTION A-A2



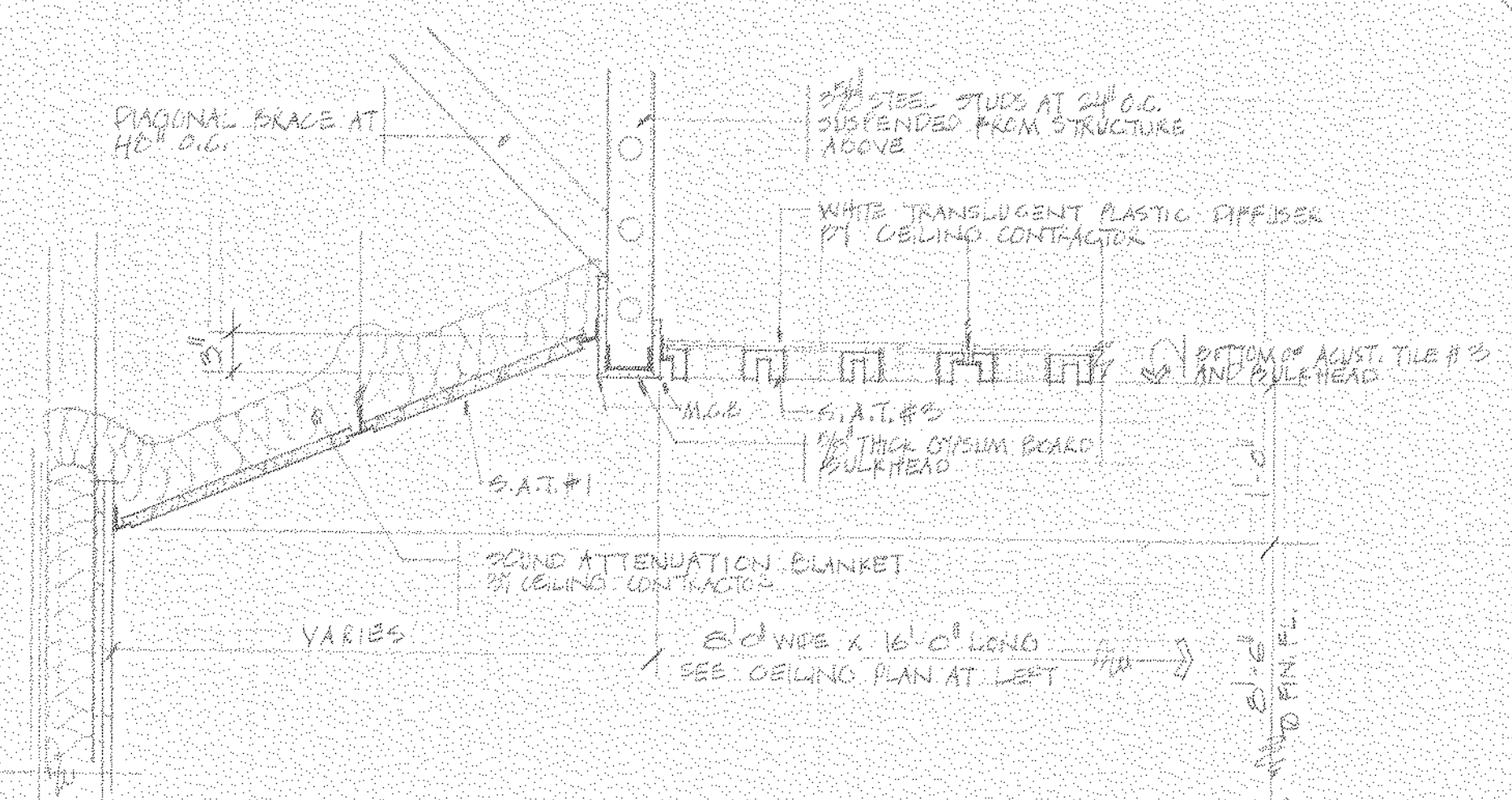
DROP CEILING SECTION B-A2



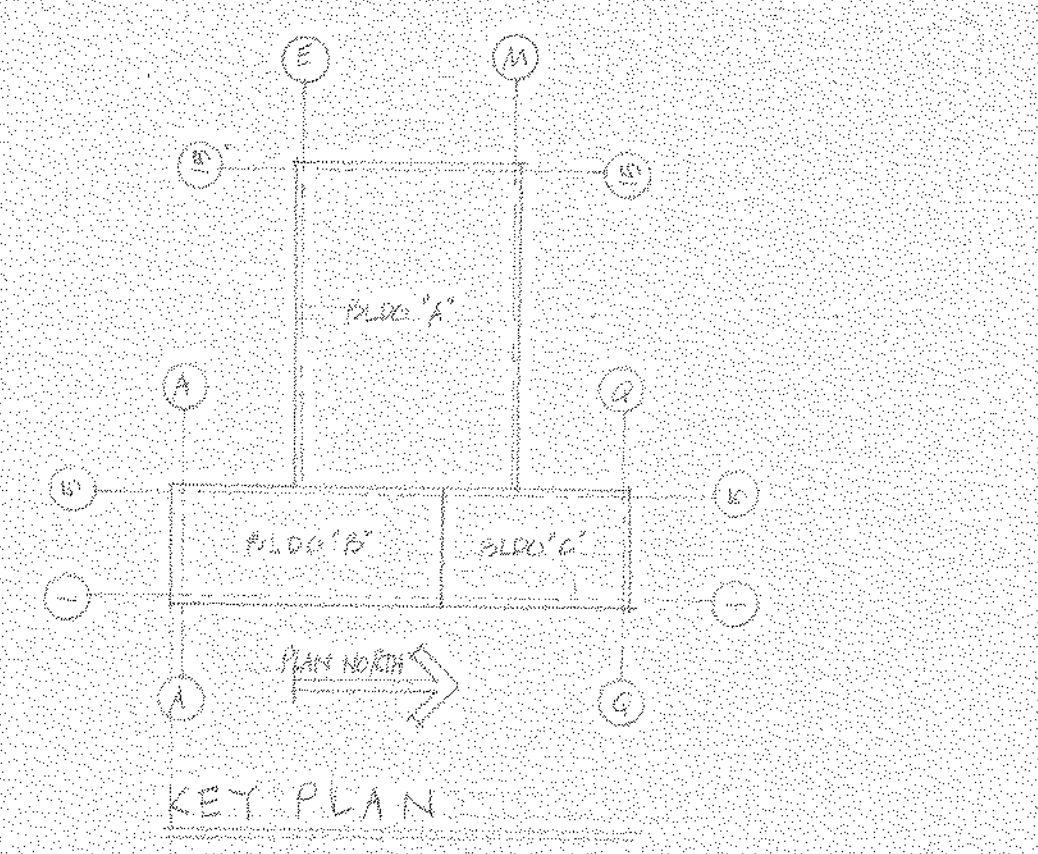
REFLECTED CEILING PLAN CONFERENCE 127



FLOOR PLAN, BUILDING 'D'



CEILING SECTION C-A2



KEY PLAN

44-5-A-17

NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.

NEW RESEARCH CENTER, OFFICES AND LABORATORY STATE COLLEGE, PENNA.

FLOOR PLAN, BUILDING 'D' & DETAILS

OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

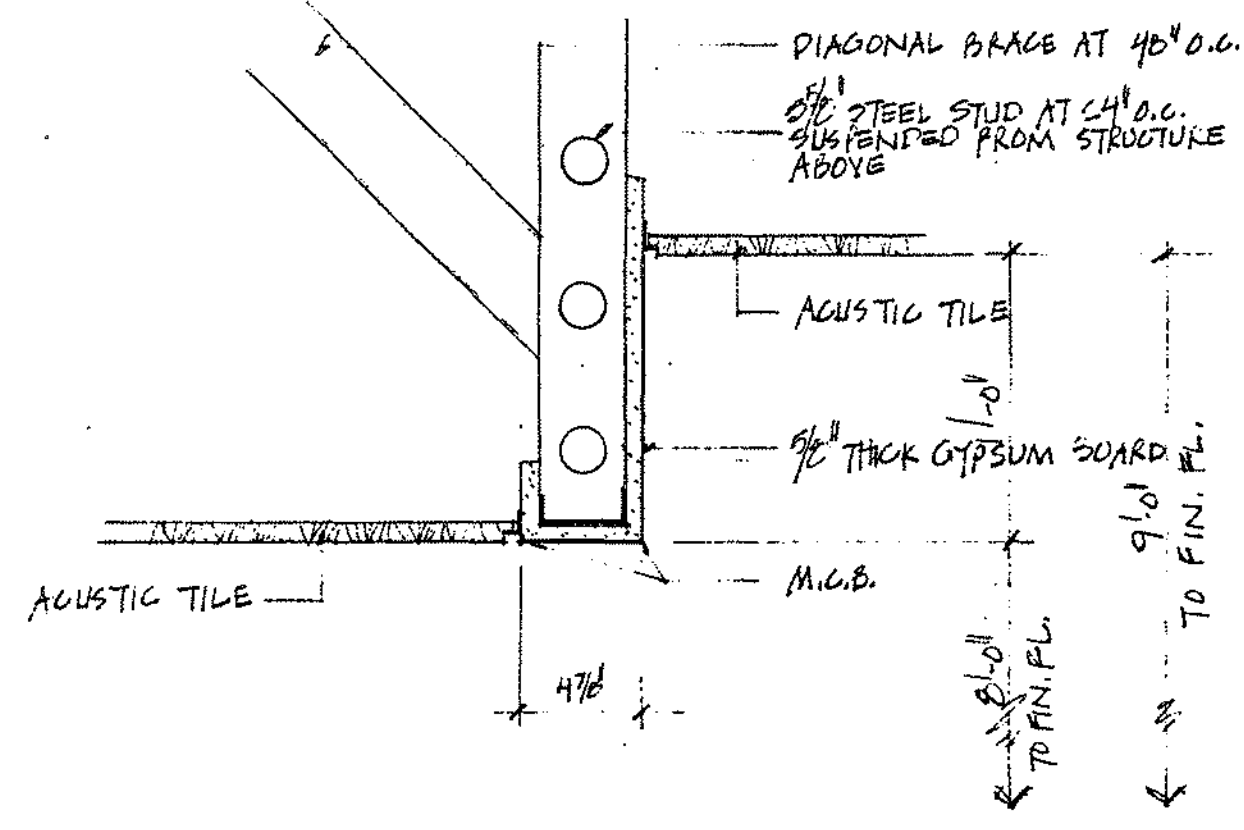
#0064 - A2 Fl. Plan. "B" + D+15 - 1981 - NONE - 02/10/7

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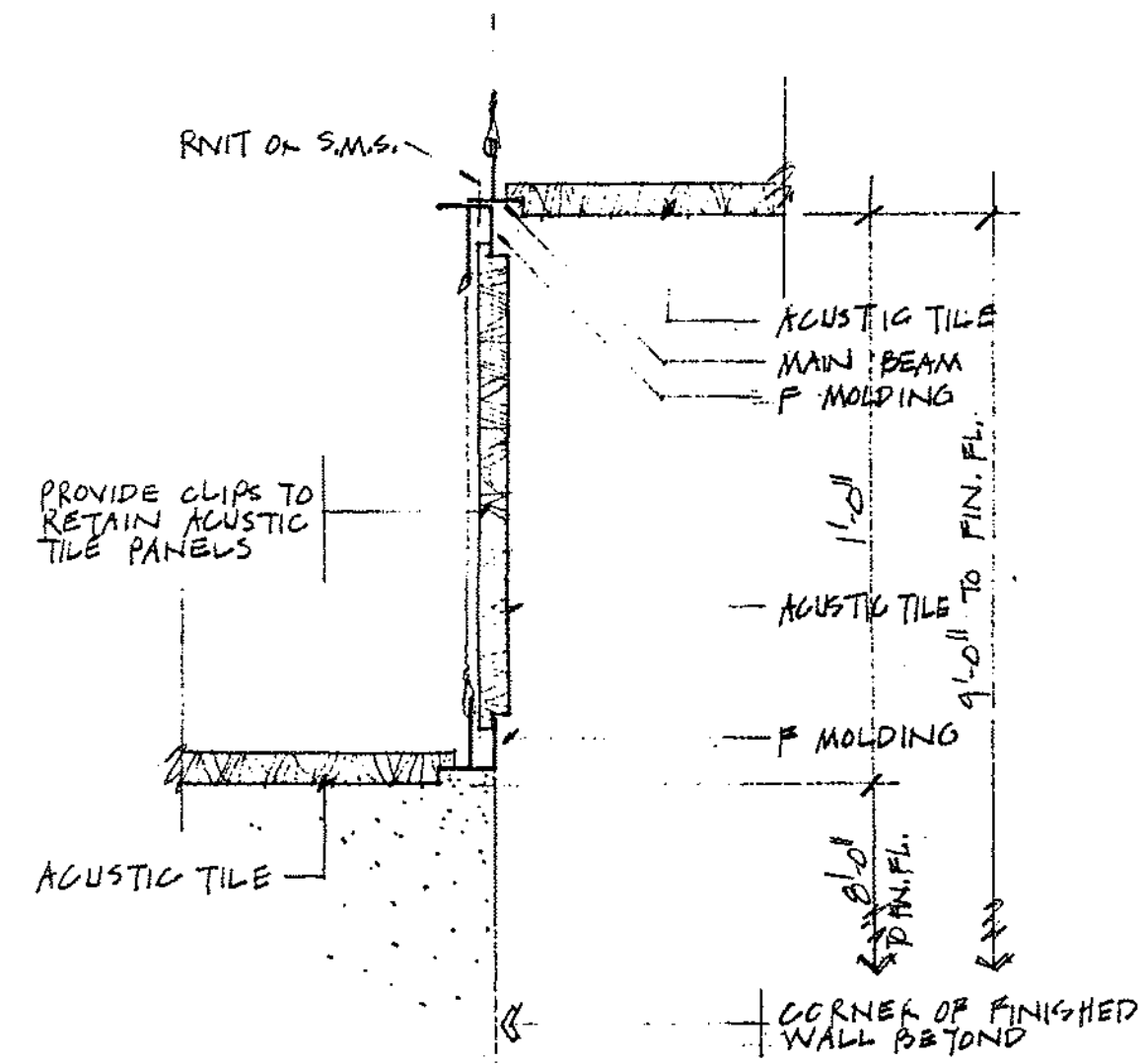




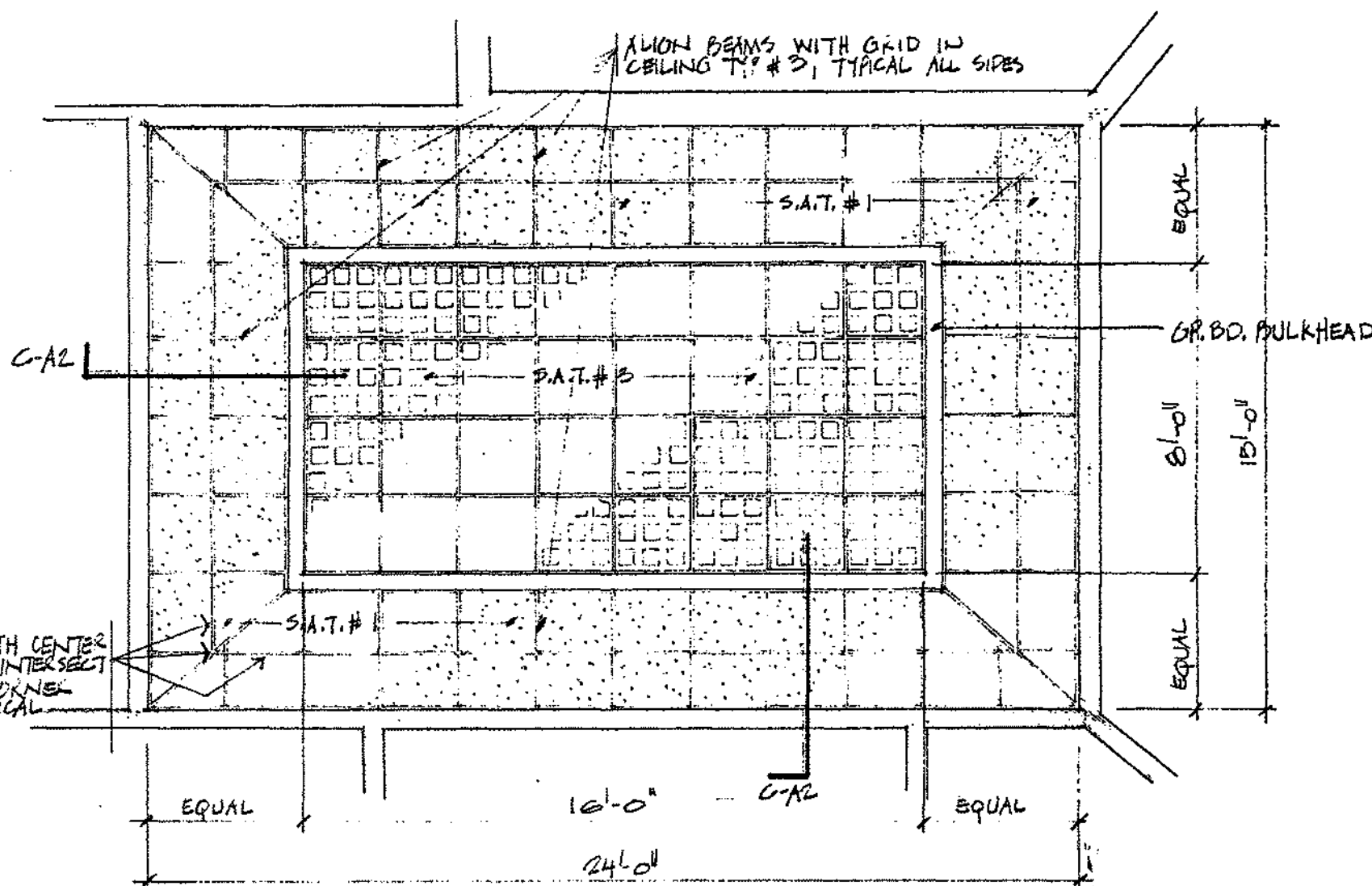




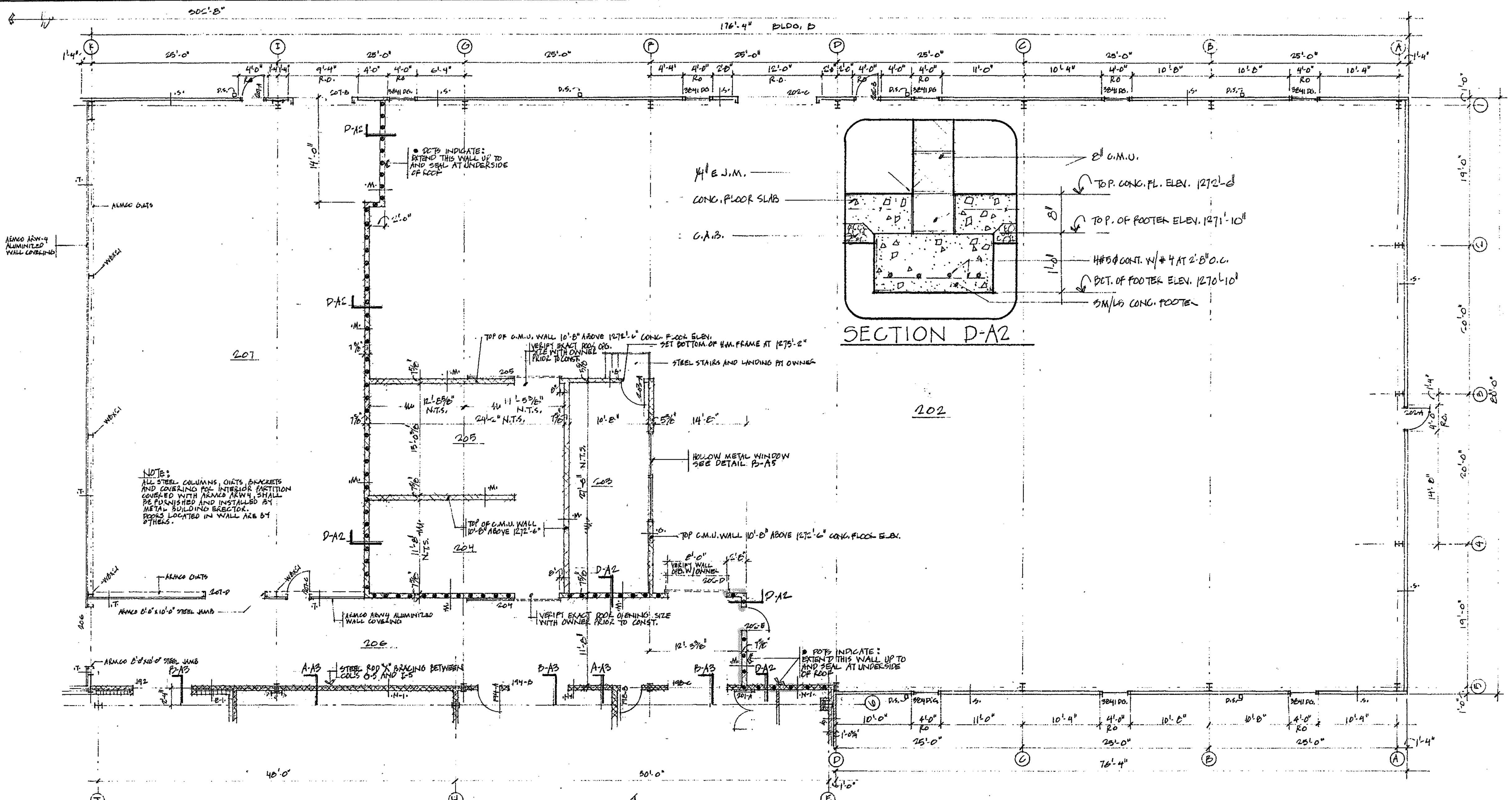
DROP CEILING SECTION A-A2  
1/4" = 1'-0"



DROP CEILING SECTION B-B2  
1/4" = 1'-0"

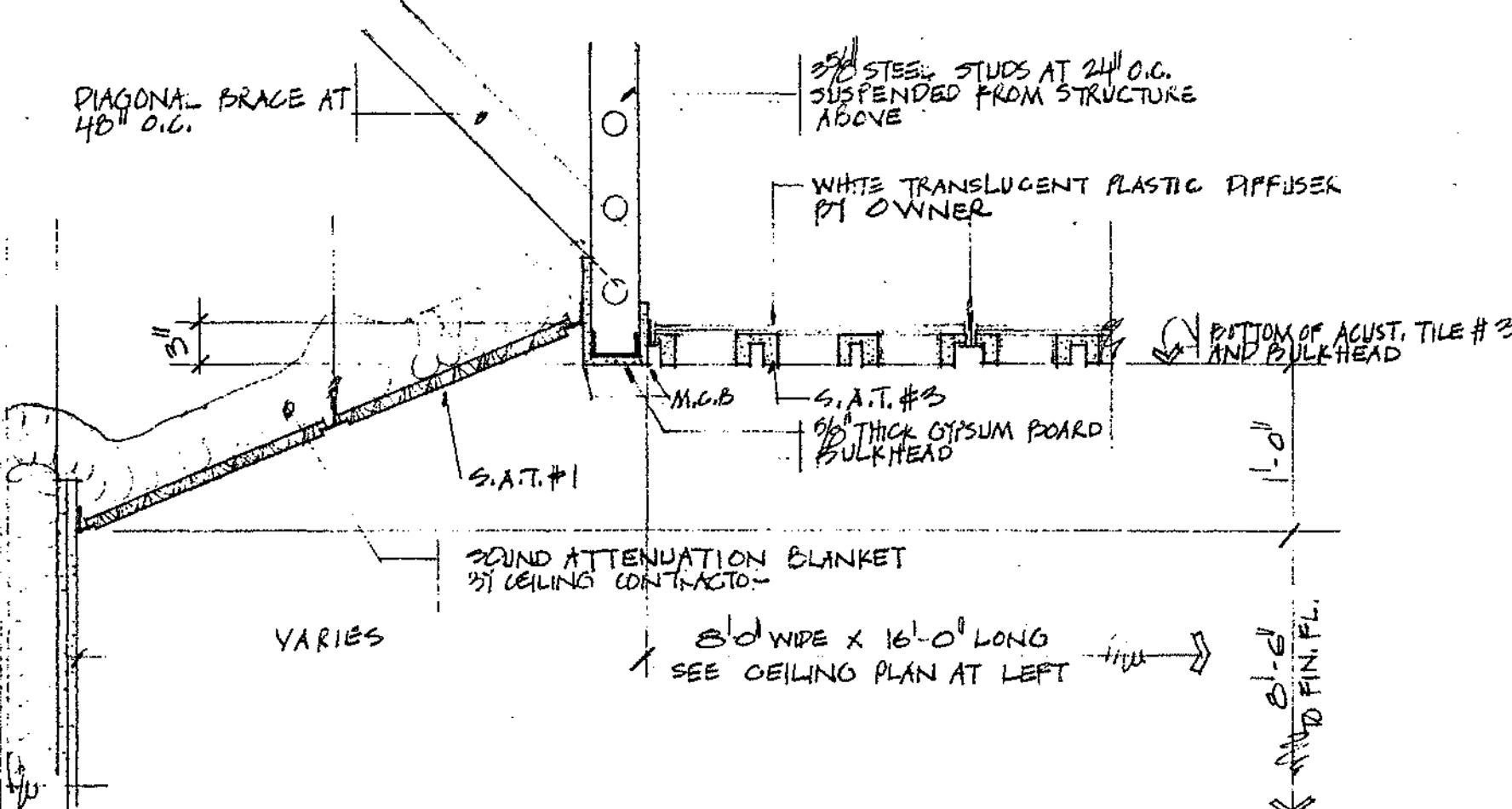


REFLECTED CEILING PLAN  
CONFERENCE 127  
1/4" = 1'-0"

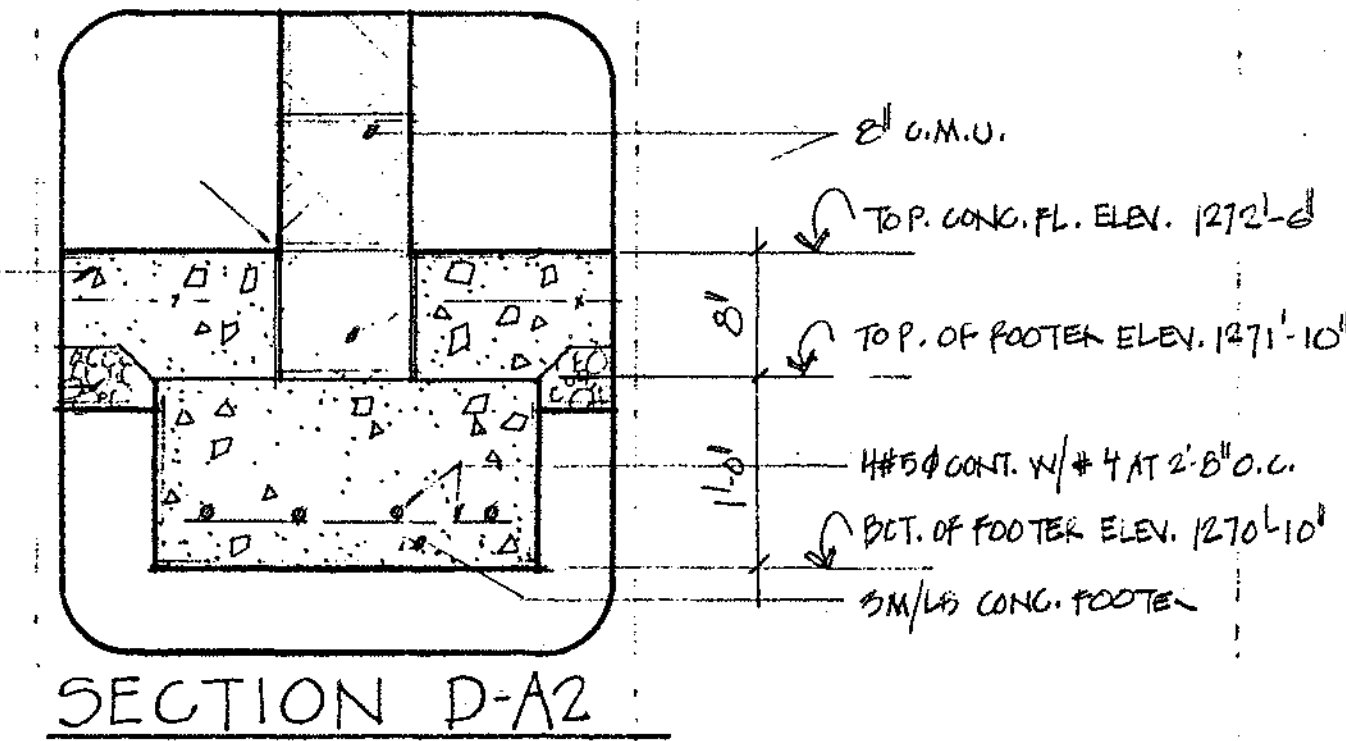


FLOOR PLAN, BUILDING 'B'

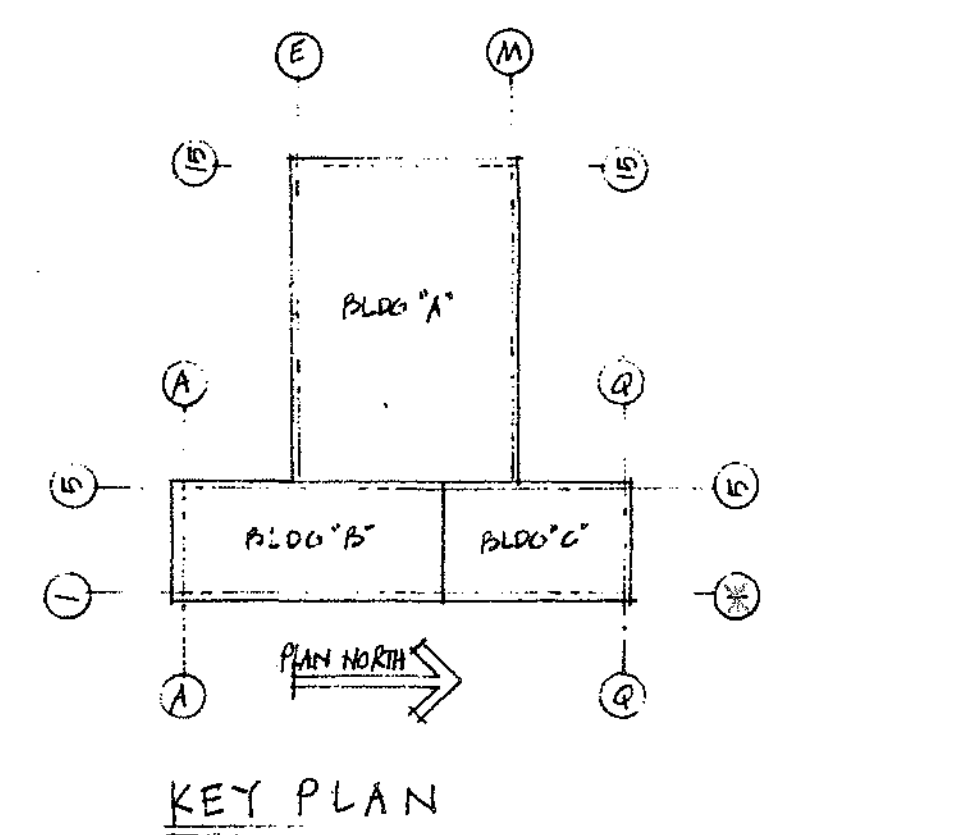
PLAN NORTH



CEILING SECTION C-C2  
1/4" = 1'-0"



SECTION D-A2



KEY PLAN

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OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

DRAWN BY G.W.H.		C.O. NO.	55-110-B-24 A2
CHECKED	DATE	CE-11-C-1	
SCALE AS NOTED		DWG. NO.	

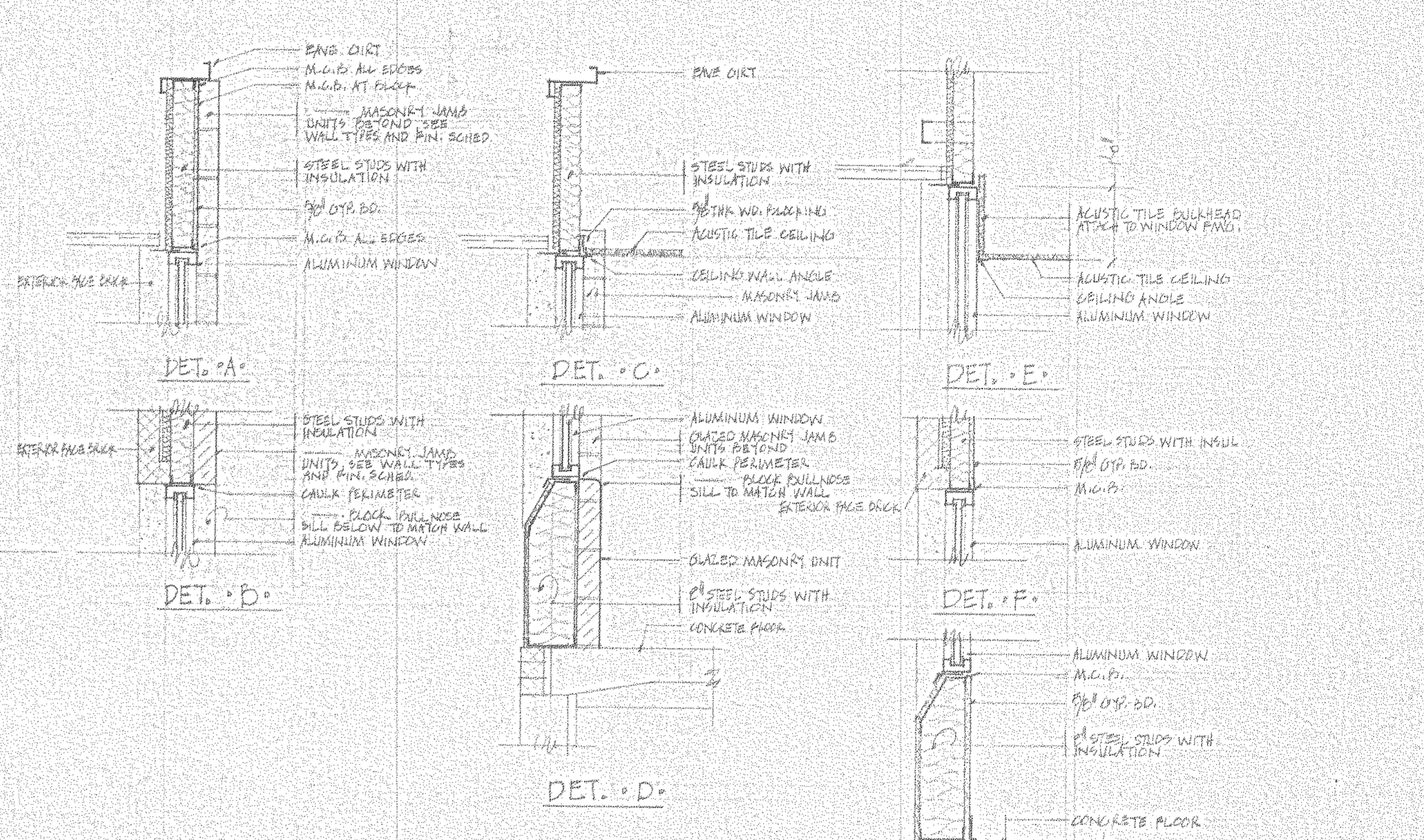
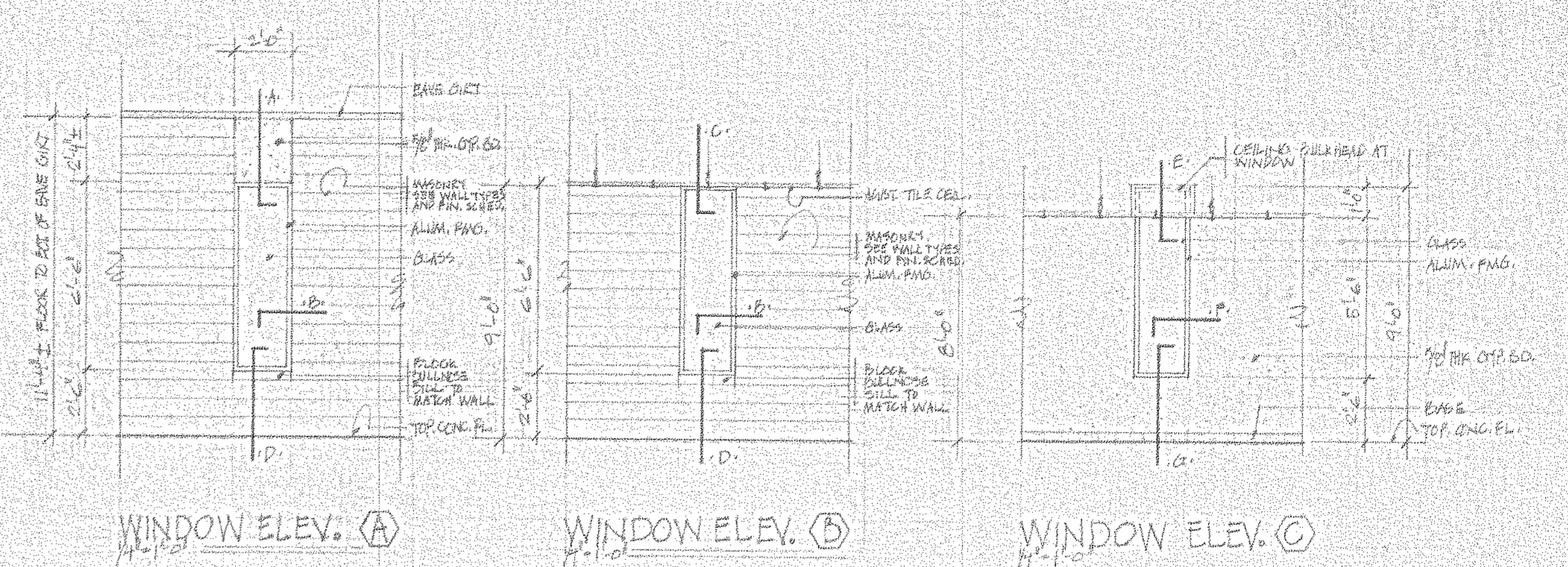
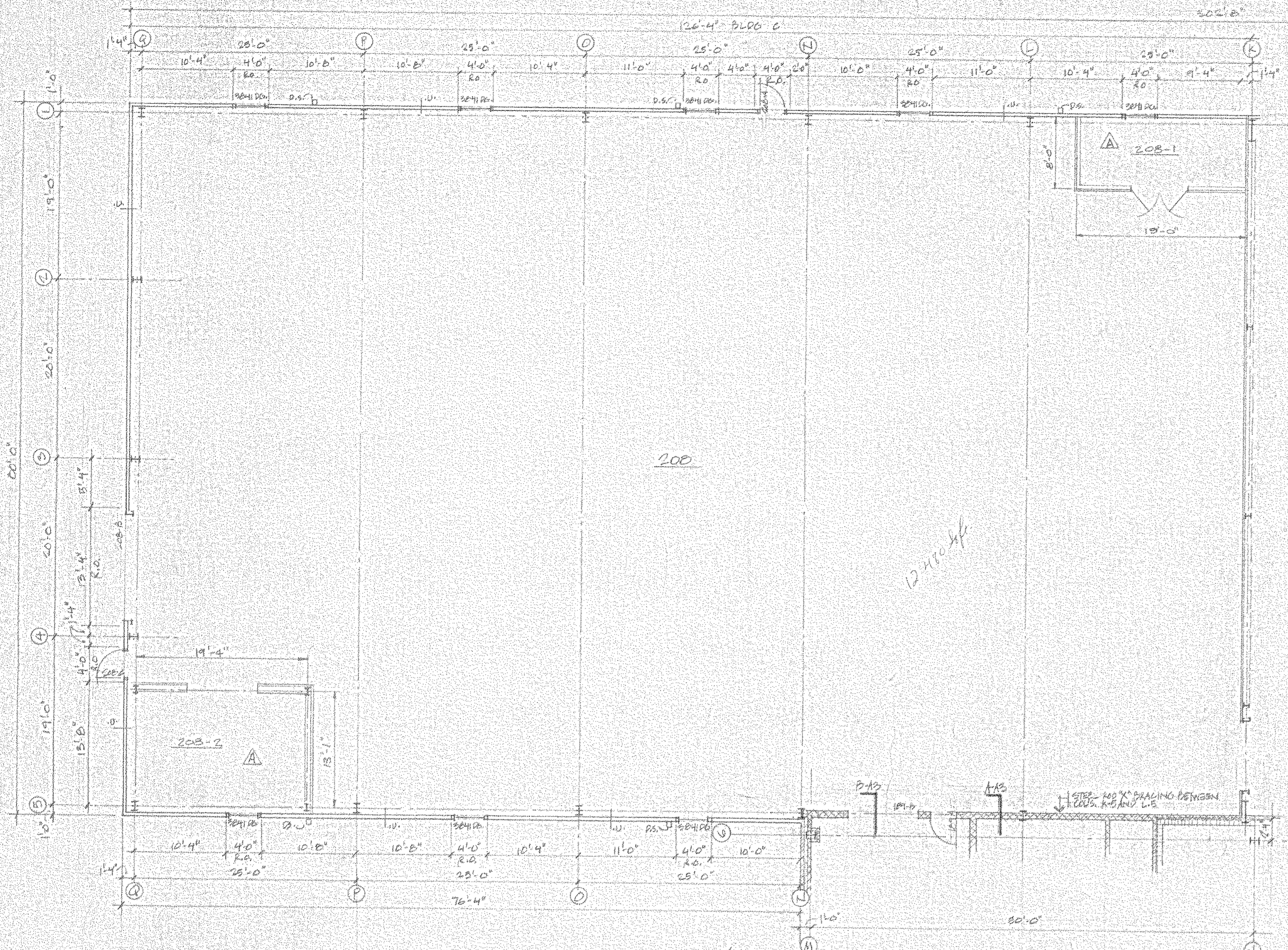
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

NEW RESEARCH CENTER,  
OFFICES AND LABORATORY  
STATE COLLEGE, PENNSA.

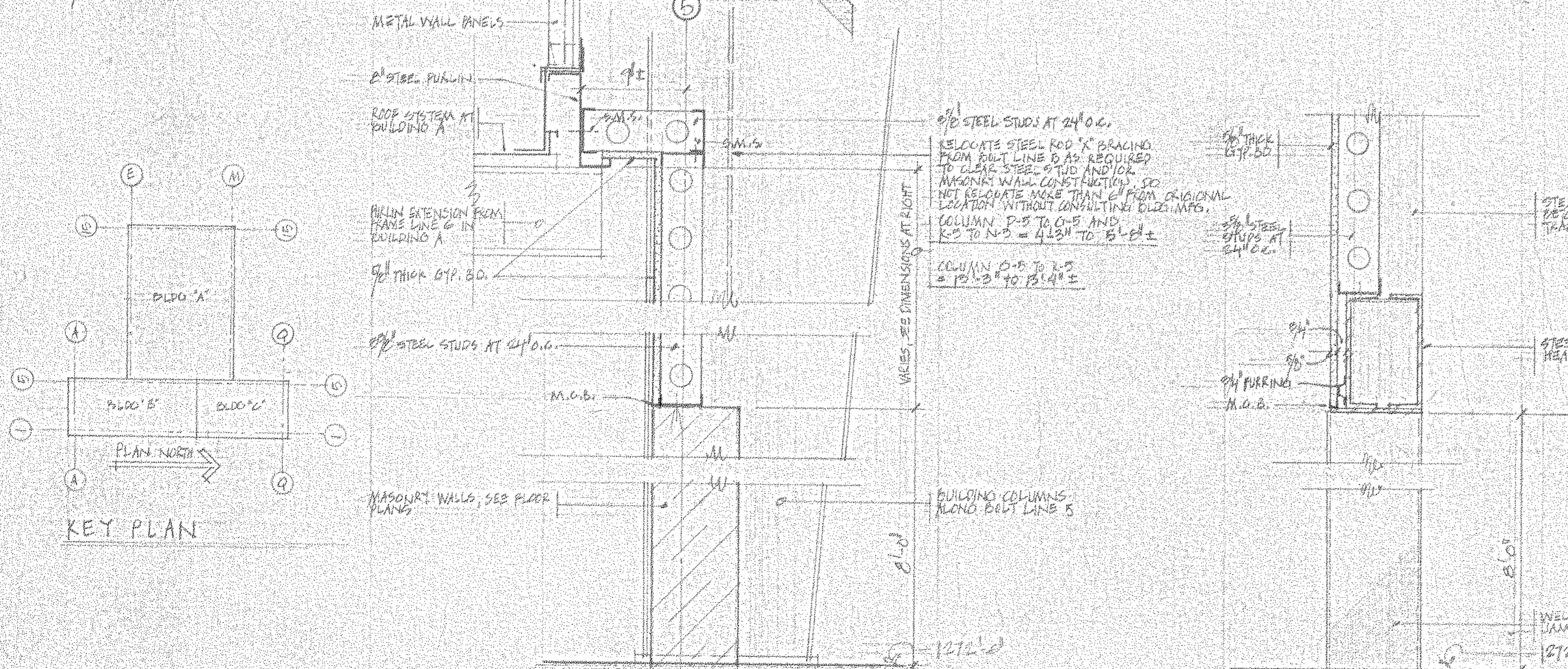
FLOOR PLAN, BUILDING 'B' & DETAILS

A-2 (AR5. +H)



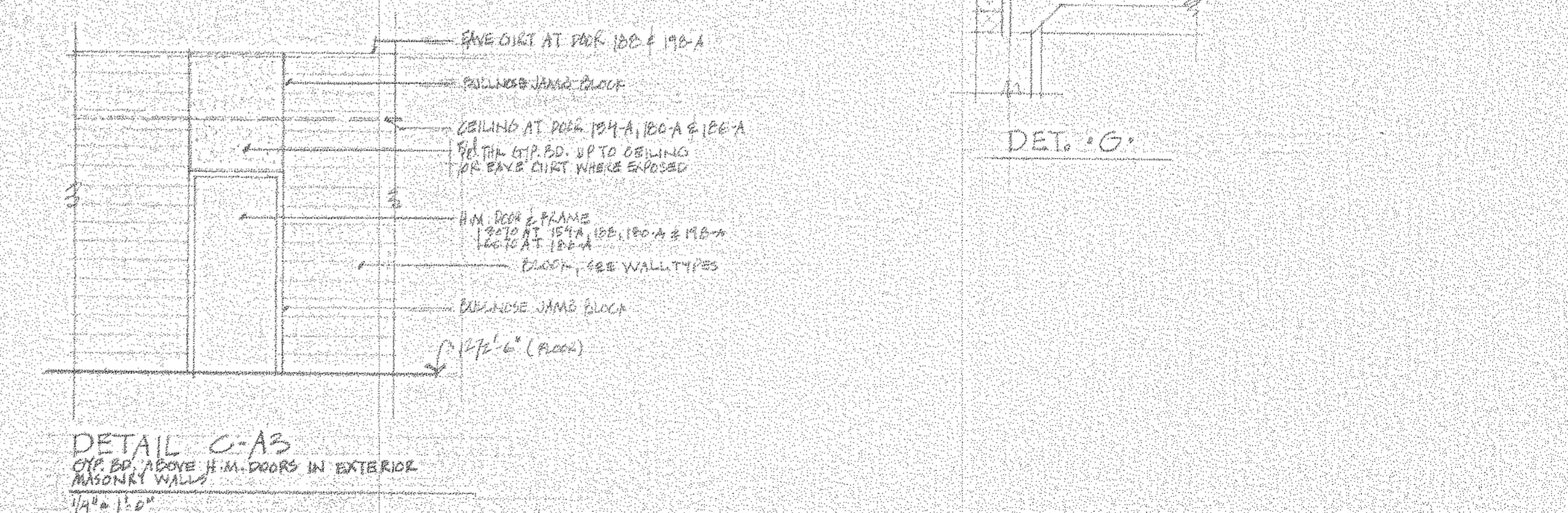


FLOOR PLAN, BUILDING 'C'



SECTION A-A3  
1/8" = 1'-0"

SECTION B-B3  
1/8" = 1'-0"



DETAIL C-A3  
O.P. ED. ABOVE H.M. DOORS IN EXTERIOR MASONRY WALLS  
1/4" = 1'-0"

11-5-A-19

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

NEW RESEARCH CENTER,  
OFFICES AND LABORATORY  
STATE COLLEGE, PENNA.

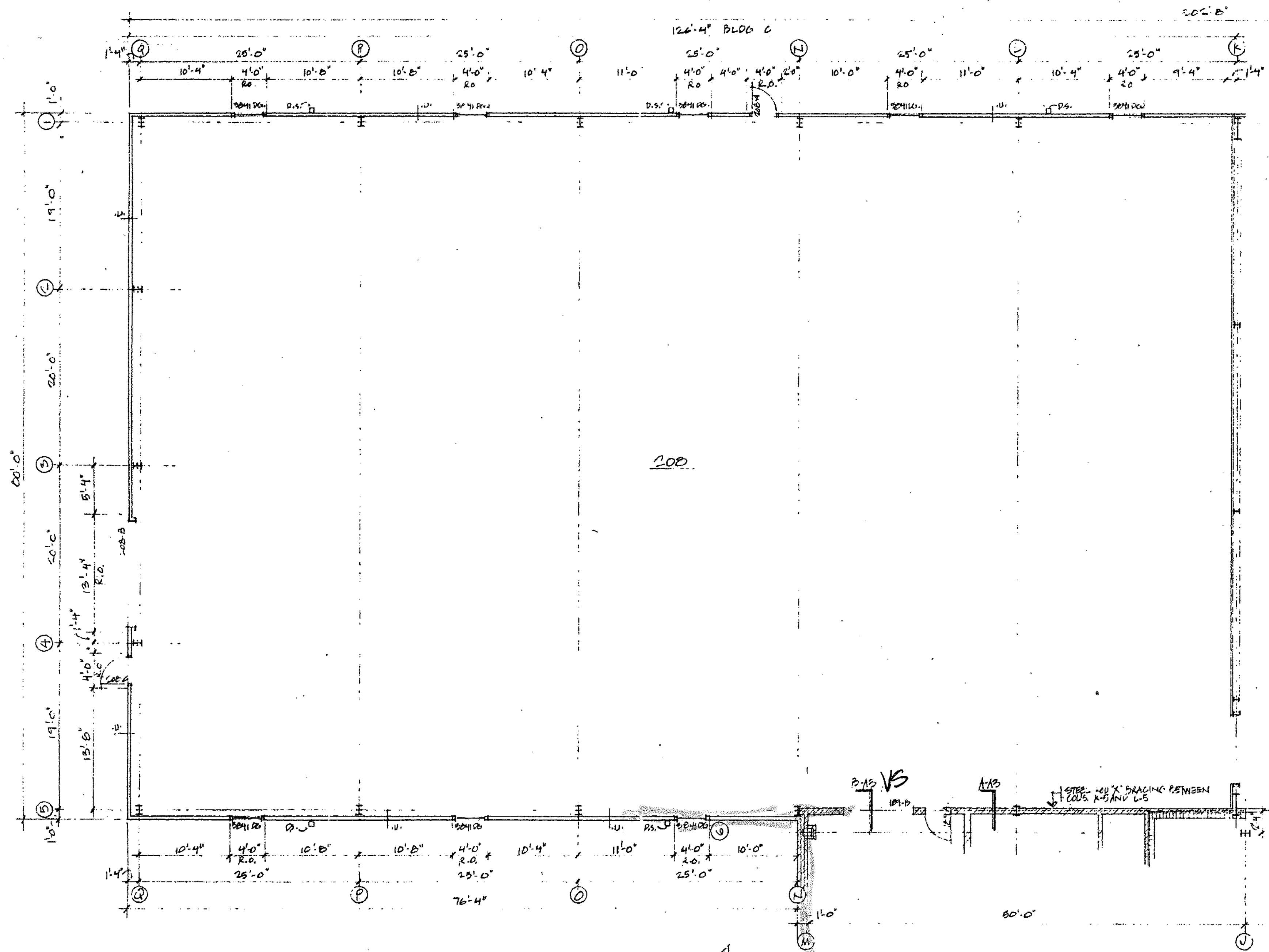
FLOOR PLAN, BUILDING 'C' & DETAILS			
OTHERS			
PLANT			
FOREMAN			
VENDOR			
PRINTS		REVISION	DESCRIPTION
		A	ADD ROOMS 208-1 & 208-2
			6-16-82
		DATE	SCALE
		11-11-81	NONE
		DATE	DWG NO.
			A3

#0064 A3 Fl. Plan 'C' & DTLS 1982 NONE 04/107

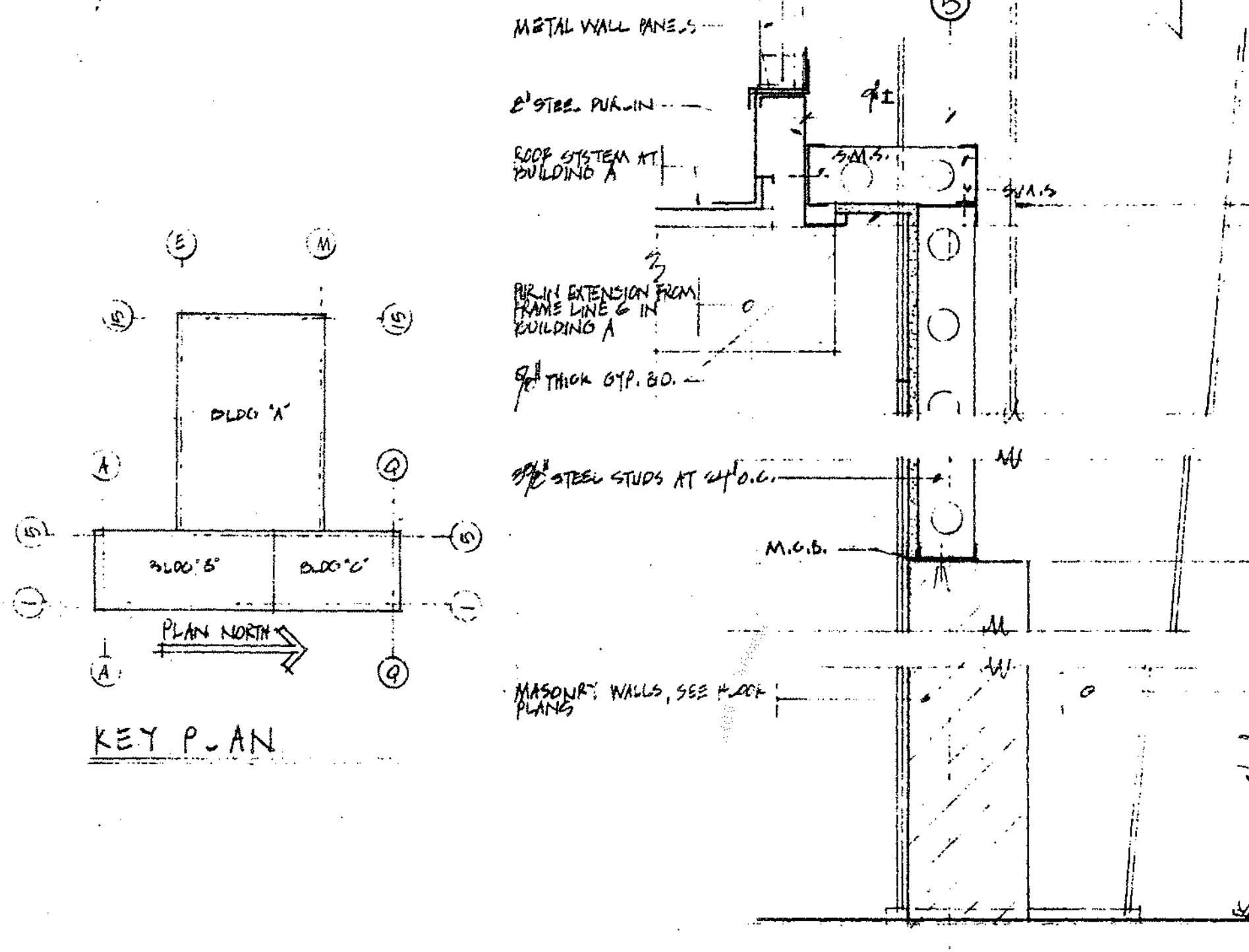
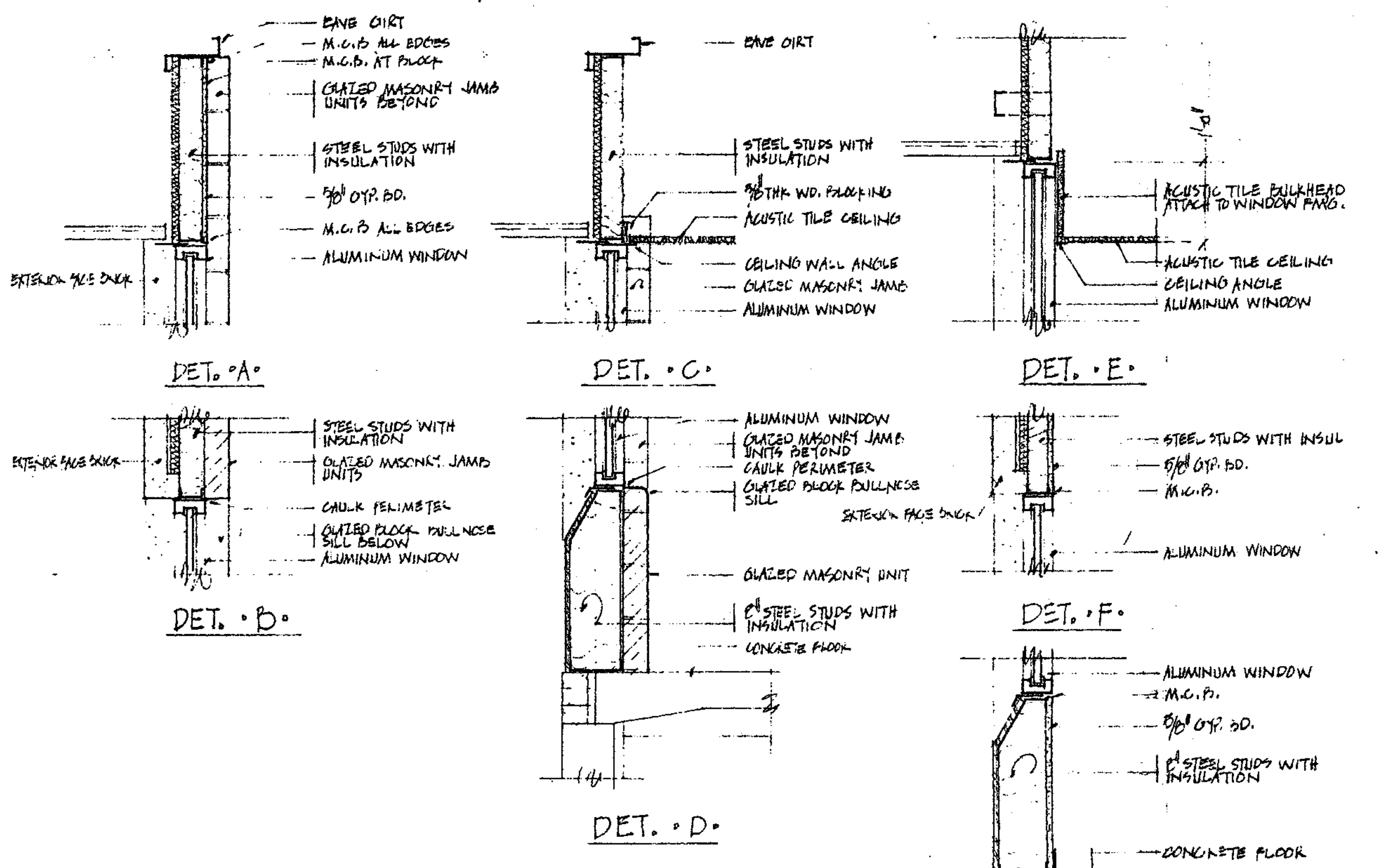
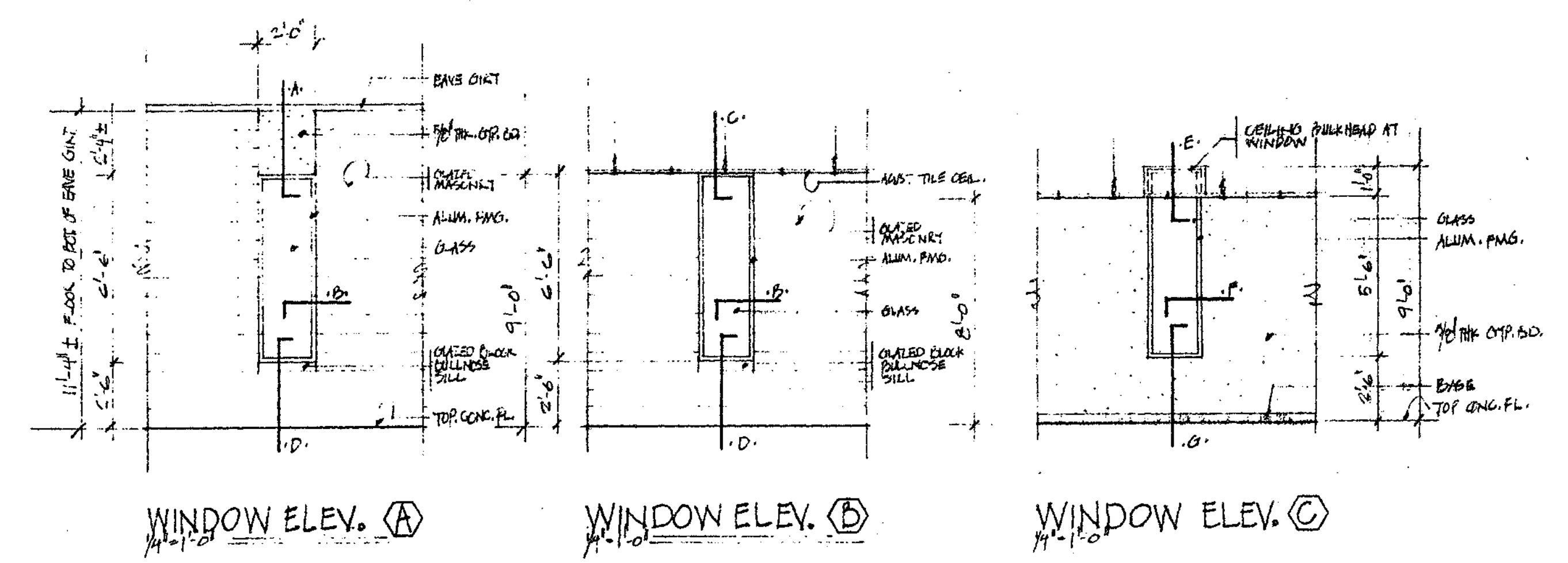
DRAWING 627 20118 3

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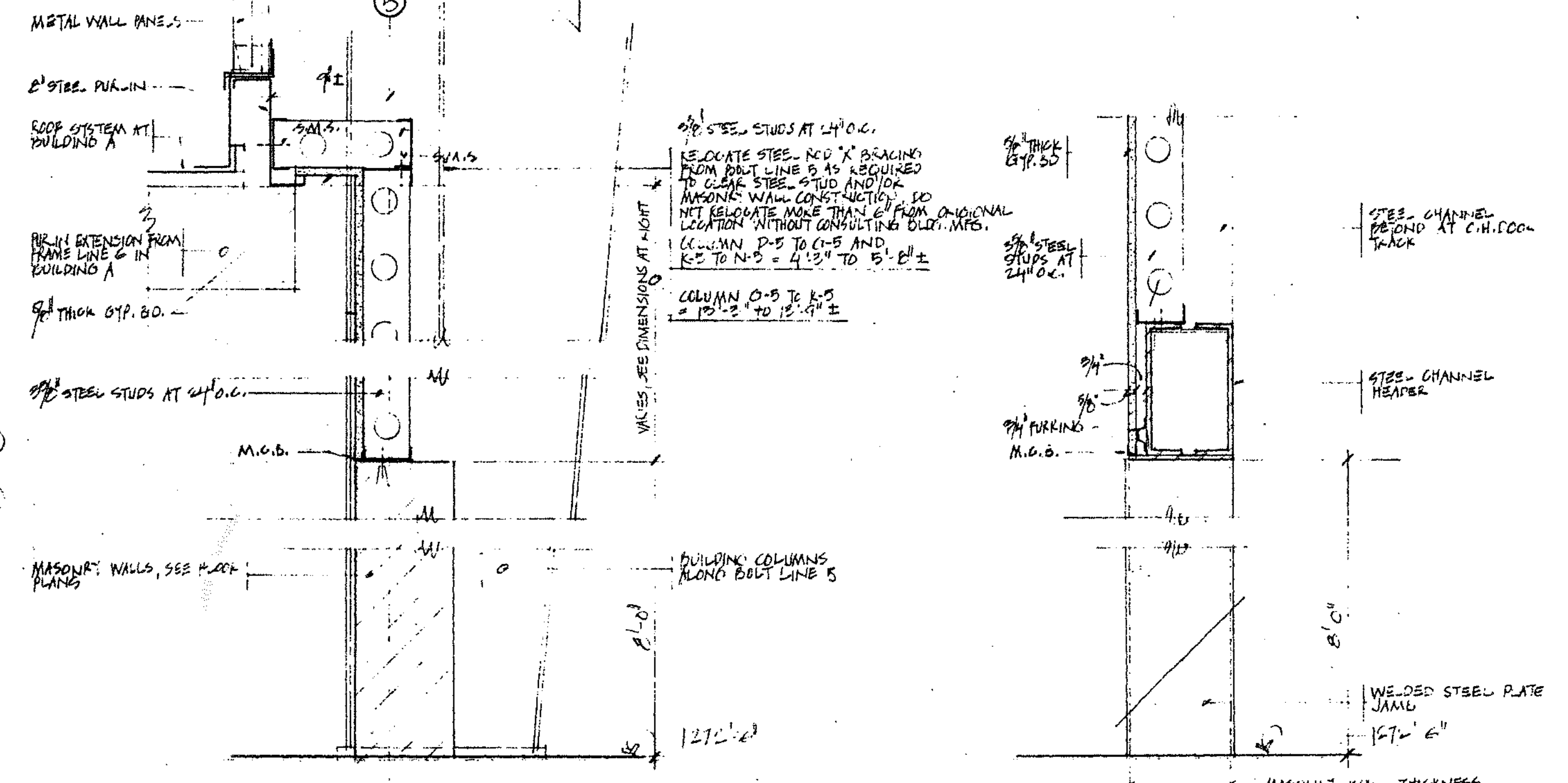




FLOOR PLAN, BUILDING 'C'

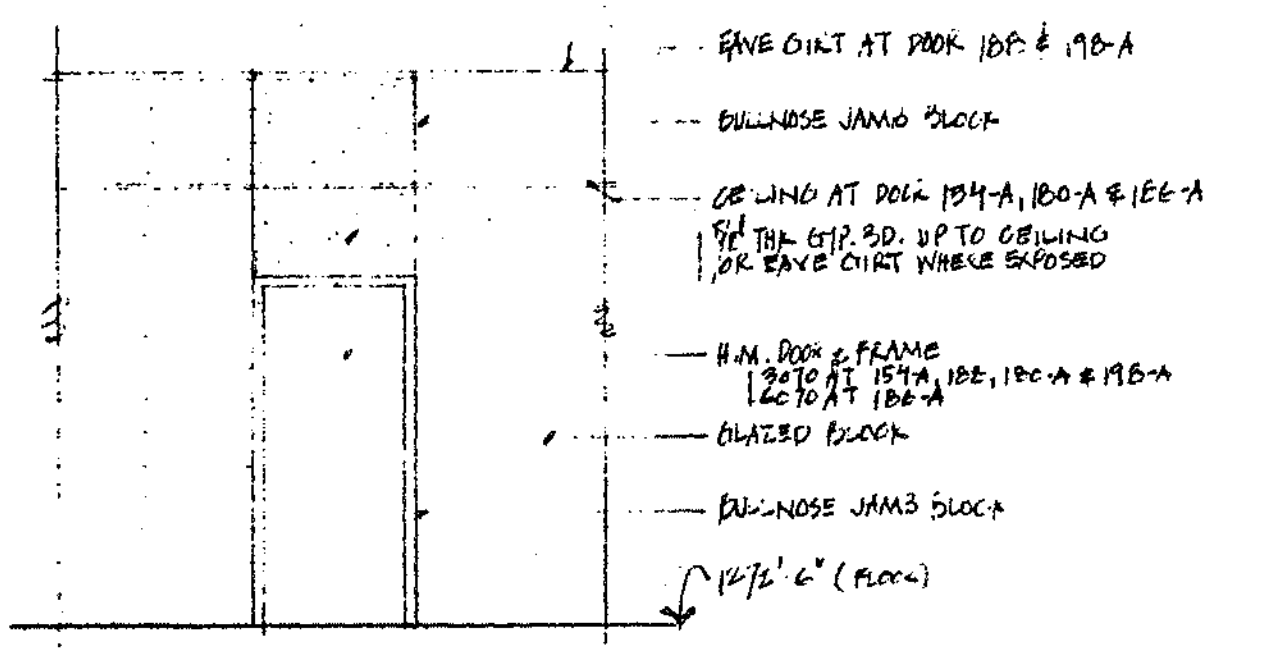


KEY PLAN



SECTION A-A3

SECTION B-A3



DETAIL C-A3  
OTE: DO NOT REMOVE H.M. DOORS IN BATHROOM  
MASONRY WALLS  
1/4" = 1'-0"

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT.  
RESEARCH CENTER  
CURWENSVILLE, PA.

NEW RESEARCH CENTER,  
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STATE COLLEGE, PENNA.

FLOOR PLAN, BUILDING 'C' & DETAILS

DRAWN BY C.W.H. C.D. NO. 02-11-01  
CHECKED DATE  
SCALE AS NOTED  
DWG. NO.

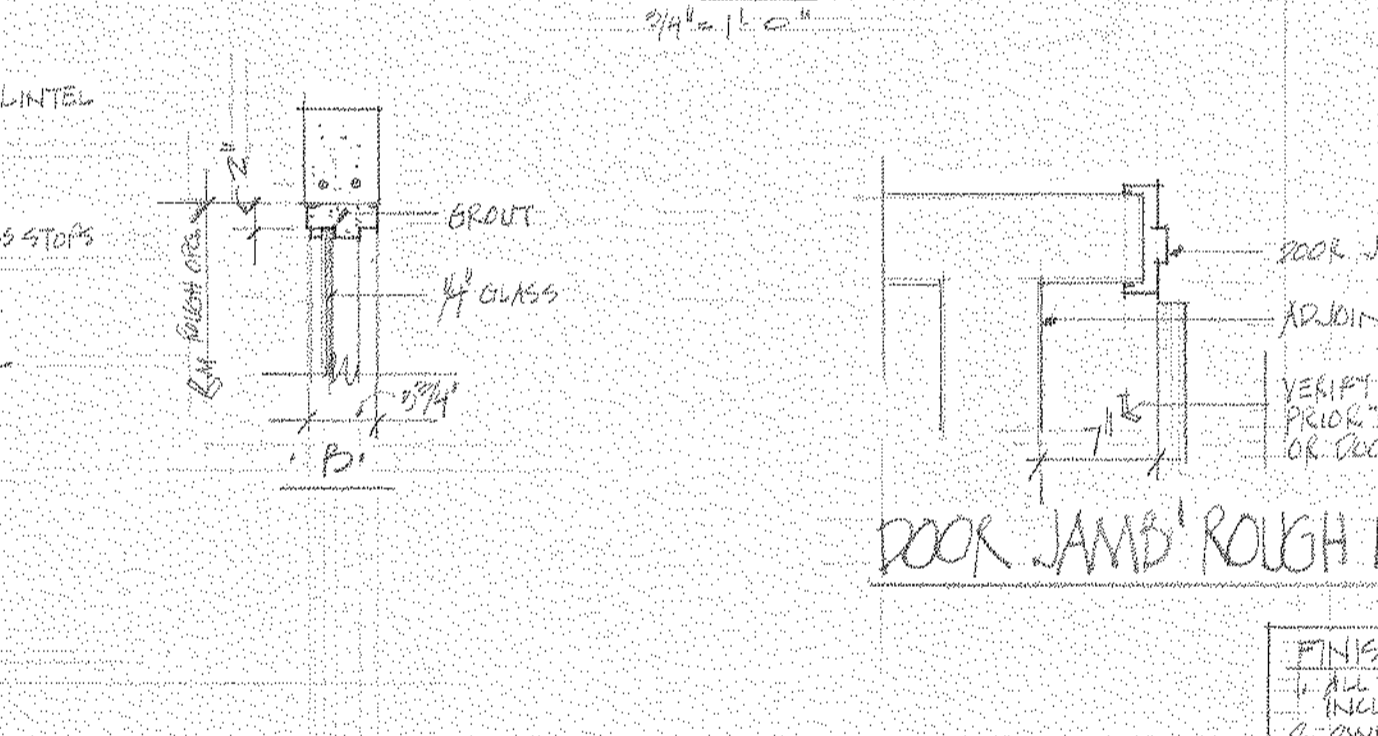
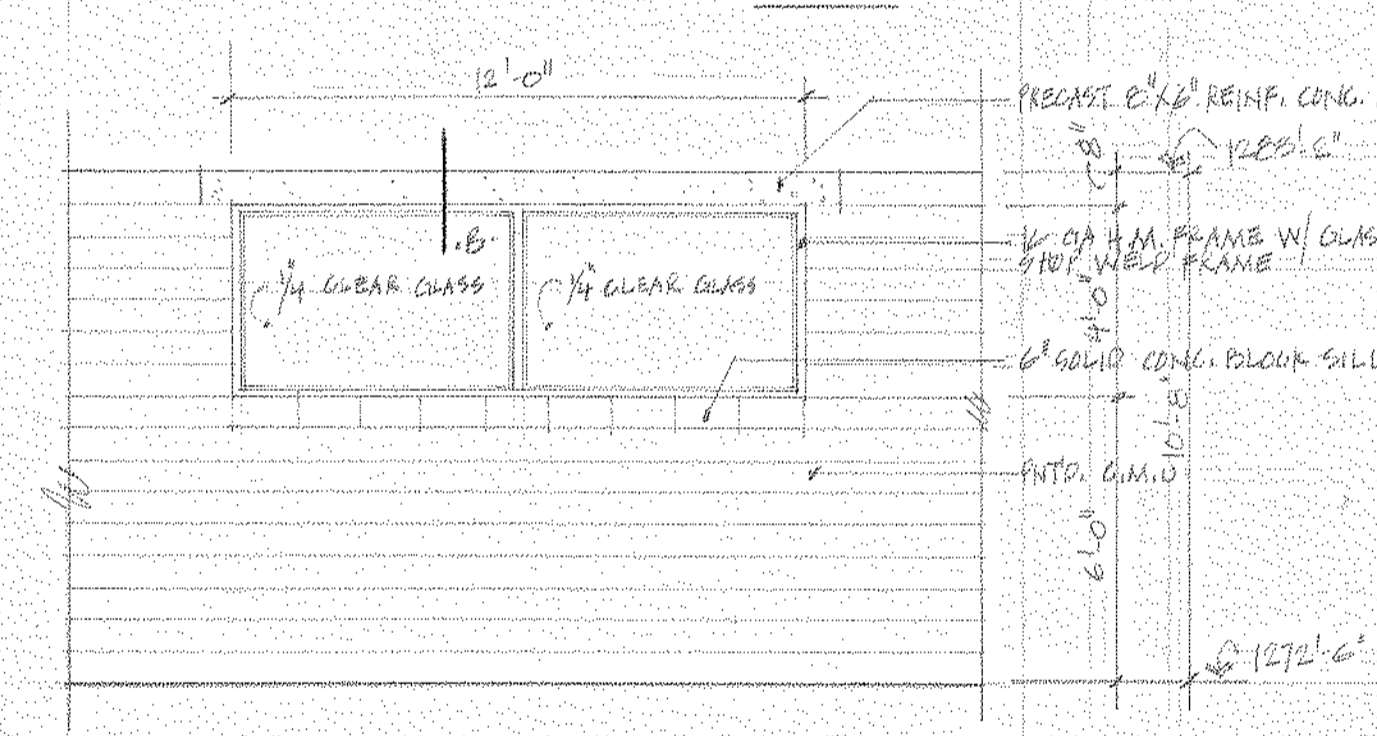
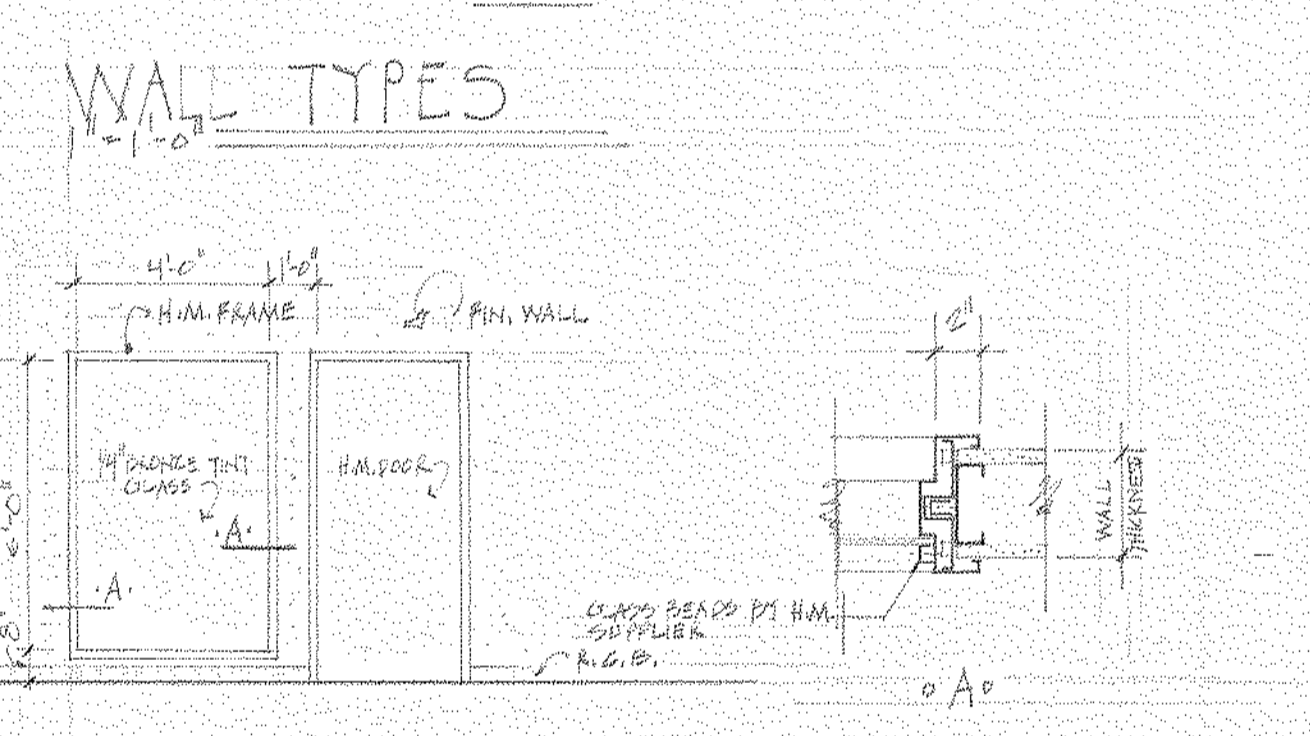
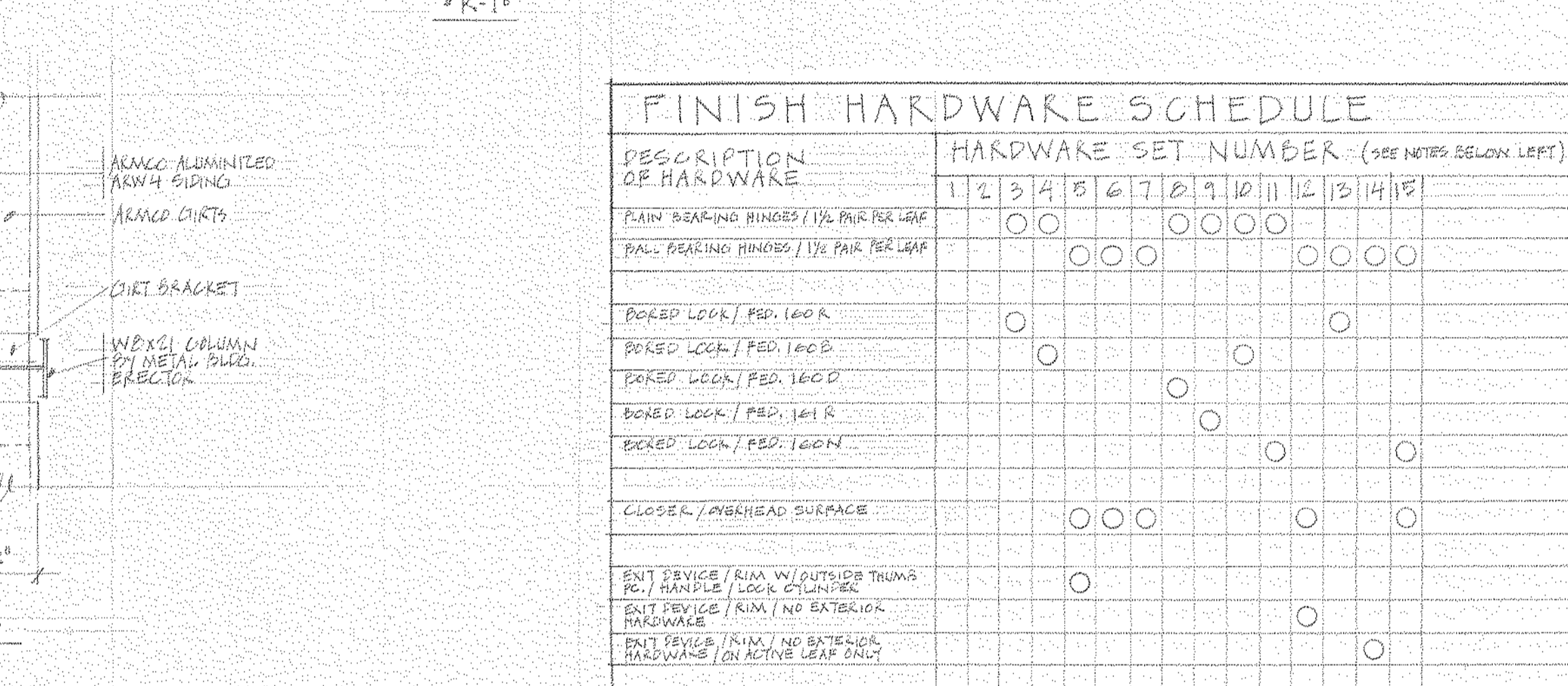
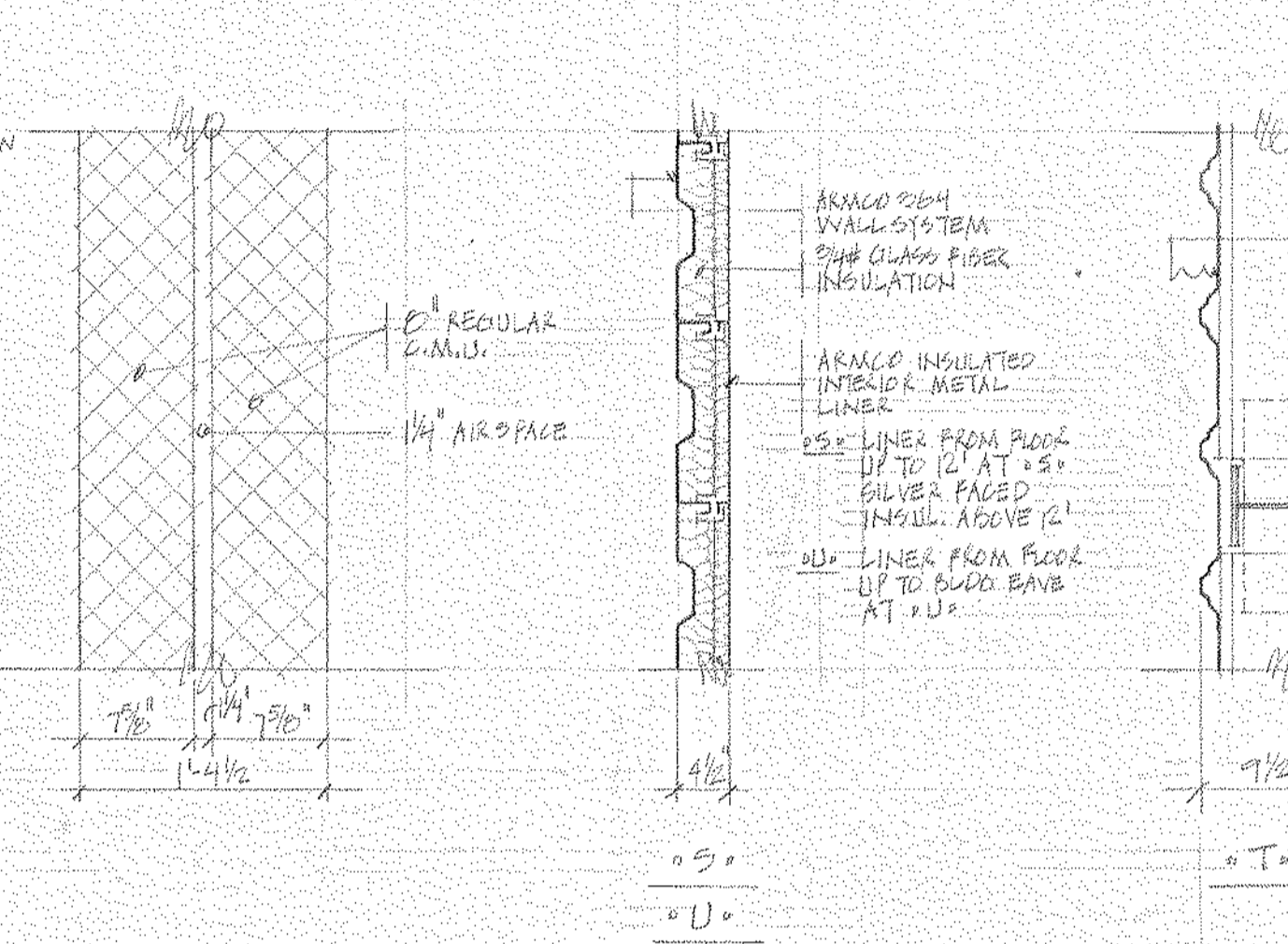
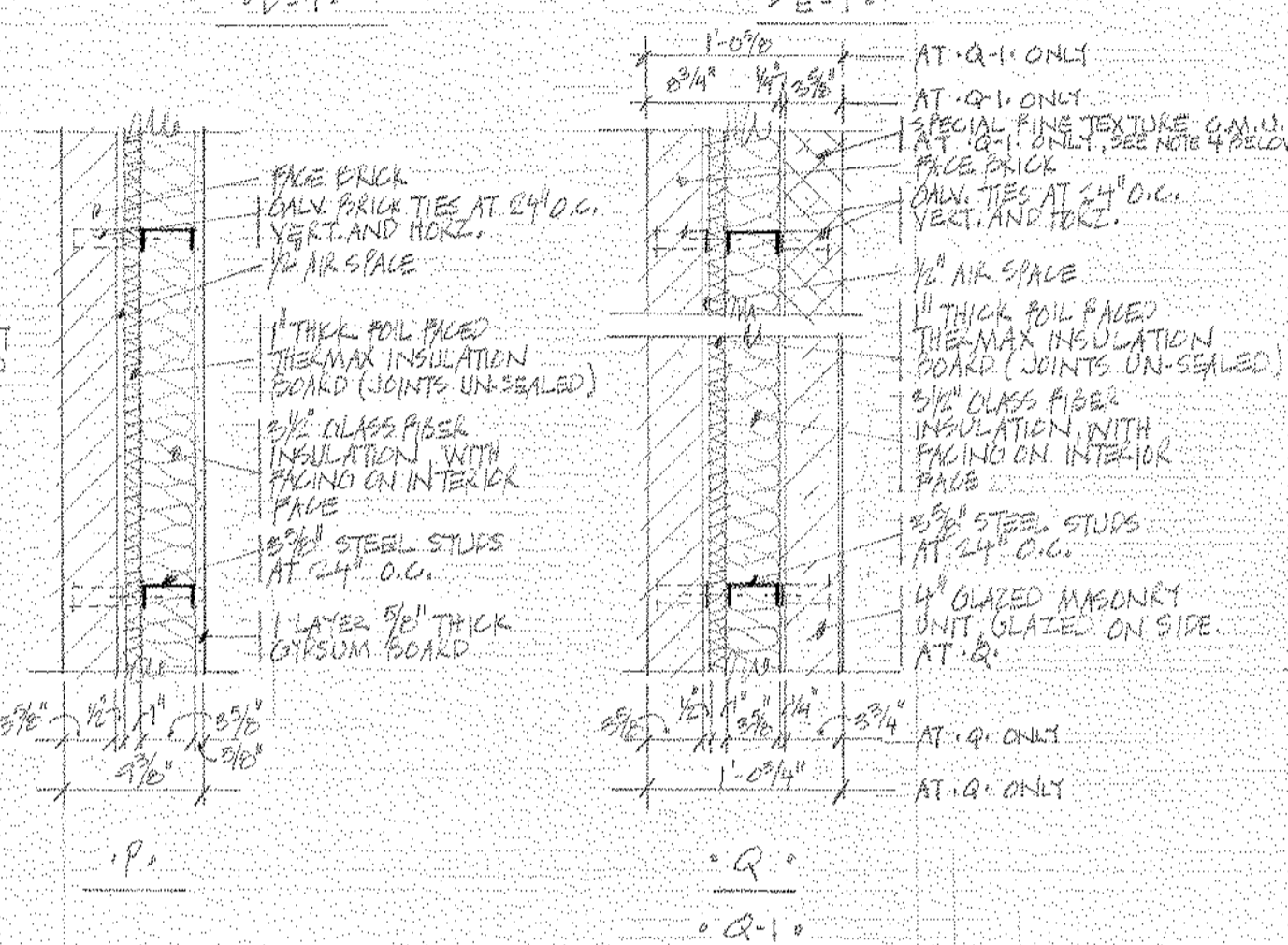
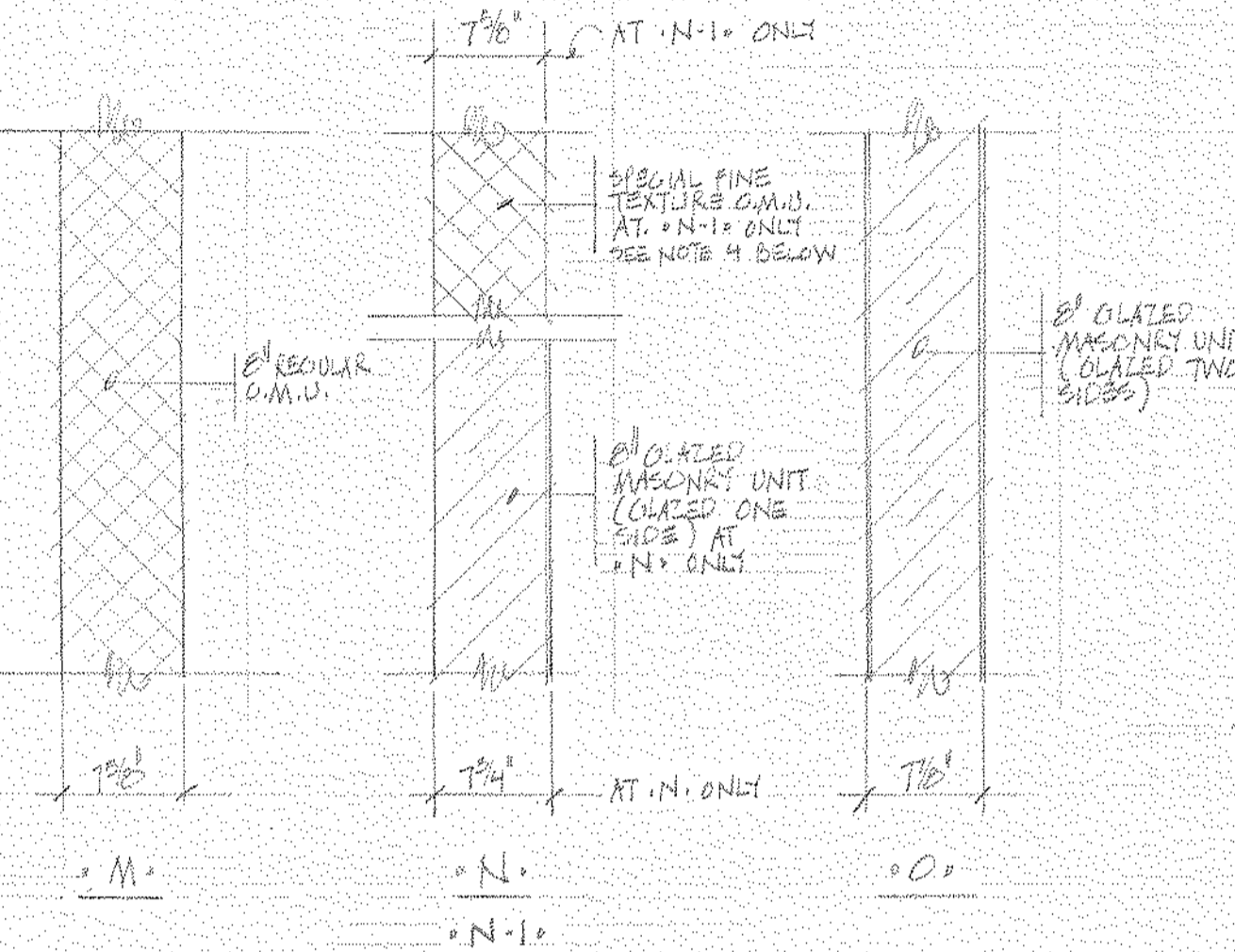
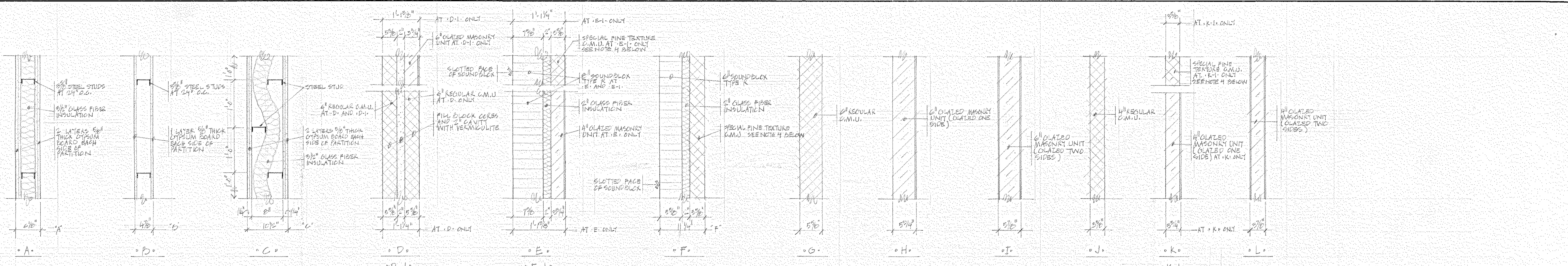
OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE	SCALE AS NOTED	DATE	DWG. NO.

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### FINISH HARDWARE SCHEDULE

DESCRIPTION OF HARDWARE | HARDWARE SET NUMBER (SEE NOTES BELOW LEFT)

PLAIN BEARING HINGES (1/2 PAIR PER LEAF)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PAUL BEARING HINGES (1/2 PAIR PER LEAF)															
ROCKED LOCK / PFD. 160 R															
ROCKED LOCK / PFD. 160 D															
ROCKED LOCK / PFD. 160 C															
ROCKED LOCK / PFD. 161 R															
ROCKED LOCK / PFD. 160 M															
CLOSER / ANGLEHEAD SURFACE															
EXIT DEVICE / RIM W/ OUTSIDE THUMB PL. / HANDLE / LOCK CYLINDER															
EXIT DEVICE / RIM / NO EXTERIOR HARDWARE															
EXIT DEVICE / RIM / NO EXTERIOR HARDWARE / ON ACTIVE LEAF ONLY															
SURFACE FLUSH BOLTS ON HEAD AND FOOT OF INACTIVE LEAF															
WALL MOUNTED POOR STOP															
FLOOR MOUNTED POOR STOP EACH LEAF															
PUSH PLATE AND FULL HANDLE															
1/2 HIGH STOP PLATE ON ROOM SIDE ONLY															
JAMB AND HEAD WEATHERSEAL KIT / ADJUSTABLE															
ADJUSTABLE DOOR SEAL / ADJUSTABLE															
EXTRUDED ALUMINUM THRESHOLD W/ WEATHERSTRIP															
RETRACTABLE PLATE AT REAR DOORS ONLY															

INTERIOR HOLLOW METAL WINDOW LIGHT UNIT DETAIL A-A5  
1/4" CLEAR GLASS, 1/2" FRAME, 1/2" FIN WALL

HOLLOW METAL WINDOW AT ROOM DOOR DETAIL B-B5  
1/4" CLEAR GLASS, 1/2" FRAME, 1/2" FIN WALL

DOOR JAMB ROUGH IN LOCATION, TYPICAL @ STU. STUDS

FINISH HARDWARE NOTES:  
1. ALL FINISH HARDWARE TO BE UP TO FINISH OF EQUAL  
2. OWNER SHALL ESTABLISH KETING  
3. HARDWARE SET IS 15 UL LABEL  
4. ALL HARDWARE SHALL BE MEDIUM DUTY OR HEAVY DUTY AS DESIGNATED IN THE DOOR AND FRAME SCHEDULE

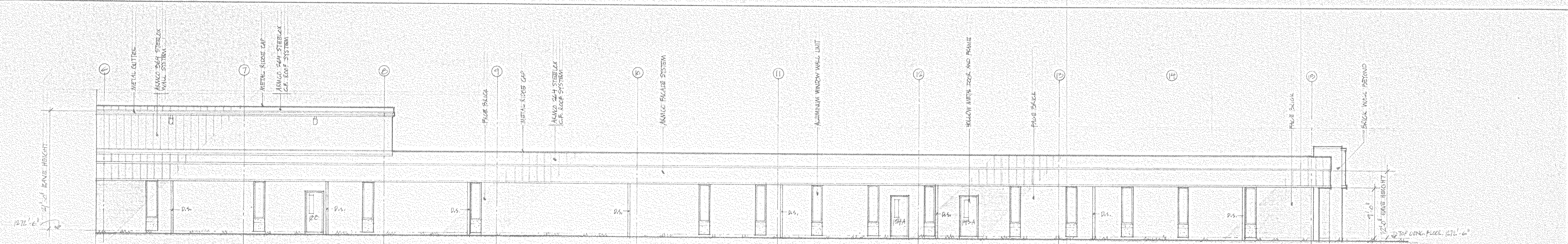
### DOOR AND FRAME SCHEDULE

DOOR NO.	SIZE		MATERIAL	TYPE	GLASS	LOUVER	FRAME		FIRE RATING	HARDWARE		REMARKS
	W	H					MATERIAL	TYPE		SET NO.	REMARKS	
199	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
200	5'0"	6'6"	---	---	---	---	---	---	---	---	---	---
201A	5'0"	6'6"	---	---	---	---	---	---	---	---	---	---
201B	5'0"	6'6"	---	---	---	---	---	---	---	---	---	---
202A	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
202B	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
202C	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
202D	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
202E	5'0"	6'6"	---	---	---	---	---	---	---	---	---	---
202F	5'0"	6'6"	---	---	---	---	---	---	---	---	---	---
203A	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
204	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
205	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
206	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207A	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207B	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207C	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207D	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207E	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207F	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207G	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207H	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207I	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207J	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207K	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207L	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207M	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207N	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207O	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207P	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207Q	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207R	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207S	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207T	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207U	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207V	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207W	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207X	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207Y	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---
207Z	5'0"	7'0"	---	---	---	---	---	---	---	---	---	---

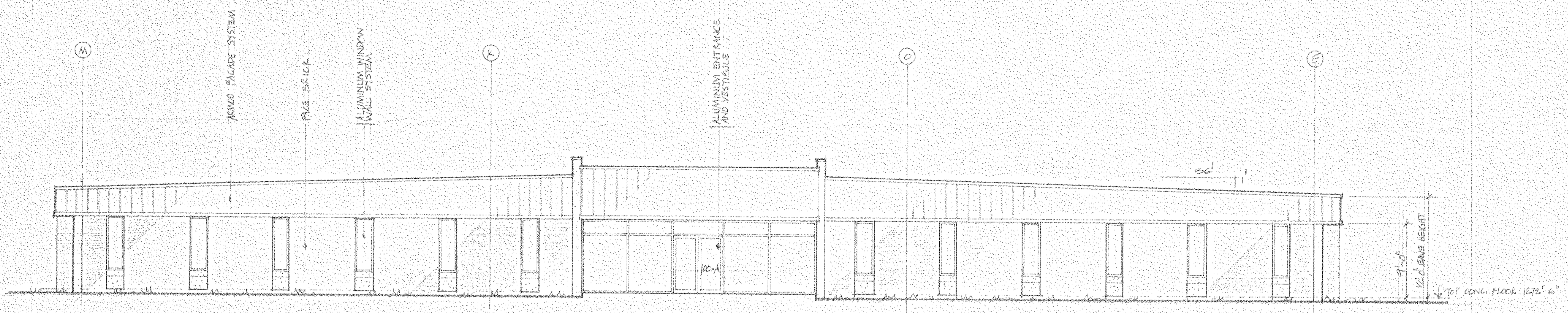
### MATERIAL AND INTERIOR FINISH SCHEDULE

SPACE NO.	NAME	FLOOR		BASE		WAINSCOT				WALLS				CEILING		DOOR FRAMES	DOOR LEAVES	WINDOW FRAMES	CABINET SHELVES	REMARKS
		MATL.	FIN.	MATL.	FIN.	MATL.	FIN.	MATL.	FIN.	MATL.	FIN.	MATL.	FIN.	MATL.	FIN.					
199	TOOL CL. B.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
200	PEROSIMETER ROOM	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
201	UN-NAMED	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
202	PURCHASE ROOM	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
203	CONTROL ROOM	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
204	COLD CUNNING	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
205	QUIN STORAGE	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
206	REARAGE WAY	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
207	RAW MATERIAL PREM.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
208	STORAGE	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
199-1	UN-NAMED	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

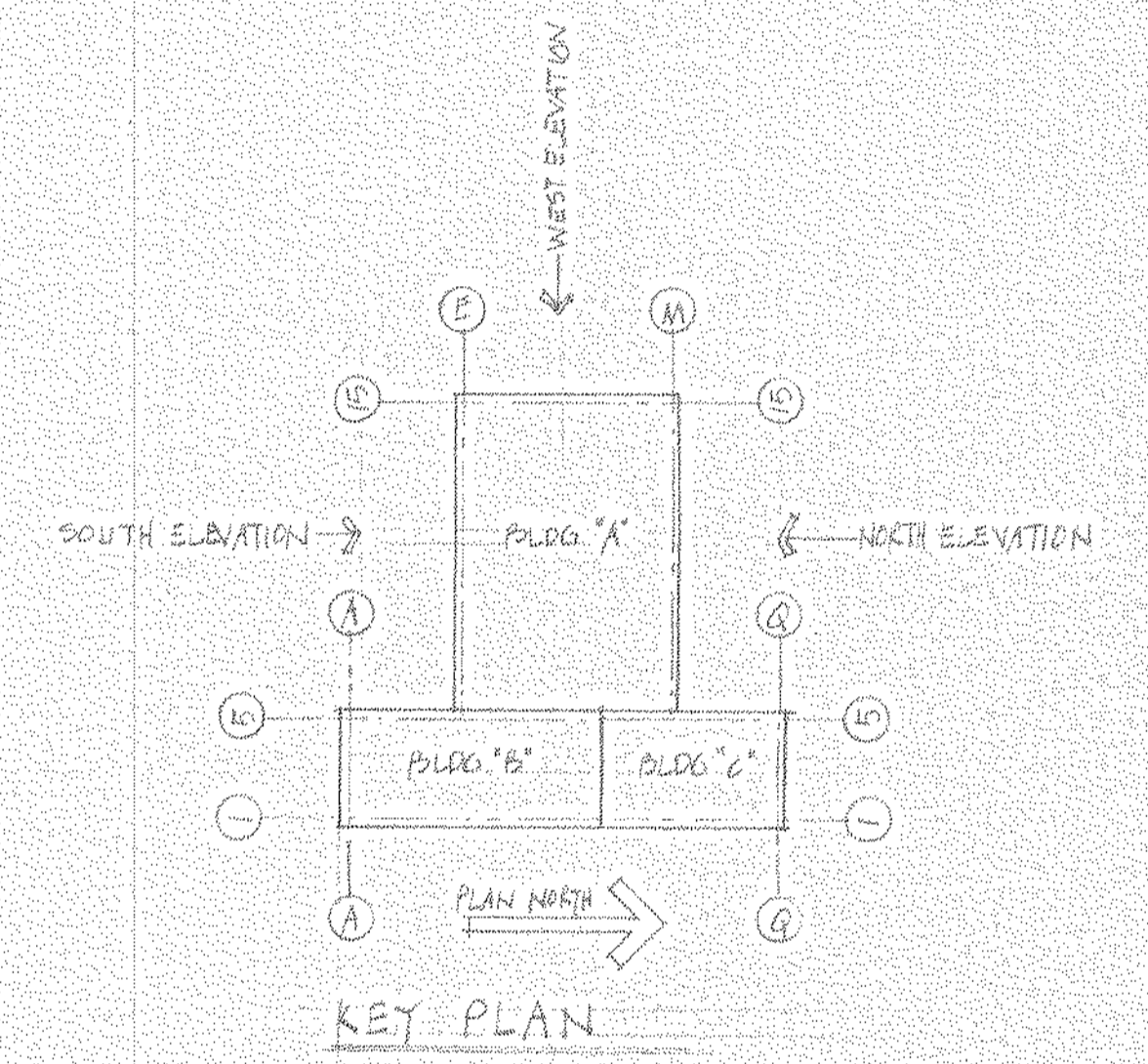




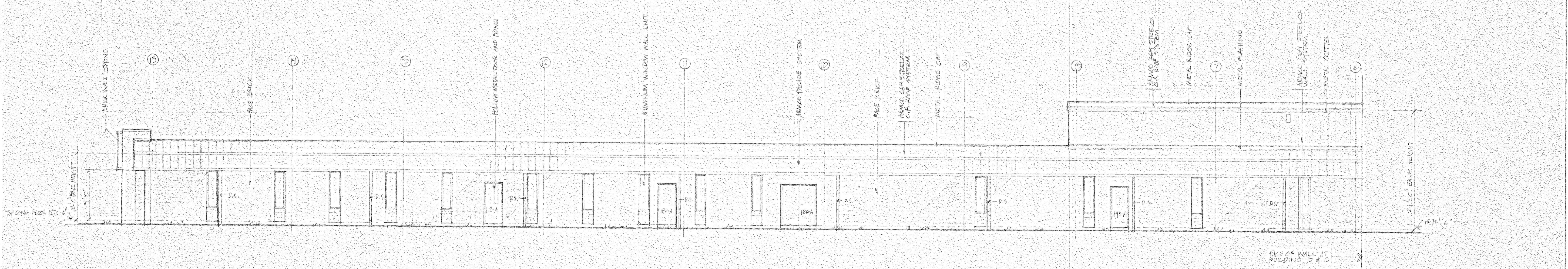
NORTH ELEVATION, BUILDING 'A'



WEST ELEVATION, BUILDING 'A'



KEY PLAN



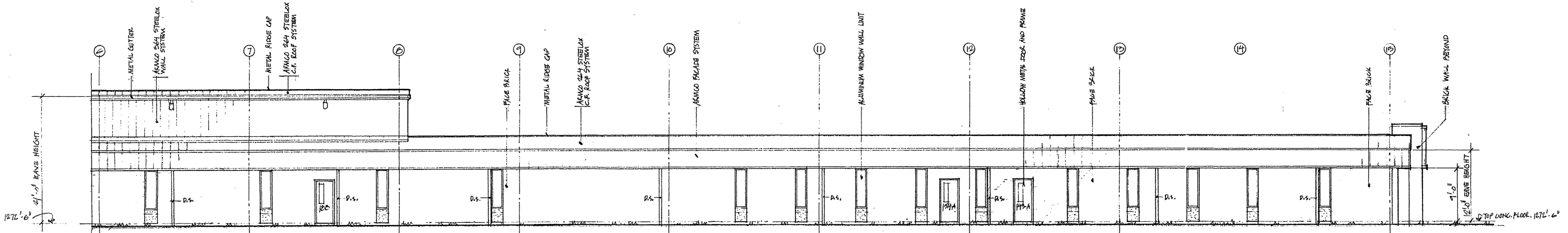
SOUTH ELEVATION, BUILDING 'A'

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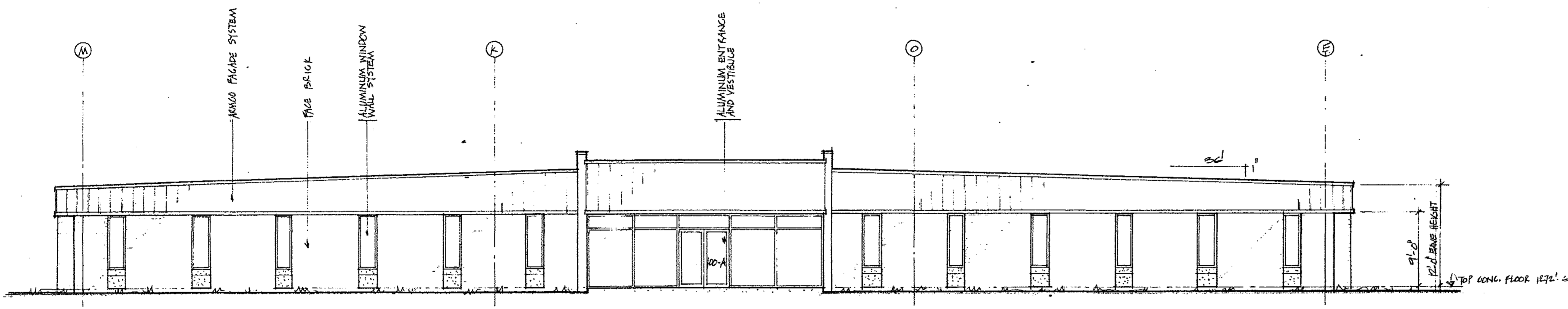
OTHERS									
PLANT									
FOREMAN									
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE	SCALE AS NOTED		DWG. NO.		
#0064		A-6 Elev. 'A'		1982	NONE		070107		

11-5-A-22  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.  
 NEW RESEARCH CENTER,  
 OFFICES AND LABORATORY  
 STATE COLLEGE, PENNA.  
 ELEVATIONS, BUILDING 'A'  
 DRAWN BY C.W.H. C.O. NO.  
 CHECKED DATE  
 DATE 08-11-81  
 A6

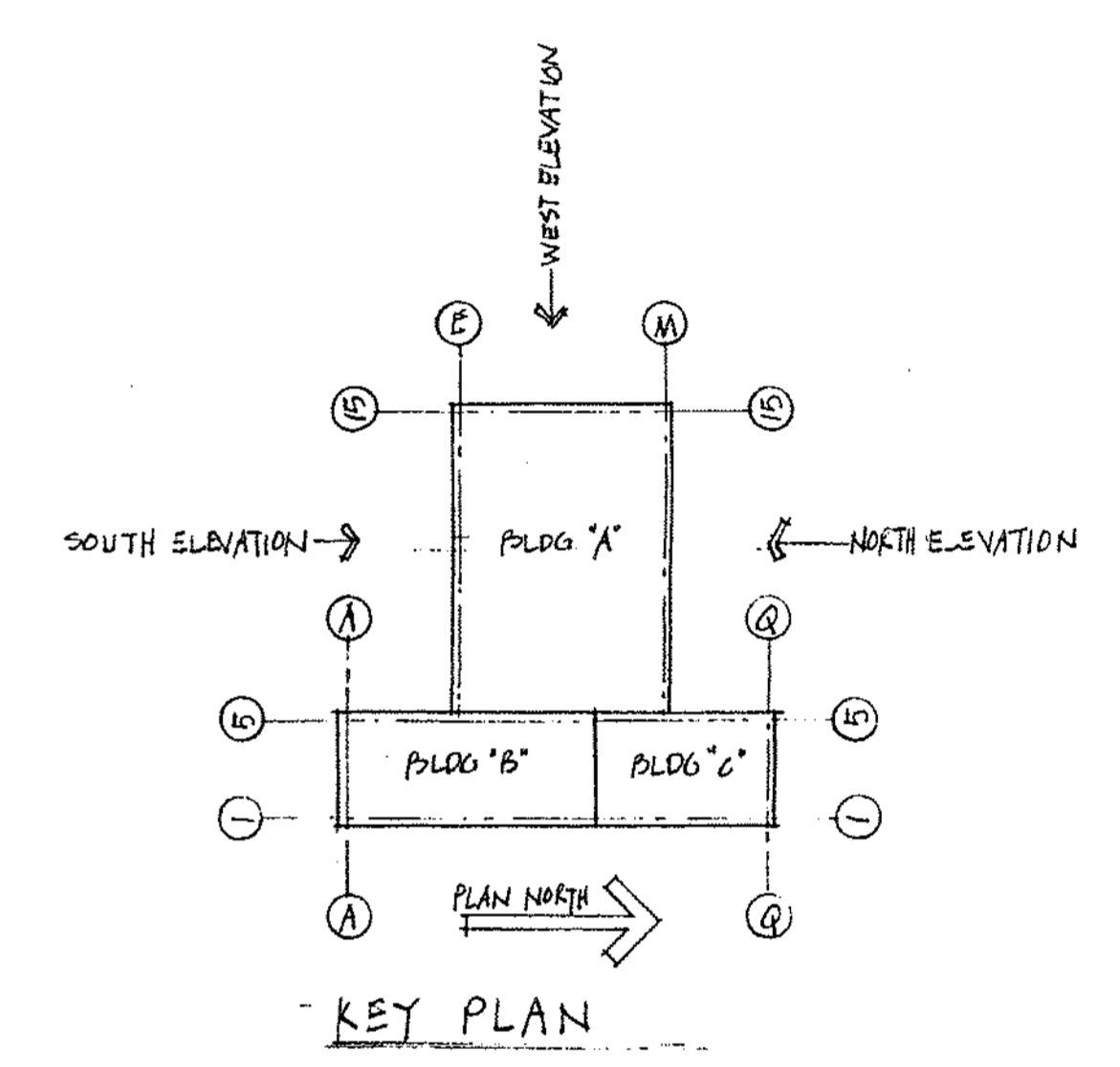




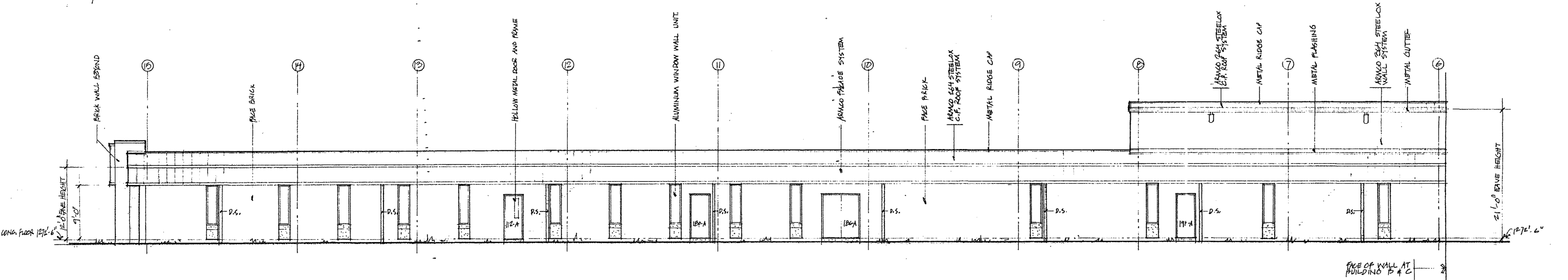
NORTH ELEVATION, BUILDING 'A'



WEST ELEVATION, BUILDING 'A'



KEY PLAN



SOUTH ELEVATION, BUILDING 'A'

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OTHERS									
PLANT									
FOREMAN									
VENDOR									
PRINTS		REVISION		DESCRIPTION		DATE		SCALE AS NOTED	

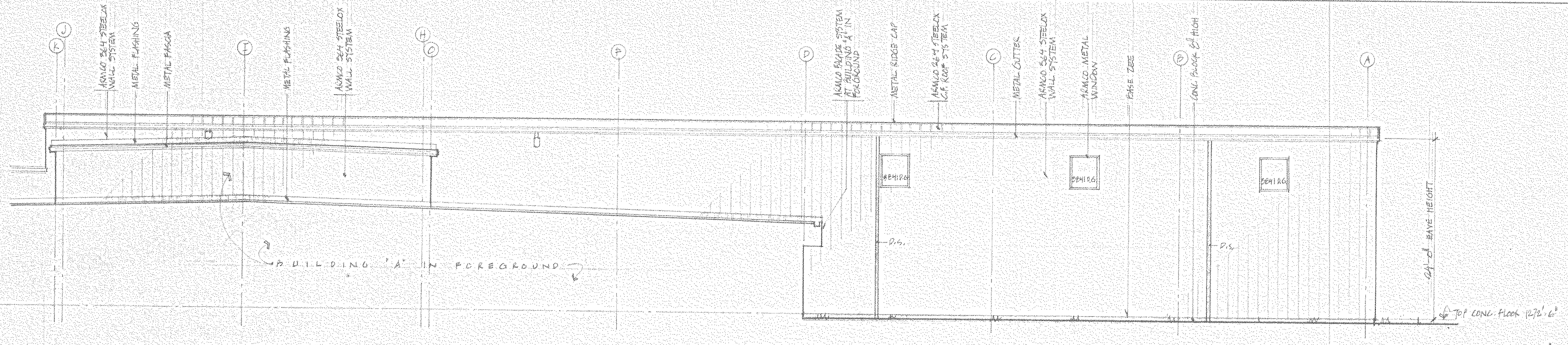
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

NEW RESEARCH CENTER,  
OFFICES AND LABORATORY  
STATE COLLEGE, PENNA.

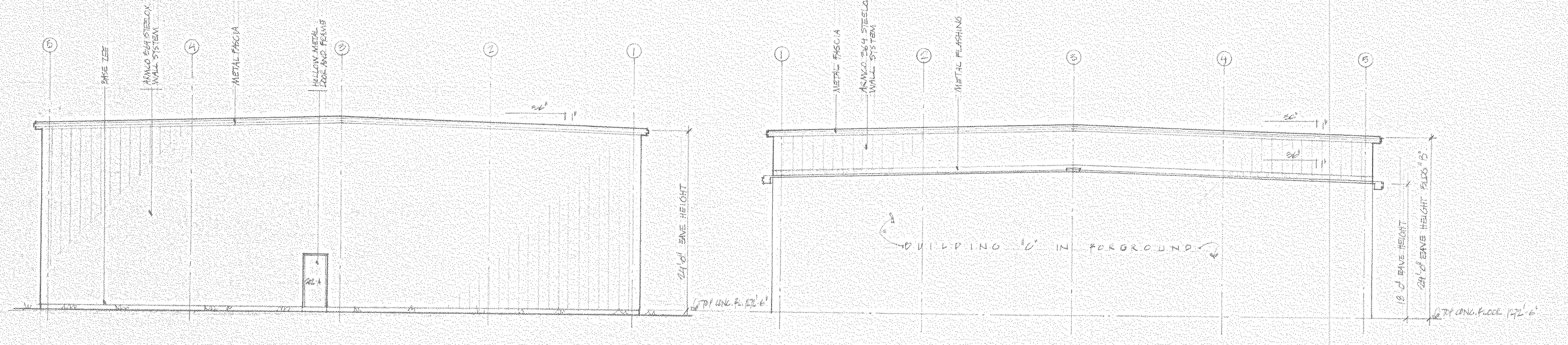
ELEVATIONS, BUILDING 'A'

DRAWN BY C.W.H. C. O. NO.  
CHECKED DATE 08-11-81 55-110-R-20  
DWG. NO. A-4



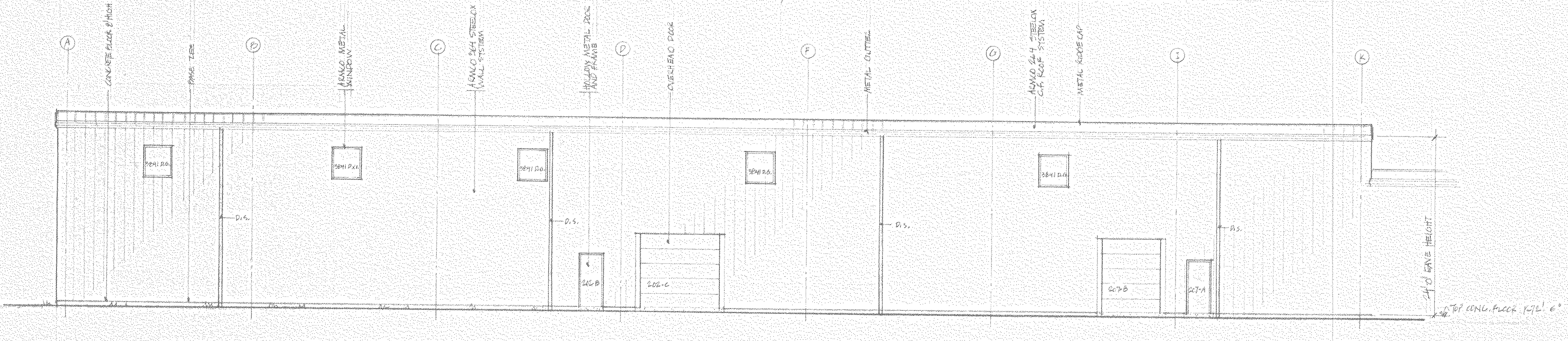
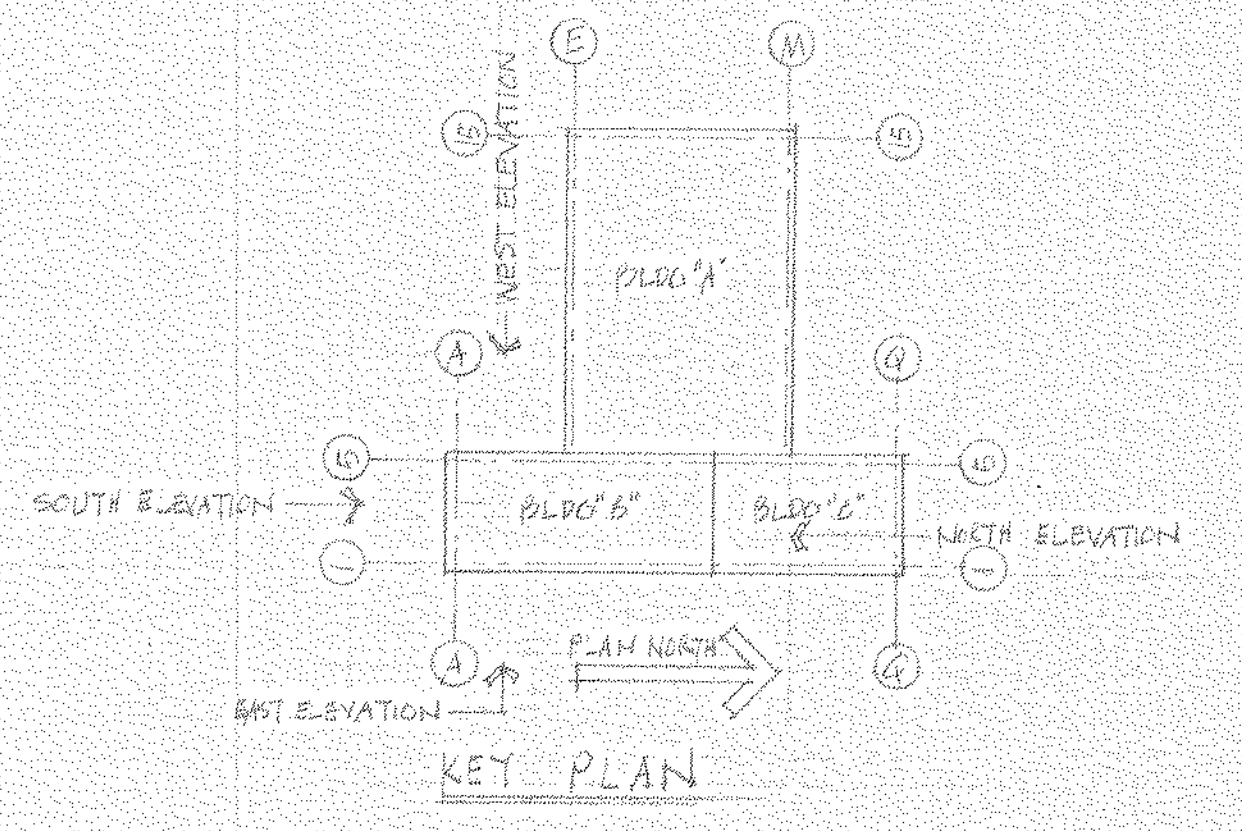


WEST ELEVATION, BUILDING "B"  
1/8" = 1'-0"



SOUTH ELEVATION, BUILDING "B"  
1/8" = 1'-0"

NORTH ELEVATION, BUILDING "B"  
1/8" = 1'-0"



EAST ELEVATION, BUILDING "B"  
1/8" = 1'-0"

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OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

LL-5-A-23

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CURWENSVILLE, PA.

**NEW RESEARCH CENTER  
OFFICES AND LABORATORY  
STATE COLLEGE, PENNA.**

**ELEVATIONS, BUILDING "B"**

DESIGNED BY: C.W.H.	C.O. NO.
CHECKED BY:	DATE
SCALE AS NOTED	CP-11-81
DWG. NO.	

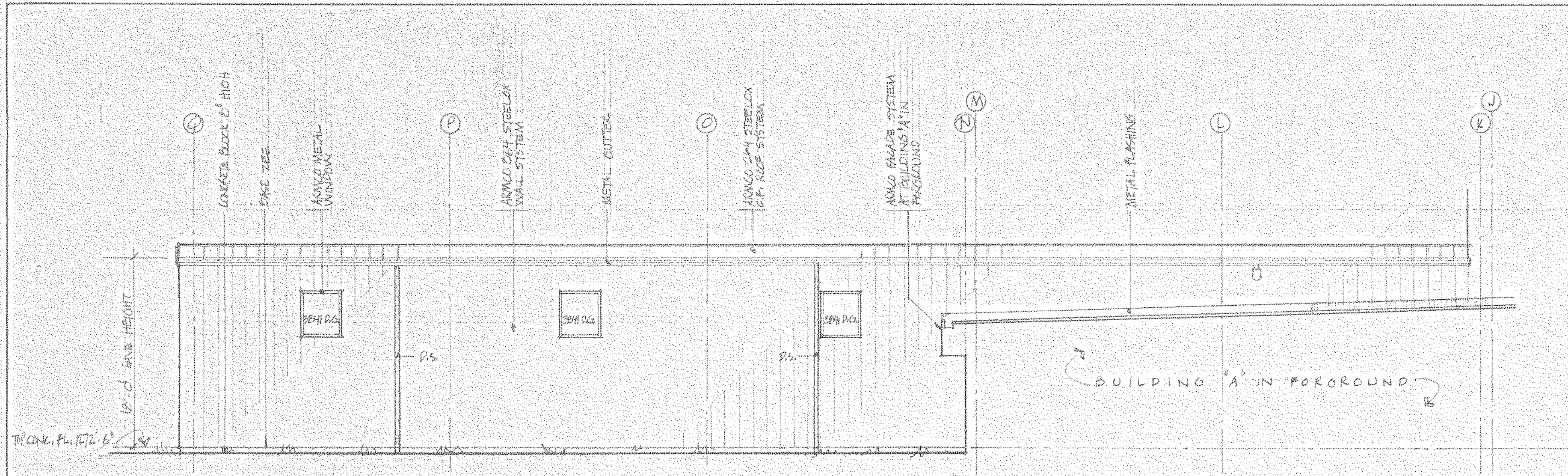
A7

#0064 - A-7 Elev. "B" - 1982 - NONE - 08x107

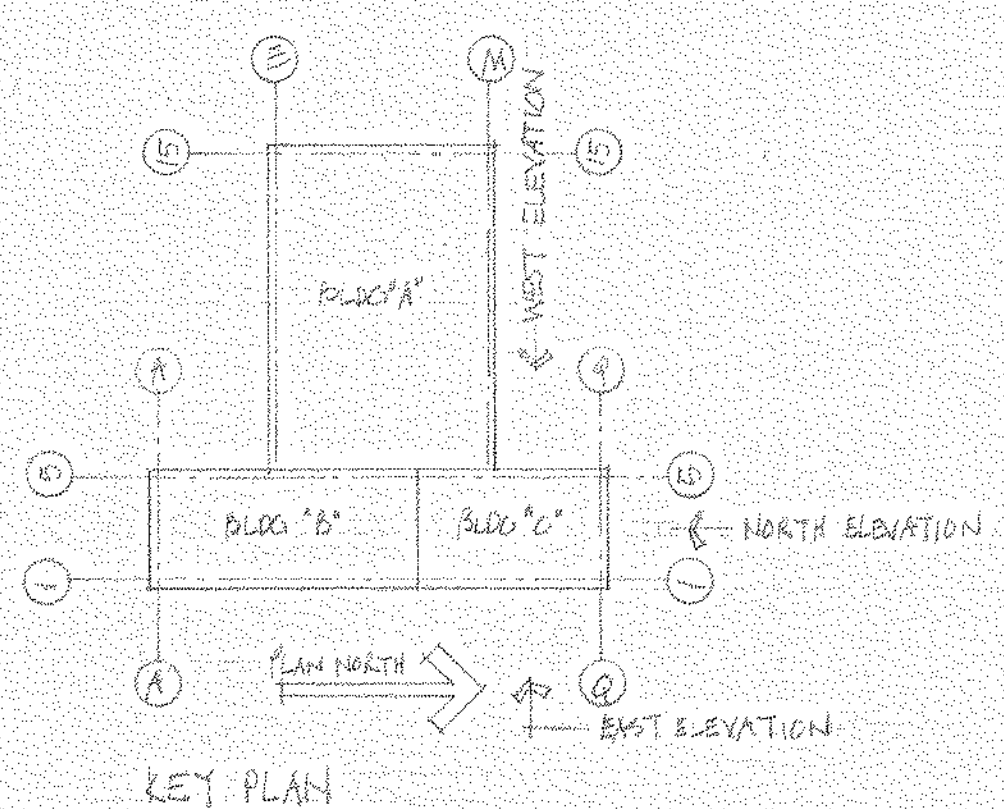




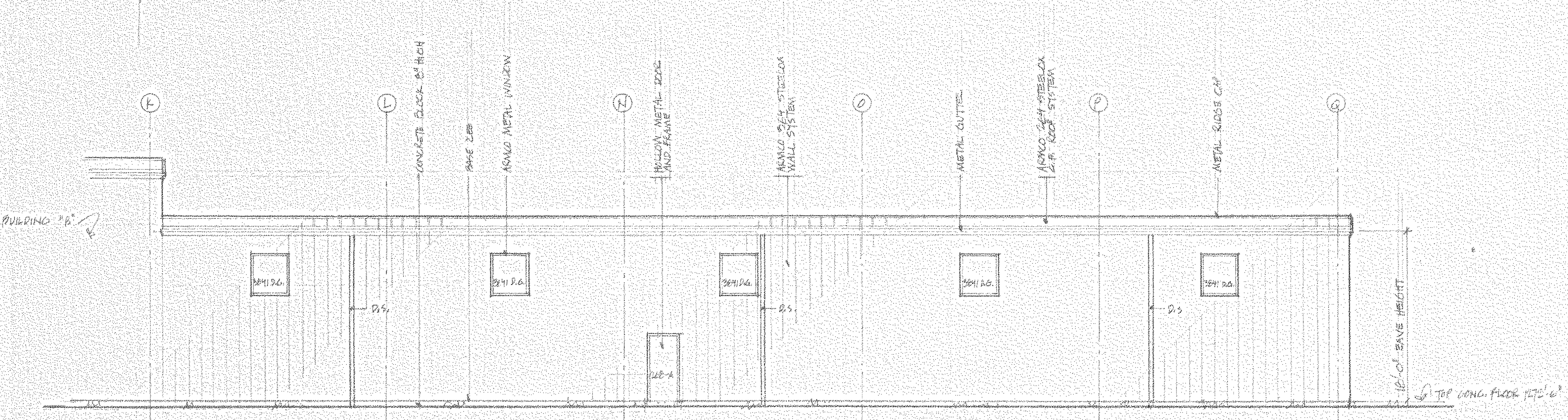




WEST ELEVATION, BUILDING 'C'



NORTH ELEVATION, BUILDING 'C'



EAST ELEVATION, BUILDING 'C'

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OTHERS									
PLANT									
FOREMAN									
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE	DRAWN BY C.W.H.		C.O. NO.		
					CHECKED		DATE	55-110-0-30 A/B	
					SCALE AS NOTED		108-11-21	DWG. NO.	

#0064 - A-8 Elev. "C" - 1982 - NONE - 090107

LL-5-A-24

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

NEW RESEARCH CENTER,  
OFFICES AND LABORATORY  
STATE COLLEGE, PENNA.

ELEVATIONS, BUILDING "C"









- LEGEND:**
- 2'x4' TROPPER
  - 4' INDUSTRIAL
  - LINEAR DIFFUSER OR RETURN
  - CEILING ORILL
  - CEILING FAN OR ORILL
  - RECESSED INCANDESCENT
  - PENDANT SPRINKLER

- NOTES:**
1. SEE ARCHITECTURAL DRAWINGS AND SCHEDULES FOR HEIGHT OF CEILING, LOCATION OF CEILING BREAKS AND FOR TYPES OF CEILING.
  2. FLUSH AND REVEAL EDGE CEILING TILE IS USED ON THIS PROJECT. SEE SCHEDULE FOR LOCATION.
  3. CEILING MOUNTED EQUIPMENT NOT SHOWN ON THIS DRAWING BUT REQUIRED BY OTHER DRAWINGS, I.E. MECHANICAL, H.V.A.C., OR ELECTRICAL SHALL BE INSTALLED WITH THE SYSTEM SHOWN HEREON AND LOCATED GENERALLY IN A SYMMETRICAL LOCATION WITHIN TILES.

REFLECTED CEILING PLAN, BUILDING "A"

NOTICE - NORTH AMERICAN REFRACTORIES CO., DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED, IN WHOLE OR IN PART, TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON. REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

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OFFICES AND LABORATORY  
STATE COLLEGE, PENNPA.

REFLECTED CEILING PLAN-BUILDING "A"

OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

DRAWN BY C.W.H.	C. O. NO.
CHECKED	DATE 10-22-81
SCALE AS NOTED	DWG NO 55-110-B-33

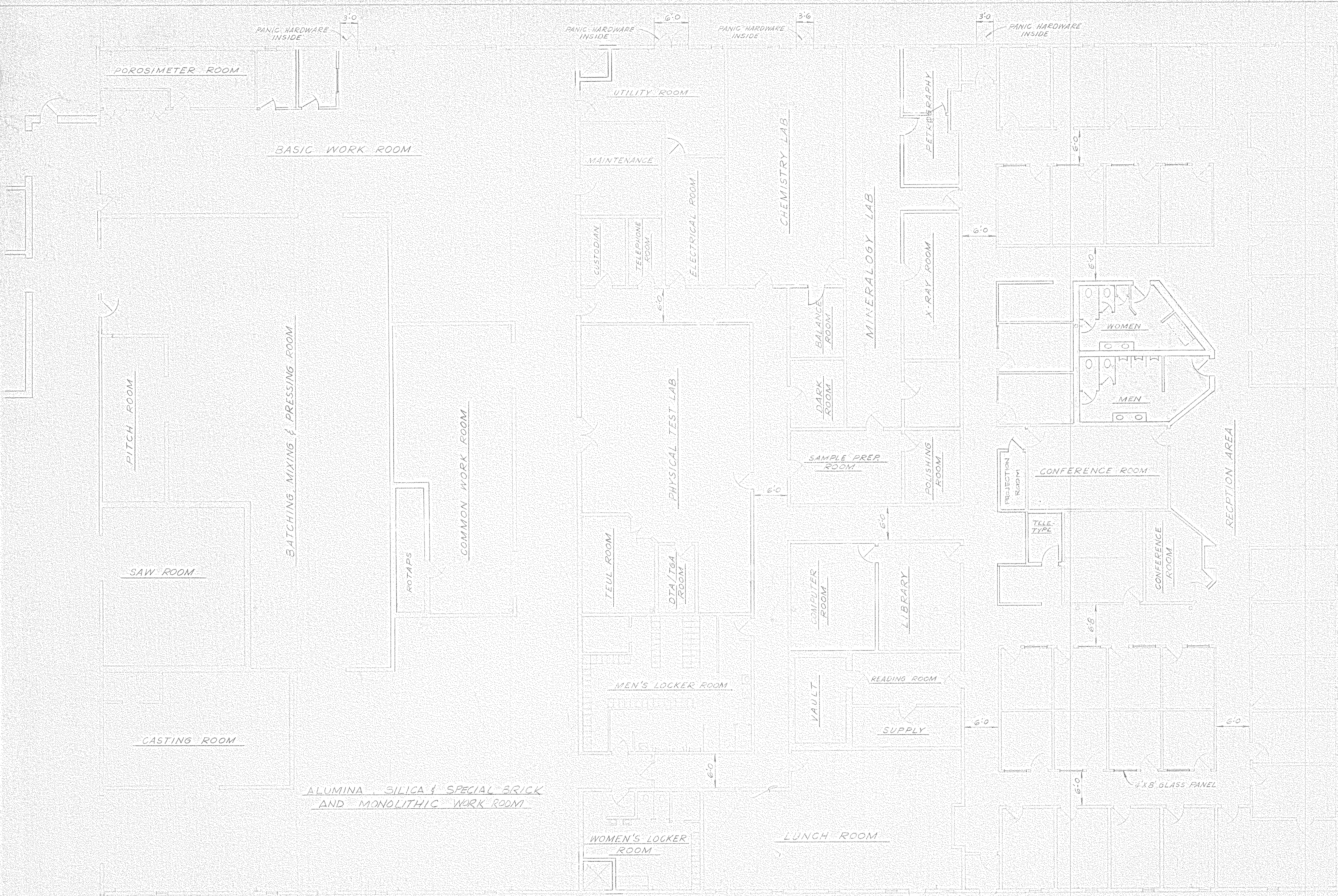
#0064 Refl. Ceil "A" 1982 NONE 100107

LL-5-A-25









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OTHERS	DATE	BY	DESCRIPTION
L. C. AND	12-18-81		
PLANT	12-24-81		
FOREMAN	12-24-81		
VENUE	12-24-81		

REVISION	DATE	DESCRIPTION
H	6-17-82	ADD PANIC HARDWARE INSIDE TO ALL EXITS
G	3-29-82	PETROGRAPHY & TELETYPE ROOMS CHANGE
F	6-7-81	REBUILDING (WAS - 05)
E	6-3-81	MOVED MEN'S & WOMEN'S REST ROOMS FROM PETROGRAPHY
D	4-23-81	CHG. MEN'S & WOMEN'S REST ROOMS
C	4-1-81	REDRAWN

LL-5-A-27

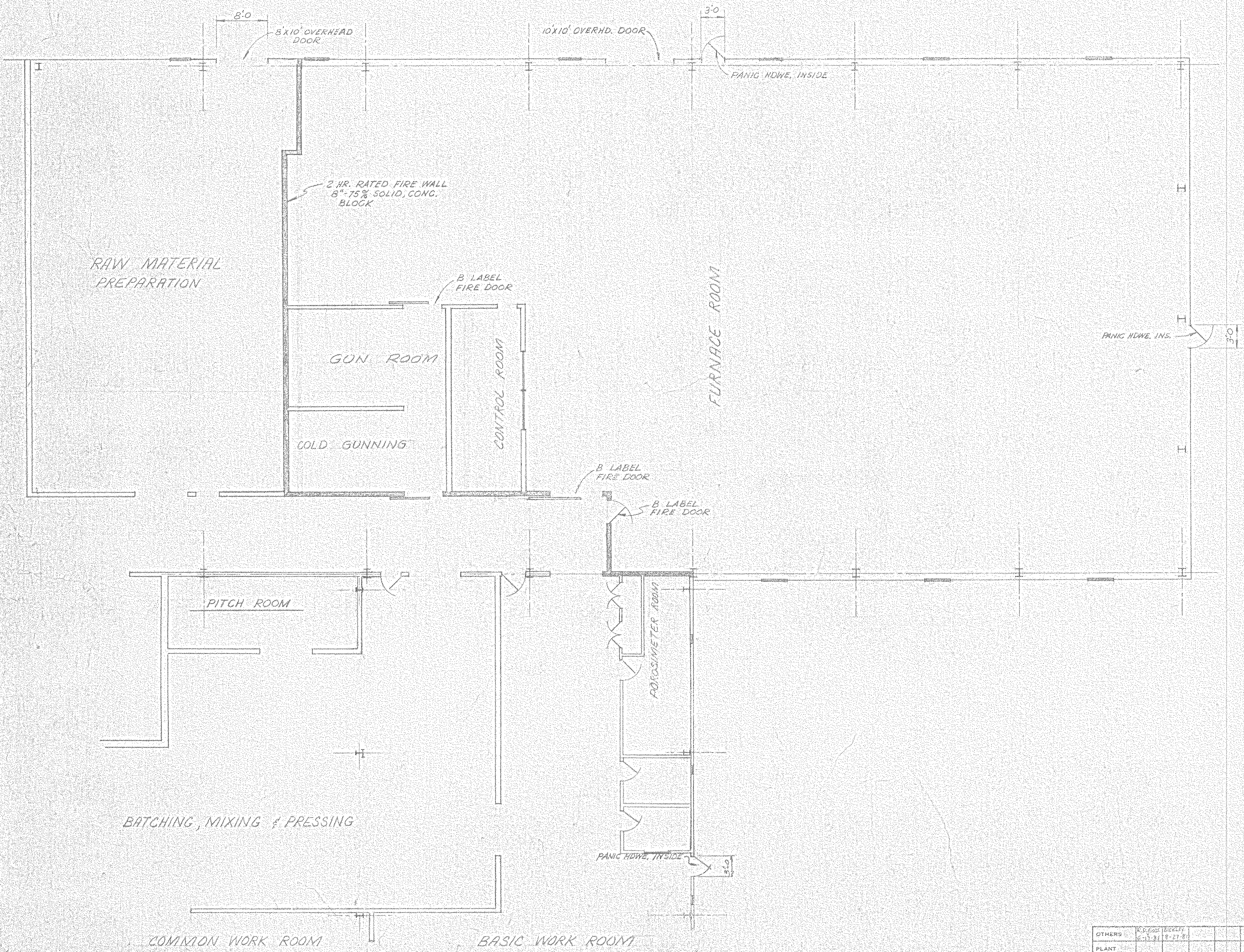
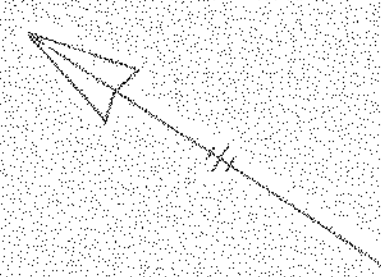
NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

**FLOOR PLAN OF OFFICES  
 AND WORK ROOMS**

RESEARCH CENTER

DESIGNED BY	D.R.H.	PROJECT NO.	55-110
CHECKED BY		DATE	1-11-80
SCALE	1/8" = 1'-0"	DRAWING NO.	55-110-B-7





LL-5-A-28  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

FLOOR PLAN OF  
 FURNACE ROOM  
 NEW RESEARCH CENTER

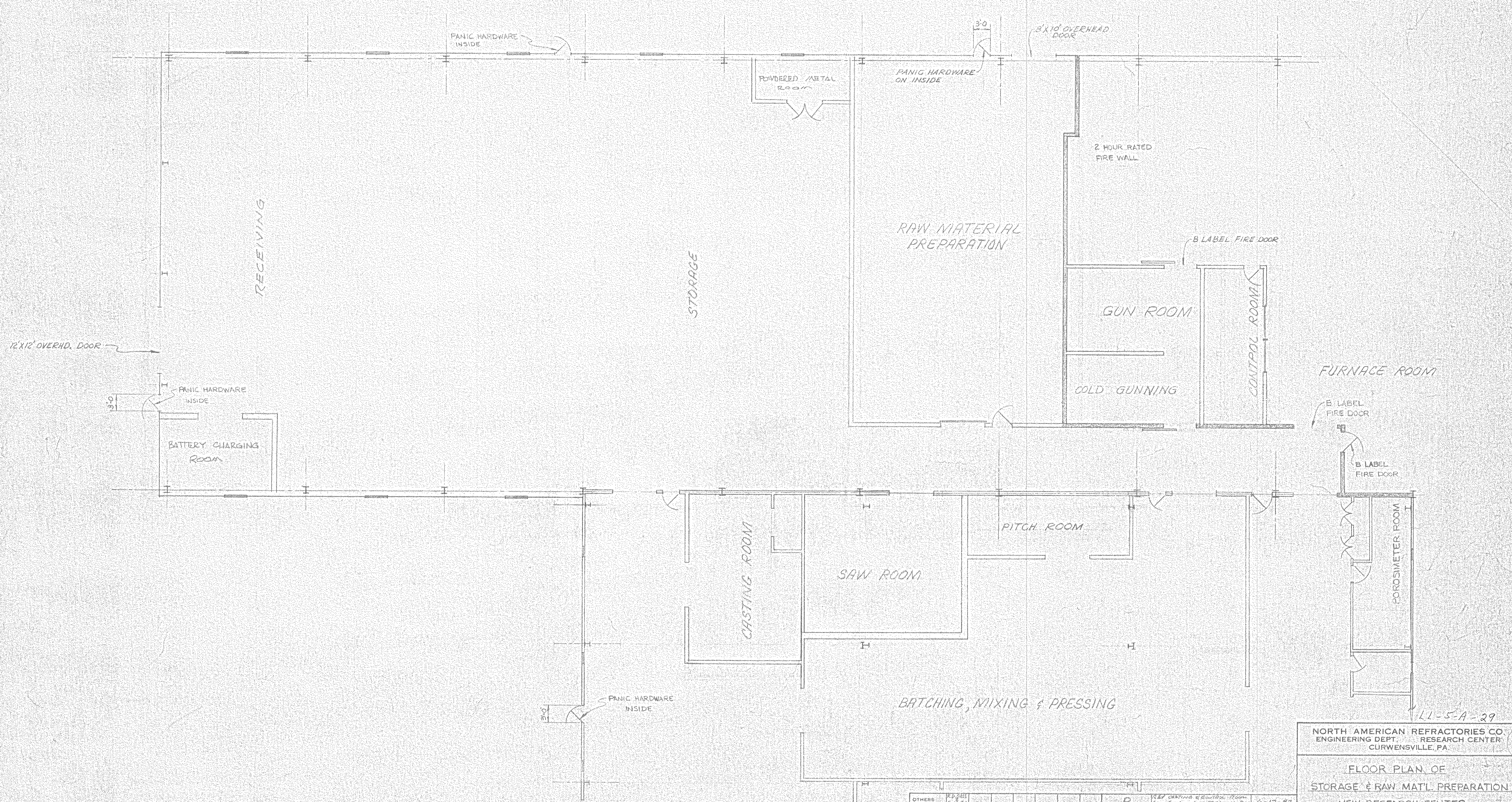
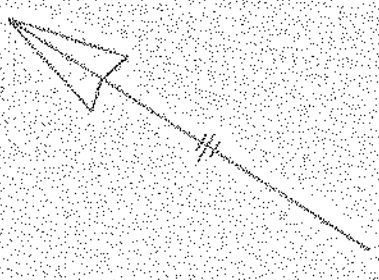
OTHERS	REV.	DESCRIPTION	DATE
	B	ADD WALLS TO CONTROL RM.	6-17-82
	A	REN. DOOR NO. 1 (HWS-02)	6-7-81

DRAWN BY: D.R.W.	C.O. NO. 55-110	DWG. NO. 55-110-B-8
CHECKED BY:	DATE: 1-11-80	

#0064 — Fl. Pn. - Furnace Rm. — 1982 — NONE — 13 of 17

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ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

FLOOR PLAN OF  
STORAGE & RAW MAT'L PREPARATION  
NEW RESEARCH CENTER

OTHERS	REV.	DATE	DESCRIPTION	DATE
	D	6-17-80	REV. CASTING & BATTERY ROOMS ADD OVERHEAD DOOR & STAY CHAIRS, PIPING	6-17-80
	C	6-7-81	RAW. DIV. NO. (NWS - 27)	6-7-81
	B	4-3-81	GEN. REV.	4-3-81
	A	11-21-80	ELIMINATED DOUBLE DOOR EDW. AT MAT'L PREP ROOM	11-21-80

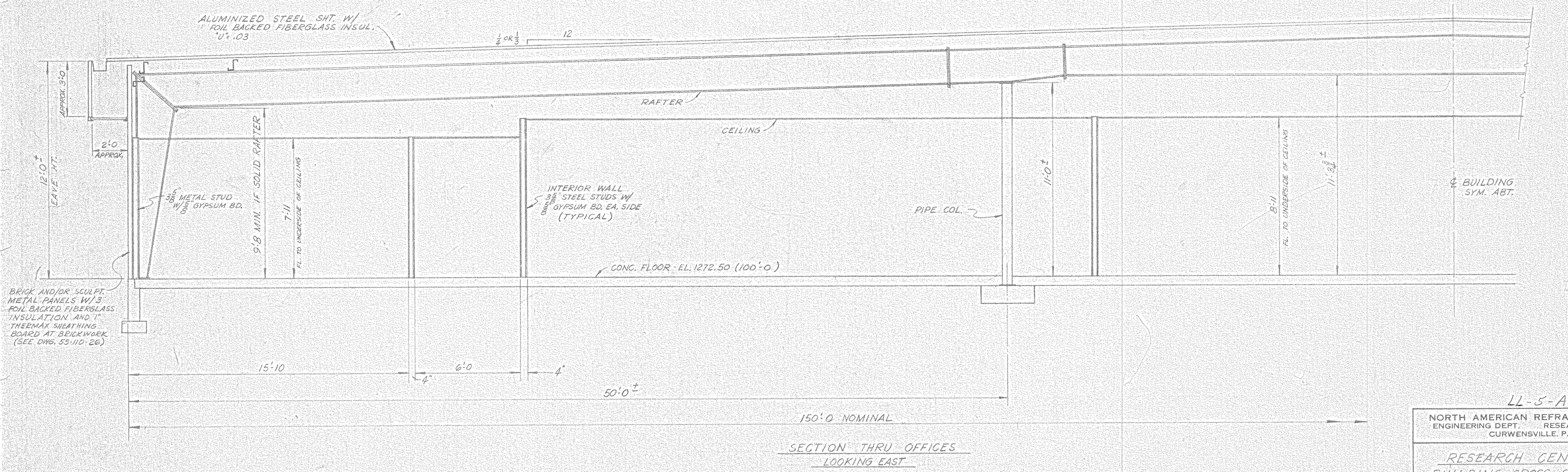
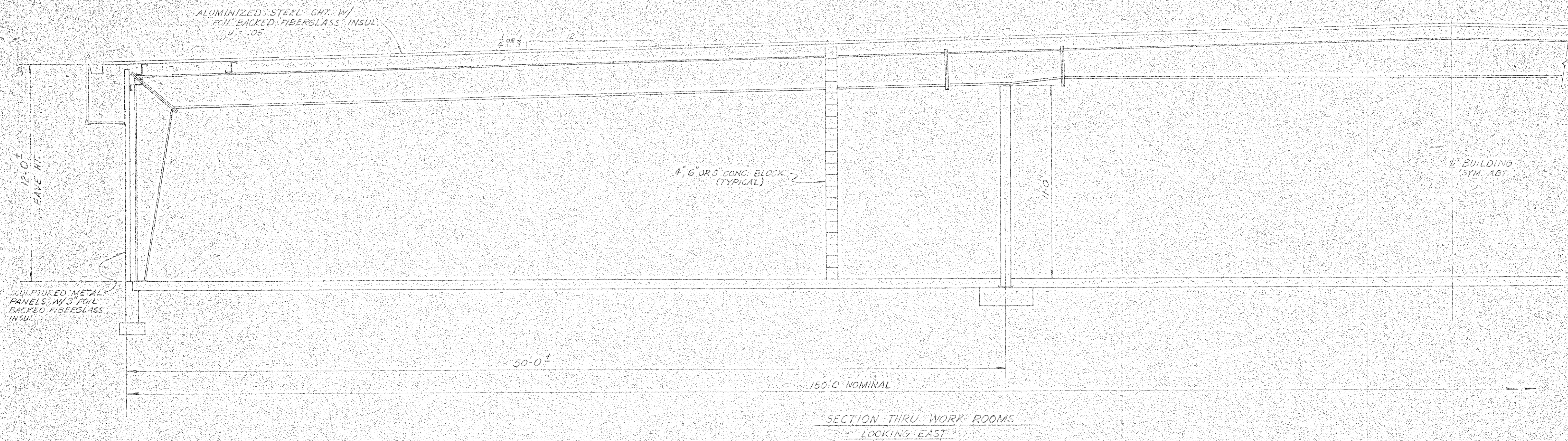
DRAWN BY: D.R.H.	C.O. NO.: 55-110
CHECKED: [Signature]	DATE: 1-11-80
SCALE: 1/8" = 1'-0"	DWG NO.: 55-110-B0

#0064 FL Pn-Strg+Raw Mat'l 1982 NONE 11.10.7

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REVISION 40 22 2318





LL-5-A-30

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CURWENSVILLE, PA.

RESEARCH CENTER  
BUILDING CROSS SECTIONS

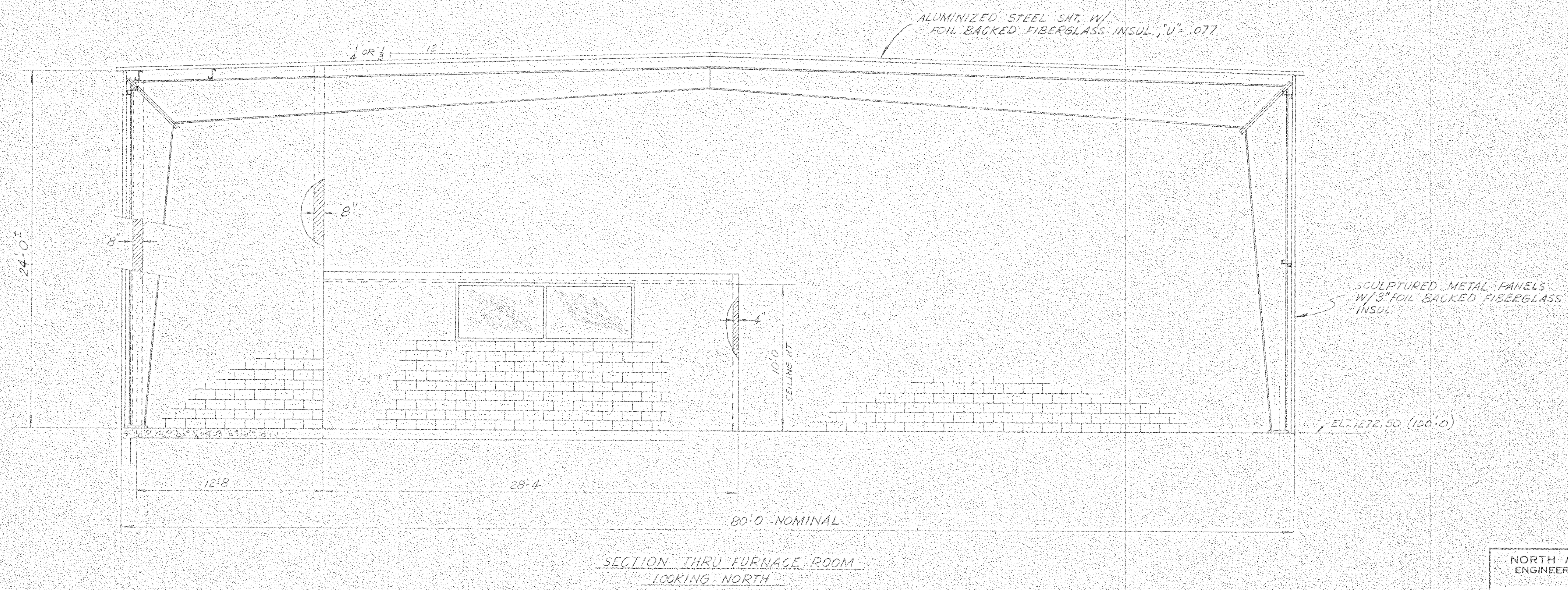
OTHERS	R.D. 6058 6-17-81				
PLANT					
FOREMAN					
VENDOR					
PRINTS		REVISION	DESCRIPTION	DATE	

DRAWN BY: *[Signature]* C.O. NO. 55-110  
CHECKED BY: *[Signature]* DATE 1-17-80  
SCALE 3/8"=1'-0" DWG. NO. 55-110-B-13

BRUNING 6022 2018

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44-5-A-31

NORTH AMERICAN REFRATORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.	
RESEARCH CENTER BUILDING CROSS SECTIONS	
OTHERS	RD. 6655 BRISTOL 6-17-81 12-27-81
PLANT	C
FOREMAN	B
VENDOR	A
REVISION	DESCRIPTION
DATE	DATE
SCALE	DATE
SCALE	DATE

55-110  
55-110-B-14  
4-29-80  
1/8" = 1'-0"

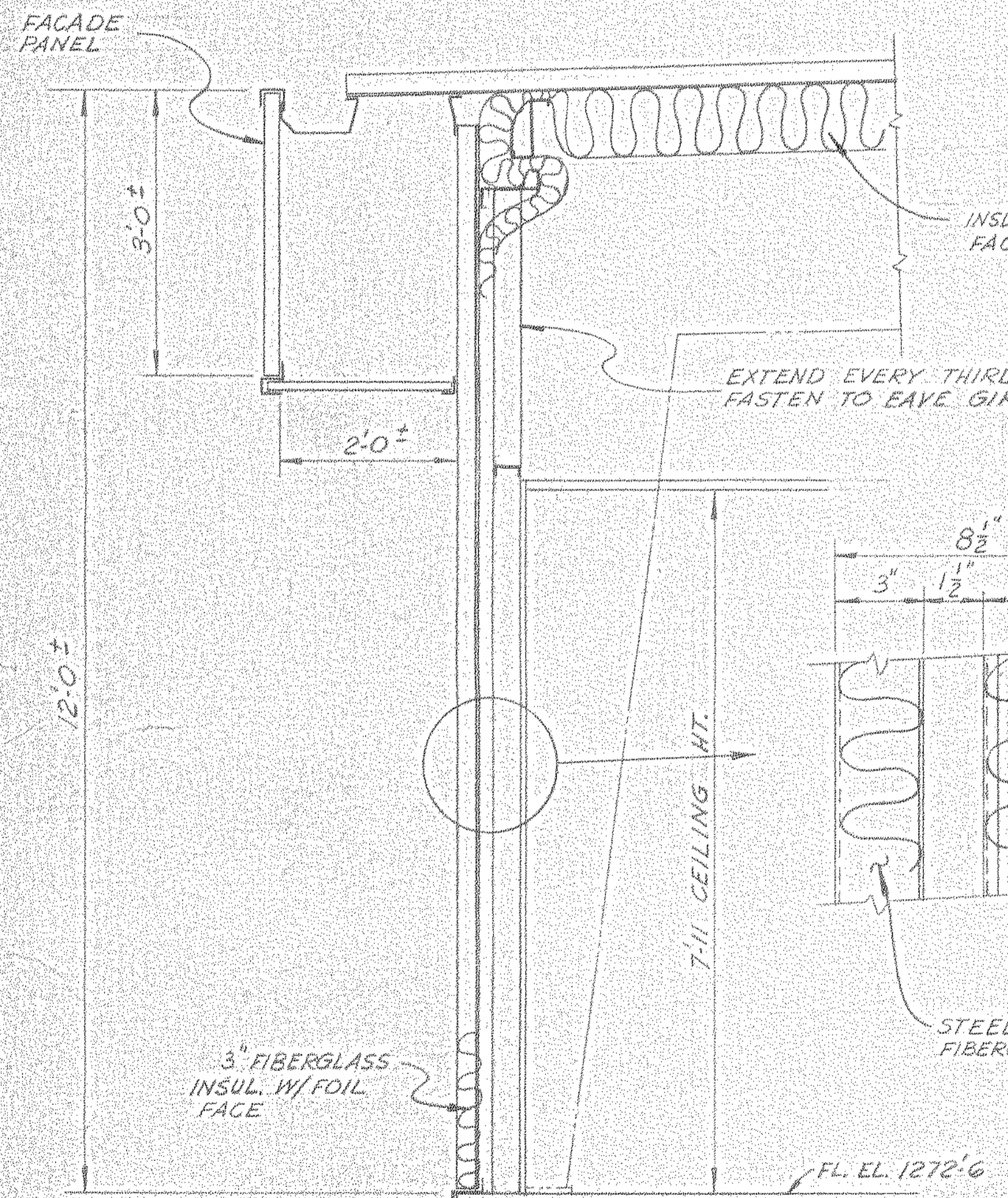
OTHERS	RD. 6655 BRISTOL 6-17-81 12-27-81
PLANT	C
FOREMAN	B
VENDOR	A
REVISION	DESCRIPTION
DATE	DATE
SCALE	DATE
SCALE	DATE

55-110  
55-110-B-14  
4-29-80  
1/8" = 1'-0"

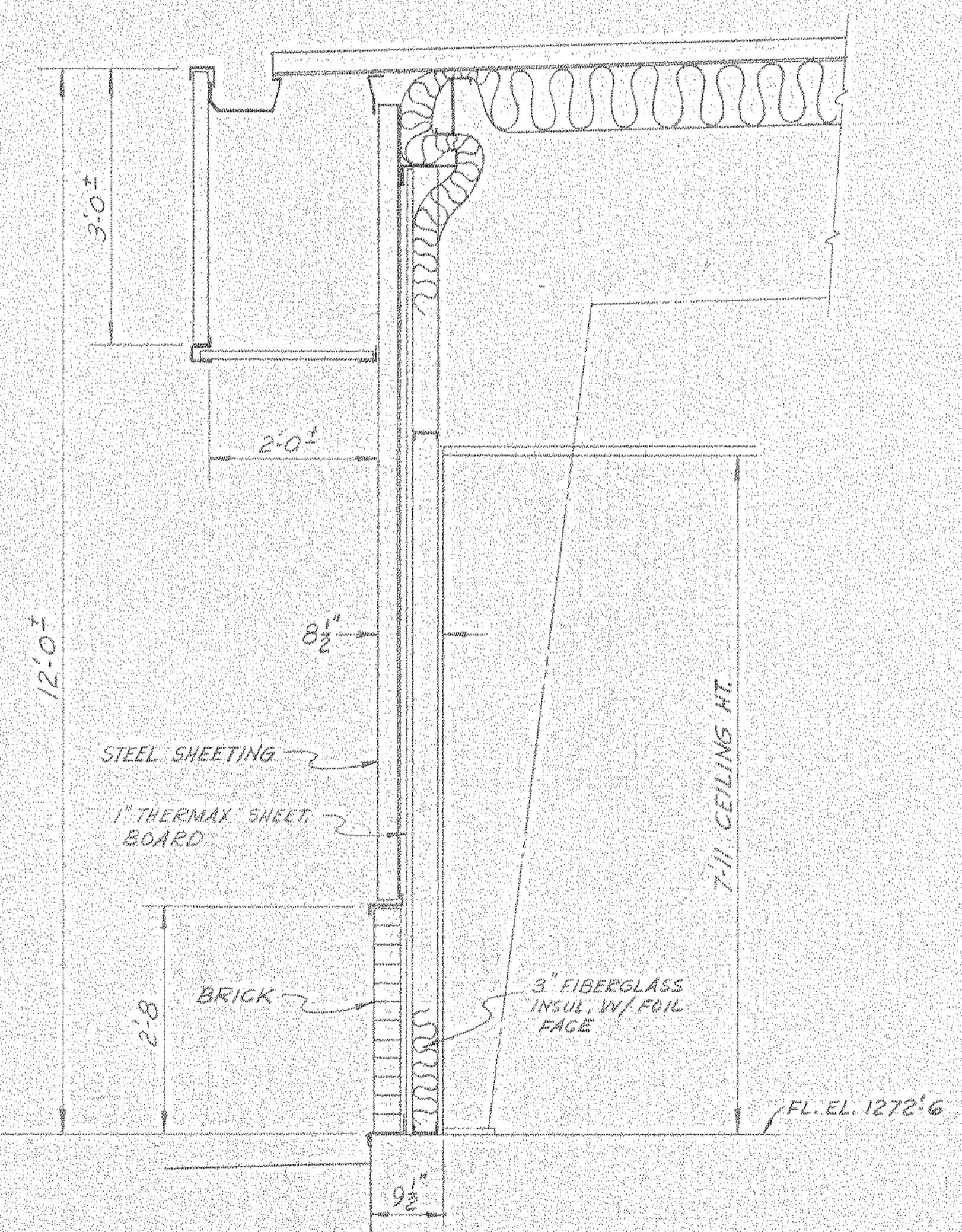
NOTICE: NORTH AMERICAN REFRATORIES CO., DIVISION OF ELTRA CORPORATION  
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#0064 Cross Sections 1982 NONE 1/8" = 1'-0"

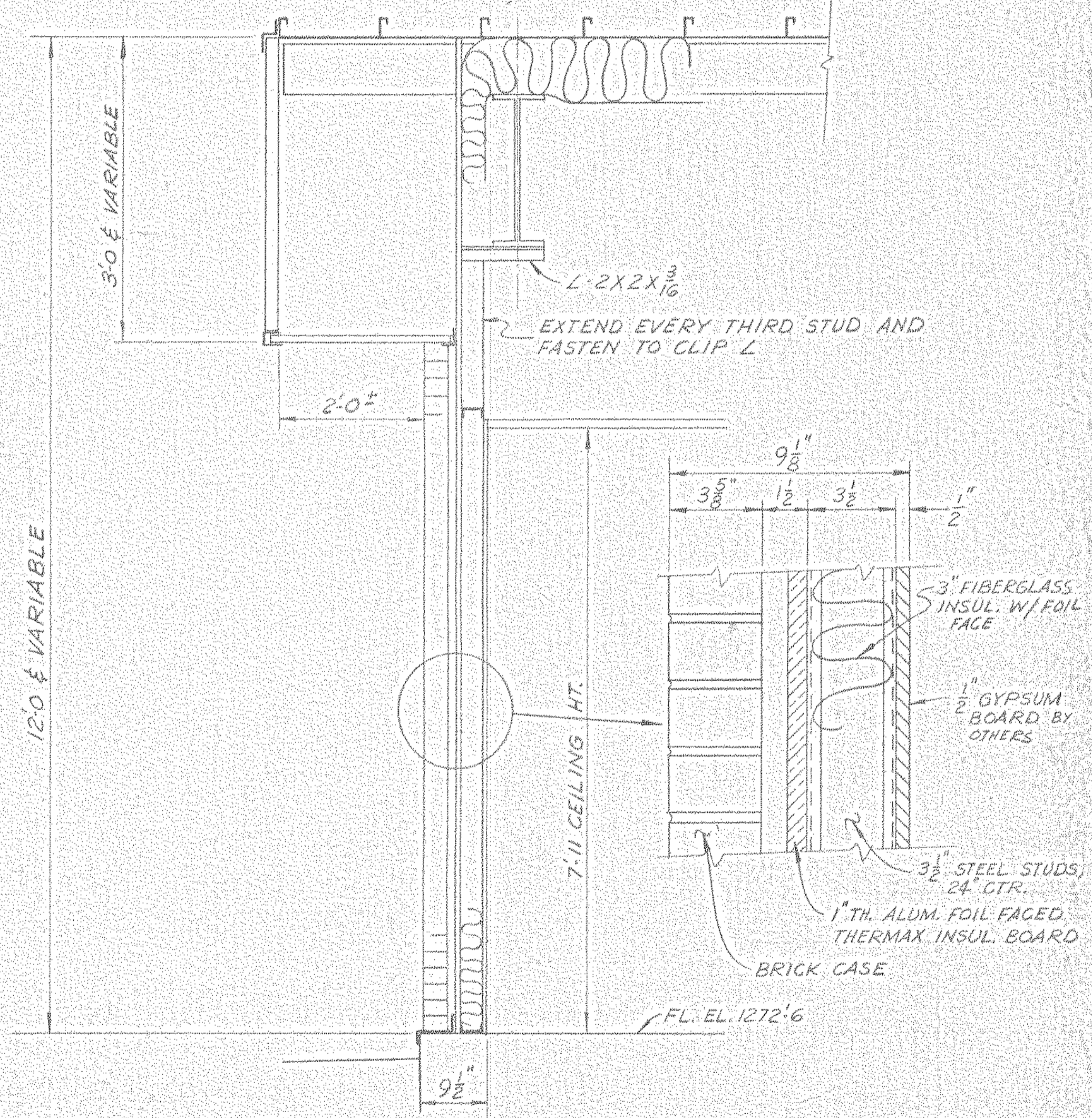




SIDEWALL AT OFFICES  
NO BRICK CASING



SIDEWALL AT OFFICES  
PARTIAL BRICK CASING



ENDWALL AT OFFICES  
BRICK CASING

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OTHERS	PLANT	FOREMAN	VENDOR	REVISION	DESCRIPTION	DATE
		JIM 6-12-81		B	REV. DING. NO. (6.105-24)	6-7-81
				A	CHANGED INSULATION DESCRIPTION	11-21-80

21-5-A-32

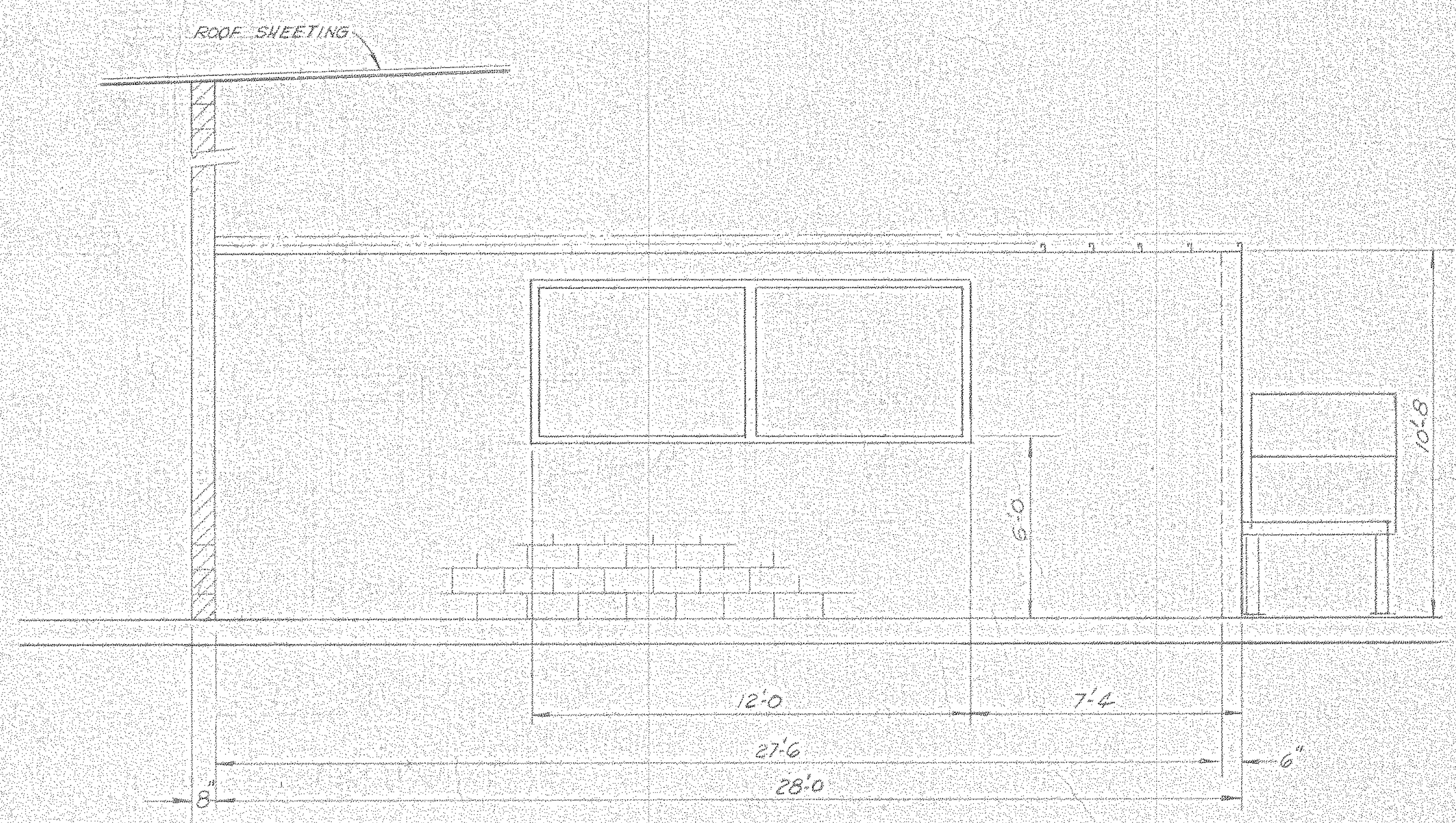
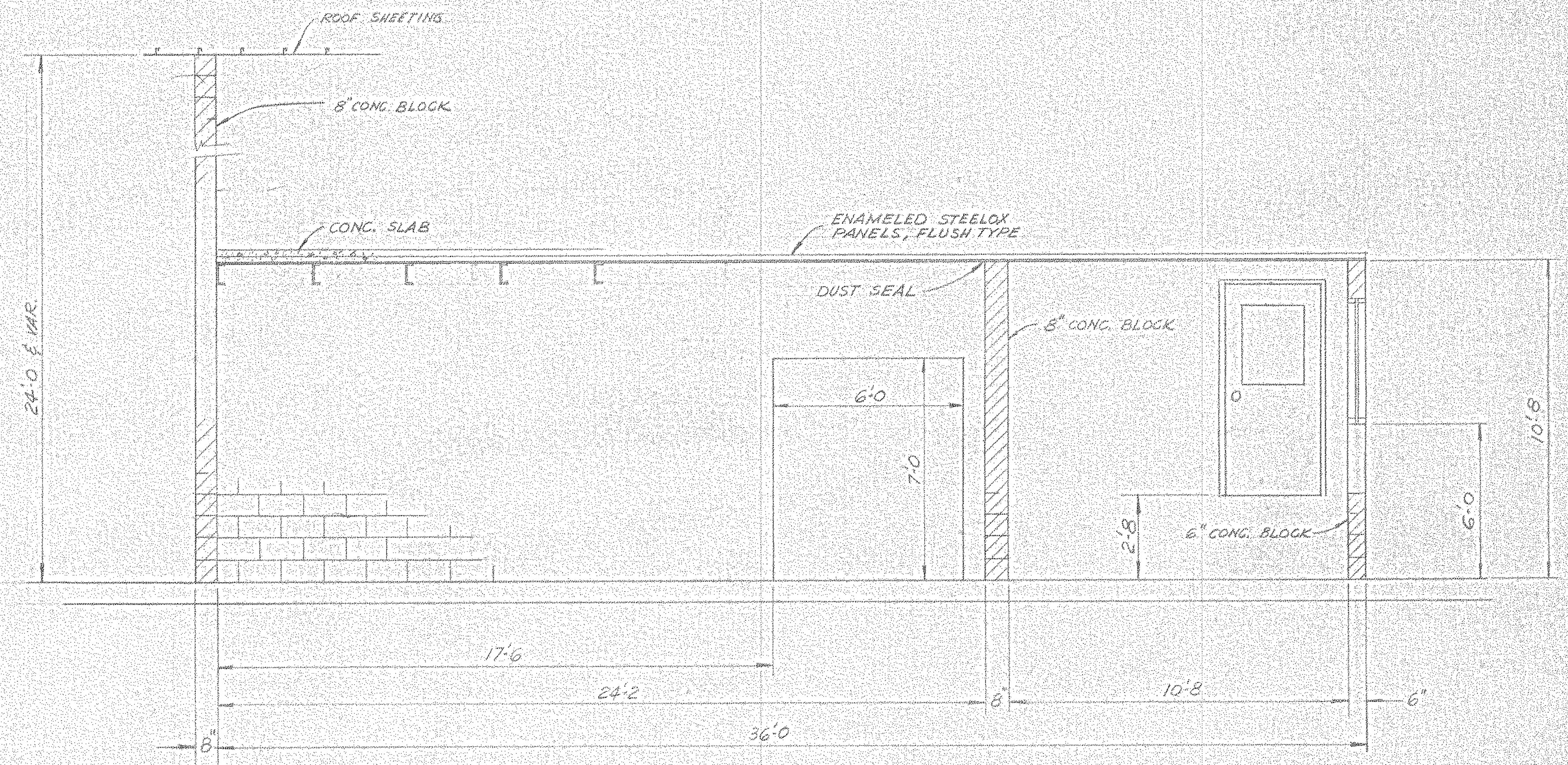
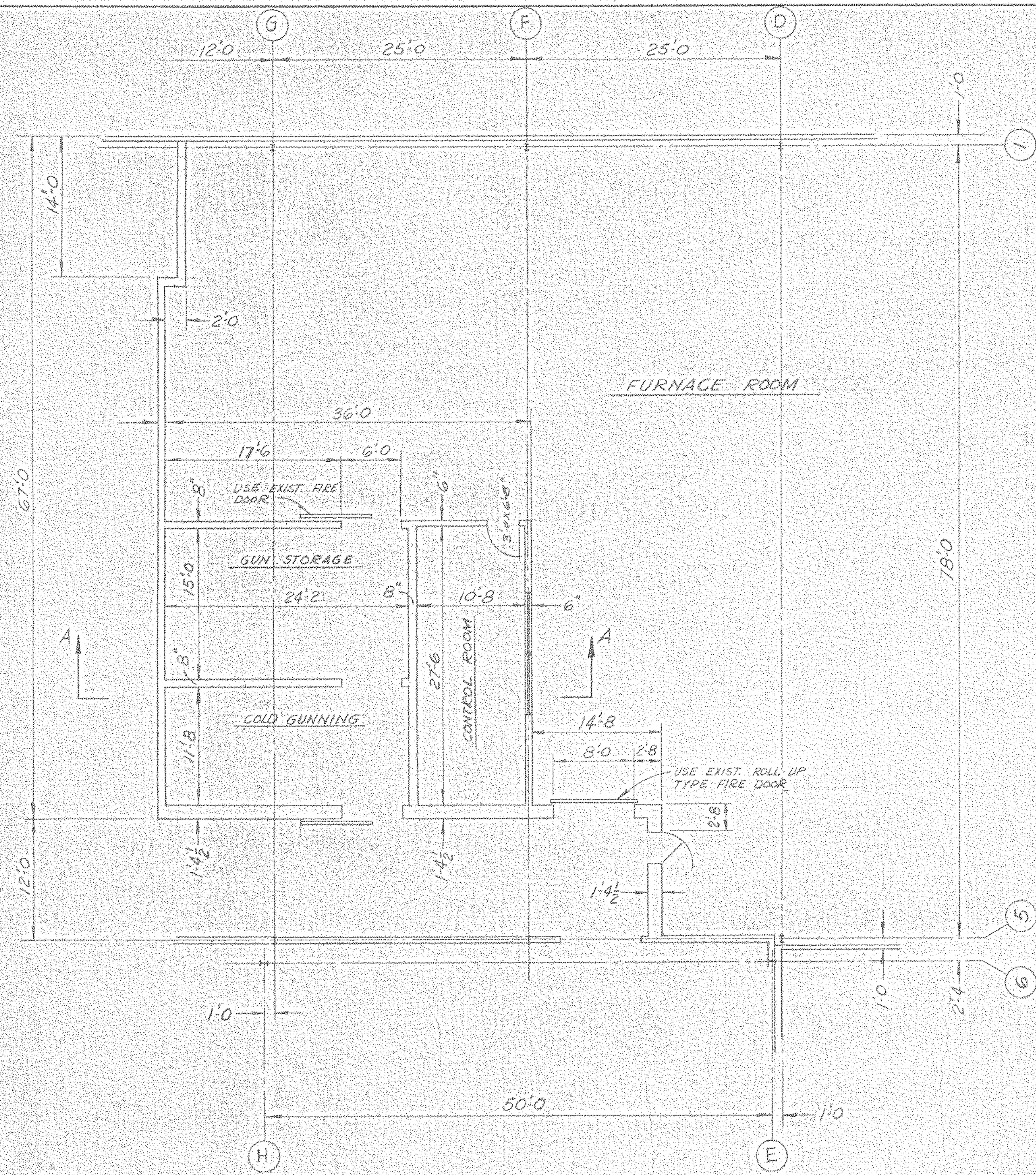
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

TYPICAL WALL SECTIONS  
BUILDING A

NEW RESEARCH CENTER

DRAWN BY	C.O. NO.	55-110	55-110-B-16
CHECKED BY	DATE	10-30-80	DWG. NO.
SCALE	3/4" = 1'-0"		





LL-5-A-33

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**INTERIOR WALLS AT  
FURNACE ROOM**

NEW RESEARCH CENTER

OTHERS	10-4-80 8-18-81								
PLANT									
FOREMAN									
VENDOR									

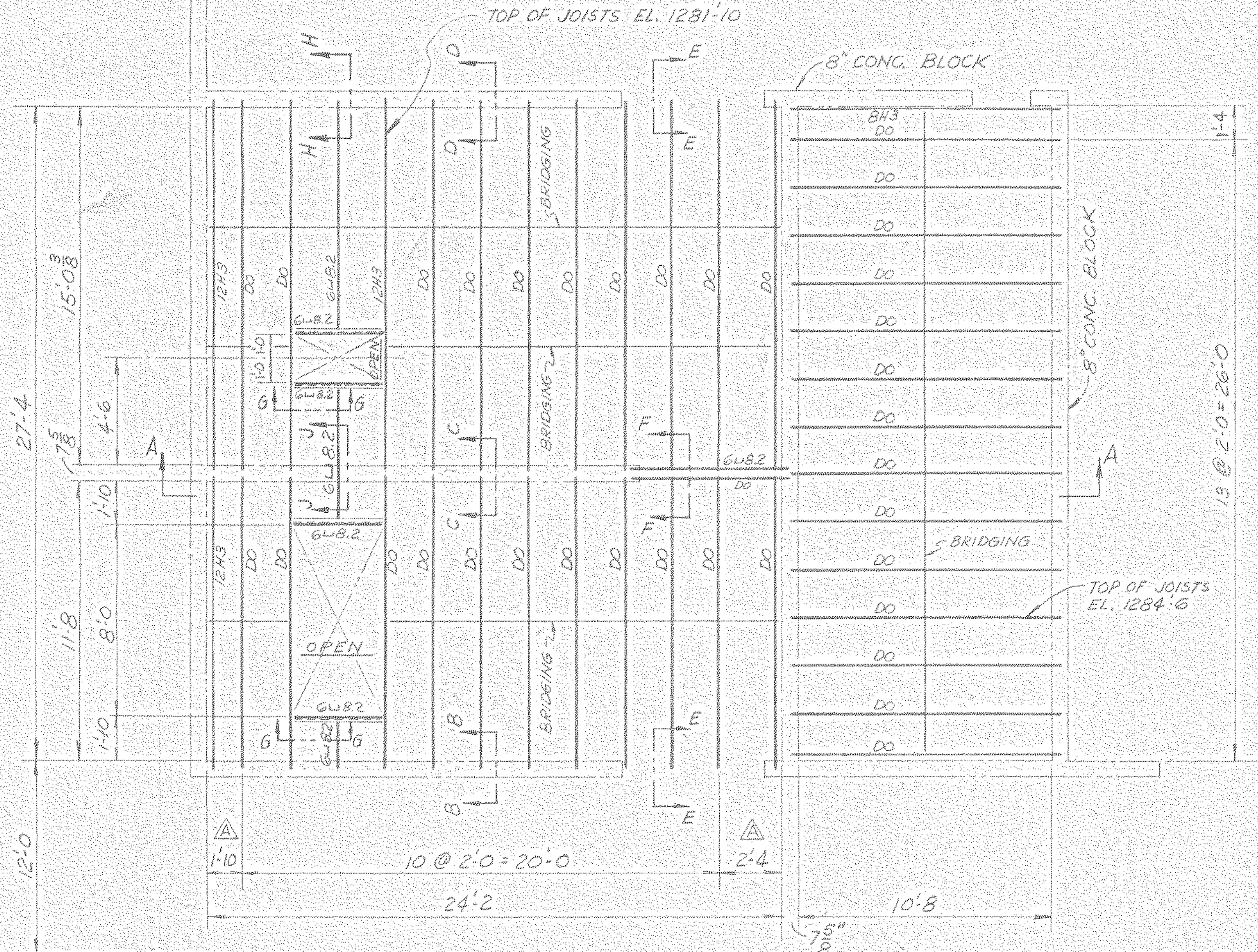
REVISION	DESCRIPTION	DATE	SCALE AS NOTED
C	GEN. REVISION	9-11-81	
B	REV. DWG. NO. (MIS. - BS)	2-7-81	
A	CHG'D. GUN ROOM LOCATIONS	4-14-81	

DRAWN BY: JJA  
CHECKED BY: JJA  
DATE: 3-20-81  
DWG NO: 55-110-B-17

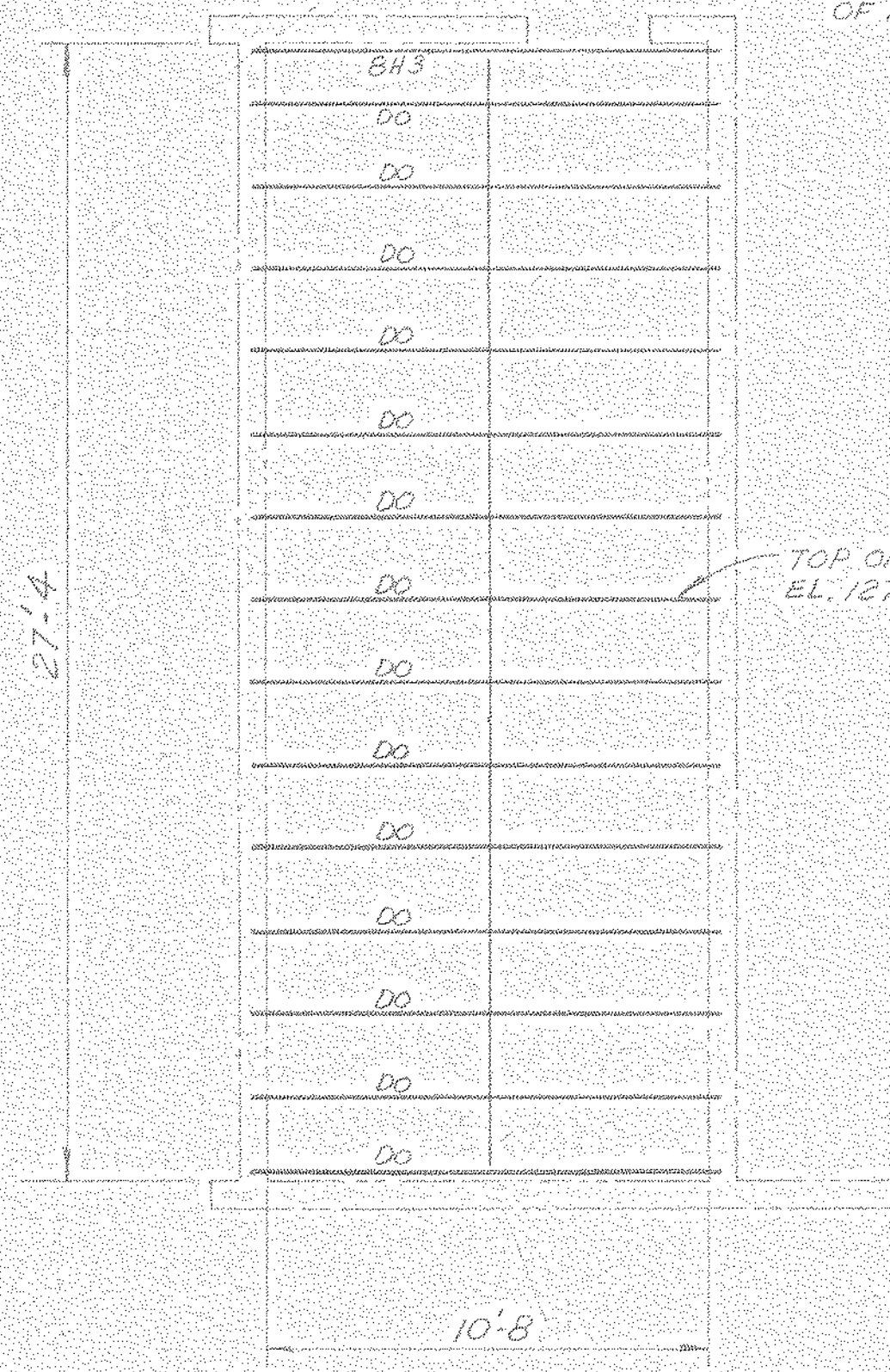
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SHOWN HEREON, REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN  
PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

#0064 Inter. Walls 1981 NONE 186107

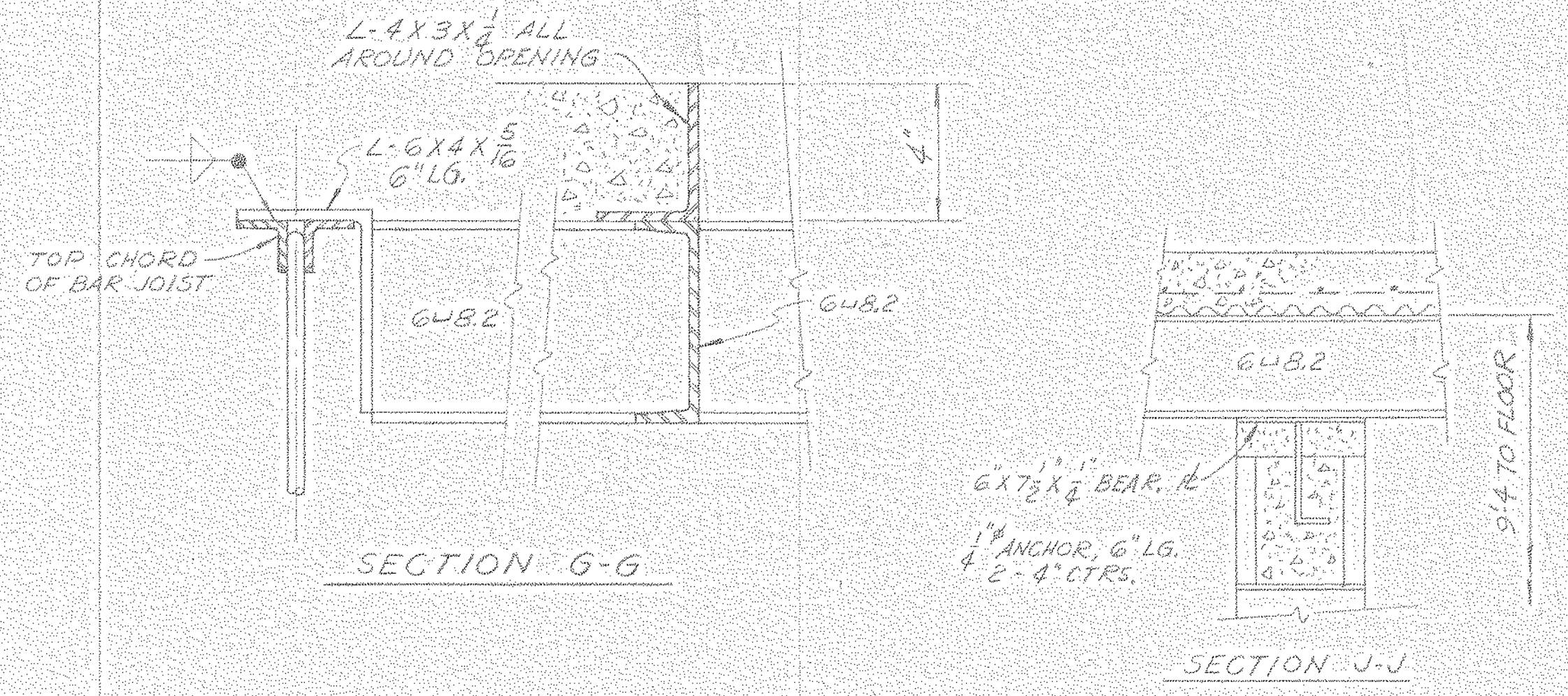




PLAN VIEW - CEILING JOISTS  
SCALE: 1/4" = 1'-0"

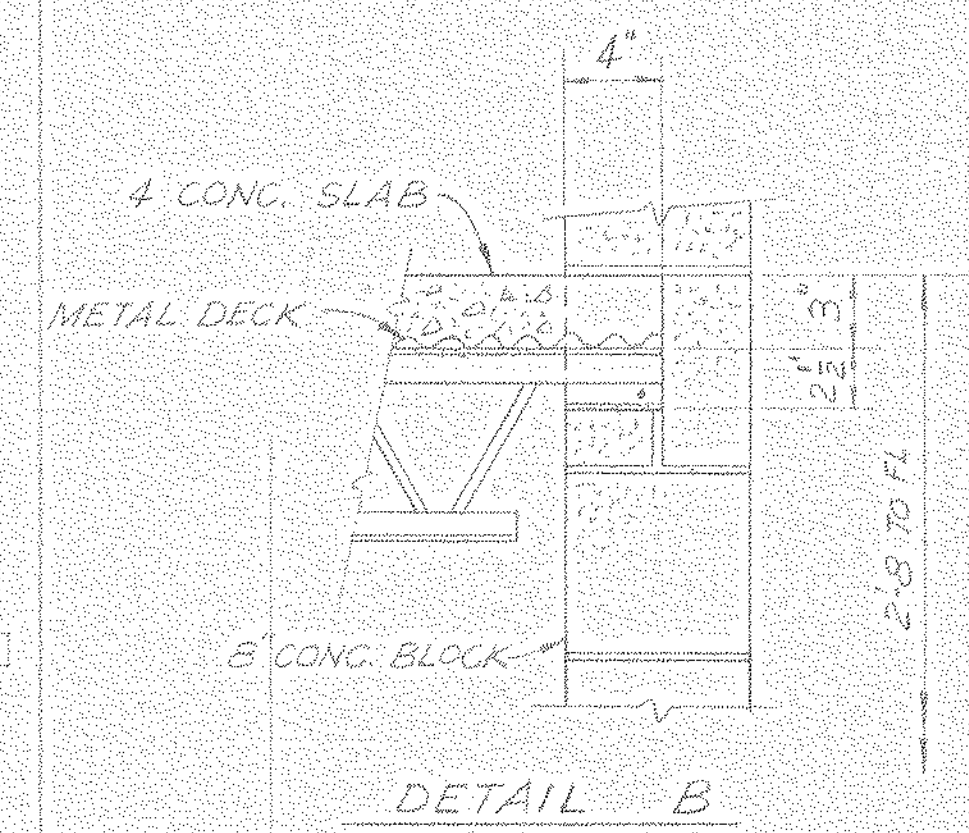


PLAN VIEW - CONTROL ROOM FLOOR JOISTS  
SCALE: 1/4" = 1'-0"

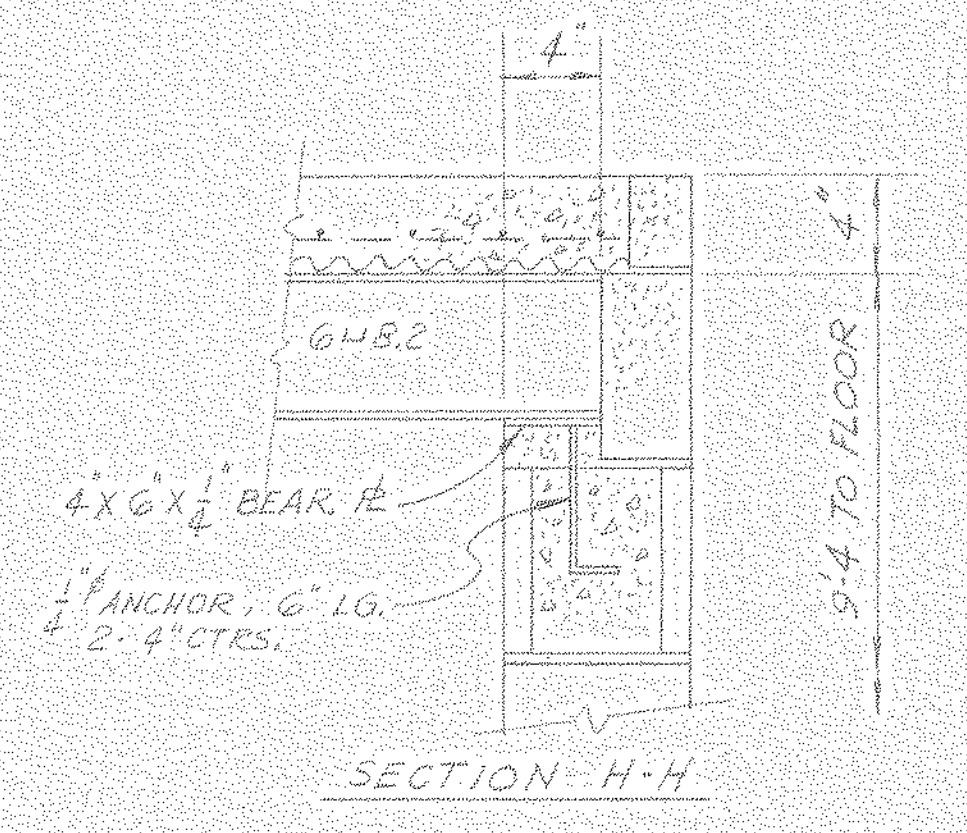


SECTION G-G

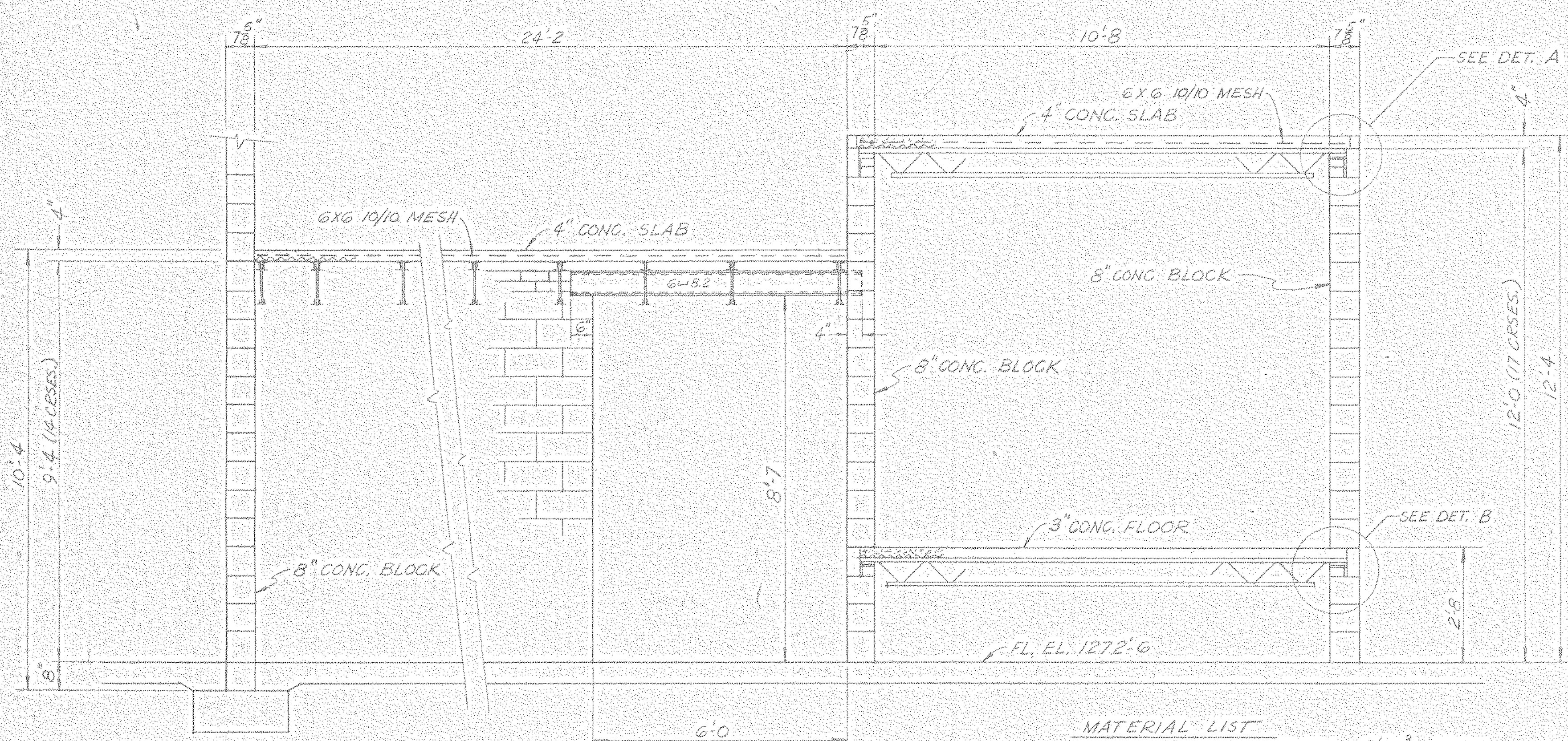
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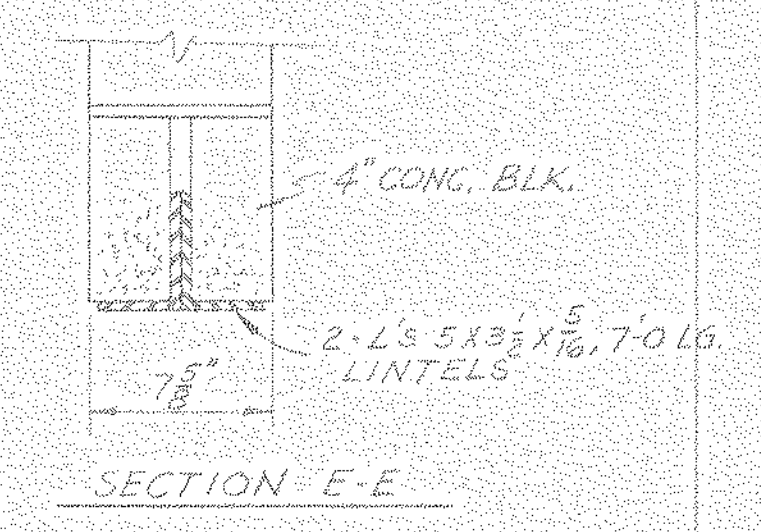
DETAIL B



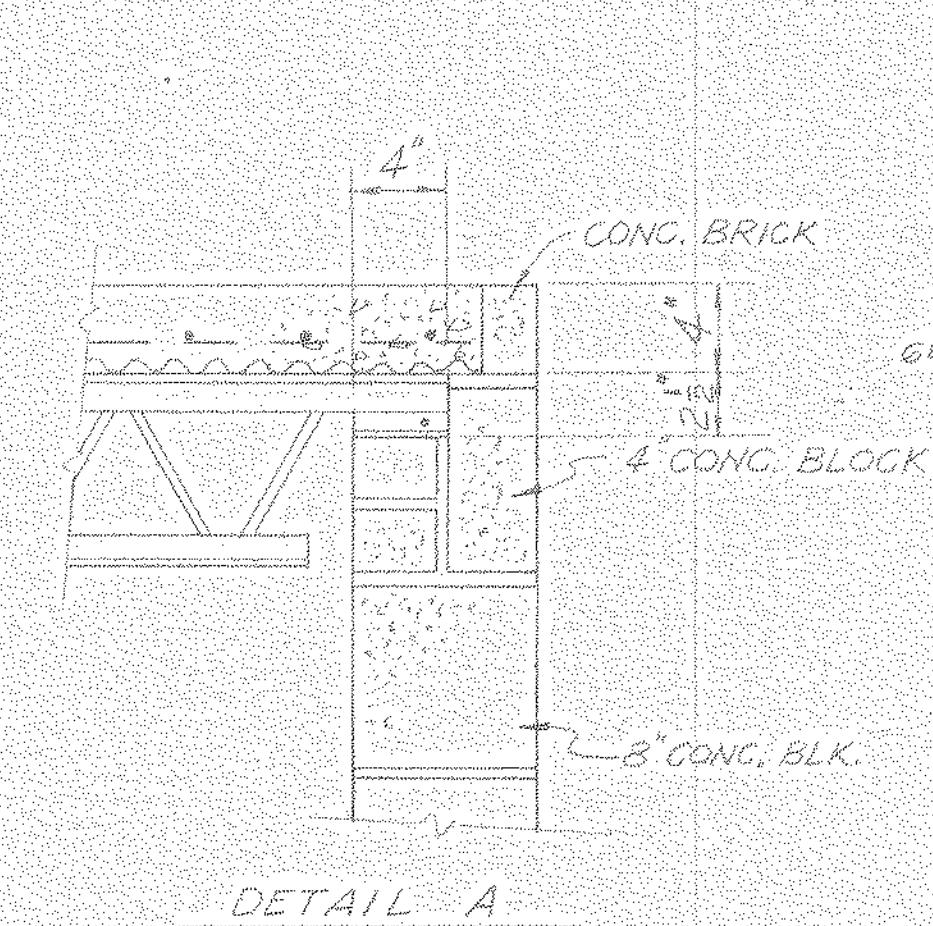
SECTION H-H



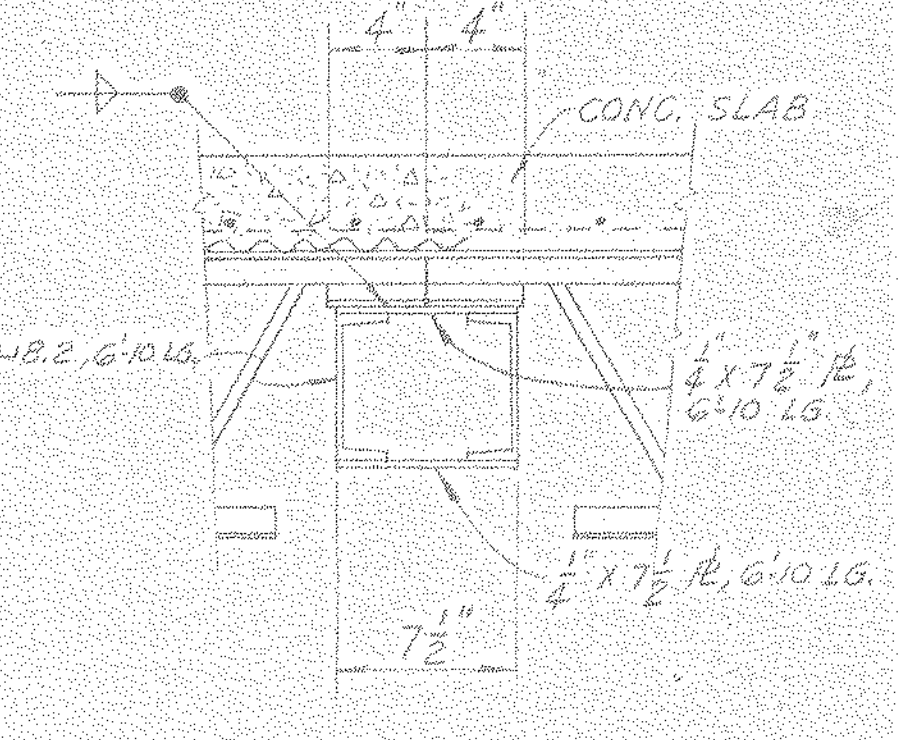
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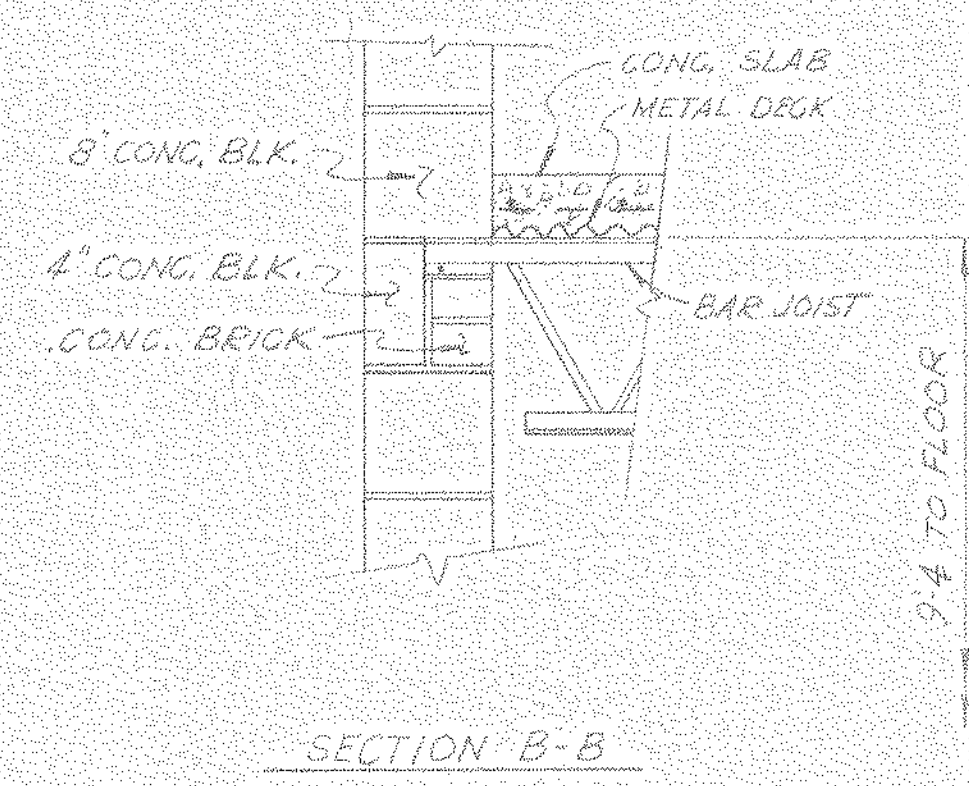
SECTION E-E



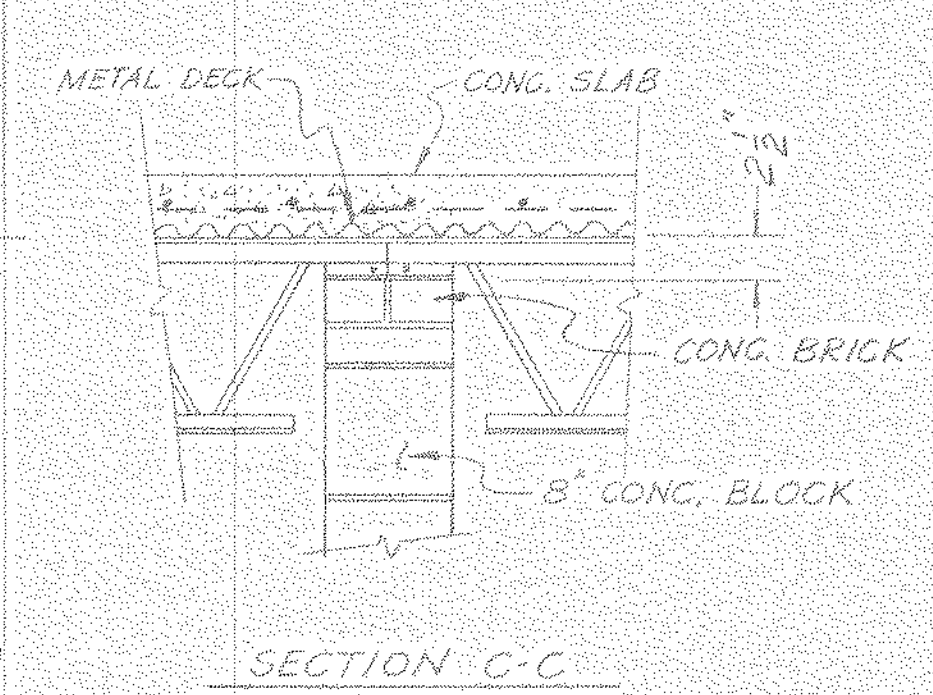
DETAIL A



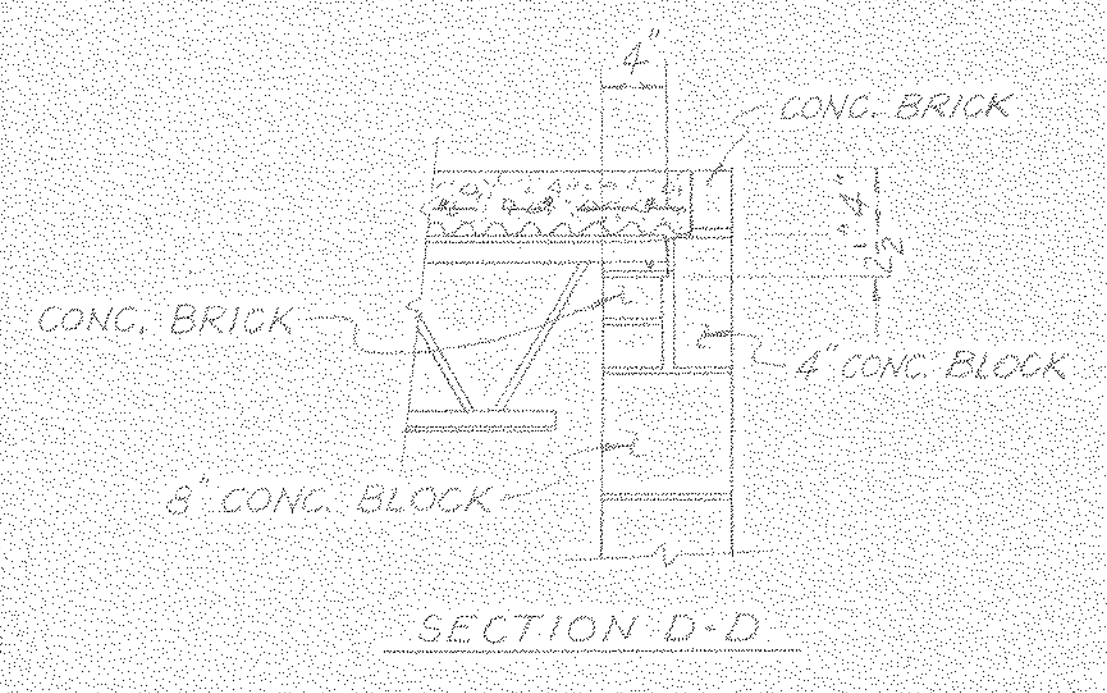
SECTION F-F



SECTION B-B



SECTION C-C



SECTION D-D

- MATERIAL LIST**
- 12 12H3 STEEL JOISTS, 15'-0" SPAN
  - 12 12H3 STEEL JOISTS, 11'-8" SPAN
  - 15 8H3 STEEL JOISTS, 10'-8" SPAN
  - 1100 SF. METAL DECK
  - 1300 SF. 6x6 10/10 WIRE MESH
  - 4 PCS. L-5x3x5/16, 7'-0" LG.
  - 40 L.F. 6x8.2,
  - 2 PCS. 1" WIDE x 6'-10" LG.

14 CY. CONCRETE

OTHERS	DATE	BY	REVISION	DESCRIPTION	DATE	SCALE	NO.	
PLANT	10-15-81	J.M.	1					
FOREMAN	10-15-81	J.M.	1					
VENDOR				A	110 WAS 1" G.; 2" WAS 2" S.	10-26-81	55-110	
PRINTS							REVISION	DESCRIPTION
							DATE	SCALE
							NO.	NO.

LL-5-A-34

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**CEILING & FLOOR DETAILS**  
**GUNNING & CONTROL ROOMS**

NEW RESEARCH CENTER

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

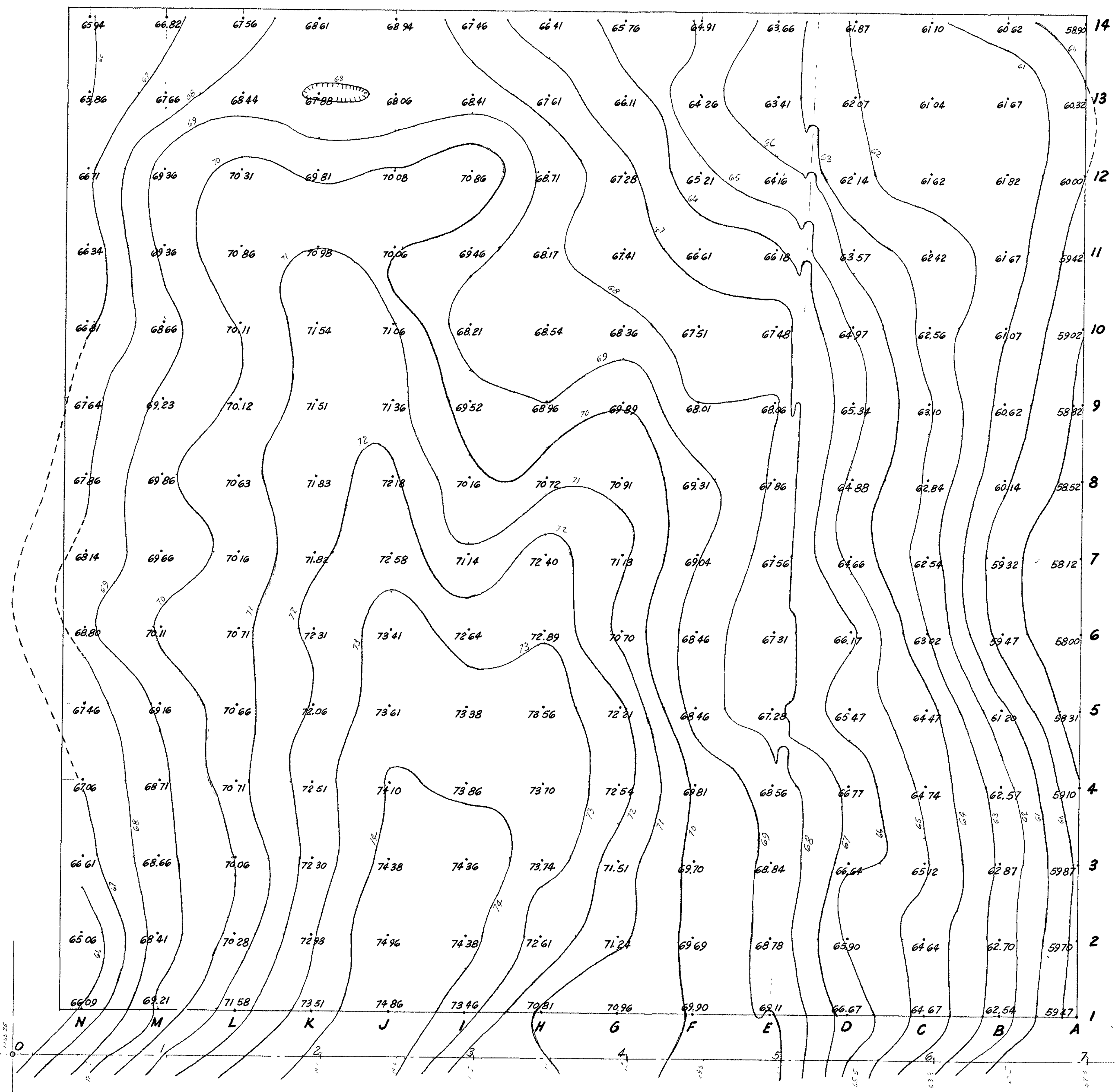
DATE: 10-12-81

DWG NO: 55-110-B-32

DRAWING 0222 201183

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CATO AVE.

ATCO ST.

EXISTING CONTOURS FROM SURVEY

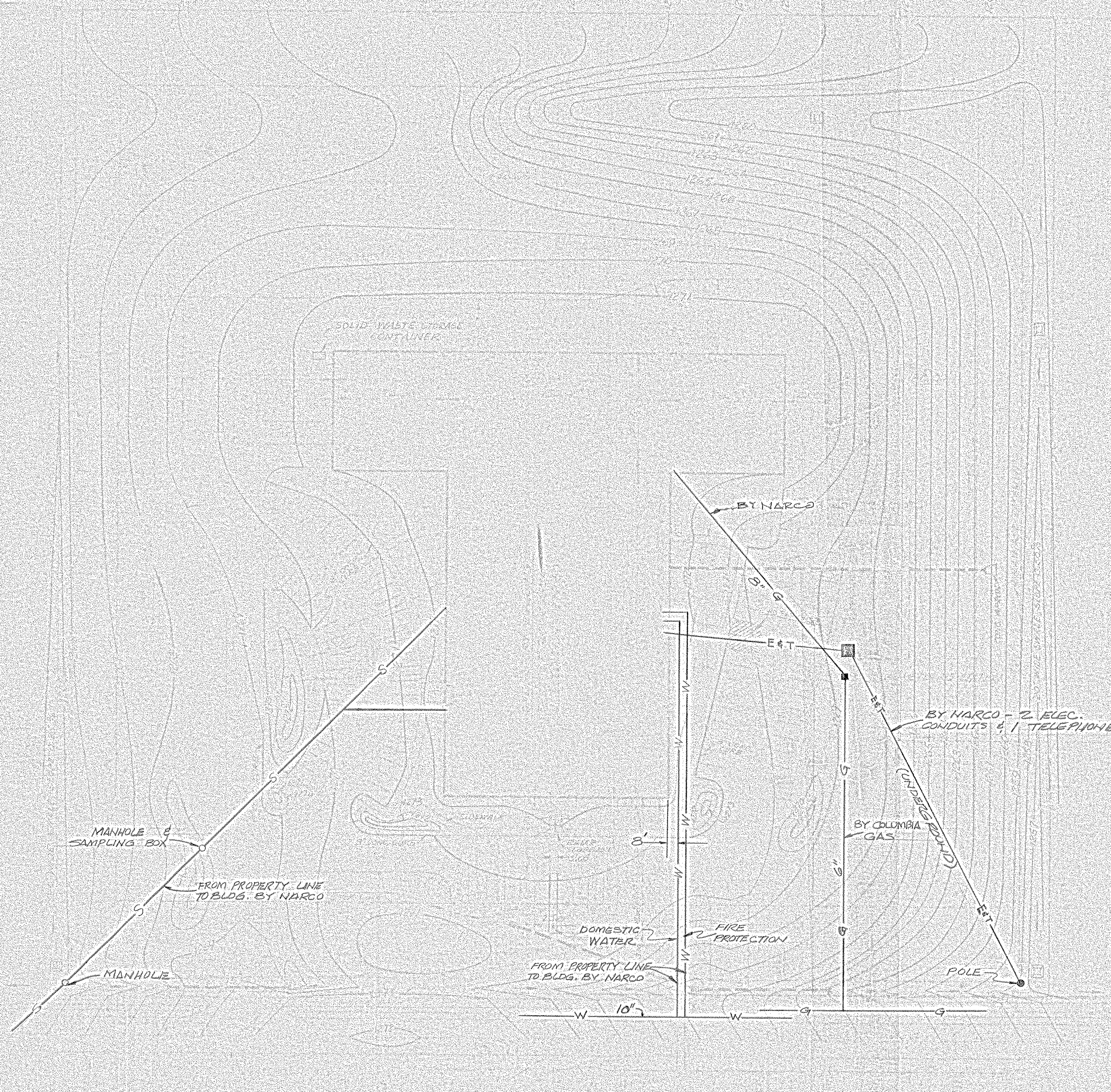
1" = 40'

#0064 Contour Survey No Date

LL-5-A-1

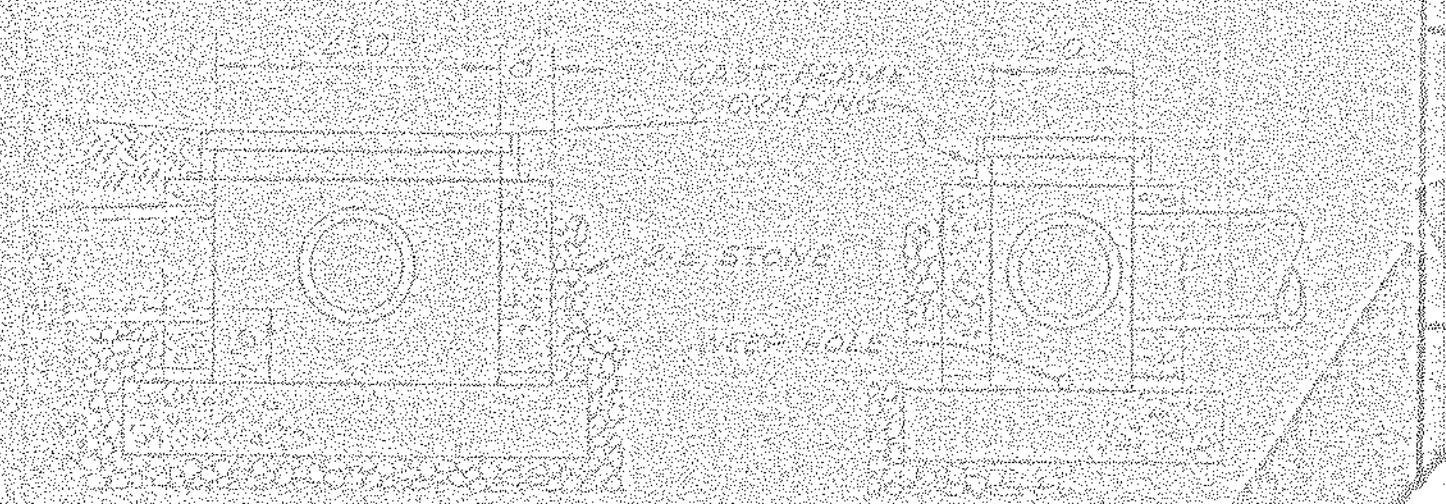
1 of 1





SITE PLAN  
SCALE 1" = 20'

- GENERAL SITE INFORMATION
  - LOT USE: OFFICE BUILDING AND RESEARCH CENTER
  - ZONING: F.R.D. (RESEARCH DEVELOPMENT LIGHT INDUSTRY)
  - TOTAL NUMBER OF LOTS: ONE
  - TOTAL ACRES: 10.00
- UTILITY INFORMATION
  - SEWER: CATON, FERGUSON JOINT AUTHORITY
  - WATER: STATE COLLEGE WATER AUTHORITY
  - ELECTRIC: WEST PENN. POWER COMPANY
  - PHONE: BELL OF PENNSYLVANIA
  - CABLE: CENTELCABLE
  - GAS: COLUMBIA GAS COMPANY
- ELEVATIONS SHOWN ARE BASED ON M.S.G.S. DATUM
- FOR ADDITIONAL INFORMATION SEE DRAWING ENTITLED CATO ASSOCIATES PRELIMINARY SUBDIVISION PLAN PREPARED BY UNIVERSAL TECHNICAL, INC.
- ALL STORM WATER DRAINAGE FACILITIES WITHIN THE CONFINES OF THE PROPERTY BOUNDARY LINES WILL BE MAINTAINED BY NORTH AMERICAN REFRACTORIES CO.
- PARKING
  - 10 EMPLOYEE SPACES (10' x 20')
  - 5 VISITOR SPACES (10' x 20')
- ALL DRIVEWAYS, BUILDINGS AND PARKING AREAS TO BE SURFACED WITH 10" DIMENSION WEARING COURSE ON BITUMINOUS BASE COURSE IN CURBED STONE EDGE OR FOR LANDSCAPE PLANTING STAND OUT OR LIGHTING SEE NARCO DRAWINGS AND 55-110-10



PIPE SIZE & LOCATION	VEL. FT.
15" CROSS PIPE DRIVEWAY 23 FT. DIA. HOLE	
15" CROSS PIPE DRIVEWAY 23 FT. DIA. HOLE	
12" DUCT PIPE FROM STONE FILLED SUMP	



LOCATION MAP  
SCALE 1" = 2000'

FERGUSON TOWNSHIP PLANNING COMMISSION  
APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_

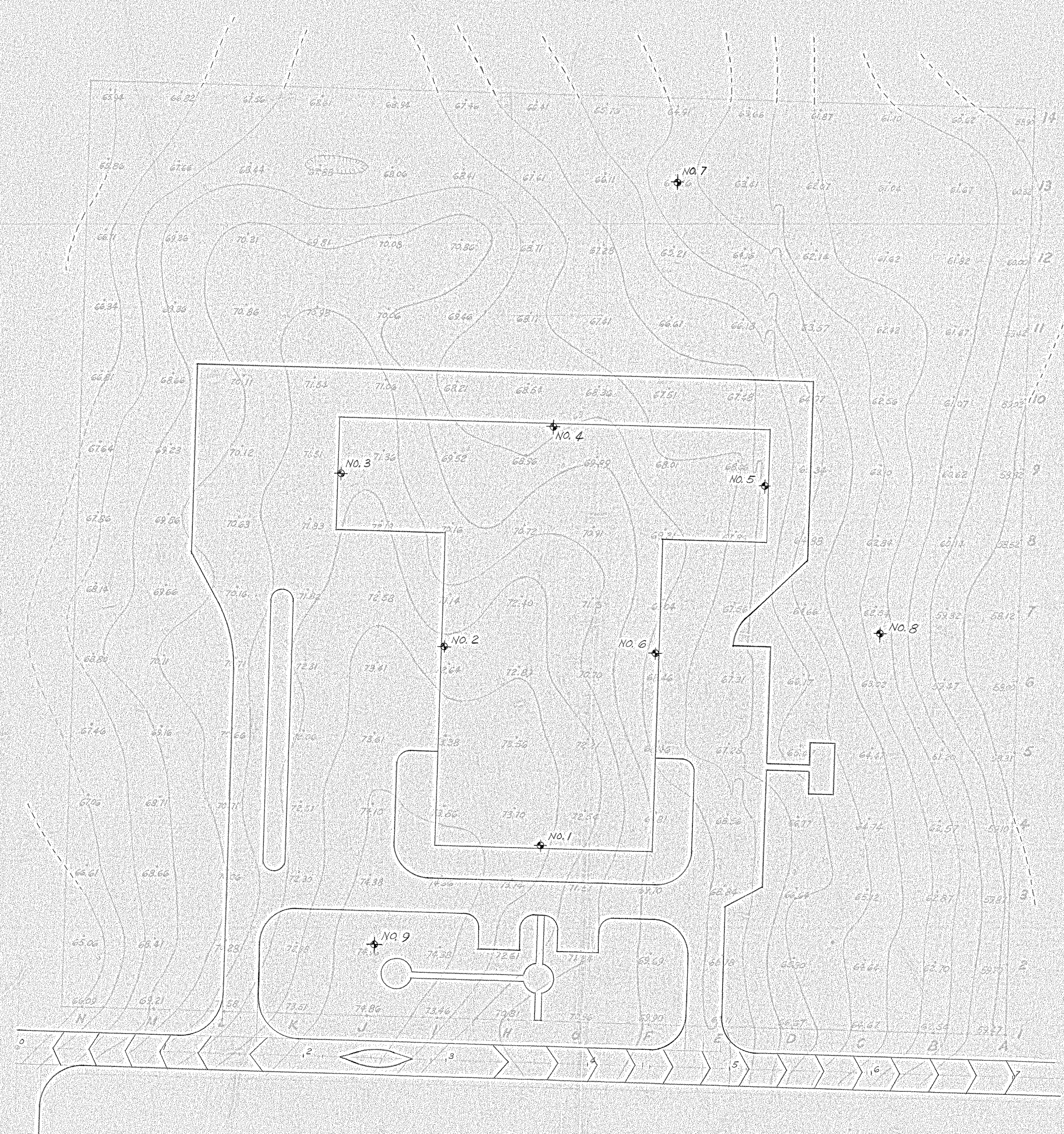
SECRETARY \_\_\_\_\_ DATE \_\_\_\_\_

FERGUSON TOWNSHIP SUPERVISORS  
APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

ENGINEER \_\_\_\_\_



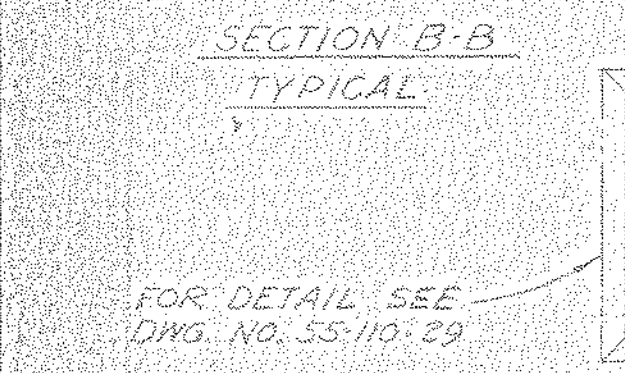
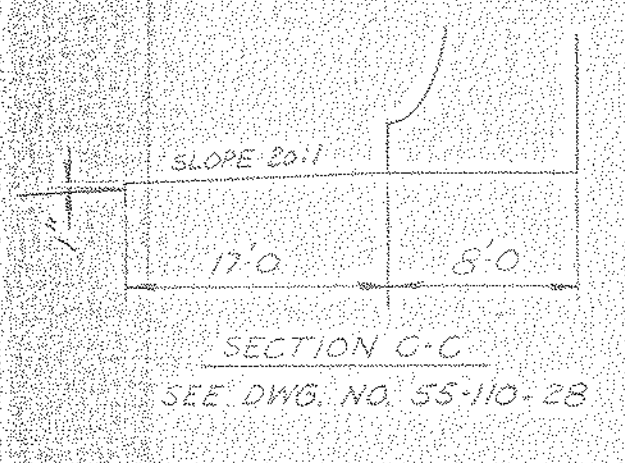
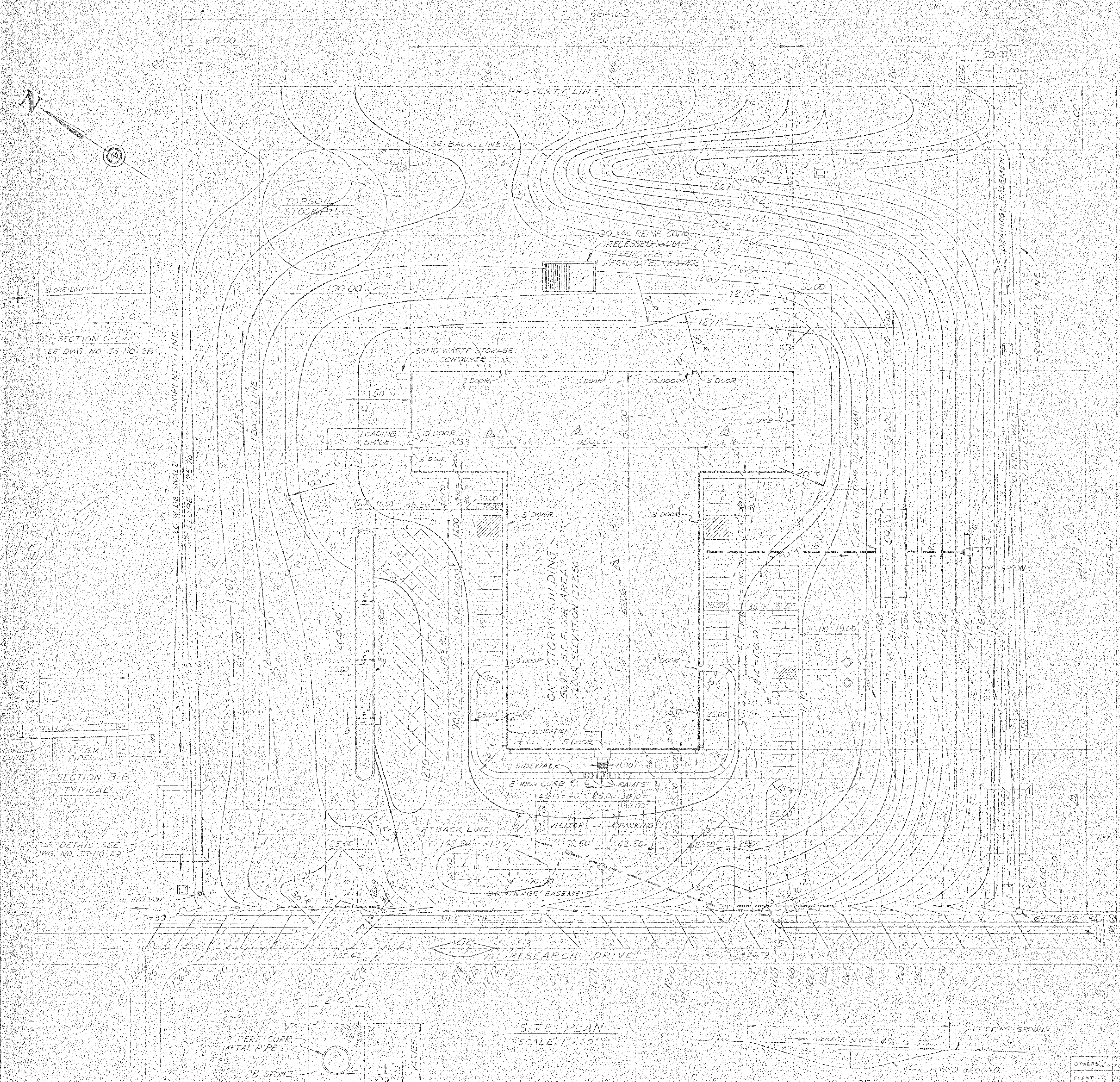


LOCATION OF TEST HOLES

NO. 1	160' LT.	STA. 3+62	ATCO ST.
NO. 2	295' LT.	STA. 2+90	" "
NO. 3	415' LT.	STA. 2+15	" "
NO. 4	455' LT.	STA. 3+62	" "
NO. 5	415' LT.	STA. 5+12	" "
NO. 6	295' LT.	STA. 4+38	" "
NO. 7	625' LT.	STA. 4+40	" "
NO. 8	310' LT.	STA. 6+00	" "
NO. 9	80' LT.	STA. 2+90	" "



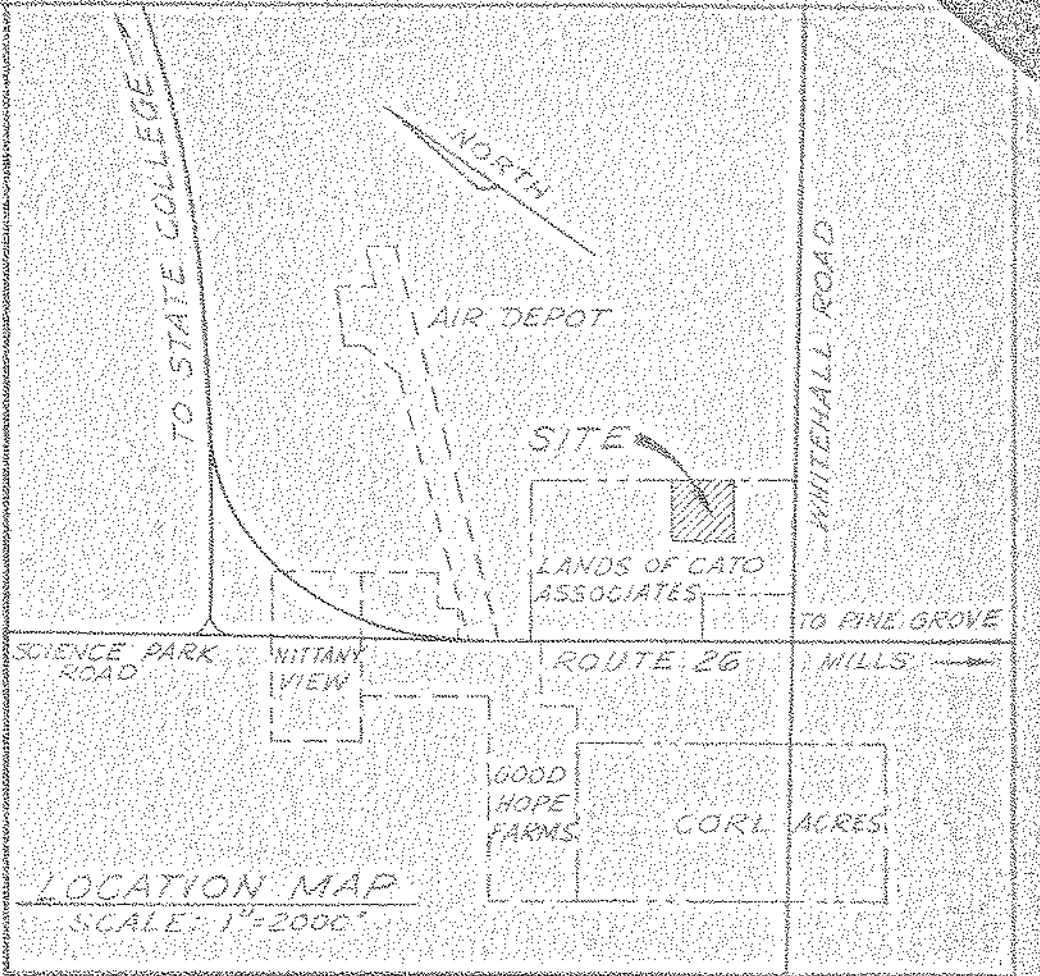
ZONING DISTRICT R-2 (LOW DENSITY RESIDENCE)



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NOTES

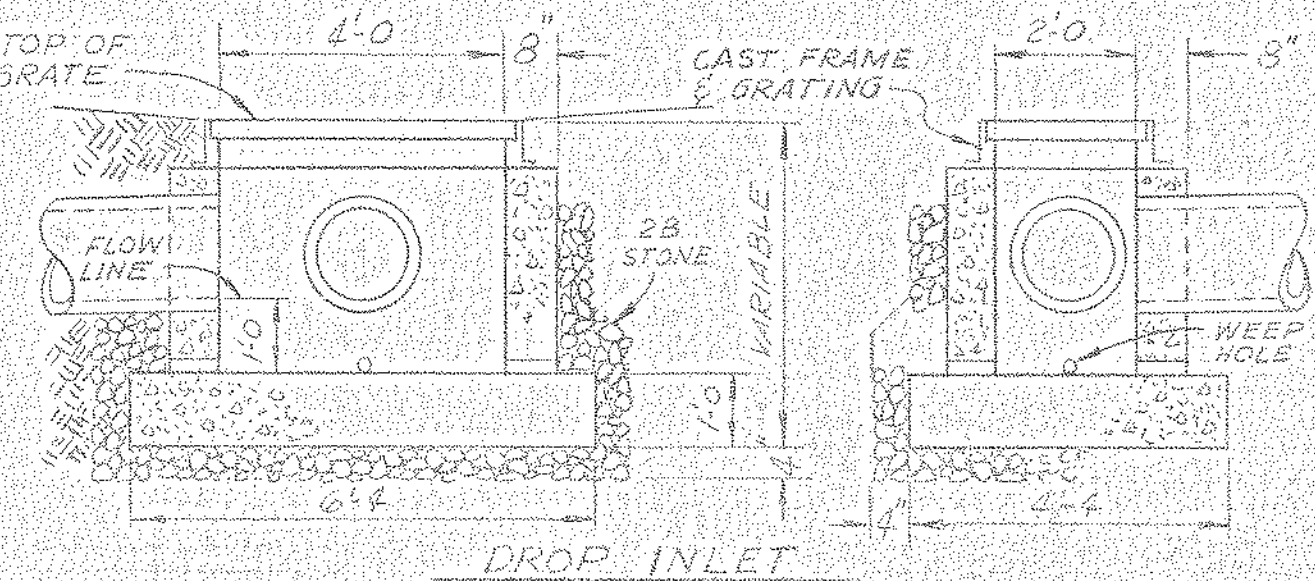
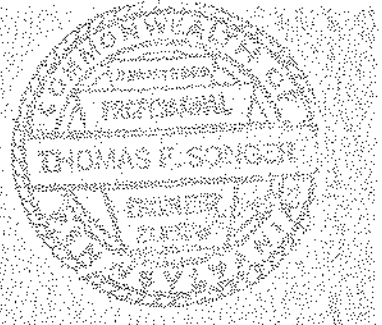
- GENERAL SITE INFORMATION
  - LOT USE: OFFICE BUILDING AND RESEARCH CENTER
  - ZONING: R-2 (RESEARCH DEVELOPMENT, LIGHT INDUSTRY)
  - TOTAL NUMBER OF LOTS: ONE
  - TOTAL ACREAGE: 10.00
- UTILITY INFORMATION
  - SEWAGE: PATTON FERGUSON JOINT AUTHORITY
  - WATER: STATE COLLEGE WATER AUTHORITY
  - ELECTRIC: WEST PENN POWER COMPANY
  - PHONE: BELL OF PENNSYLVANIA
  - CABLE TV: CENTRE VIDEO
  - GAS: COLUMBIA GAS COMPANY
- ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM
- FOR ADDITIONAL INFORMATION SEE DRAWING ENTITLED 'CATO ASSOCIATES PRELIMINARY SUBDIVISION PLAN, PREPARED BY UNIVERSAL TECHNICAL, INC.'
- ALL STORM WATER DRAINAGE FACILITIES WITHIN THE CONFINES OF THE PROPERTY BOUNDARY LINES WILL BE MAINTAINED BY NORTH AMERICAN REFRACTORIES CO.
- PARKING
  - 66 EMPLOYEE SPACES (10' X 20')
  - 2 VISITOR SPACES (10' X 20')
- ALL DRIVEWAYS, LOADING AND PARKING AREAS TO BE SURFACED WITH 1" OR 1.5" BITUMINOUS WEARING COURSE ON BITUMINOUS BASE COURSE ON CRUSHED STONE SUBBASE.
- FOR LANDSCAPE PLANTINGS AND OUTDOOR LIGHTING SEE NARGO DRAWING NO. 55-110-10



FERGUSON TOWNSHIP PLANNING COMMISSION  
APPROVED BY  
 [Signature] 10/15/80  
 CHAIRMAN DATE  
 [Signature] 10/13/80  
 SECRETARY DATE

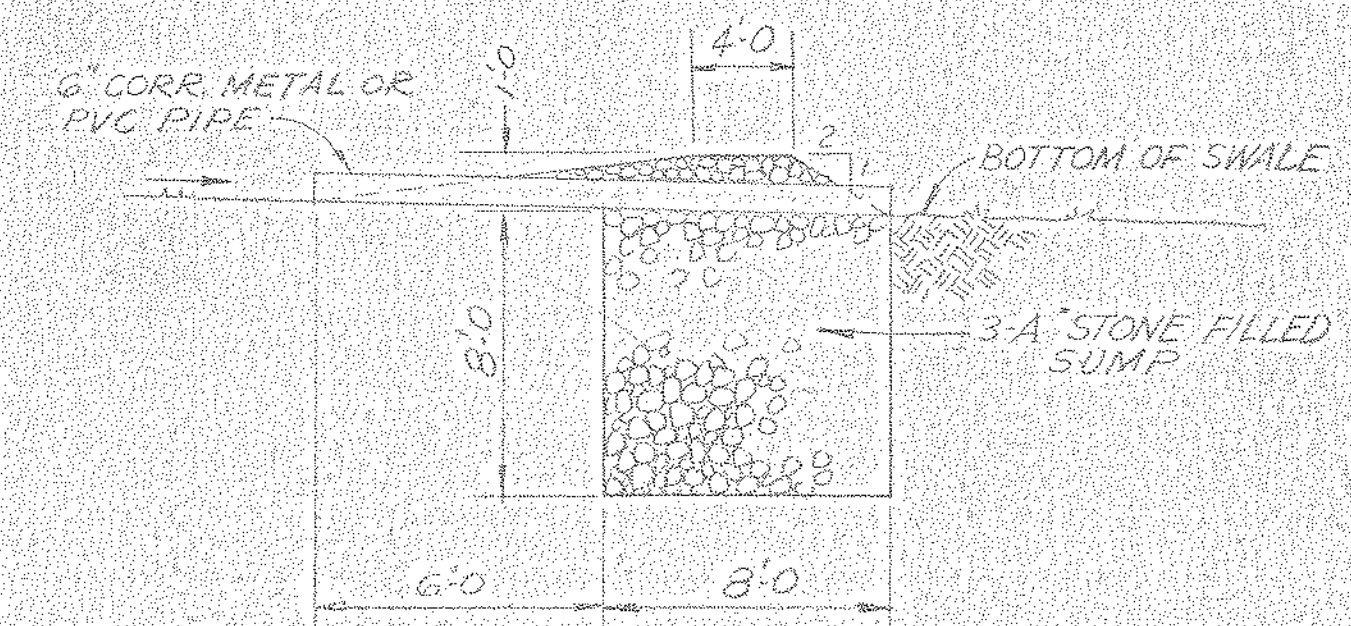
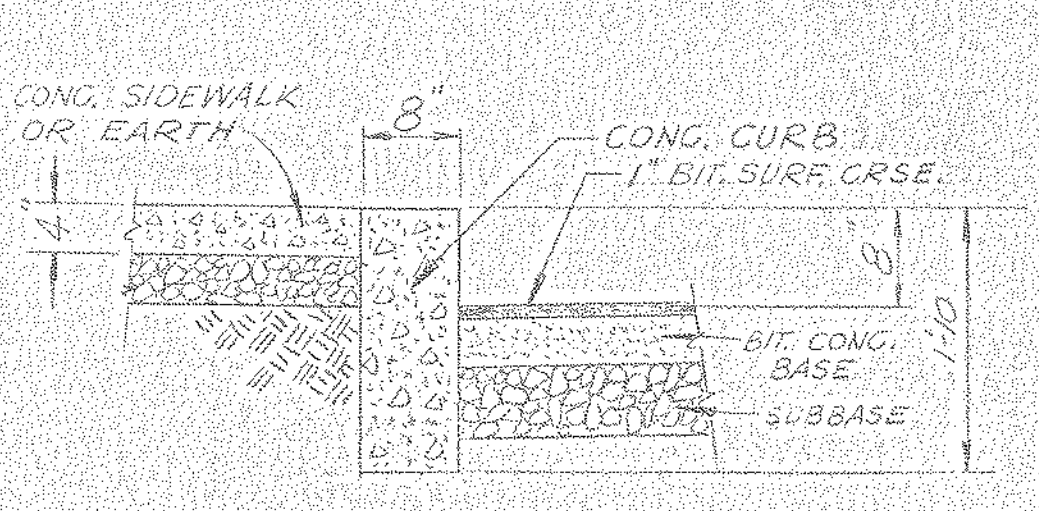
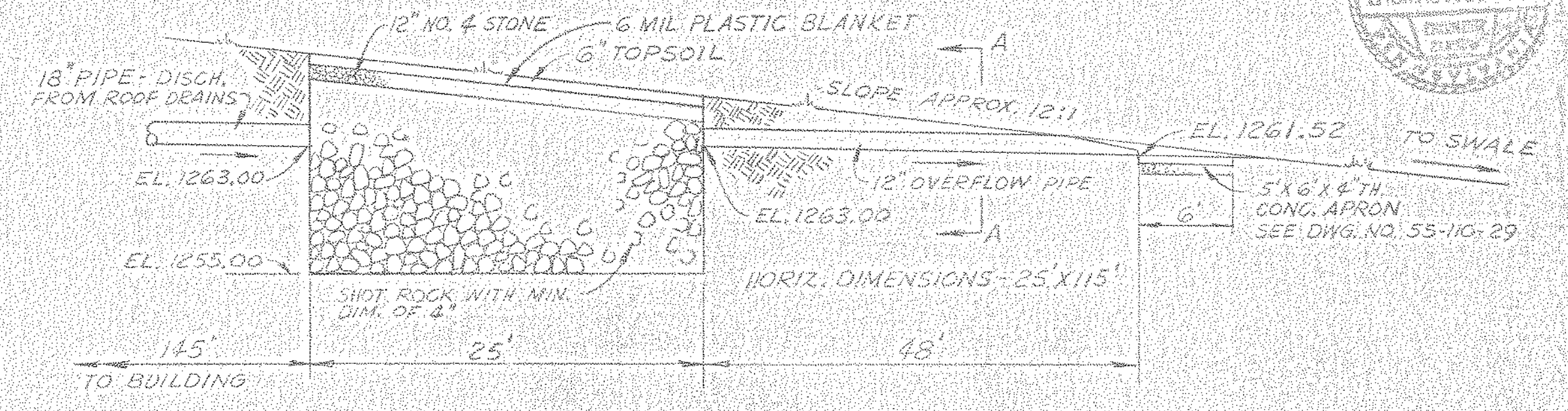
FERGUSON TOWNSHIP SUPERVISORS  
APPROVED BY  
 [Signature] 10-17-80  
 CHAIRMAN DATE  
 [Signature] 10-15-80  
 SECRETARY DATE

ENGINEERING CERTIFICATION  
 I, Thomas P. Songer, HEREBY CERTIFY THAT THE STORM WATER MANAGEMENT PLAN MEETS ALL DESIGN CRITERIA OF THE STORM WATER MANAGEMENT CONTROLS AS REQUIRED BY THE TOWNSHIP OF FERGUSON.



OUTLET VELOCITIES FROM PIPES

SIZE & LOCATION	VEL.-FPS
15" CROSS PIPE, DRIVEWAY 33' LT STA. 1+55.43	4.5
15" CROSS PIPE, DRIVEWAY 33' LT STA. 4+80.79	4.3
12" DISCH. PIPE FROM STONE FILLED SUMP	4.0



- LEGEND
- EXISTING CONTOUR
  - 1270- DESIGN CONTOUR
  - STORM SEWER
  - STORM SEWER W/ END SECTION
  - DROP INLET
  - SWALE BLOCK W/ SUMP
  - TEMPORARY SILTATION BASIN SEE DET. IN STORM WATER NARRATIVE & DWG. NO. 55-110-29

SEE DWG. NO. 55-110-A-2 FOR REVISED SITE PLAN

LL-S-A-4  
 NORTH AMERICAN REFRACTORIES CO  
 ENGINEERING DEPT., RESEARCH CENTER  
 CURWENSVILLE, PA.

SITE PLAN

REV.	REV. DWG. NO. (DATE)	DATE
E	REV. OVERALL DESIGN	6-7-81
D	REV. OVERALL DESIGN	2-24-81
C	REV. OVERALL DESIGN	12-18-80
B	REV. OVERALL DESIGN	9-26-80
A	REV. OVERALL DESIGN	8-28-80

DRAWN BY: [Signature]  
 CHECKED BY: [Signature]  
 SCALE: 1" = 40'

OTHERS	DATE	DESCRIPTION	DATE
PLANT	10-23-81	PLANTING	
FOREMAN	10-23-81	CONSTRUCTION	
VENDOR			

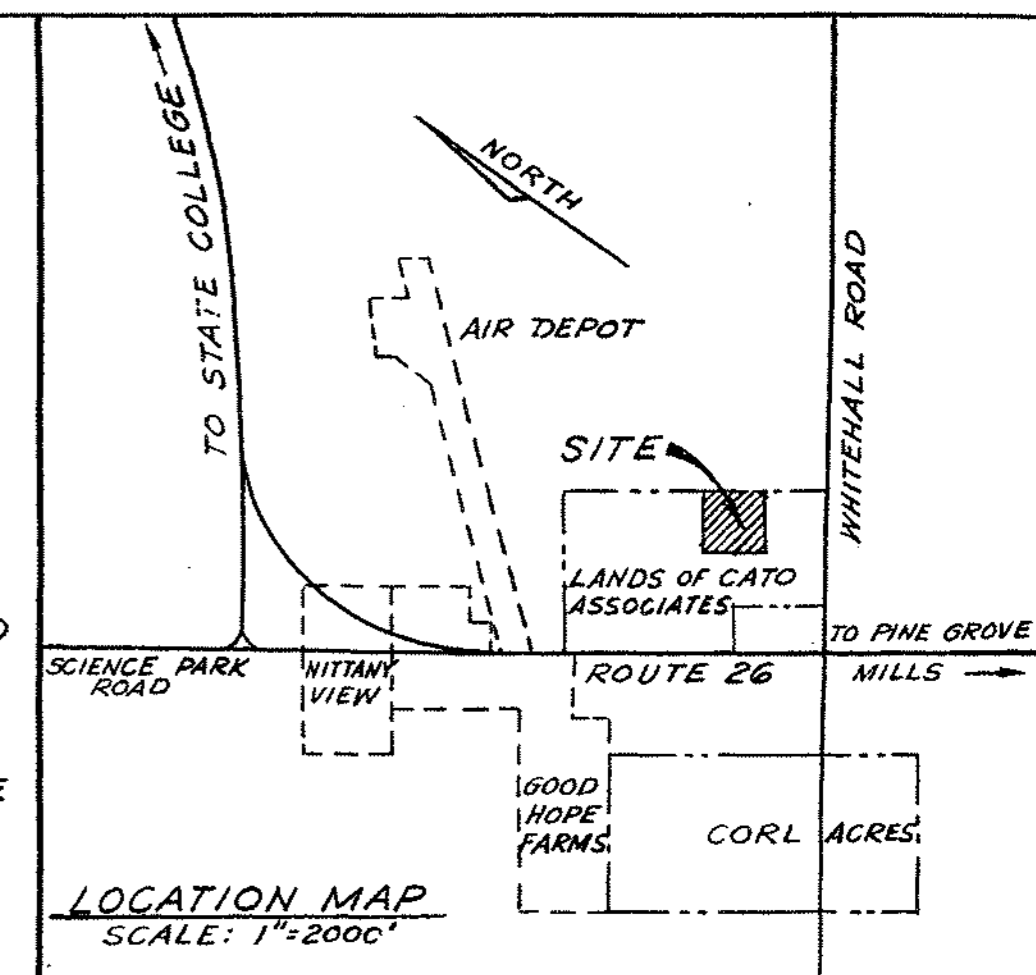


664.62'

180.00'

NOTES

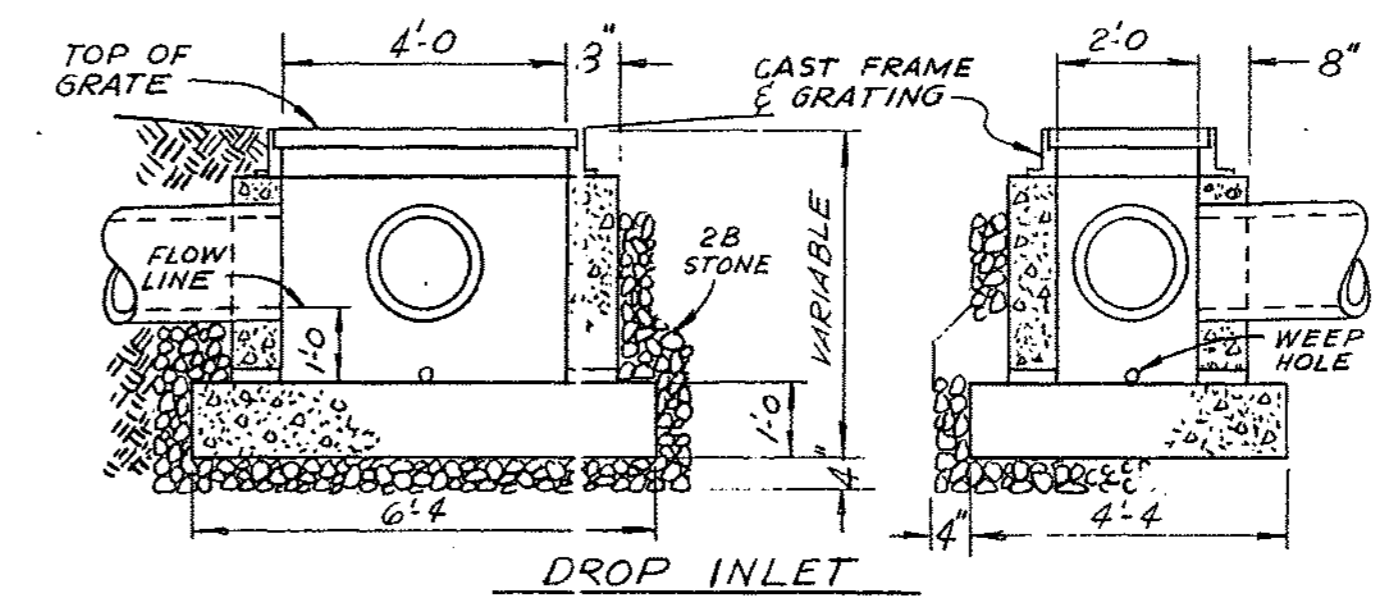
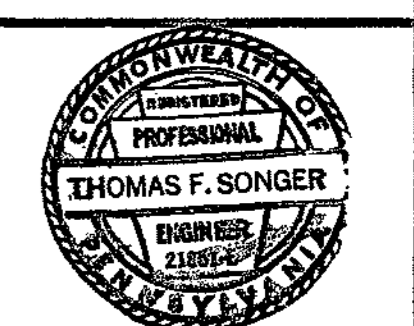
- GENERAL SITE INFORMATION
  - LOT USE: OFFICE BUILDING AND RESEARCH CENTER
  - ZONING: R-2 (RESEARCH DEVELOPMENT, LIGHT INDUSTRY)
  - TOTAL NUMBER OF LOTS: ONE
  - TOTAL ACREAGE: 10.00
- UTILITY INFORMATION
  - SEWAGE: PATTON FERGUSON JOINT AUTHORITY
  - WATER: STATE COLLEGE WATER AUTHORITY
  - ELECTRIC: WEST PENN POWER COMPANY
  - PHONE: BELL OF PENNSYLVANIA
  - CABLE TV: CENTRE VIDEO
  - GAS: COLUMBIA GAS COMPANY
- ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM
- FOR ADDITIONAL INFORMATION SEE DRAWING ENTITLED CATO ASSOCIATES PRELIMINARY SUBDIVISION PLAN, PREPARED BY UNIVERSAL TECHNICAL, INC.
- ALL STORM WATER DRAINAGE FACILITIES WITHIN THE CONFINES OF THIS PROPERTY BOUNDARY LINES WILL BE MAINTAINED BY NORTH AMERICAN REFRACTORIES CO.
- PARKING
  - 66 EMPLOYEE SPACES (10' X 20')
  - 6 VISITOR SPACES (10' X 20')
- ALL DRIVEWAYS, LOADING AND PARKING AREAS TO BE SURFACED WITH 1" OR 1 1/2" BITUMINOUS WEARING COURSE ON BITUMINOUS BASE COURSE ON CRUSHED STONE SUBBASE.
- FOR LANDSCAPE PLANTINGS AND OUTDOOR LIGHTING SEE NARCO DRAWING NO. 55-110-10



FERGUSON TOWNSHIP PLANNING COMMISSION  
APPROVED BY  
*Donald E. Antos* 10/15/80  
CHAIRMAN DATE  
*William R. Raugh* 10/13/80  
SECRETARY DATE

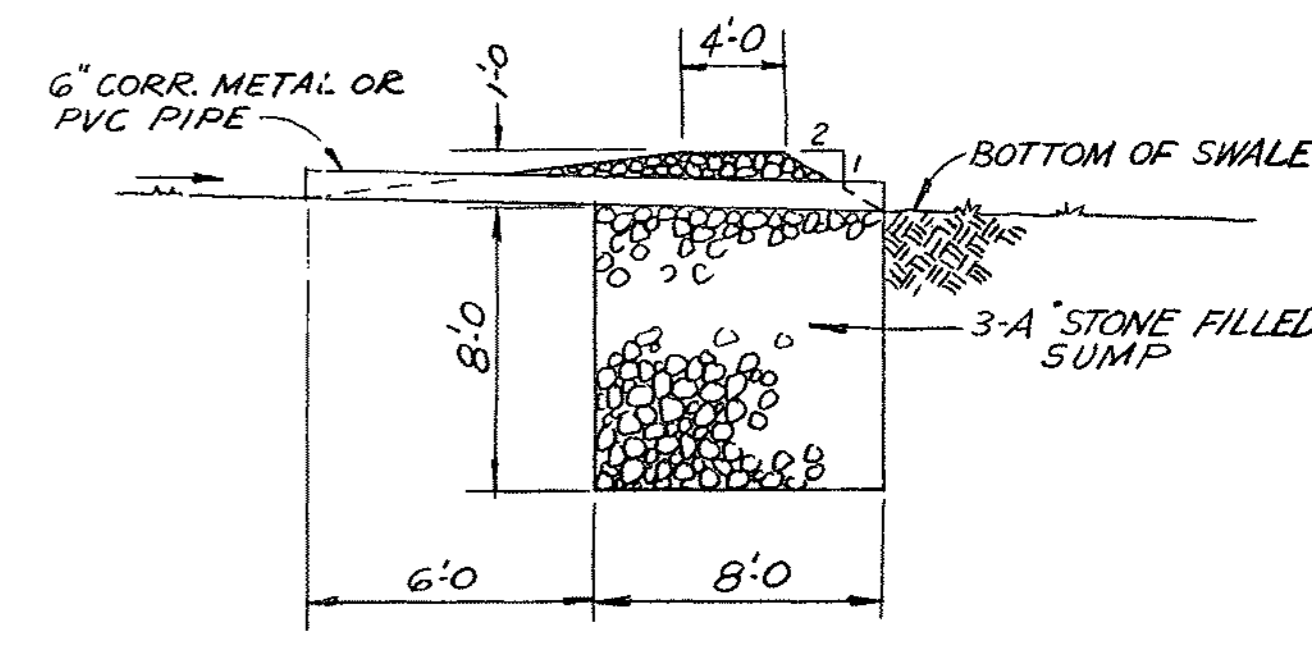
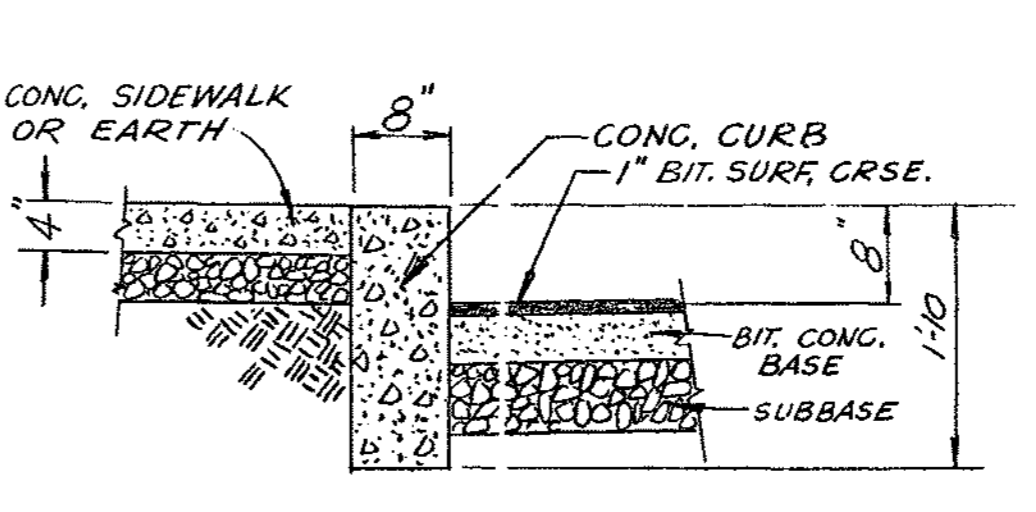
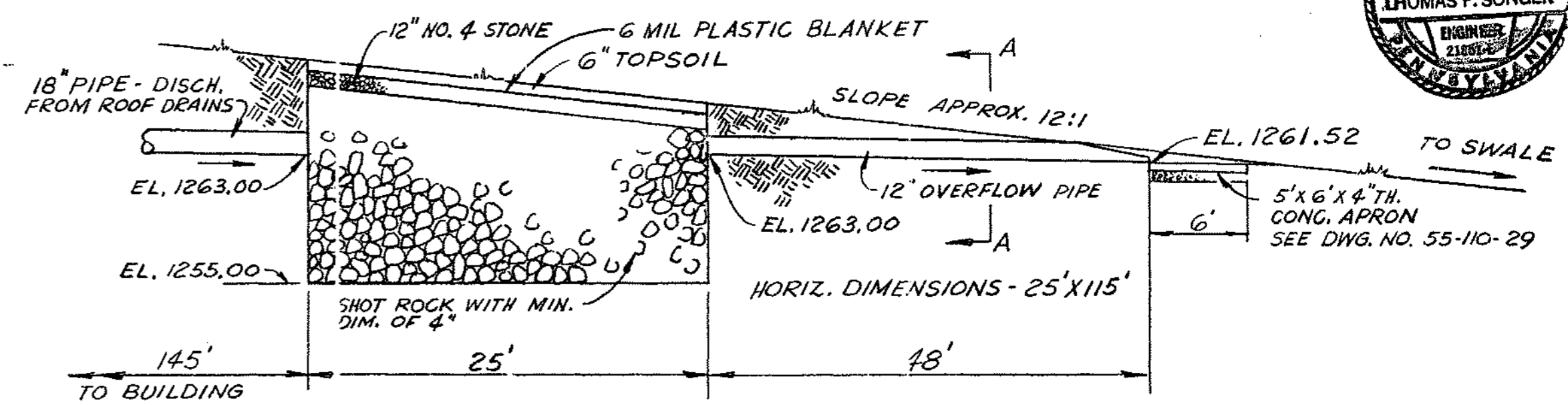
FERGUSON TOWNSHIP SUPERVISORS  
APPROVED BY  
*Anthony J. Conway* 10-14-80  
CHAIRMAN DATE  
*Donald H. Bachman* 10-15-80  
SECRETARY DATE

ENGINEERING CERTIFICATION  
*Thomas F. Songer* HEREBY CERTIFY THAT THE STORM WATER MANAGEMENT PLAN MEETS ALL DESIGN CRITERIA OF THE STORM WATER MANAGEMENT CONTROLS AS REQUIRED BY THE TOWNSHIP OF FERGUSON.



CUTLET VELOCITIES FROM PIPES

SIZE & LOCATION	VEL. - FPS
15" CROSS PIPE, DRIVEWAY 33' LT. STA. 4155+43	4.5
15" CROSS PIPE, DRIVEWAY 33' LT. STA. 4180+79	4.3
12" DISCH. PIPE FROM STONE FILLED SUMP	4.0



LEGEND

- EXISTING CONTOUR
- 1270 — DESIGN CONTOUR
- STORM SEWER
- STORM SEWER W/ END SECTION
- DROP INLET
- SWALE BLOCK W/ SUMP
- TEMPORARY SILTATION BASIN SEE DET. IN STORM WATER NARRATIVE & DWG. NO. 55-110-29

SEE DWG. NO. 55-110-A-2 FOR REVISED SITE PLAN

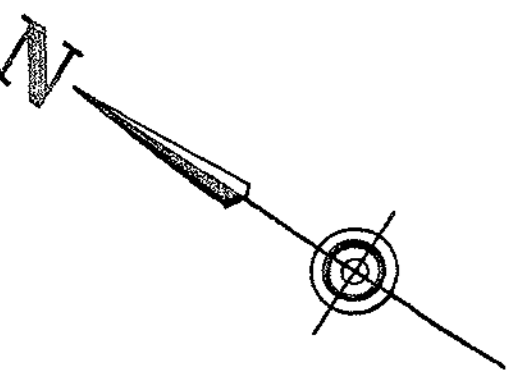
NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.

SITE PLAN

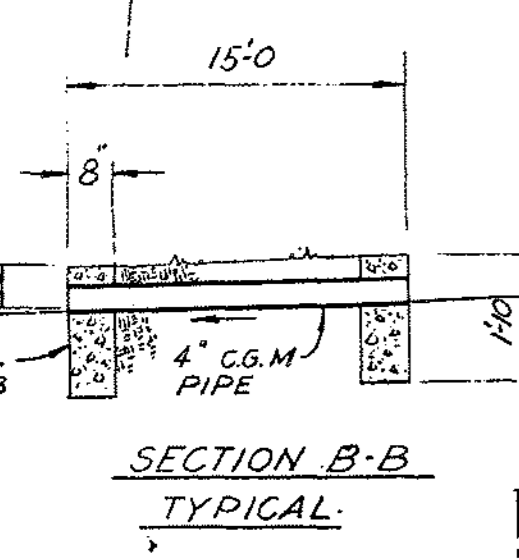
NEW RESEARCH CENTER

DRAWN BY *[Signature]* C. O. NO. 55-110  
CHECKED DATE 3-27-80 55-110-A-1  
SCALE 1"=40' DWG NO.

OTHERS	REV.	DATE	DESCRIPTION
	E	6-7-81	REV. DWG. NO. (was -09)
	D	2-24-81	CHGD. OVERALL BLDG. DIMENSIONS
	C	12-15-80	STORM SEWER PIPE TO SUMP 18" DIA. 15'
	B	9-26-80	CHGD. SWALE BLOCK, ADD'D PIPE DROPLET WEL, CHGD. EN. SHT. BASIN
	A	8-28-80	GEN. REVISION FOR TRAINING COMM. APPROVAL



SECTION C-C  
SEE DWG. NO. 55-110-28



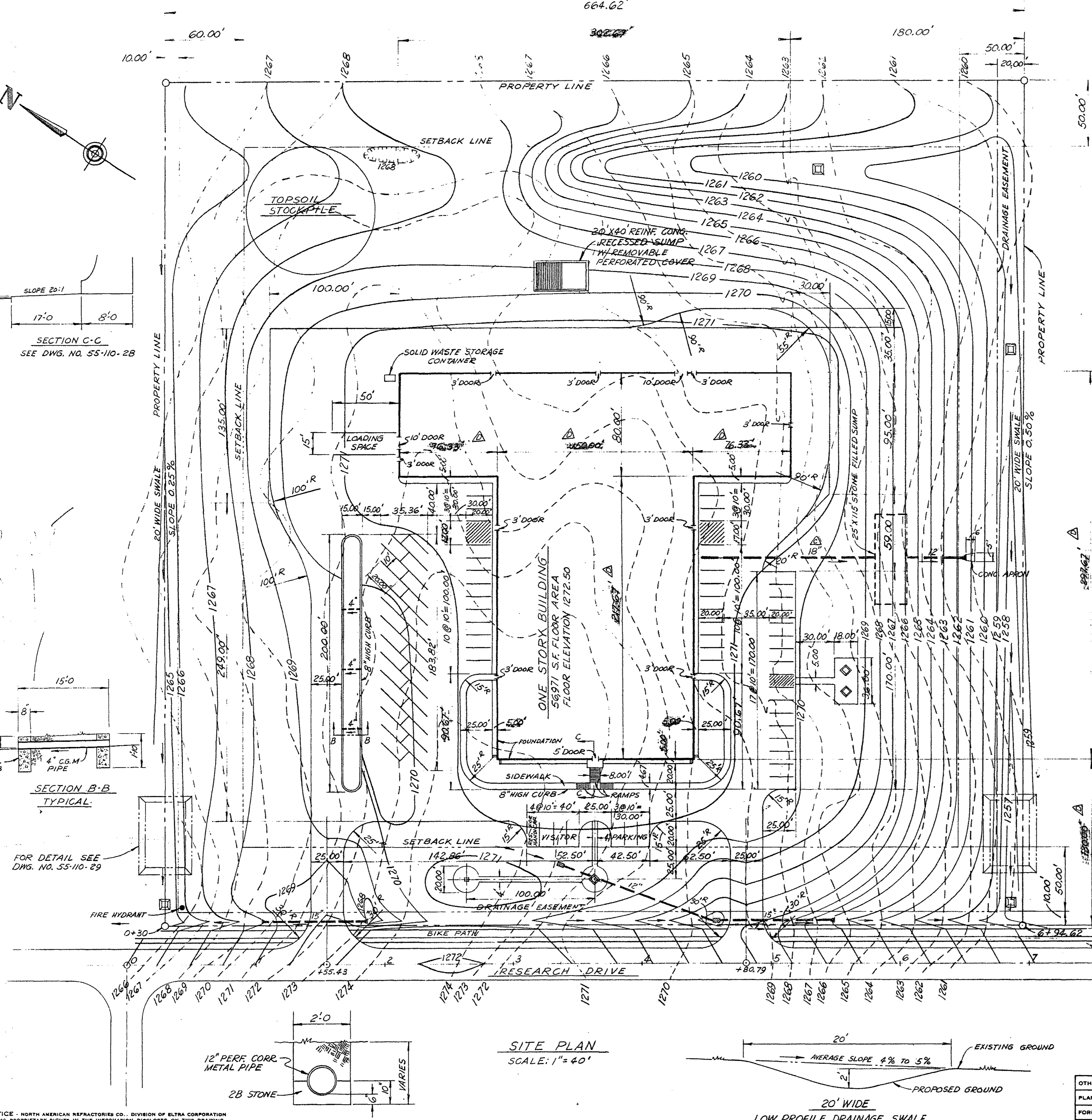
FOR DETAIL SEE DWG. NO. 55-110-29

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SECTION A-A

SITE PLAN  
SCALE: 1"=40'

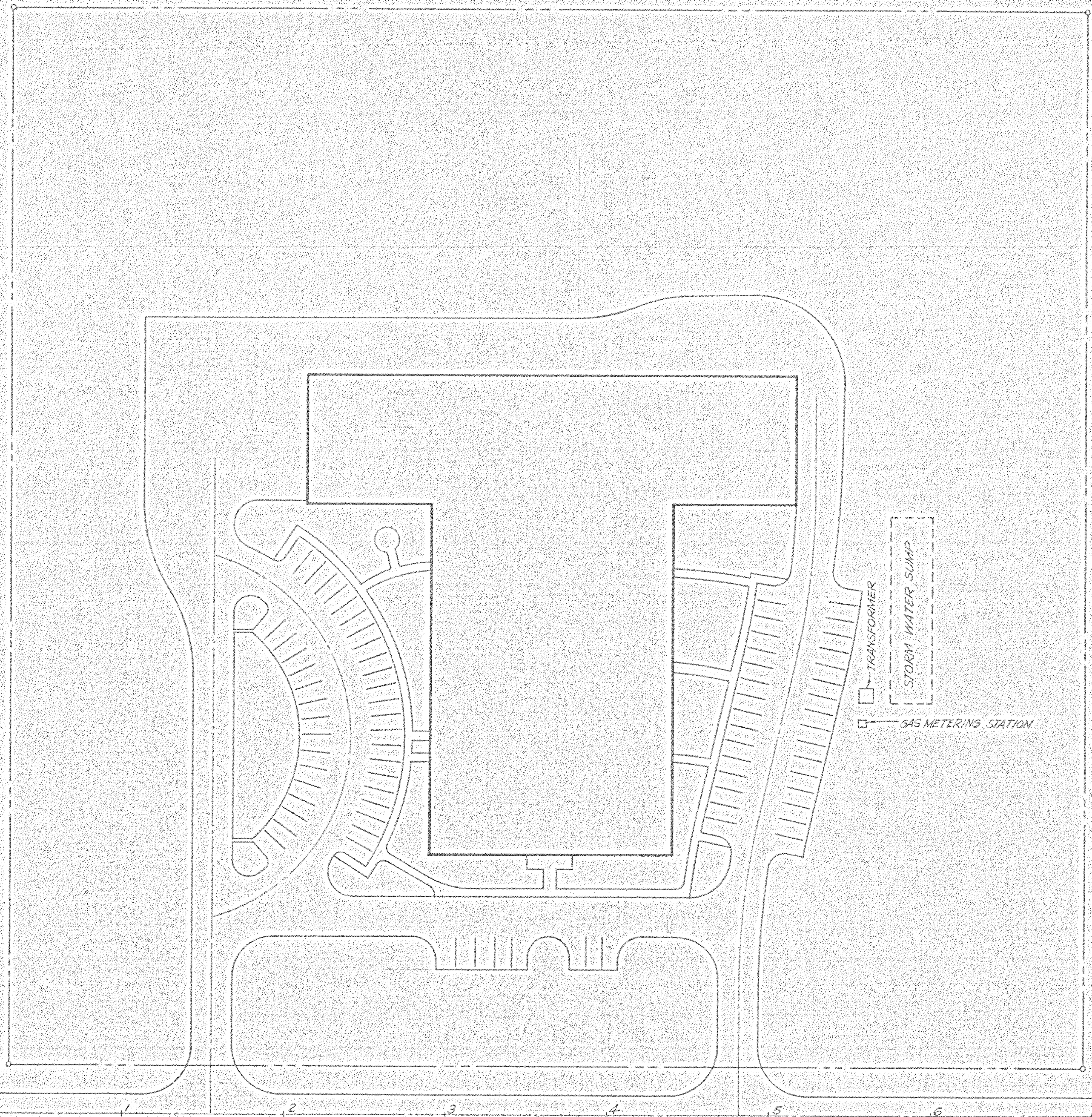
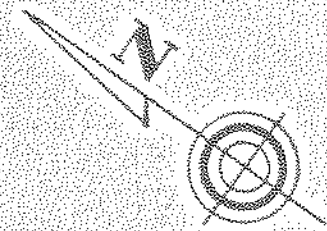
20' WIDE  
LOW PROFILE DRAINAGE SWALE











LL-5-A-6

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

OTHERS									
PLANT									
FOREMAN									
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE					

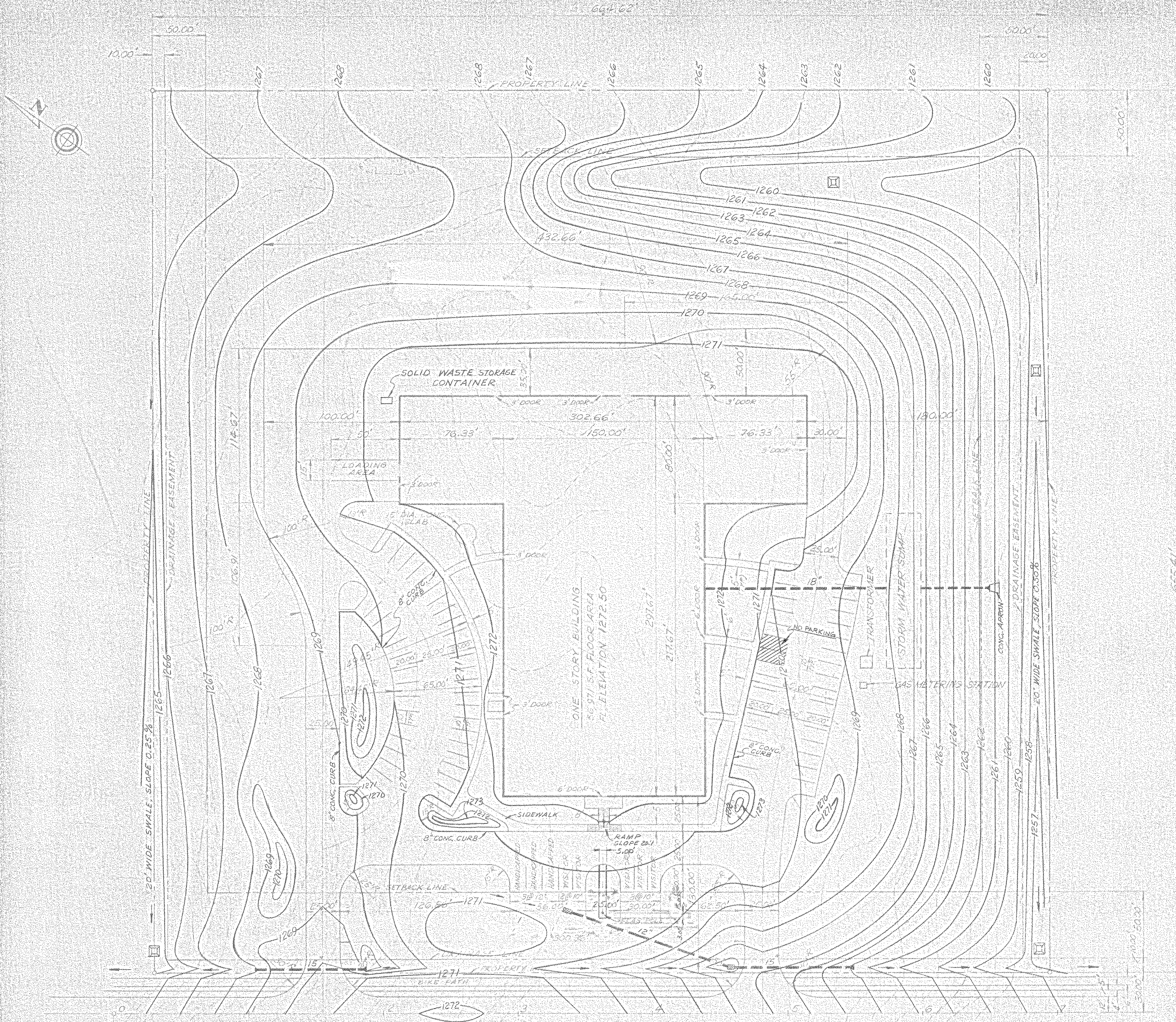
DRAWN BY	C. O. NO.
CHECKED	DATE
SCALE	DWG. NO.

#0064 — Trans/St. Water/Gas Meter — 1980 — None — 03012

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PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

DRAWING NO. 22 23116-3





SITE PLAN  
SCALE 1" = 40'

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OTHERS	DATE	BY	DESCRIPTION	DATE	BY
PLANT	6-12-81	JIM	D	ADDED NO PARKING AREA	6-3-82
FOREMAN	6-12-81	JIM	B	ADDED DIMENSIONS AT PERIMETER OF BLDG.	6-12-82
VENDOR	6-12-81	JIM	A	FLAG POLE ALLOCATED IN BACK OF BLDG.	5-10-82
				REMOVED SLOPE BASIN	6-11-82

LL-5-A-7

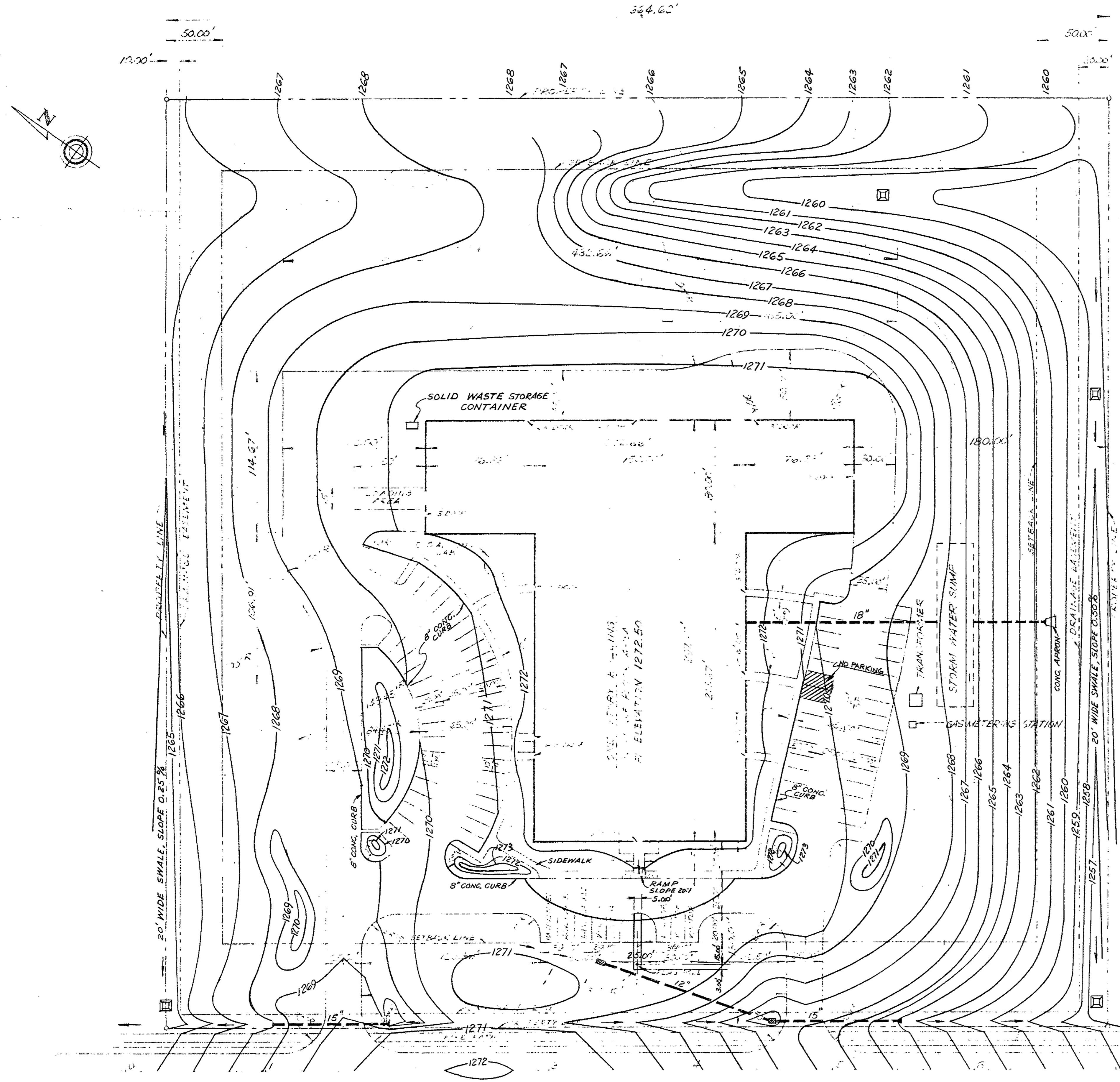
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

REVISED  
SITE PLAN

NEW RESEARCH CENTER

DRWN BY	JRP	C.D. NO.	55-110
CHECKED		DATE	6-11-81
SCALE	1" = 40'	DWG. NO.	55-110-A-2





**SITE PLAN**  
SCALE 1"=40'

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OTHERS	2-DRAWING	4-TEAM	2-DRAWING	2-DRAWING				
	6-12-81	6-11-81	5-11-82	5-12-82		D	ADDED NO PARKING AREA	6-3-82
PLANT						C	ADDED MOUNDS AT FRONT OF BLDG.	5-12-82
FOREMAN	3-JIM	2-JIM	1-JIM			B	FLAG POLE RELOCATED	5-10-82
VENDOR	6-12-81	5-11-82	5-12-82			A	REMOVED SLUDGE BASIN IN EACH OF BLDG.	2-11-82

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**REVISED  
 SITE PLAN**

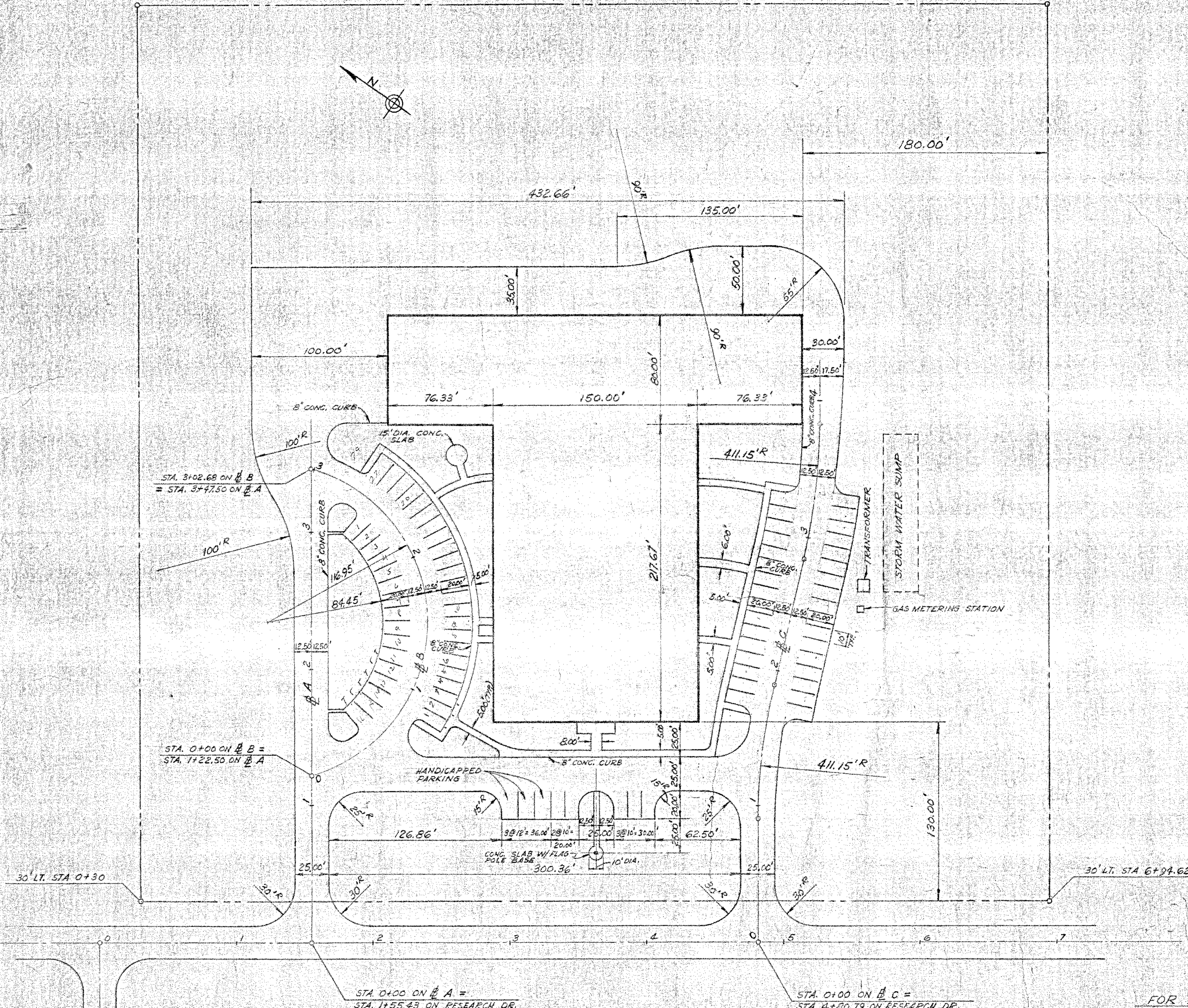
**NEW RESEARCH CENTER**

DRAWN BY	DATE	DRAWING NO.	PROJECT NO.
JMA	6-11-81	55-110	55-110-A-2

PRINTS

SCALE 1"=40'





STA. 3+02.68 ON B B  
= STA. 3+47.50 ON A A

STA. 0+00 ON B B =  
STA. 1+22.50 ON A A

STA. 0+00 ON A A =  
STA. 1+55.43 ON RESEARCH DR.

STA. 0+00 ON A C =  
STA. 4+50.79 ON RESEARCH DR.

72 EMPLOYEE PARKING SPACES  
5 VISITOR PARKING SPACES  
3 HANDICAPPED PARKING SPACES

FOR ADDITIONAL PARKING LOT  
LAYOUT INFO. SEE DWG. 55-110-51

LL-5-A-8

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CURWENSVILLE, PA.

PLOT PLAN

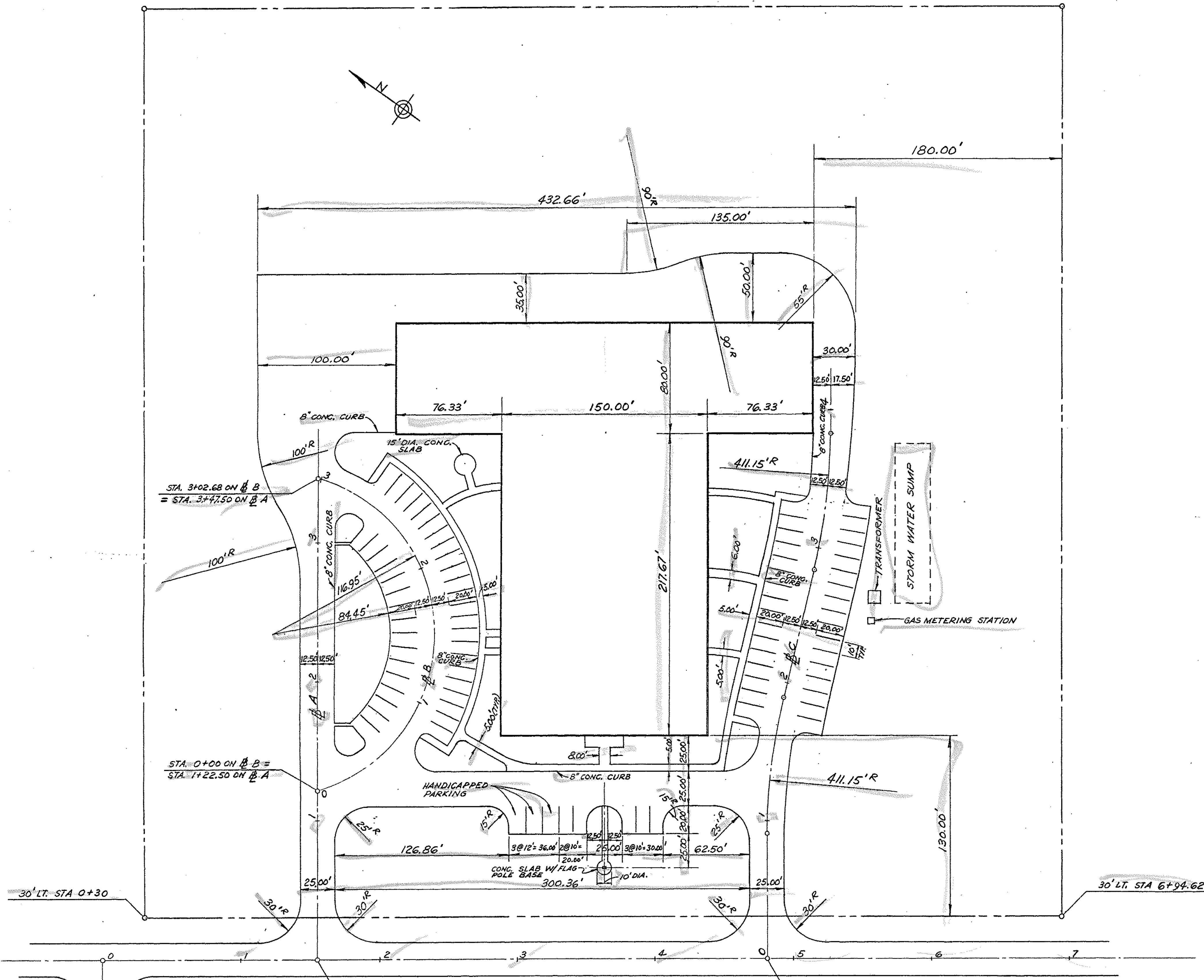
NEW RESEARCH CENTER

OTHERS	DATE	REVISION	DESCRIPTION	DATE
PLANT	5-2-81	E	REV. DWG. NO. (105-15)	6-7-81
FOREMAN	5-20-81	D	REDRAWN	5-19-81
VENDOR	5-3-81	C	REDRAWN	5-3-81

DRAWN BY	JW	E.C. NO.	55-110
CHECKED BY	JW	DATE	5-19-81
SCALE	1" = 40'	DWG. NO.	55-110-A-3

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120' x 300' x 45' x 50' x 55' x 60' x 65' x 70' x 75' x 80' x 85' x 90' x 95' x 100' x 105' x 110' x 115' x 120'

72 EMPLOYEE PARKING SPACES  
 5 VISITOR PARKING SPACES  
 3 HANDICAPPED PARKING SPACES

FOR ADDITIONAL PARKING LOT LAYOUT INFO. SEE DWG. 55-110-51

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

PLOT PLAN

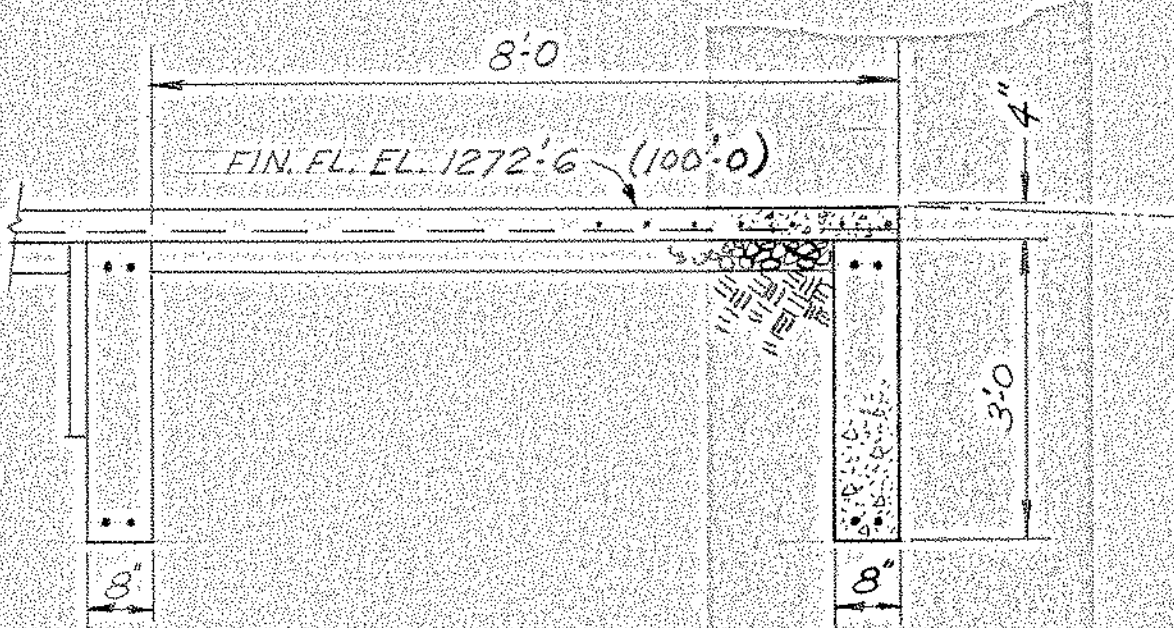
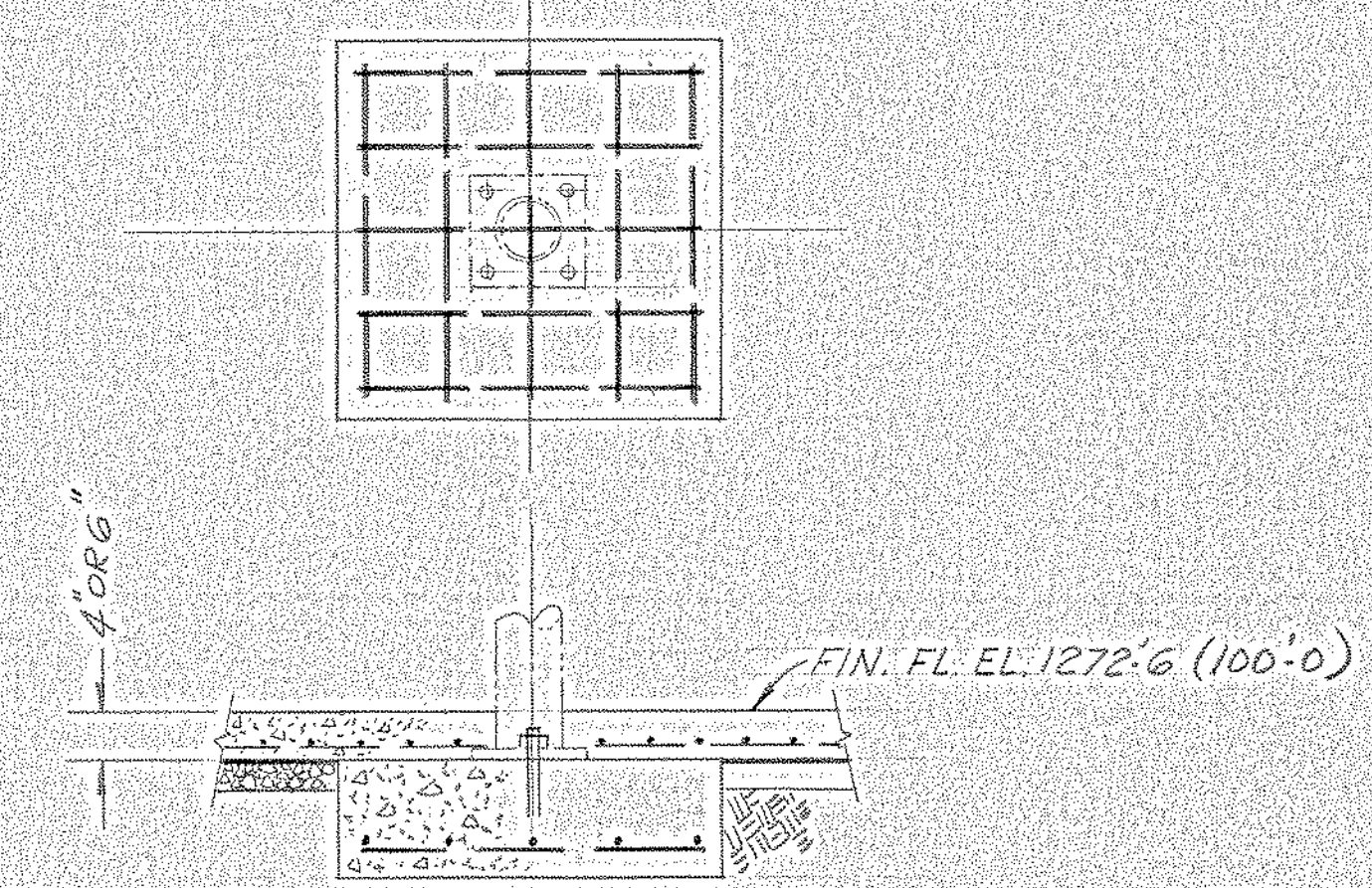
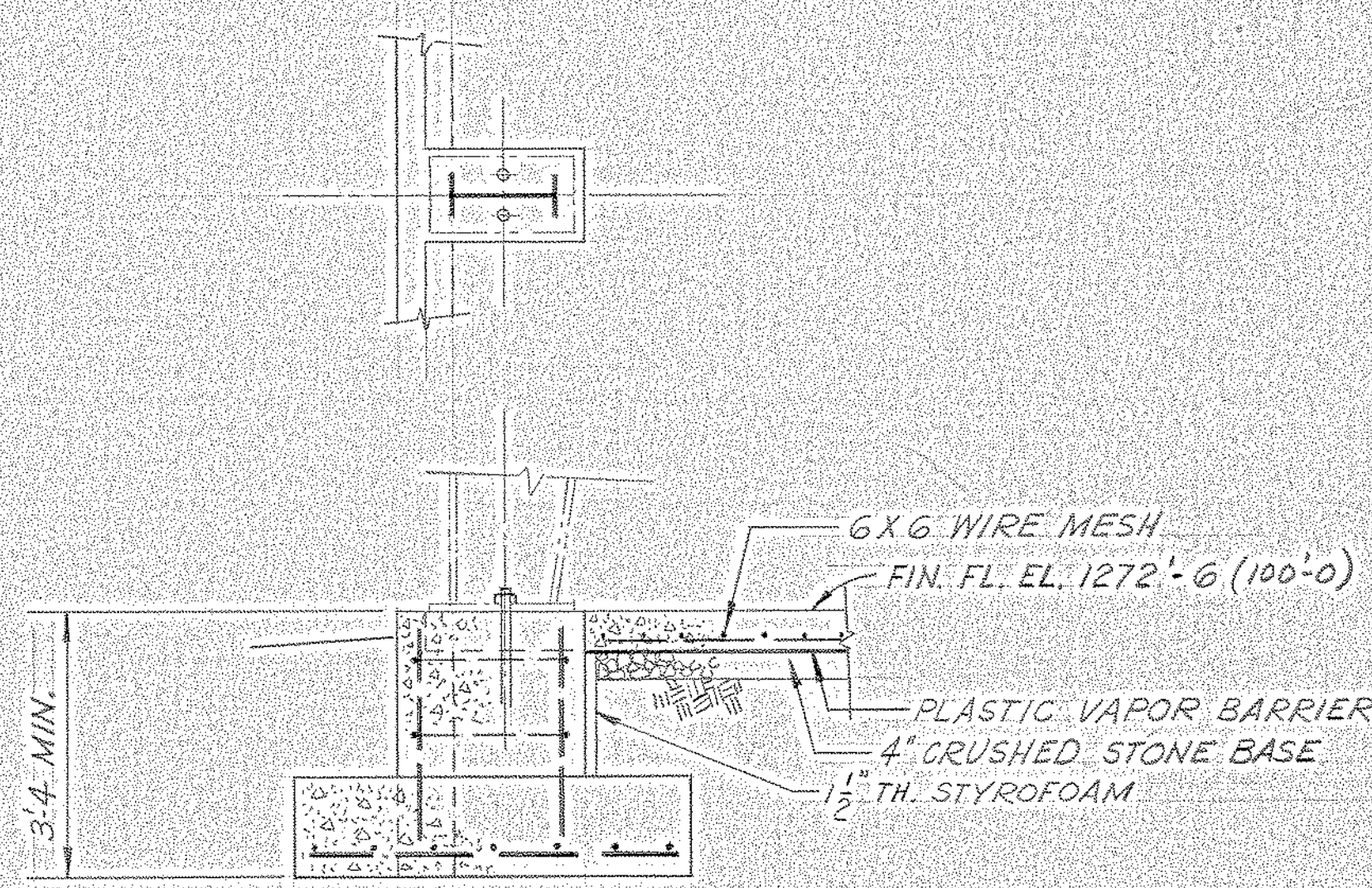
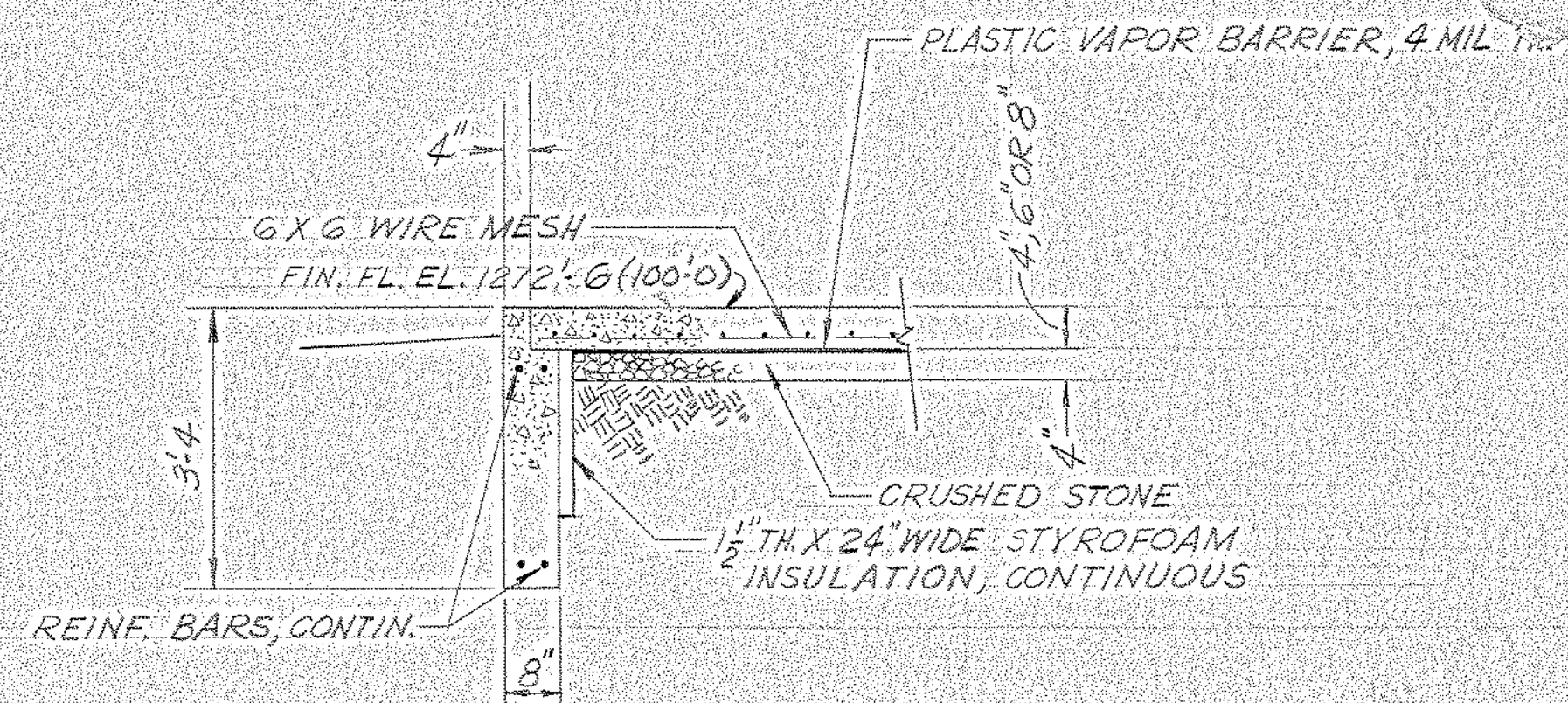
NEW RESEARCH CENTER

OTHERS	DATE	REVISION	DESCRIPTION	DATE
PLANT	5-29-81	E	REV. DWG. NO. (WAS - 15)	6-7-81
FOREMAN	5-29-81	D	REDRAWN	5-19-81
VENDOR	5-29-81	C	REDRAWN	5-3-81

DRAWN BY	C. O. NO.	DWG. NO.
CHECKED	55-110	55-110-A-3
SCALE	DATE	
1" = 40'	5-19-81	

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LL-5-A-9  
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FOUNDATION LAYOUT  
NEW RESEARCH CENTER  
FOR ESTIMATE ONLY

DATE	REV.	DWG. NO.	DATE	BY	CHKD.	DATE	NO.
	B	REV. DWG. NO. (NAS-23)	6-7-81				
	A	ADDED DOWNSPOUT LOCATIONS	2-9-81				

SCALE: 1/16" = 1'-0"

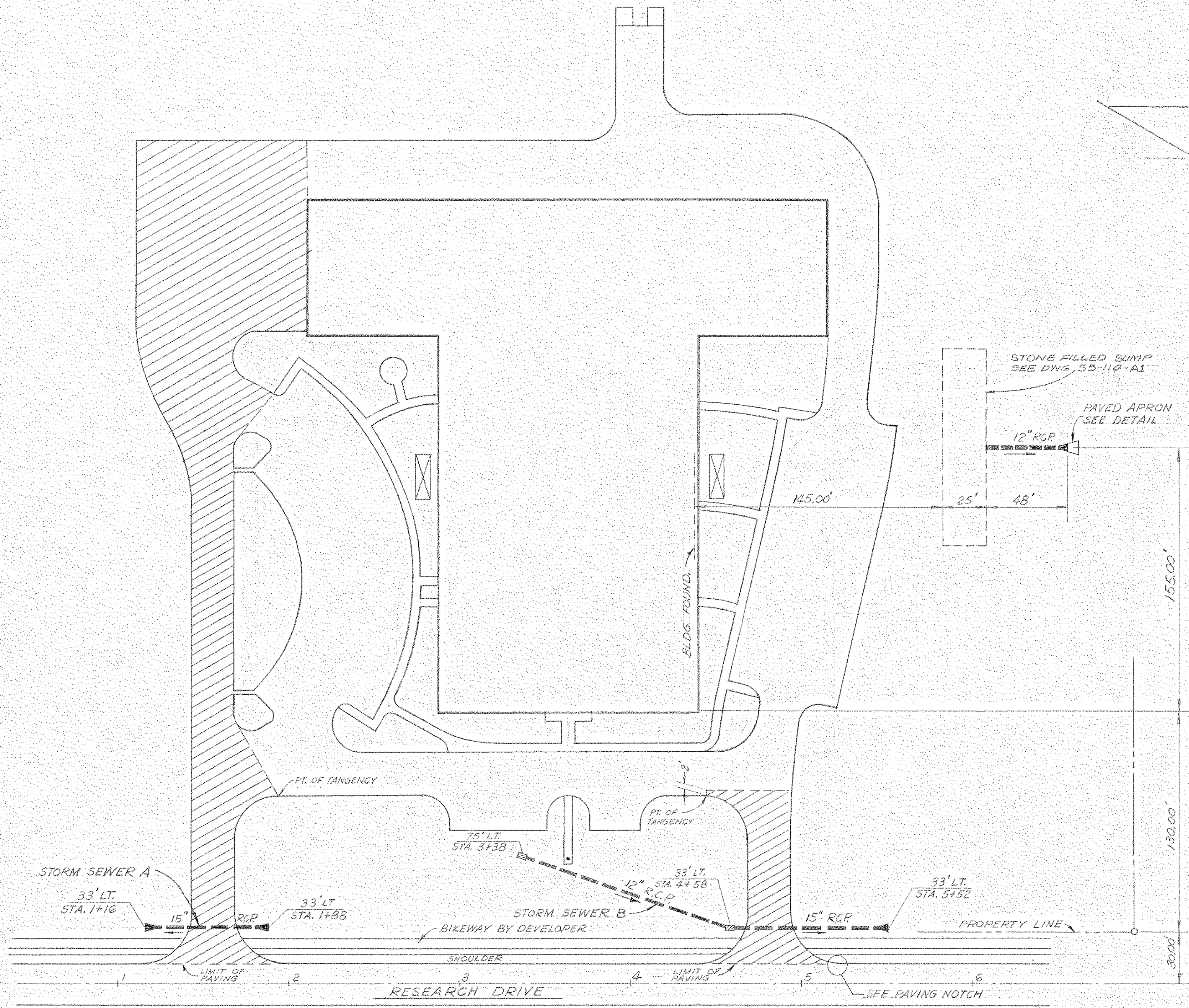
#0064 Foundation 1981 NO. 1E 0602

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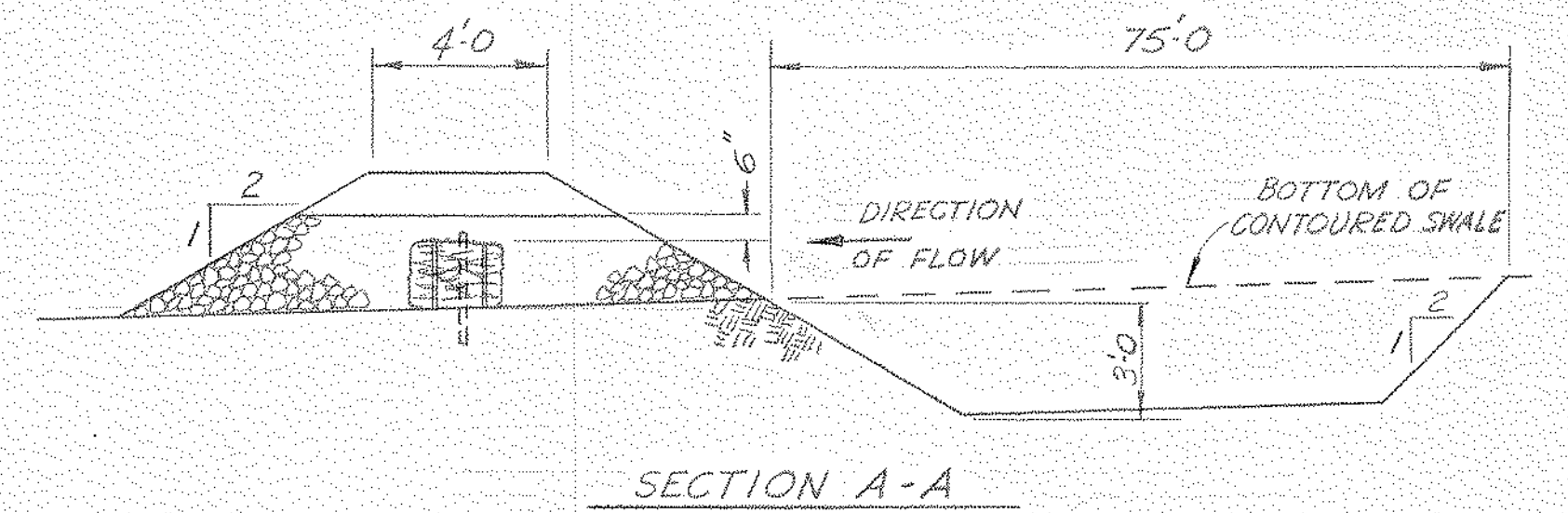
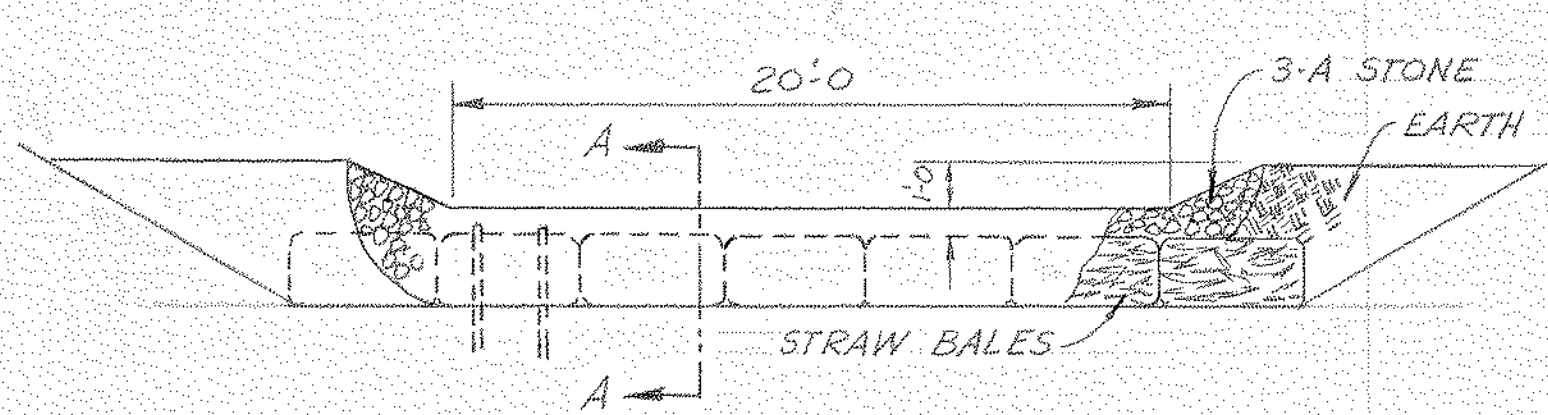
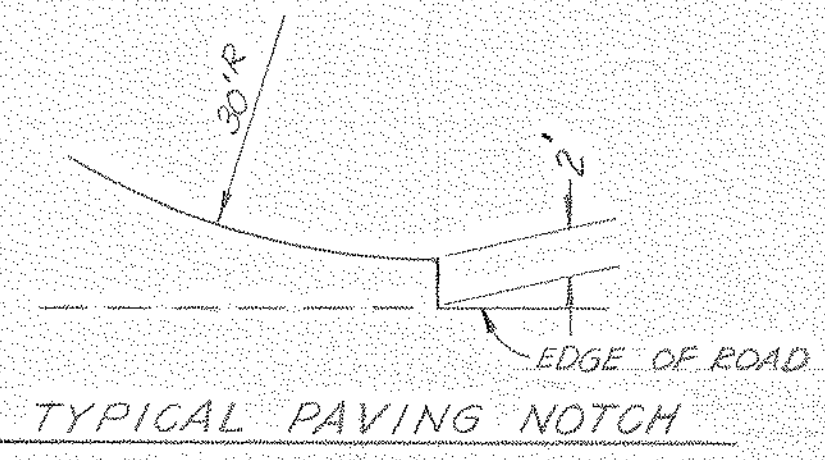
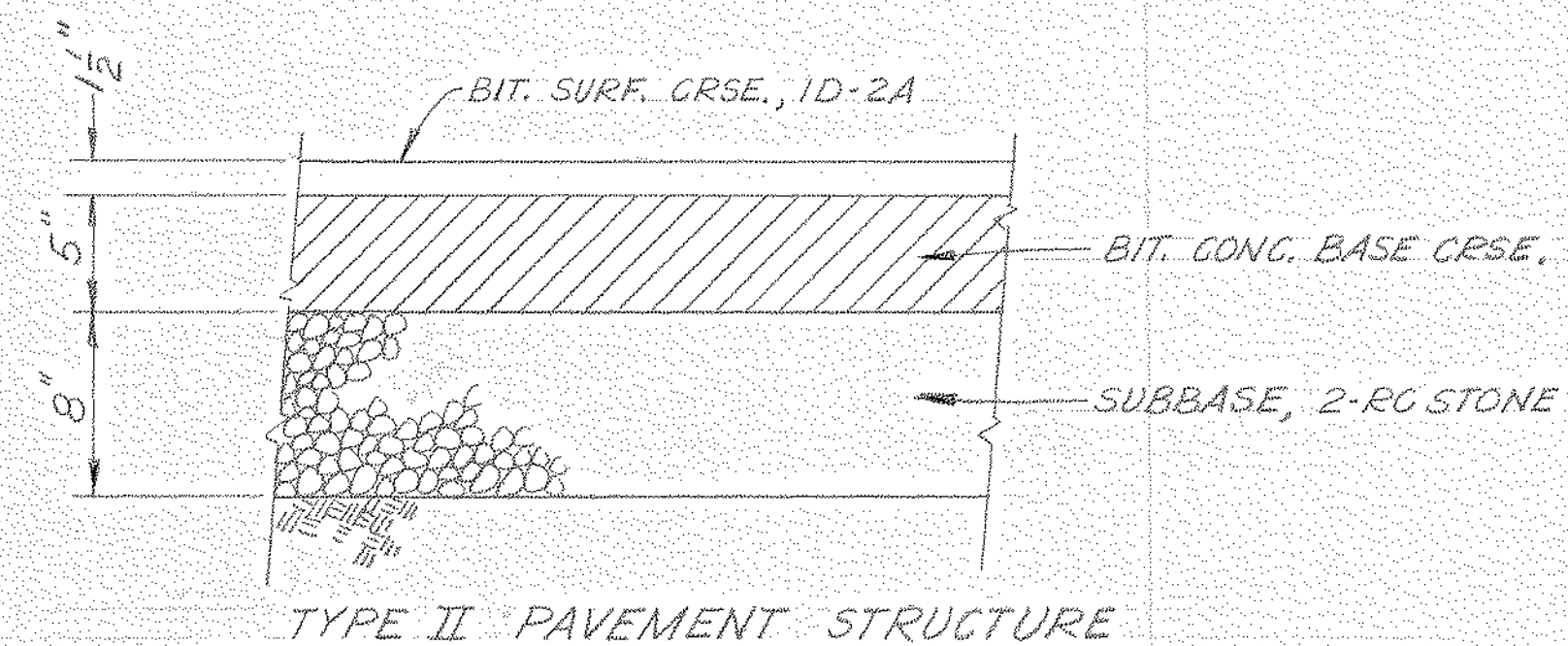
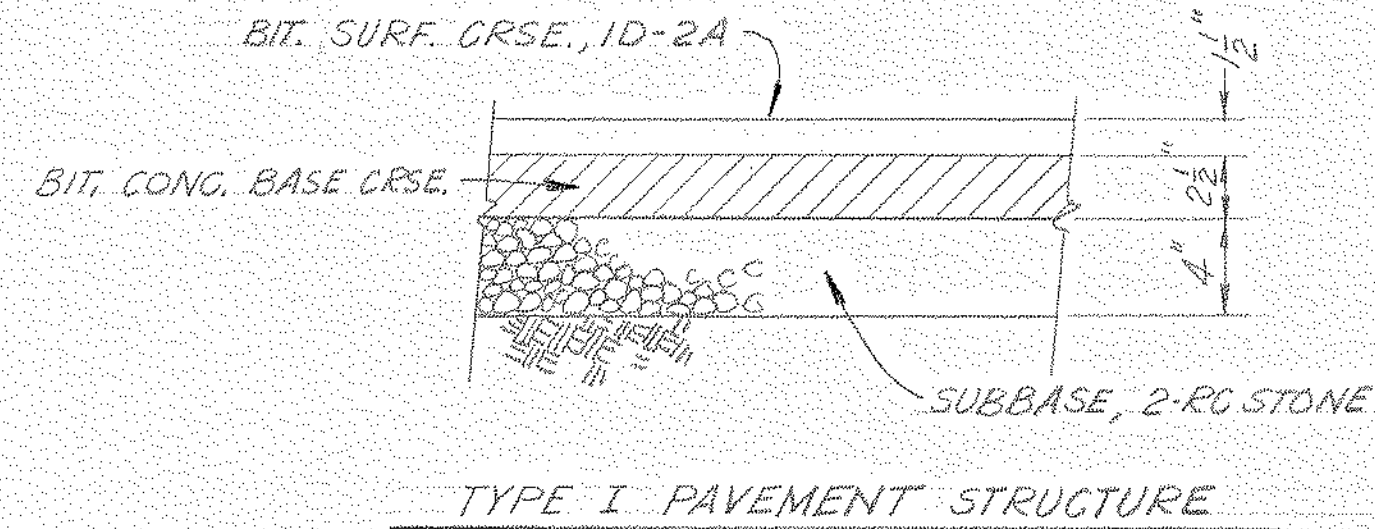




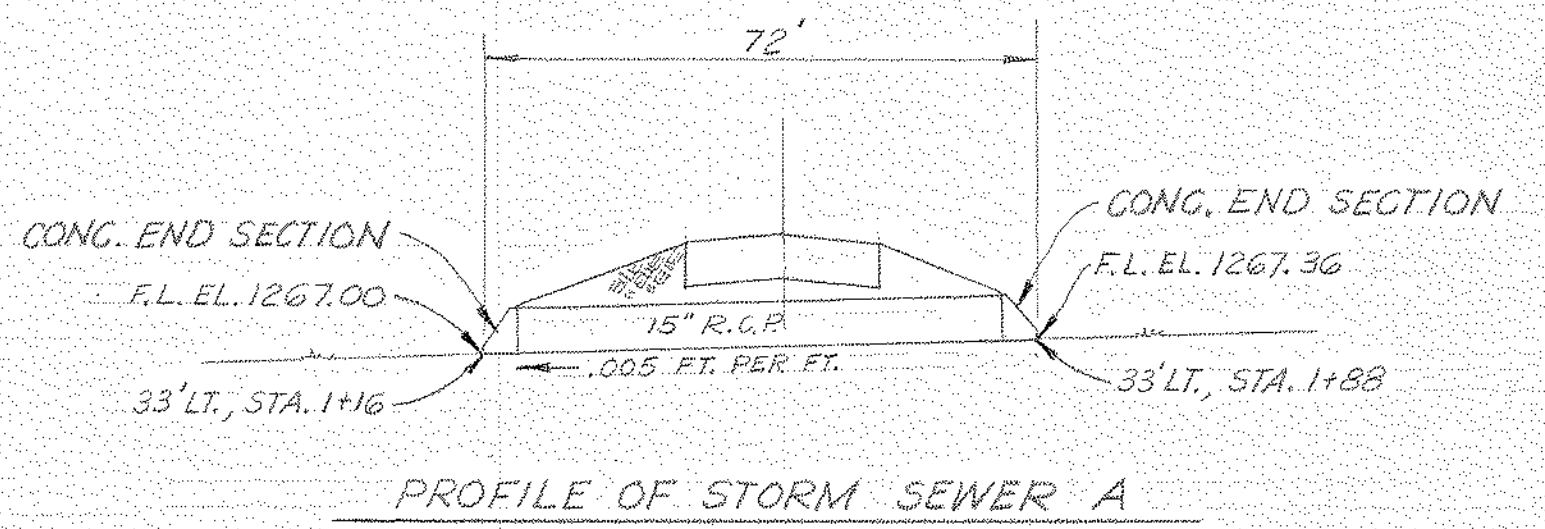
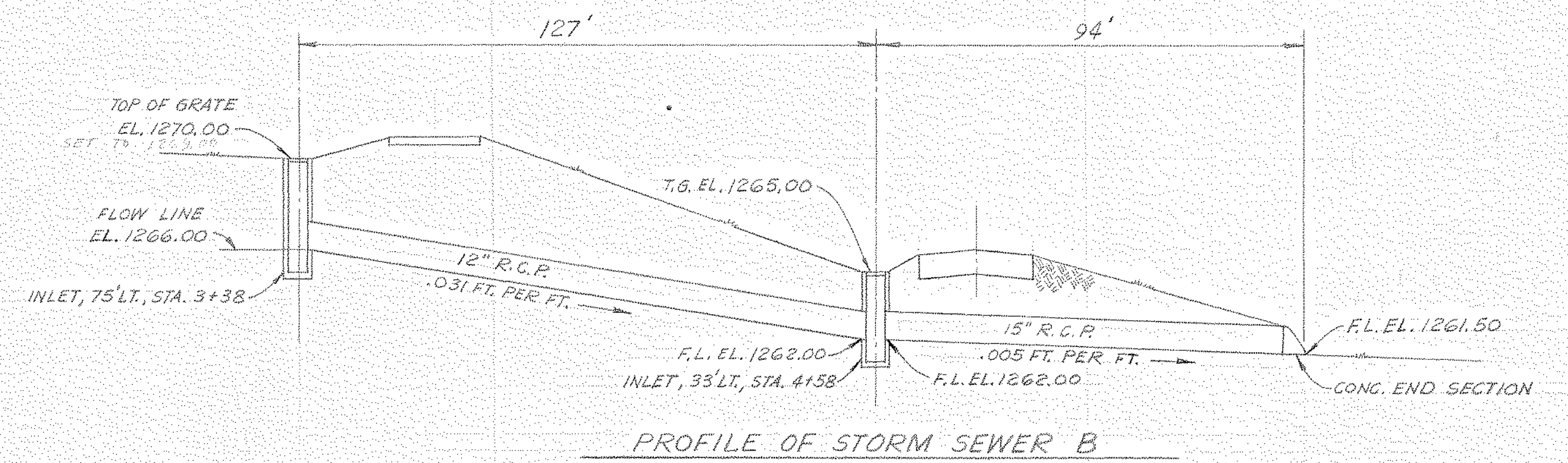
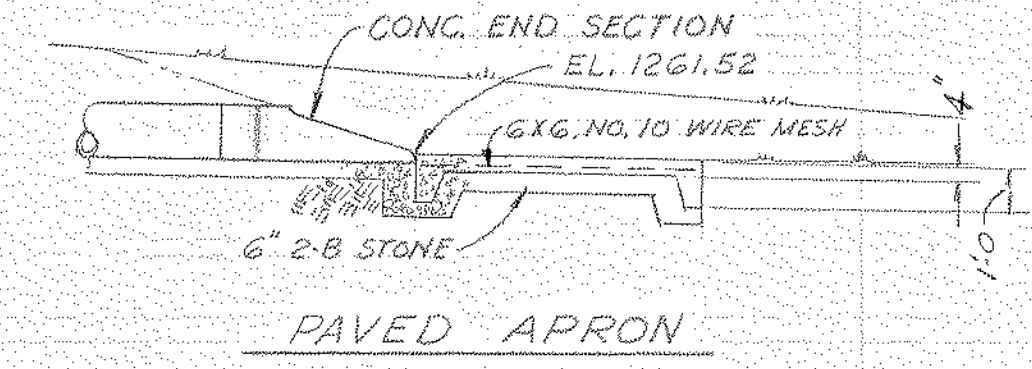
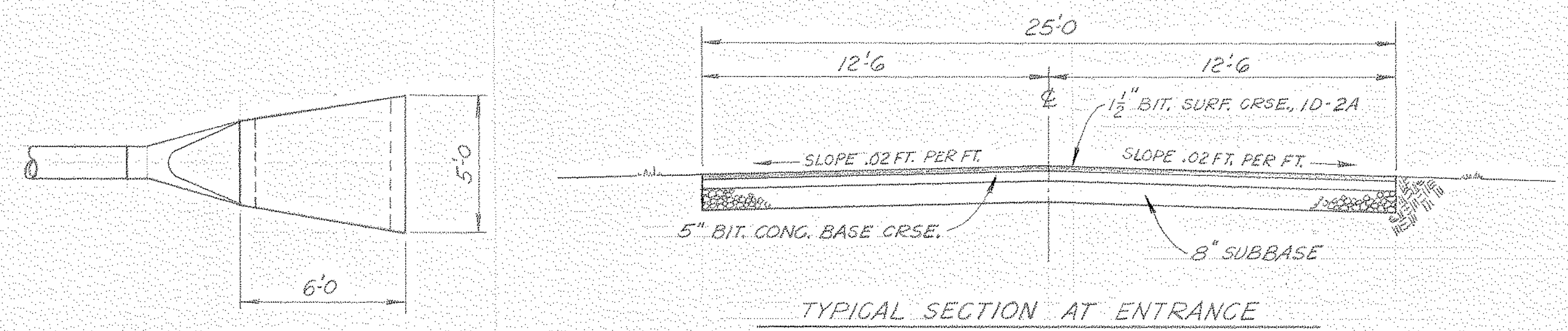


PLAN VIEW  
SCALE: 1"=40'

- LEGEND**
- STORM SEWER
  - CONCRETE END SECTION
  - DROP INLET
  - AREA WITH TYPE I PAVEMENT STRUCTURE
  - AREA WITH TYPE II PAVEMENT STRUCTURE



TEMPORARY SILTATION BASIN  
FOR LOCATIONS SEE DWG. NO. 55-110-09



LL-5-A-11

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**SITE DEVELOPMENT  
PAVING AND DRAINAGE**

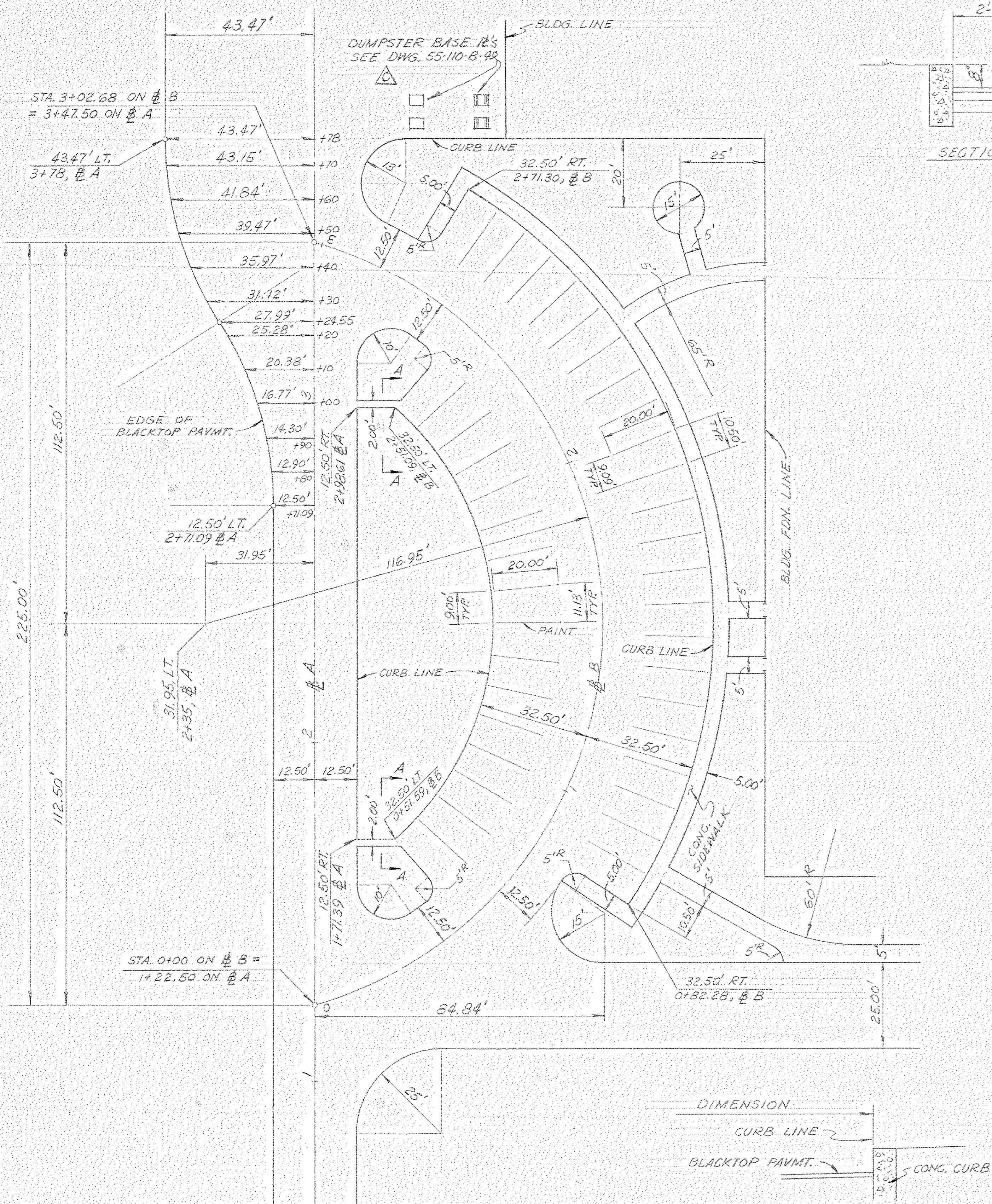
**NEW RESEARCH CENTER**

OTHERS					
PLANT					
FOREMAN					
VENDOR					
PRINTS	REVISION	DESCRIPTION	DATE	C. S. NO.	DWG. NO.
	B	REV. CURB, WALK & PAVING AROUND BLDG.	6-15-82	55-110	55-110-A-6
	A	REV. DWG. NO. (WAS - 29)	6-7-81	12-11-80	

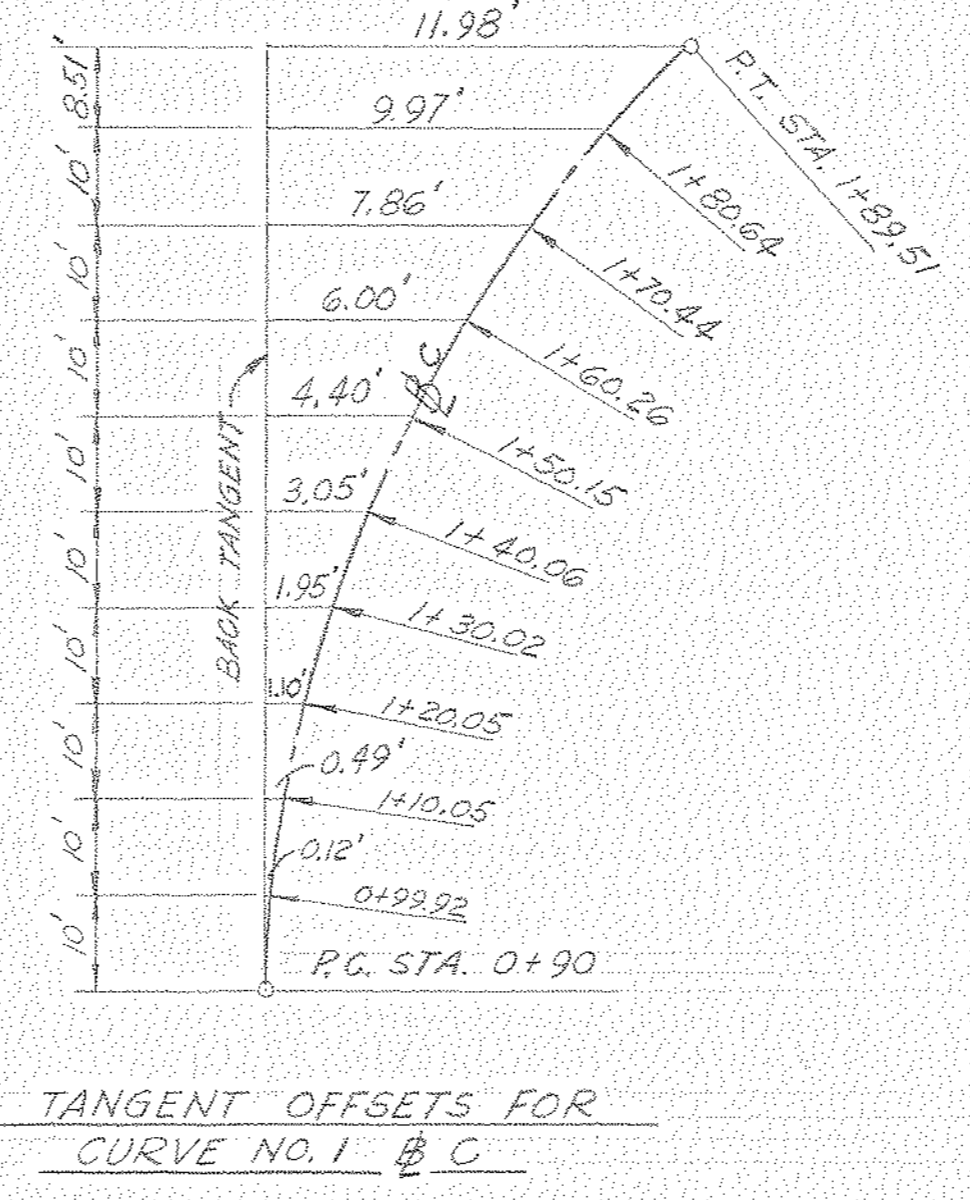
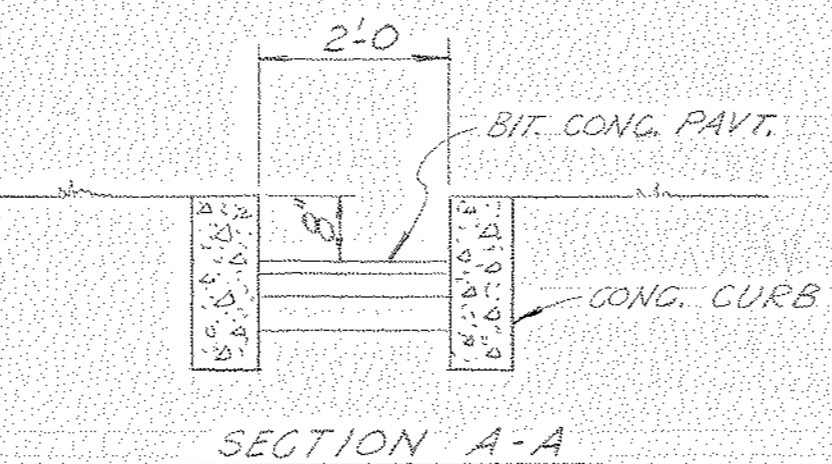
SCALE: 1"=40'

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LAYOUT OF NORTH PARKING AREA  
SCALE: 1" = 20'



LAYOUT OF SOUTH PARKING AREA  
SCALE: 1" = 20'

11-5-A-12  
 NORTH AMERICAN REFRACTORIES CO.  
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 CURWENSVILLE, PA.  
 LAYOUT OF PARKING  
 AREAS

OTHERS	DATE	BY	DESCRIPTION	DATE
PLANT	6-8-81	1-BAR		7-6-82
FOREMAN	6-3-81	1-JIM		7-9-82
VENDOR	6-3-81	7-8-82		7-9-82

PRINTS	REVISION	DESCRIPTION	DATE
	C	REMOVED CONC. SLAB ADDED DUMPSTER BASE 12'S	7-9-82
	B	ADDED 10" THK. CONC. CONC. SLAB	7-6-82
	A	REV. DIMS. NO. (WMS-51)	6-7-81

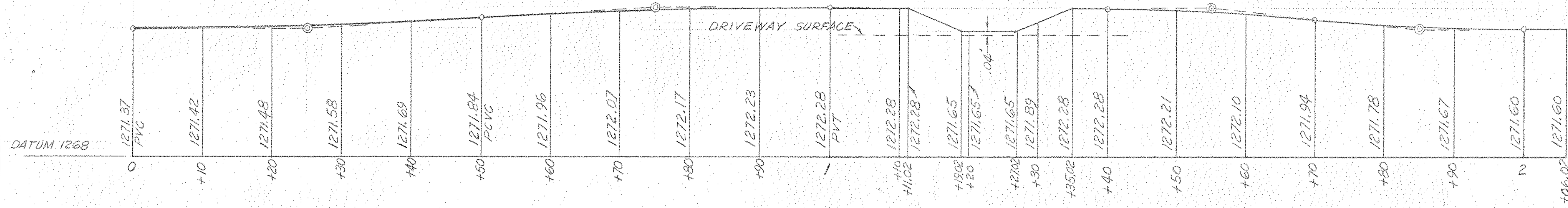
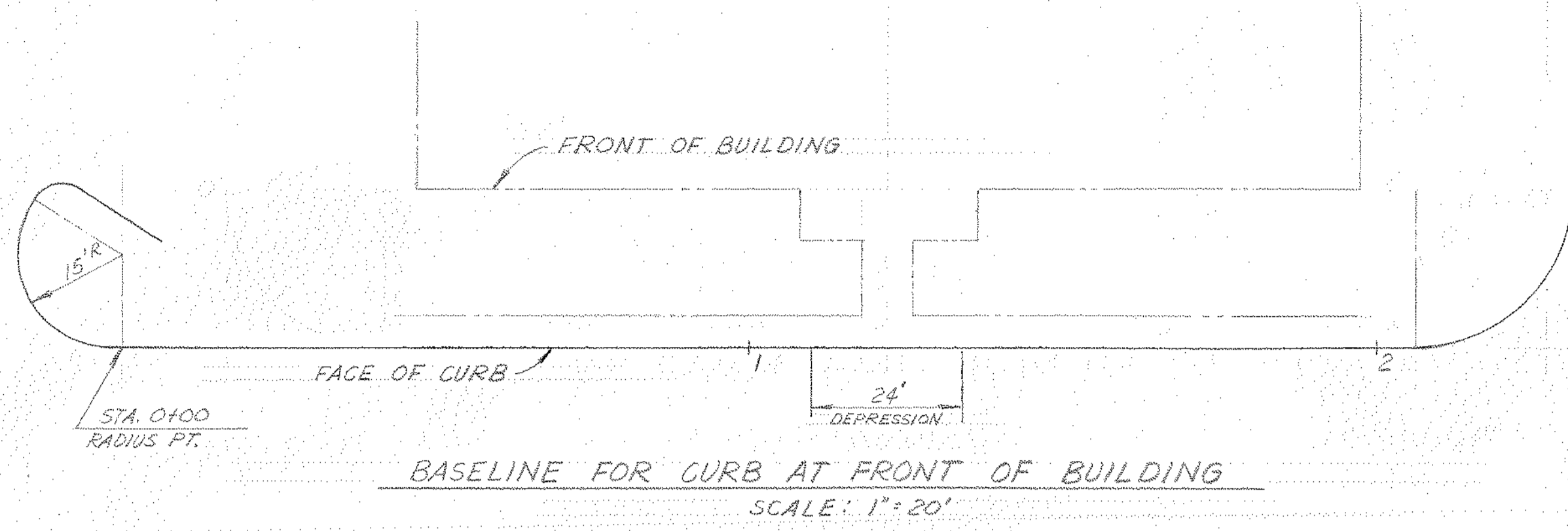
  

DRAWN BY	C. O. NO.	55-110
CHECKED	DATE	5-26-81
SCALE 1" = 20'	DWG. NO.	55-110-A-7

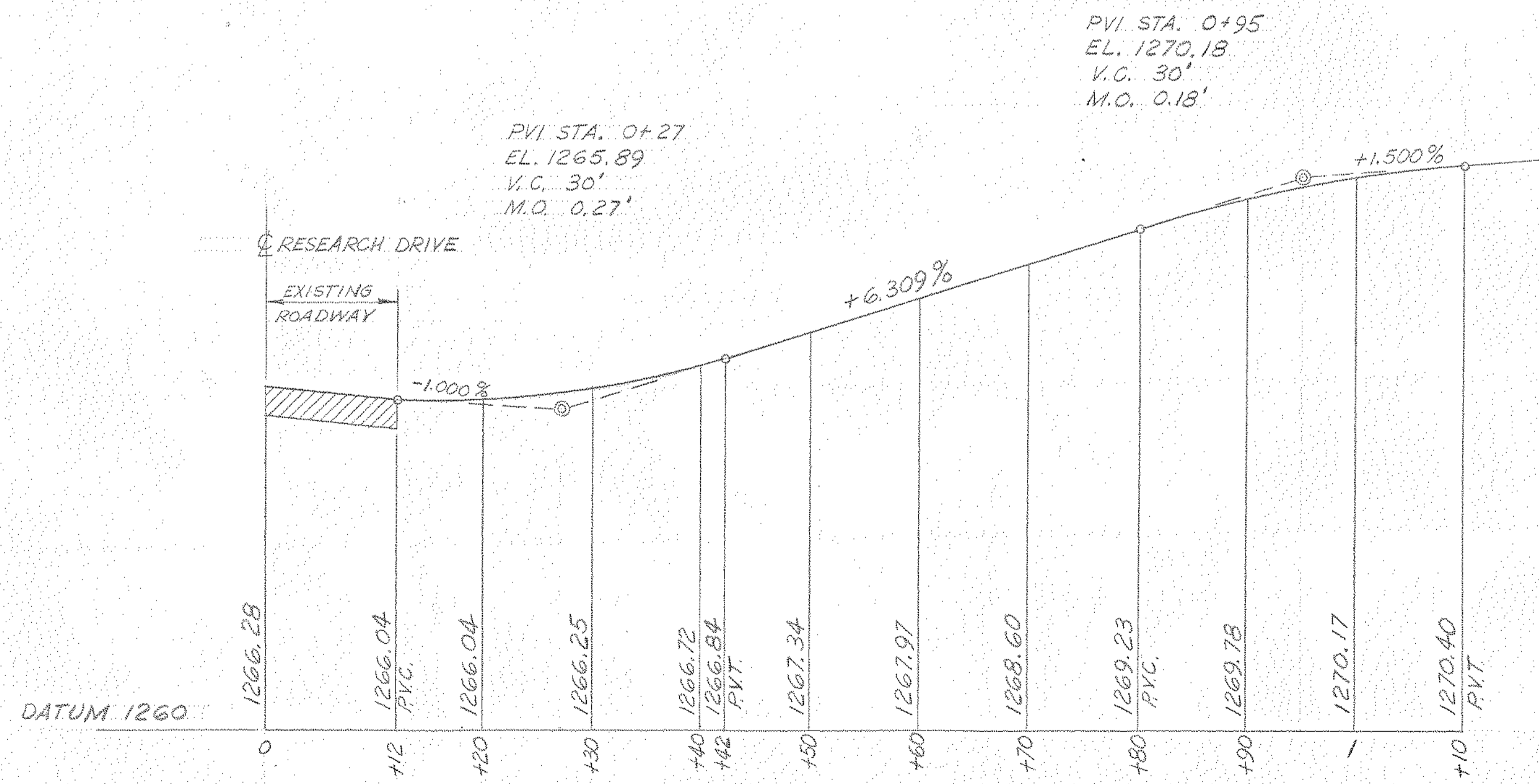
#0064 — Parking Areas — 1982 — NONE — 09/02

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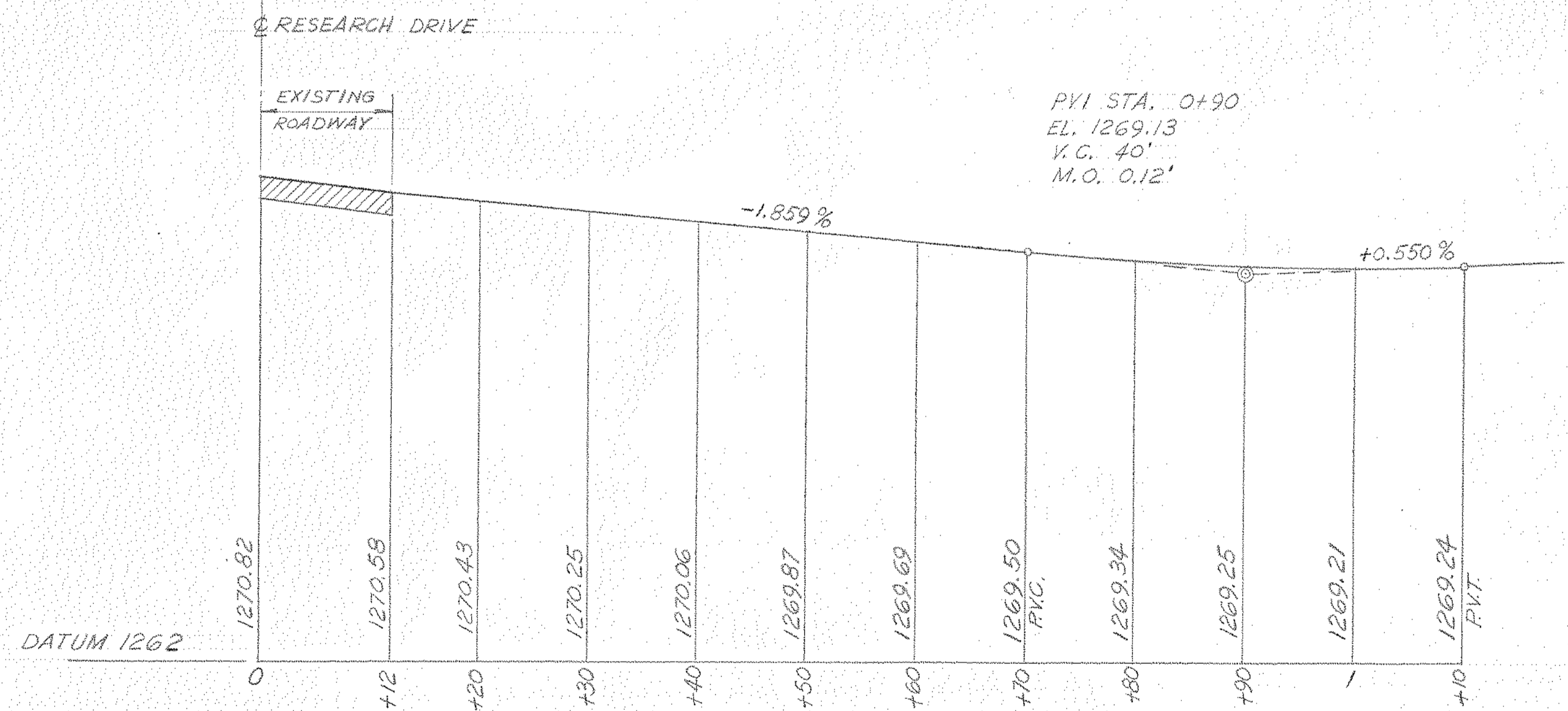




PROFILE OF CURB AT FRONT OF BUILDING  
 HORIZ. SCALE: 1" = 10'  
 VERT. SCALE: 1" = 2'  
 ALL ELEVATIONS AT TOP OF CURB



PROFILE OF DRIVEWAY, STA. 4+80.79 RESEARCH DRIVE  
 HORIZ. SCALE: 1" = 10'  
 VERT. SCALE: 1" = 2'



PROFILE OF DRIVEWAY, STA. 1+55.43 RESEARCH DRIVE  
 HORIZ. SCALE: 1" = 10'  
 VERT. SCALE: 1" = 2'

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OTHERS	5-8-81								
PLANT									
FOREMAN	2-JIM 5-10-81	2-JIM 5-3-81	2-JIM 10-15-81						
VENDOR									
PRINTS				REVISION	DESCRIPTION	DATE			
				A	COMPLETE REVISION OF CURB PROFILES	5-29-81			

11-5-A-13

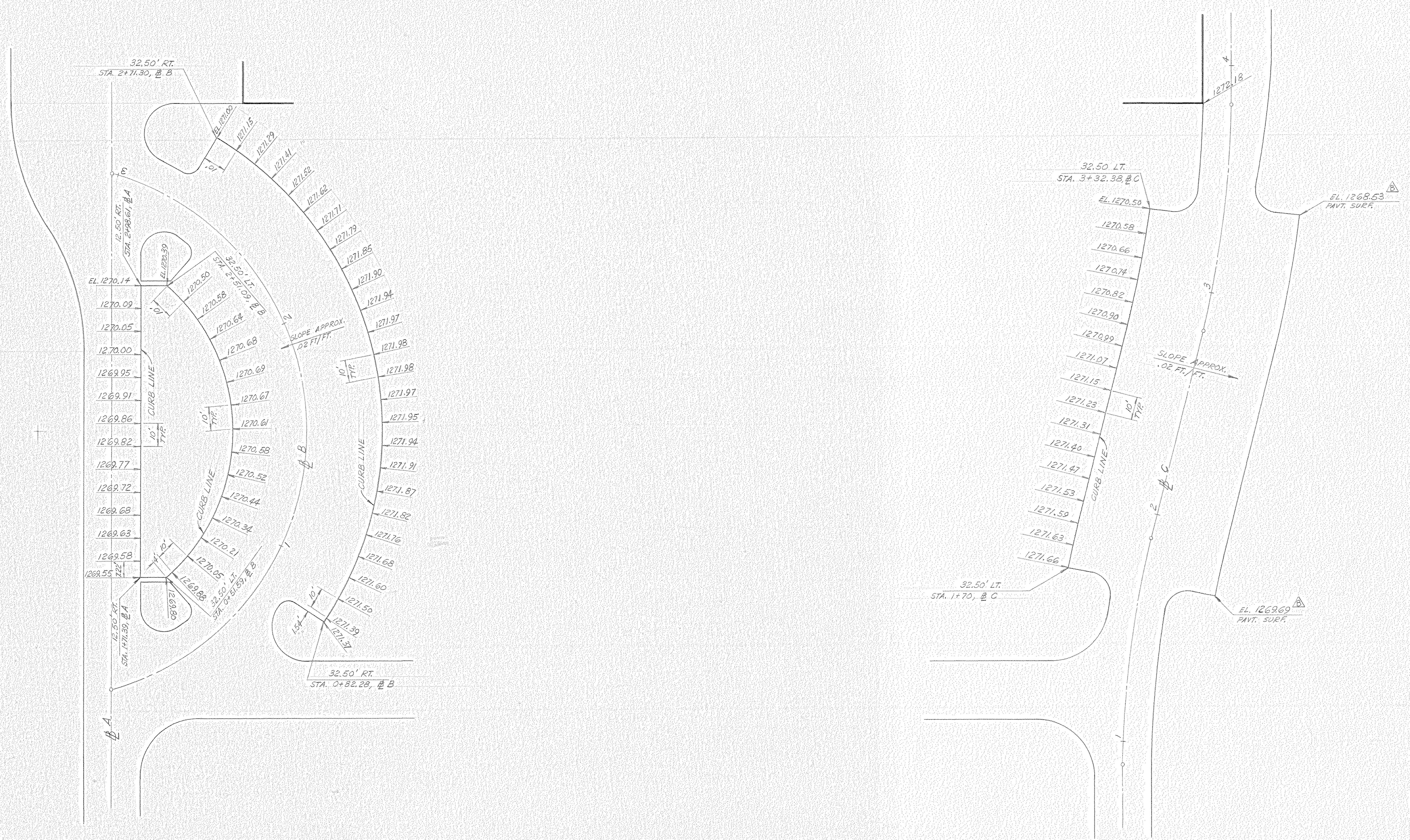
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 CURWENSVILLE, PA.

DRIVEWAY & CURBING  
PROFILES

NEW RESEARCH CENTER

DRAWN BY	C. G. NO.	
CHECKED	55-110	55-110-A-8
DATE	1-14-81	
SCALE AS NOTED		





NORTH PARKING AREA

SOUTH PARKING AREA

ALL ELEVATIONS ARE AT TOP OF CURB UNLESS NOTED

LL-5-A-14

NORTH AMERICAN REFRACTORIES CO.  
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CURWENSVILLE, PA.

CURB ELEVATIONS  
PARKING AREAS

NEW RESEARCH CENTER

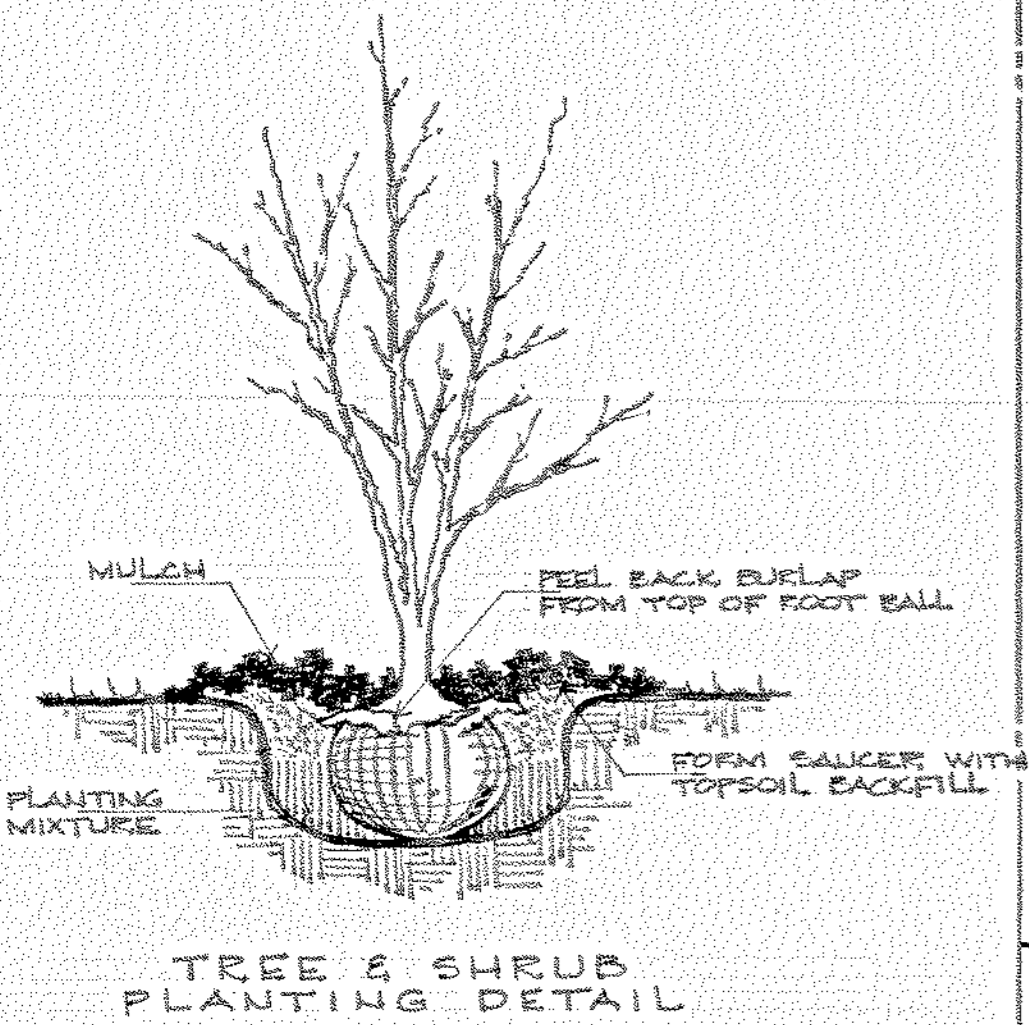
OTHERS	DATE	DESCRIPTION	DATE
PLANT	6-2-81		6-12-81
FOREMAN	6-3-81		6-12-81
VENDOR			

DRAWN BY	C. O. NO.	55-110
CHECKED	DATE	5-29-81
SCALE 1" = 20'	DWG. NO.	55-110-A-0

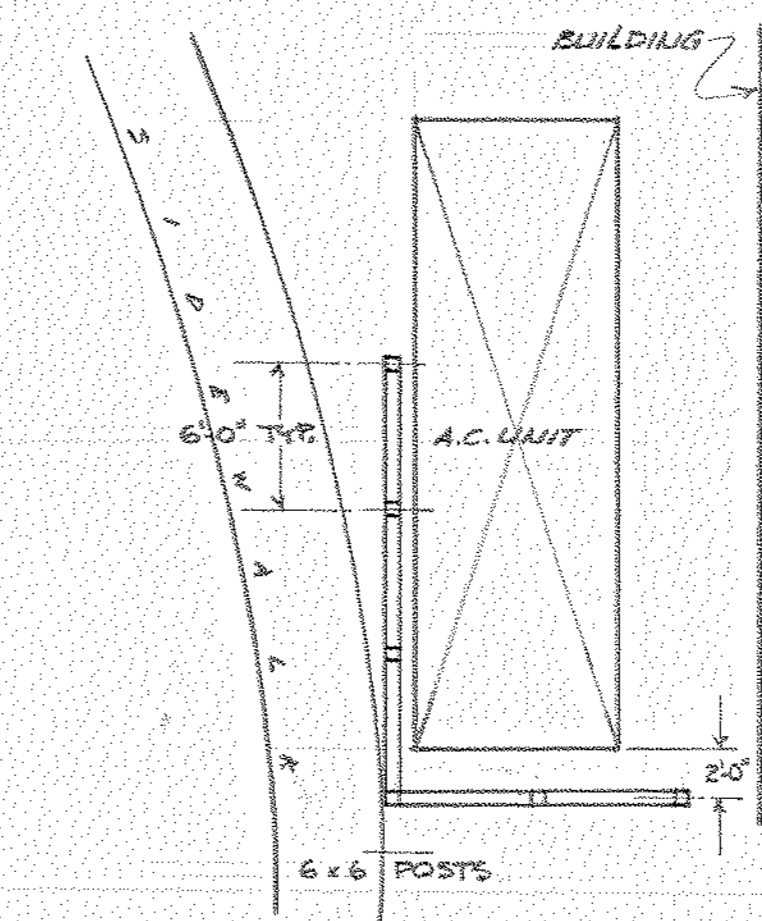
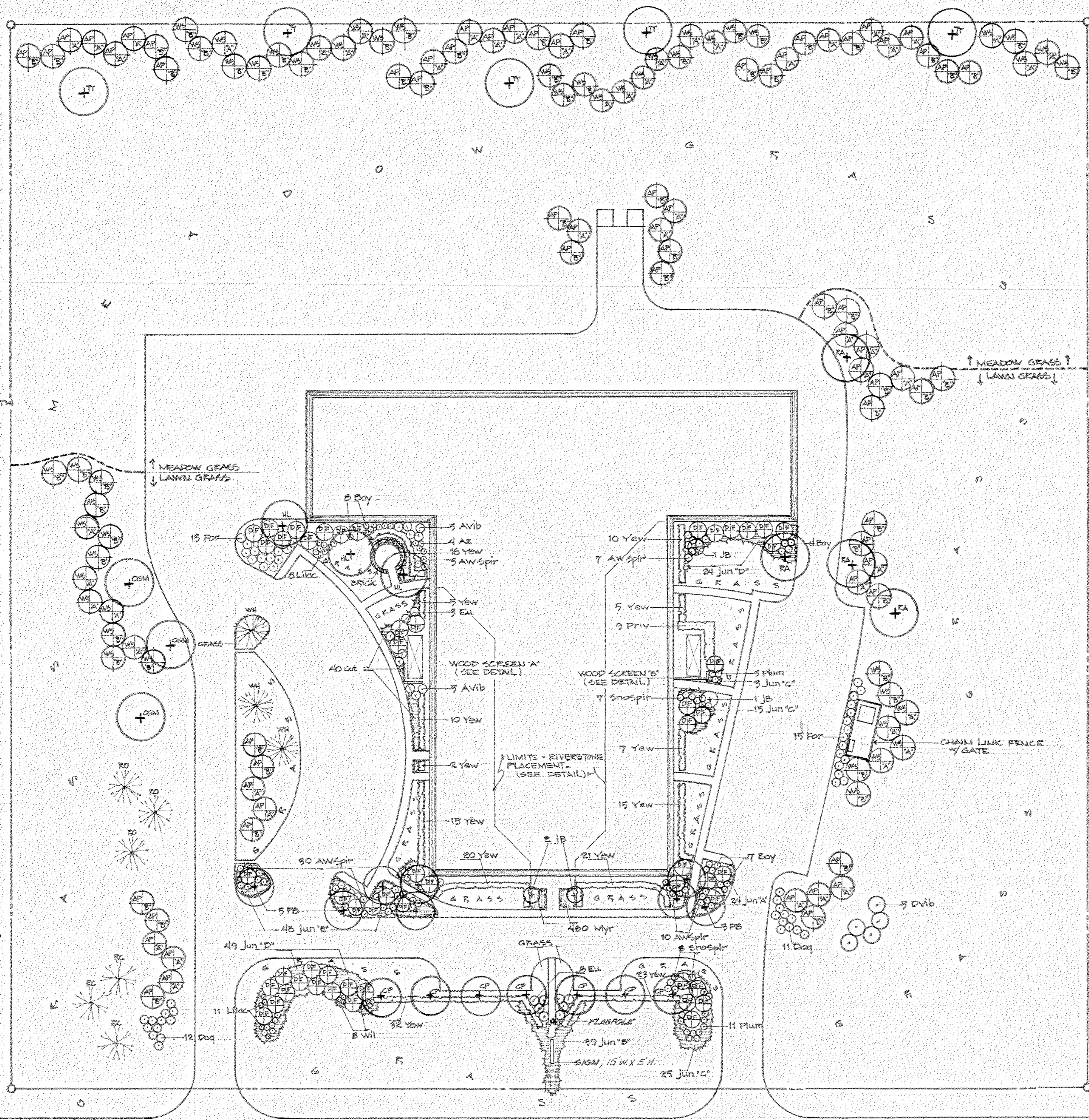
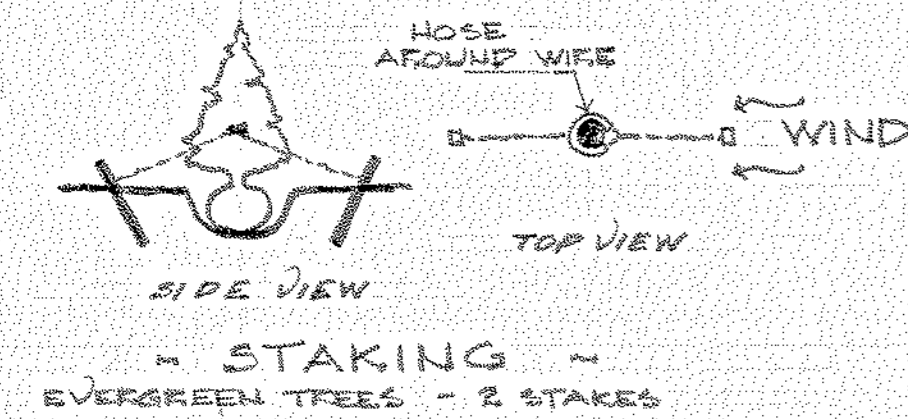
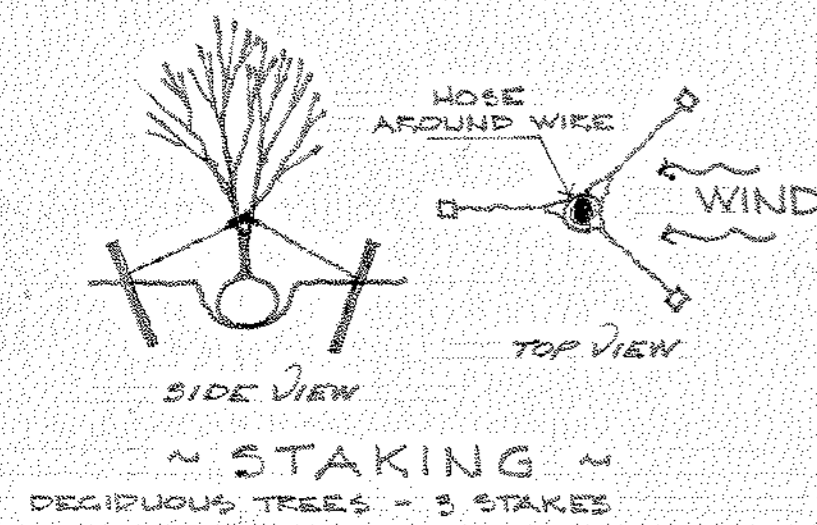
#0064 Curb Elevation 1981 None 11/012

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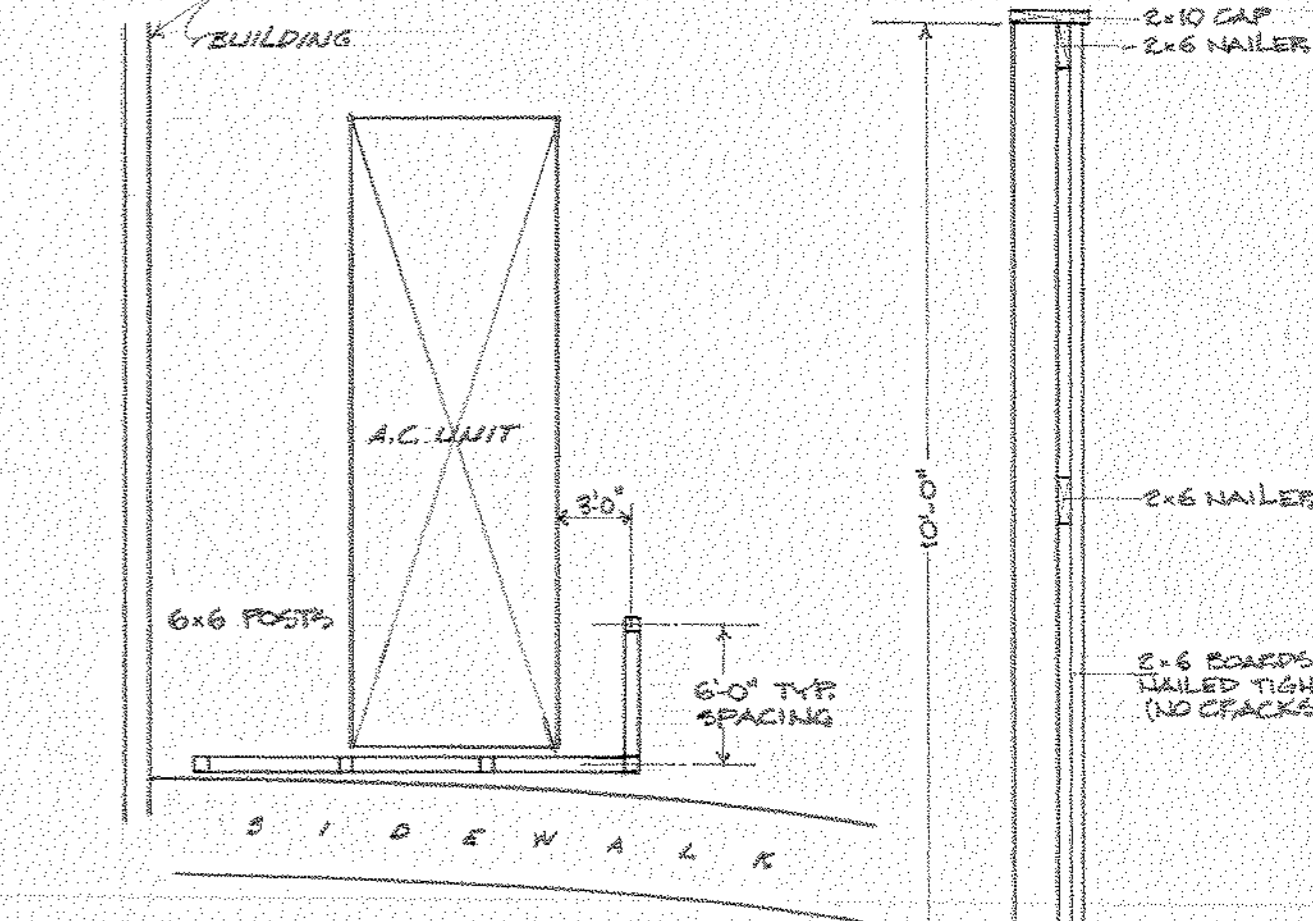




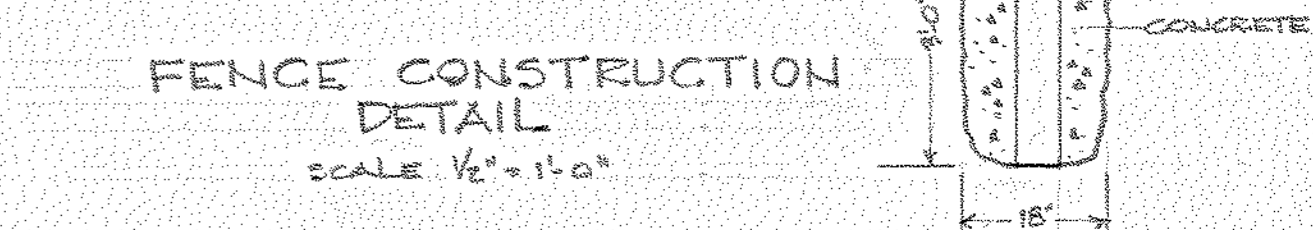
TREE & SHRUB PLANTING DETAIL



WOOD SCREEN 'A' SCALE: 1/8" = 1'-0"



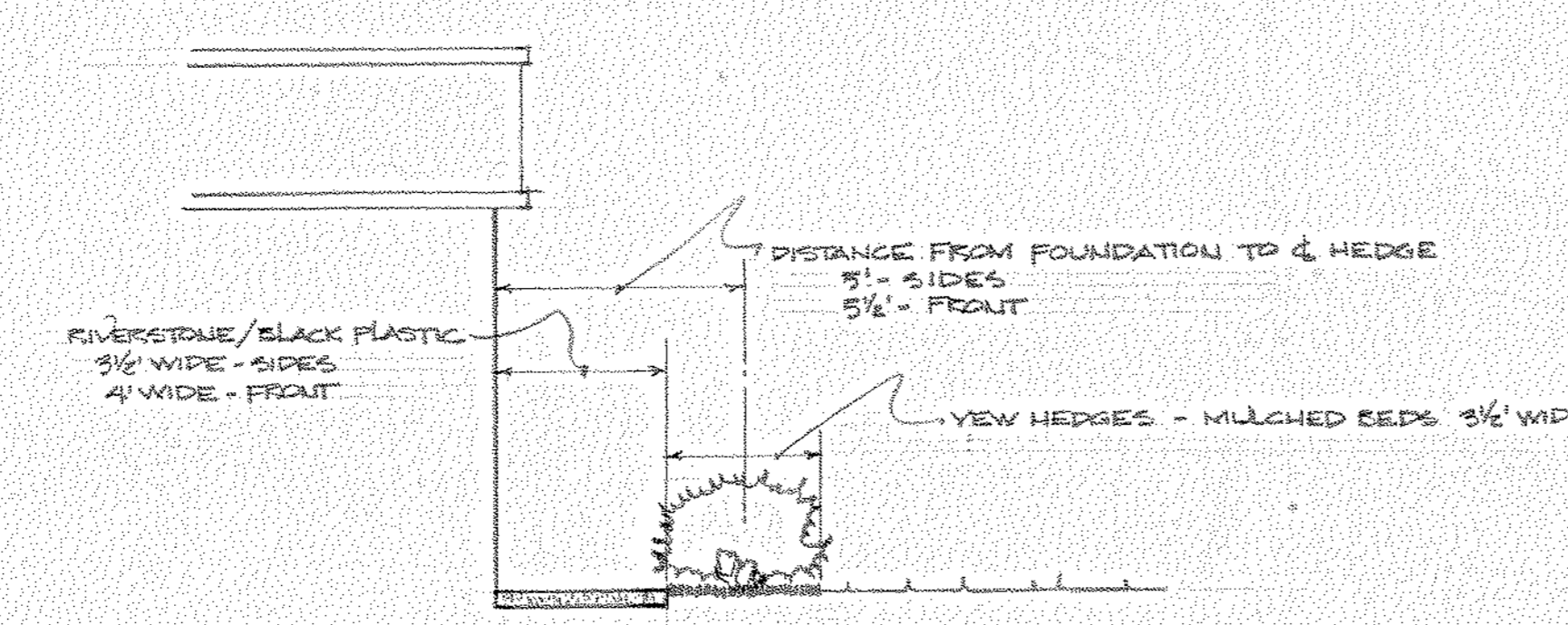
WOOD SCREEN 'B' SCALE: 1/8" = 1'-0"



FENCE CONSTRUCTION DETAIL SCALE: 1/2" = 1'-0"

PLANT LIST

KEY	NO.	COMMON NAME	BOTANICAL NAME	SIZE
CP	7	GALLERY PEAR	PRUNUS CALLERYANA	2 1/2" - 3" CAL.
JB	4	JULIEBERRY	AMELANCHIER, CANADENSIS	8-10' MS.
CSM	3	OCTOBER GLORY MAPLE	ACER RUBRUM 'OCTOBER GLOEY'	2-2 1/2" CAL.
PS	8	PAPER BIRCH	BETULA PAPPYRIFERA	2-3" MS.
EA	4	ROSEHILL ASH	FRAXINUS AMERICANA 'ROSEHILL'	2-2 1/2" CAL.
RC	3	ROYALTY CRABAPPLE	MALUS 'ROYALTY'	6-10'
RO	3	RUSSIAN OLIVE	ELEAGNUS ANGUSTIFOLIA	6-10'
TT	5	TULIP TREE	LIRIODENDRON TULIPIFERA	10-12'
WA	3	WASHINGTON HAWTHORN	CRATAEGUS PHAENOPYRUM	6-10'
AP 'A'	31	AUSTRIAN PINE 'A'	PINUS NIGRA	4-5'
AP 'B'	38	AUSTRIAN PINE 'B'	PINUS NIGRA	3-4'
DF	54	DOUGLAS FIR	PSEUDOTSUGA TAXIFOLIA	4-5'
WS 'A'	22	WHITE SPRUCE 'A'	PICEA GLAUCA	4-5'
WS 'B'	29	WHITE SPRUCE 'B'	PICEA GLAUCA	3-4'
AVib	10	ARROWWOOD VIBURNUM	VIBURNUM DENTATUM	5-5'
AWSpir	50	ANTHONY WATERER SPIREA	SPIRAEA x SUMALDA 'ANTHONY WATERER'	18-24"
AZ	1	HERBERT AZALEA	RHODODENDRON GABLE x HERBERT	15-18"
AZ	1	STEWARTSONIAN AZALEA	RHODO. GABLE x 'STEWARTSONIAN'	15-18"
AZ	1	DELAWARE VALLEY WHITE AZALEA	RHODO. KURLUM x DELAWARE VALLEY	15-18"
AZ	1	YODOGAWA AZALEA	RHODO. YEDOENSE POUCHANNEUSE	15-18"
SB	19	BAVBERRY	MYRTICA PENNSYLVANICA	18-24"
COE	40	CORAL BEAUTY COTONEASTER	COTONEASTER, DAMMERI 'CORAL BEAUTY'	1 GALLON
DOG	23	CEANERIDGE DOGWOOD	COENULUS ELEGANTISSIMA	24-30"
DVib	5	MARIE DOUBLEFILE VIBURNUM	VIBURNUM PLICATUM 'MARIE'S'	4-5'
EV	11	DWARF WINGED EUONYMUS	EUONYMUS ALATUS 'COMPACTUS'	18-24"
FOR	28	FOKSYTHIA	FOKSYTHIA x INTERMEDIA	3-4'
Jun 'A'	72	BLUE SARGENT JUNIPER	JUNIPERUS CHINENSIS 'SARGENTII' GLAUCA	1 GALLON
Jun 'B'	39	SARGENT JUNIPER	JUNIPERUS CHINENSIS 'SARGENTII'	1 GALLON
Jun 'C'	43	BLUE CHIP JUNIPER	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	1 GALLON
Jun 'D'	73	TAM JUNIPER	JUNIPERUS SABINA TAMARISCIFOLIA	1 GALLON
Lilac	19	DWARF KOREAN LILAC	SYRINGA PALIBIANIANA	18-24"
Plum	14	PURPLELEAF PLUM	PRUNUS x CISTENA	3-4'
Priv	9	AMUR PRIVET	LIGUSTRUM AMURICAENSE	4-5'
SpSpir	15	SNOWMOUND SPIREA	SPIRAEA JAPONICA	18-24"
Will	8	DWARF ARCTIC WILLOW	SALIX PURPUREA 'NANA'	2 GALLON
Yew	181	DENSE YEW	TAXUS CUSPIDATA 'DENSIFORMIS'	15-18"
Myr	480	MYRTLE	VINCA MINOR	2 1/2" POTS
HL	3	THORNLESS HONEY LOCUST	GLEDITSIA TRIACANTHOS 'INERMIS'	2-2 1/2" CAL.



TYPICAL FOUNDATION PLANTING

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LL-5-A-15

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LANDSCAPE PLAN  
- NARCO RESEARCH CENTER -  
STATE COLLEGE PENNSYLVANIA

OTHERS	DESIGNED	DRAWN	CHECKED	DATE	SCALE	REVISION	DESCRIPTION	DATE	DRAWN BY	C. O. NO.	DWG. NO.
	5-11-82	5-11-82		5-11-82	1" = 40'	A	ADDED THORNLESS HONEYLOCUST TO TAB.	5-11-82	DPK	55-110	55-110-A-11
FOREMAN	5-11-82									30 MARCH '82	
VENDOR											

PRINTS

#0064 - Landscape Plan - 1982 - NONE - 13012



ZONING DISTRICT R-2 (LOW DENSITY RESIDENCE)

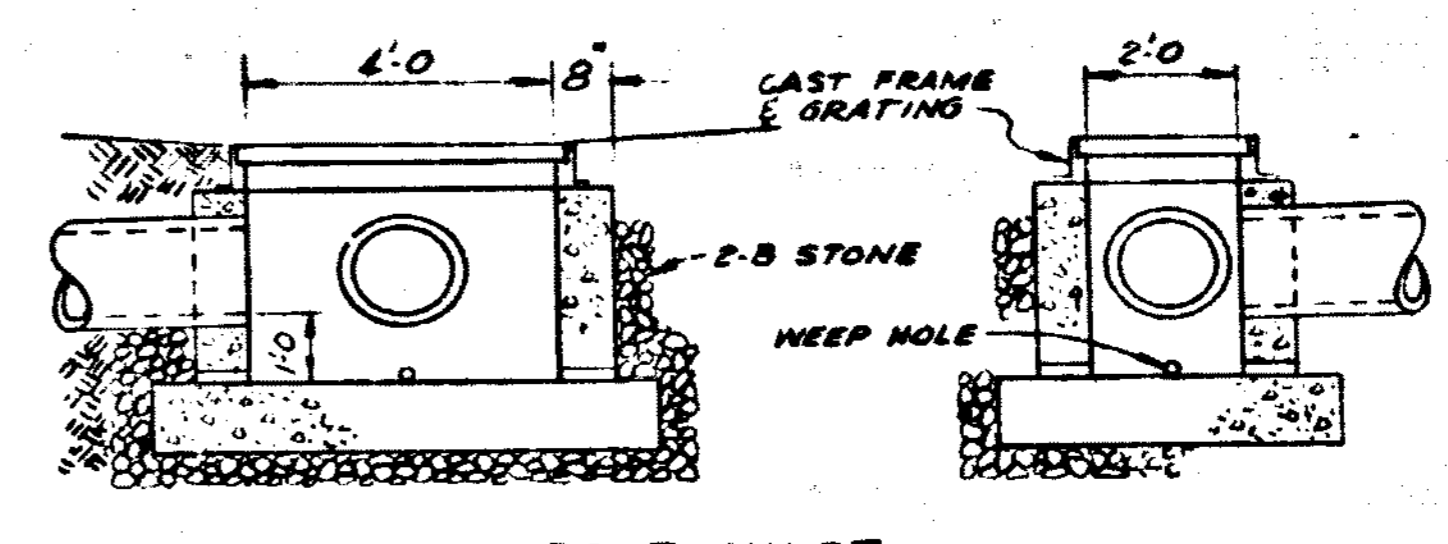
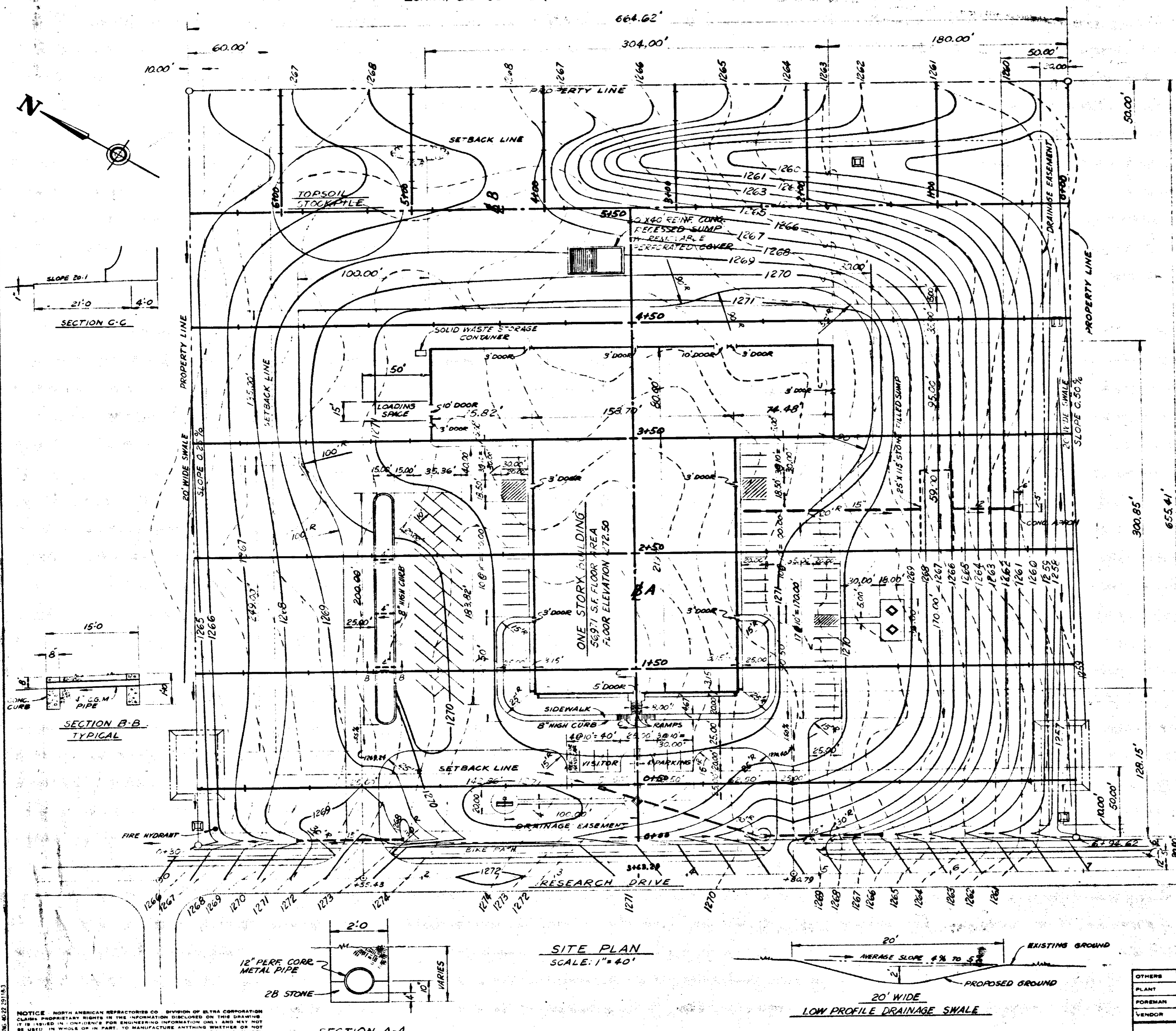
- NOTES**
- GENERAL SITE INFORMATION
    - LOT USE: OFFICE BUILDING AND RESEARCH CENTER
    - ZONING: 1-RD (RESEARCH DEVELOPMENT, LIGHT INDUSTRY)
    - TOTAL NUMBER OF LOTS: ONE
    - TOTAL ACREAGE: 10.00
  - UTILITY INFORMATION
    - SEWAGE: PATTON FERGUSON JOINT AUTHORITY
    - WATER: STATE COLLEGE WATER AUTHORITY
    - ELECTRIC: WEST PENN. POWER COMPANY
    - PHONE: BELL OF PENNSYLVANIA
    - CABLE TV: CENTRE VIDEO
    - GAS: COLUMBIA GAS COMPANY
  - ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM
  - FOR ADDITIONAL INFORMATION SEE DRAWING ENTITLED CATO ASSOCIATES PRELIMINARY SUBDIVISION PLAN, PREPARED BY UNIVERSAL TECHNICAL, INC.
  - ALL STORM WATER DRAINAGE FACILITIES WITHIN THE CONFINES OF THE PROPERTY BOUNDARY LINES WILL BE MAINTAINED BY NORTH AMERICAN REFRACTORIES CO.
  - PARKING
    - 66 EMPLOYEE SPACES (10' X 20')
    - 6 VISITOR SPACES (10' X 20')
  - ALL DRIVEWAYS, LOADING AND PARKING AREAS TO BE SURFACED WITH 1" OR 1 1/2" BITUMINOUS WEARING COURSE ON BITUMINOUS BASE COURSE ON CRUSHED STONE SUBBASE.
  - FOR LANDSCAPE PLANTINGS AND OUTDOOR LIGHTING SEE NARGO DRAWING NO. 55-110-10

**LOCATION MAP**  
SCALE: 1" = 200'

**FERGUSON TOWNSHIP PLANNING COMMISSION**  
APPROVED BY  
 Chairman: [Signature] DATE: 10-15-80  
 Secretary: [Signature] DATE: 10-15-80

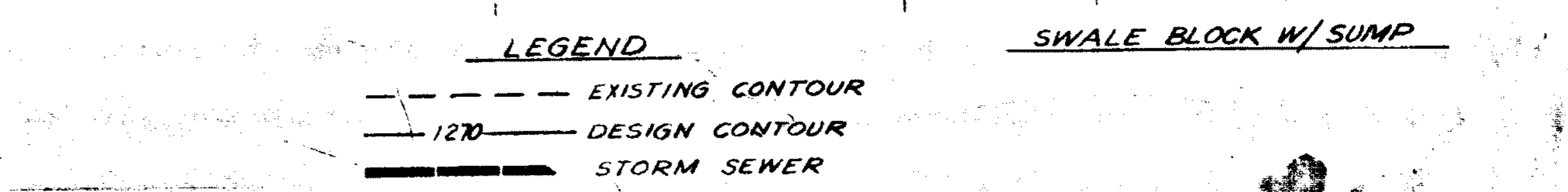
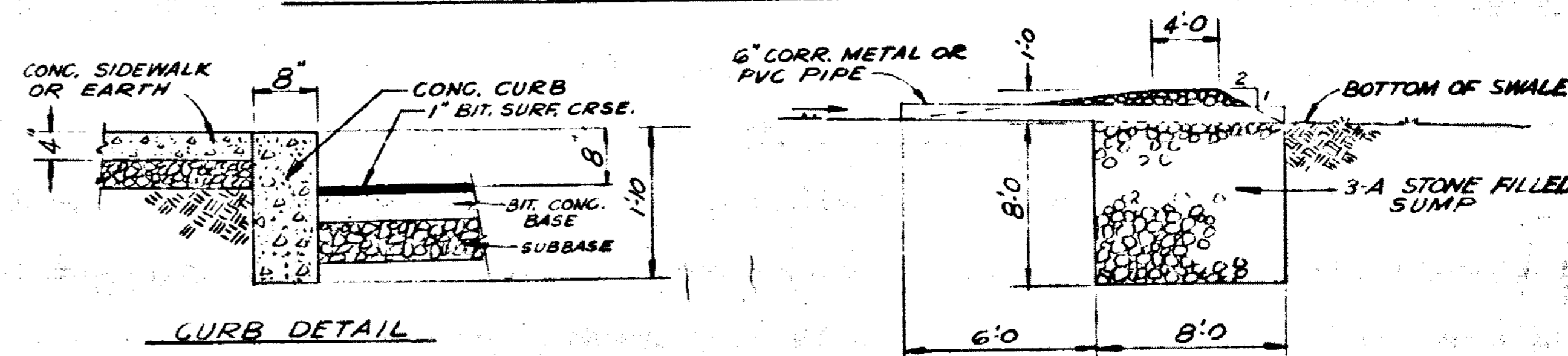
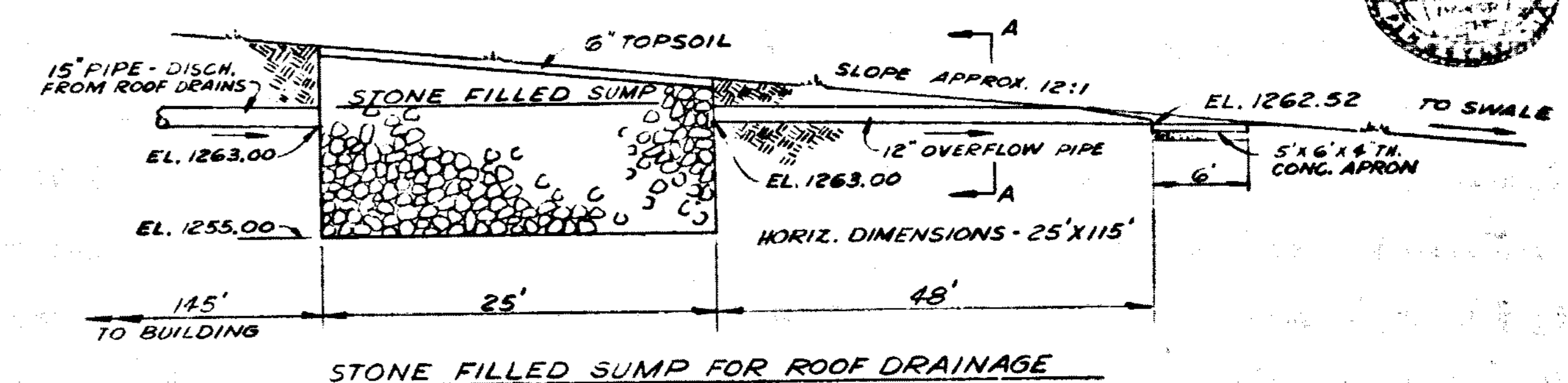
**FERGUSON TOWNSHIP SUPERVISORS**  
APPROVED BY  
 Chairman: [Signature] DATE: 10-17-80  
 Secretary: [Signature] DATE: 10-15-80

**ENGINEERING CERTIFICATION**  
 I, [Signature], HEREBY CERTIFY THAT THE STORM WATER MANAGEMENT PLAN MEETS ALL DESIGN CRITERIA OF THE STORM WATER MANAGEMENT CONTROLS AS REQUIRED BY THE TOWNSHIP OF FERGUSON.



**OUTLET VELOCITIES FROM PIPES**

SIZE & LOCATION	VEL. - FPS
15" CROSS PIPE, DRIVEWAY 33' LT STA. 155+43	4.5
15" CROSS PIPE, DRIVEWAY 33' LT STA. 418+79	4.3
12" DISCH PIPE FROM STONE FILLED SUMP	4.0



- LEGEND**
- EXISTING CONTOUR
  - 1270 DESIGN CONTOUR
  - STORM SEWER
  - STORM SEWER W/ END SECTION
  - DROP INLET
  - SWALE BLOCK W/ SUMP
  - TEMPORARY SILTATION BASIN SEE DET. IN STORM WATER NARRATIVE

LL-5-A-48

**NORTH AMERICAN REFRACTORIES CO.**  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**SITE PLAN**

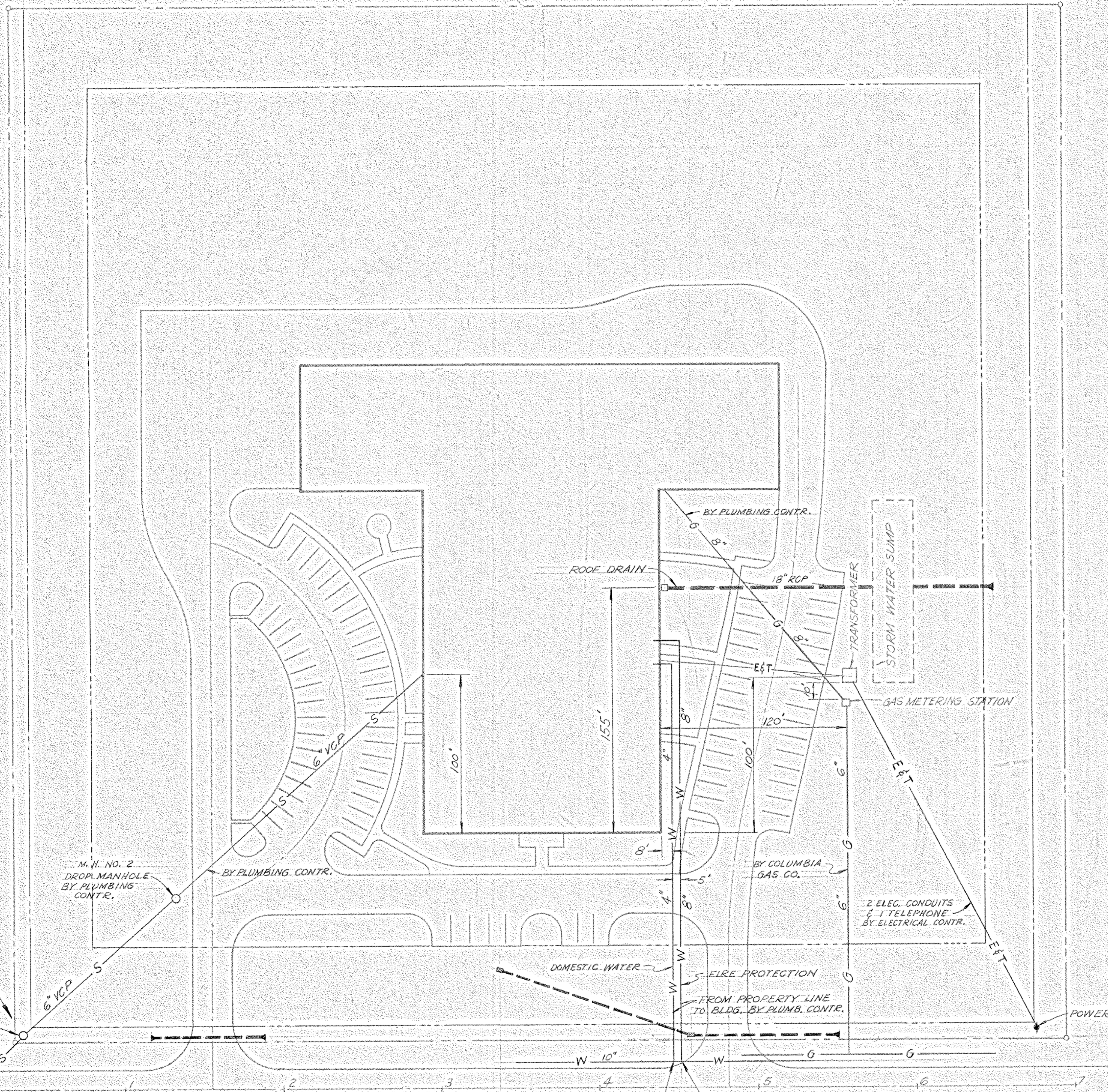
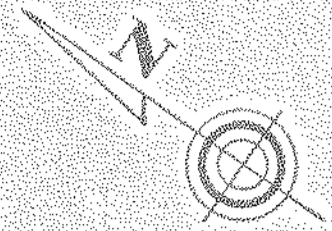
**NEW RESEARCH CENTER**

OTHER	5/17/80	5/17/80	
PLANT			
FOREMAN	B	9-26-80	
VENDOR	A	3-28-80	

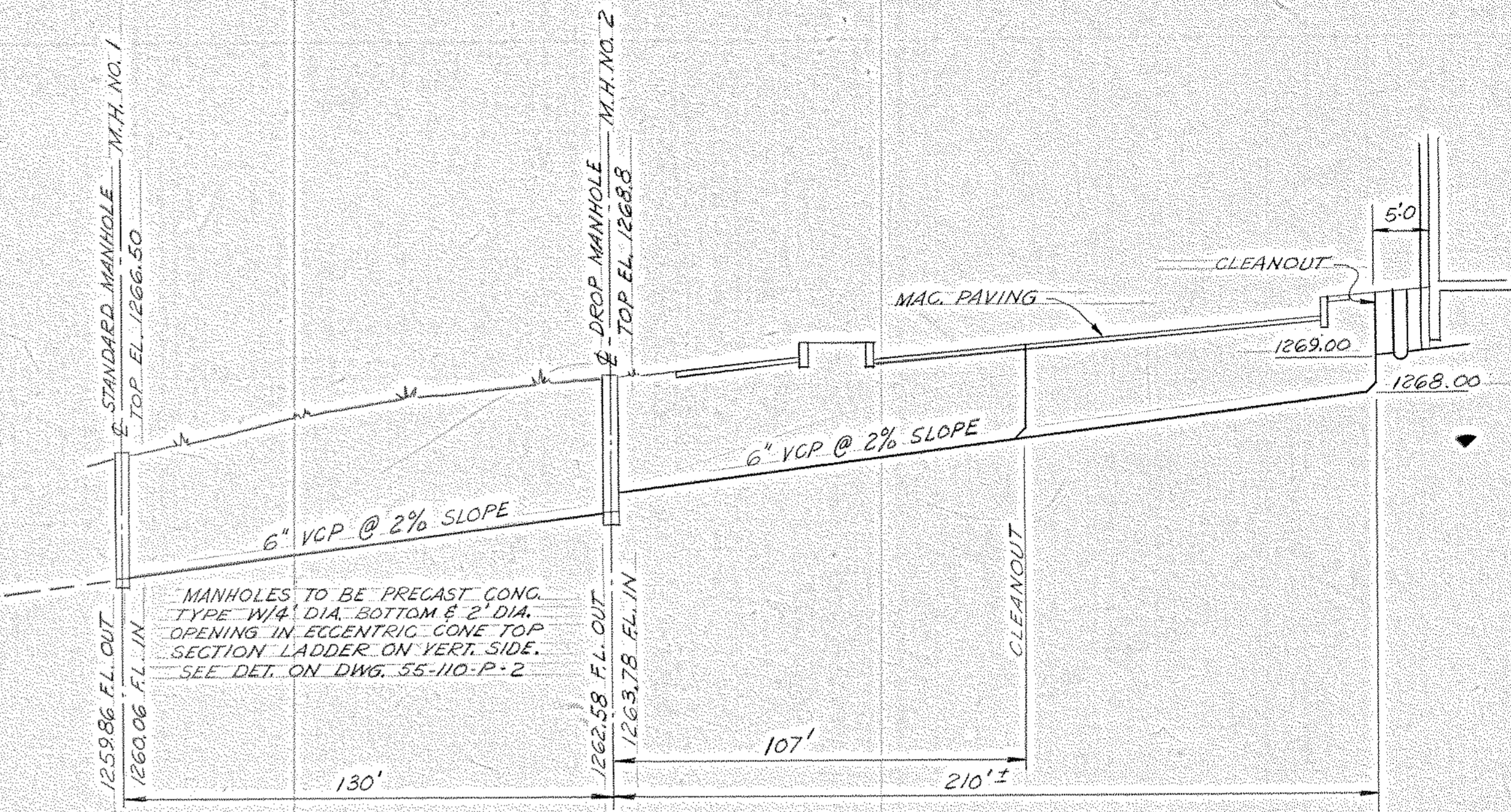
DATE: 3-27-80  
SCALE: 1" = 40'

NOTICE: NORTH AMERICAN REFRACTORIES CO. DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS TO BE USED IN CONFORMANCE WITH THE INFORMATION DISCLOSED AND NOT BE USED IN WHOLE OR IN PART TO MANUFACTURE ANYTHING WHETHER OR NOT KNOWN HERETO. REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

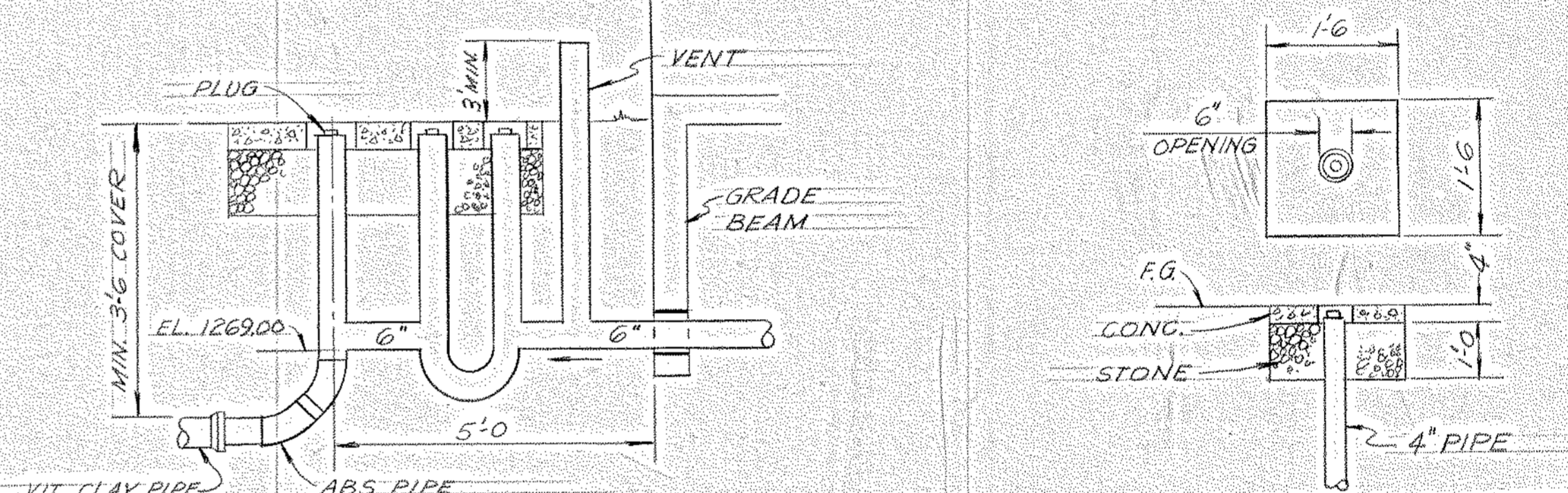




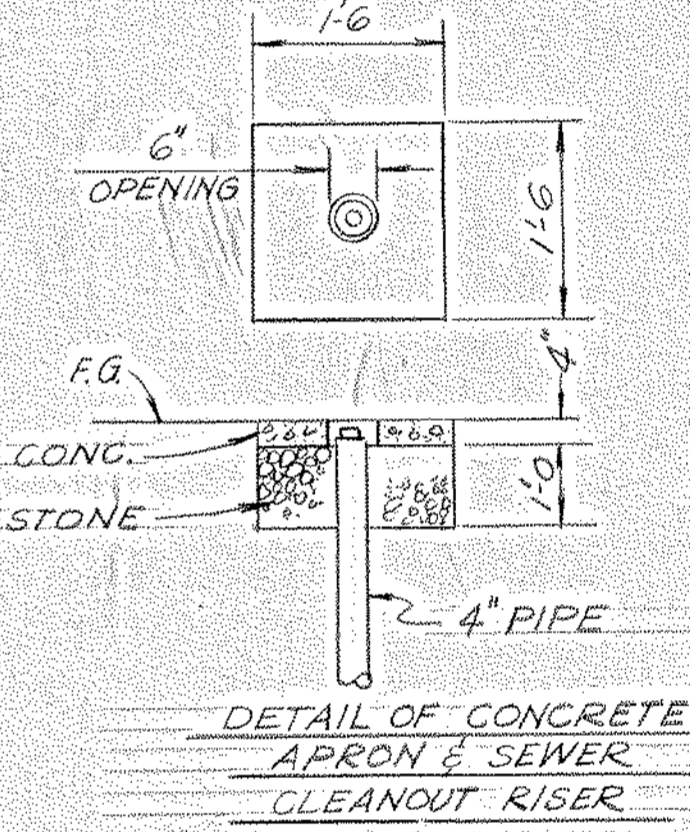
PLOT PLAN  
SCALE: 1"=40'



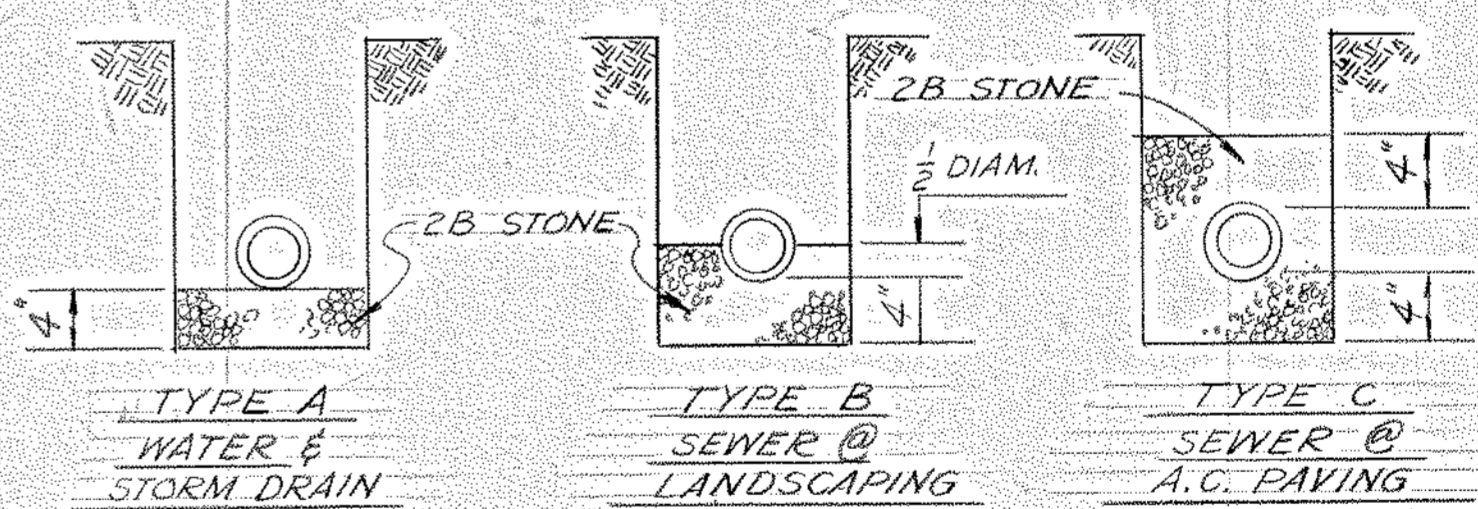
SEWER PROFILE - LINE A  
SCALE: HORIZ. 1"=30' VERT. 1"=5'



DETAIL OF CLEANOUT AND BUILDING LINE CONNECTION



DETAIL OF CONCRETE APRON & SEWER CLEANOUT RISER



DETAIL - PIPE BEDDING TYPES

LEGEND

- ELECTRIC — E —
- TELEPHONE — T —
- GAS — G —
- SANITARY SEWER — S —
- STORM SEWER — W —
- WATER — W —

OTHERS	R.B. GOSB	R.B. GOSB	R.B. GOSB	R.B. GOSB
PLANT	6-18-81	7-9-81	8-27-81	
FOREMAN	J. J. M.	J. J. M.	J. J. M.	
VENDOR	6-18-81	8-27-81		

11-5-A-49

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. — RESEARCH CENTER  
CURWENSVILLE, PA.

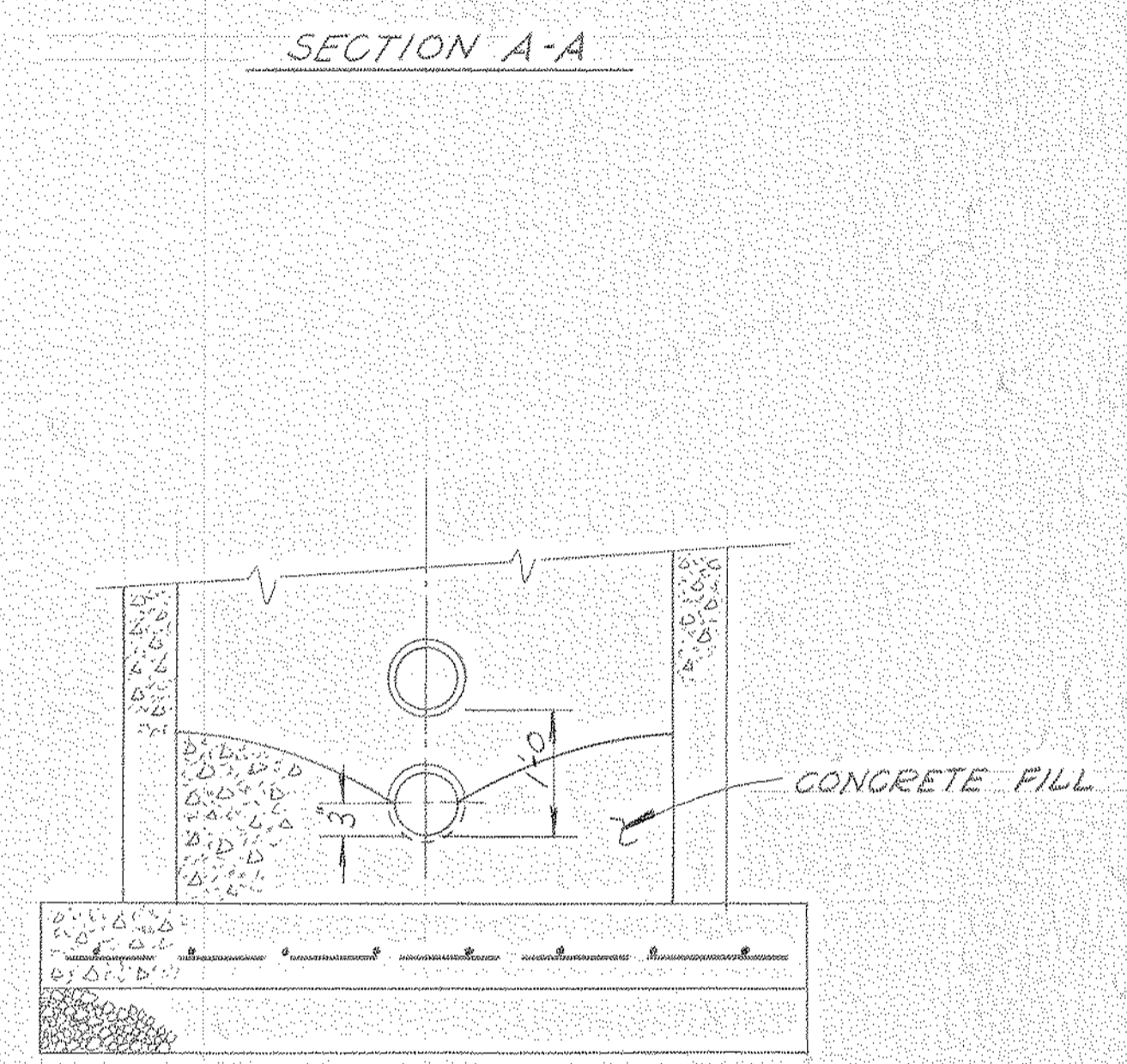
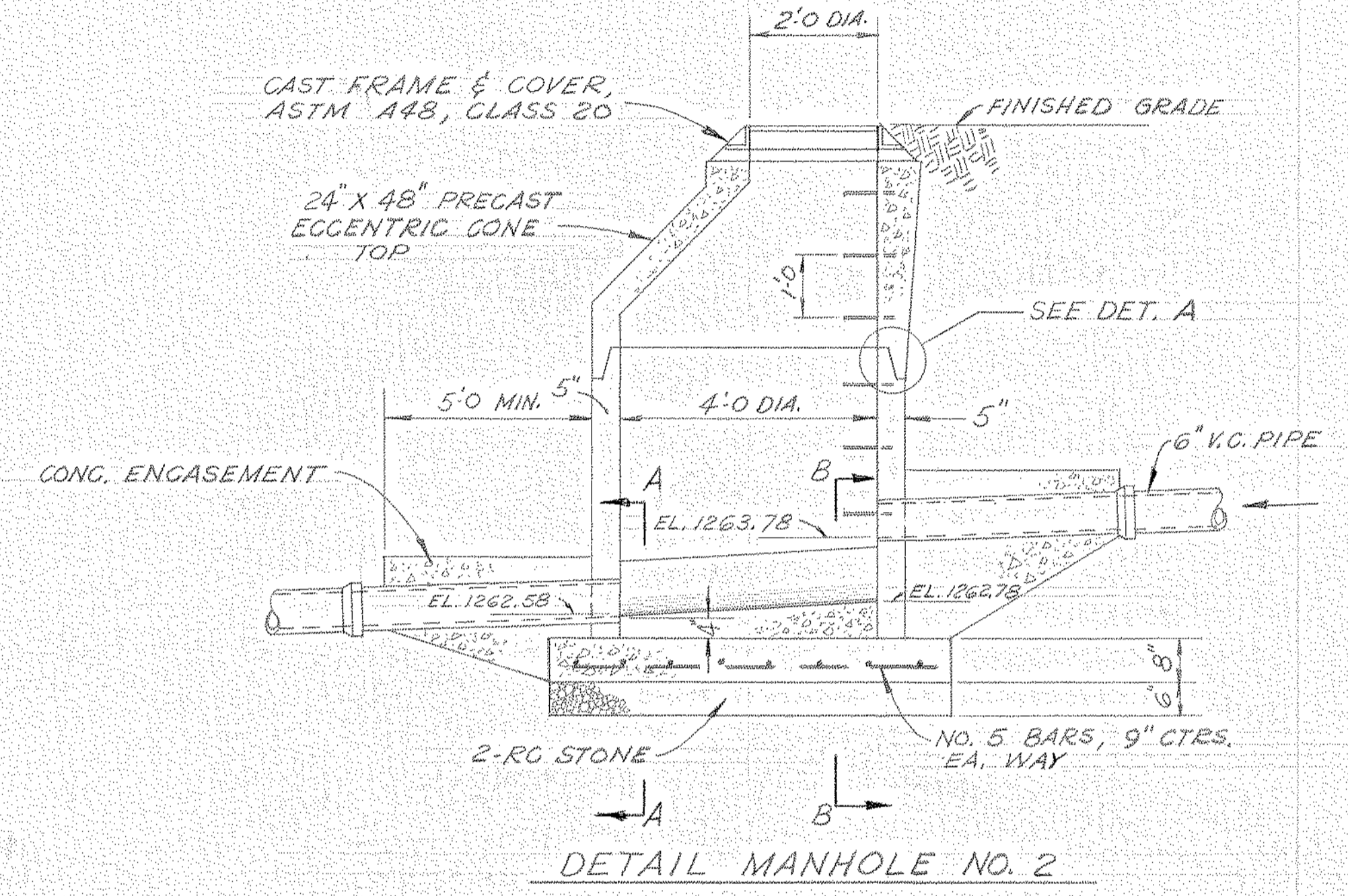
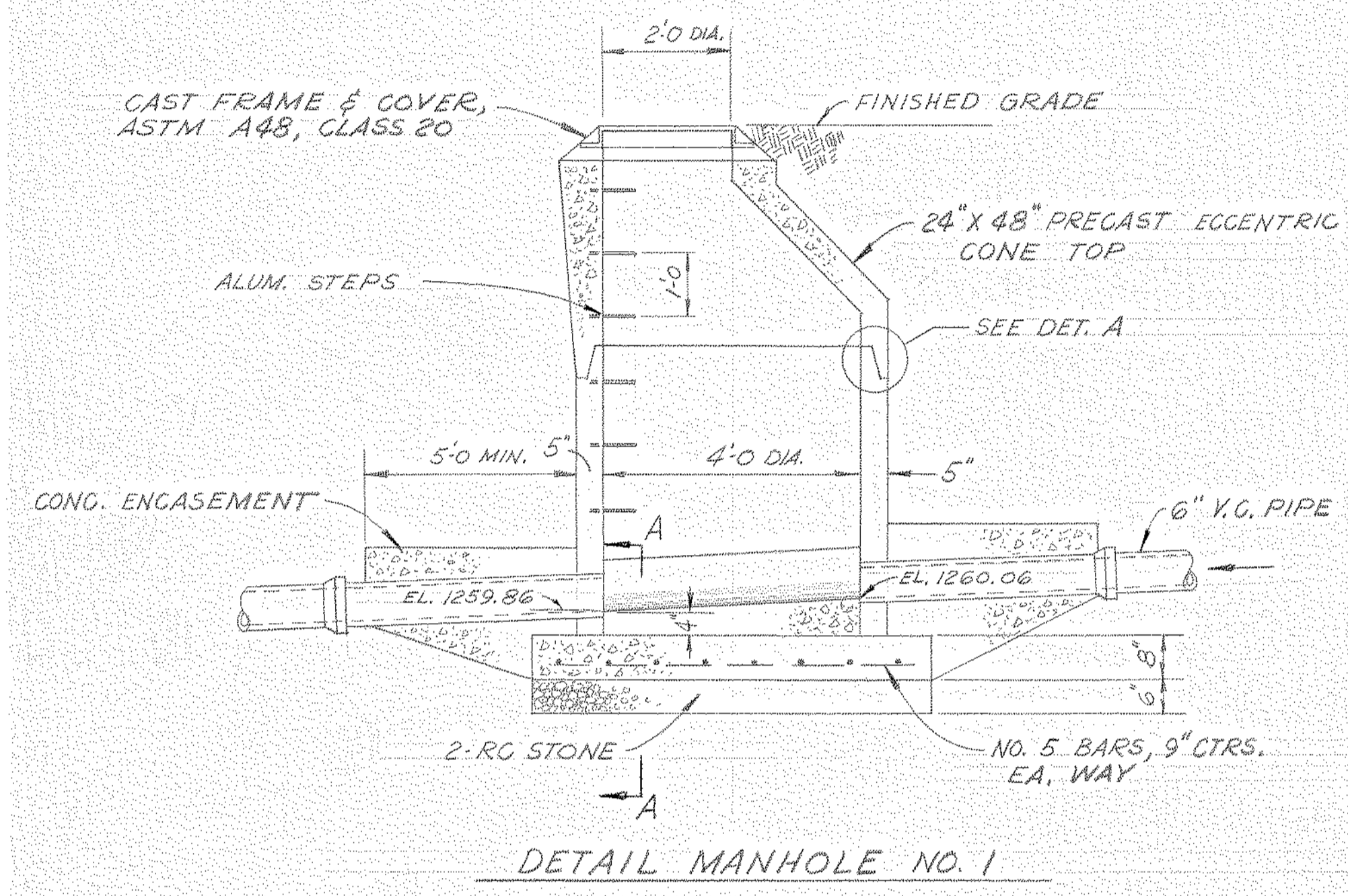
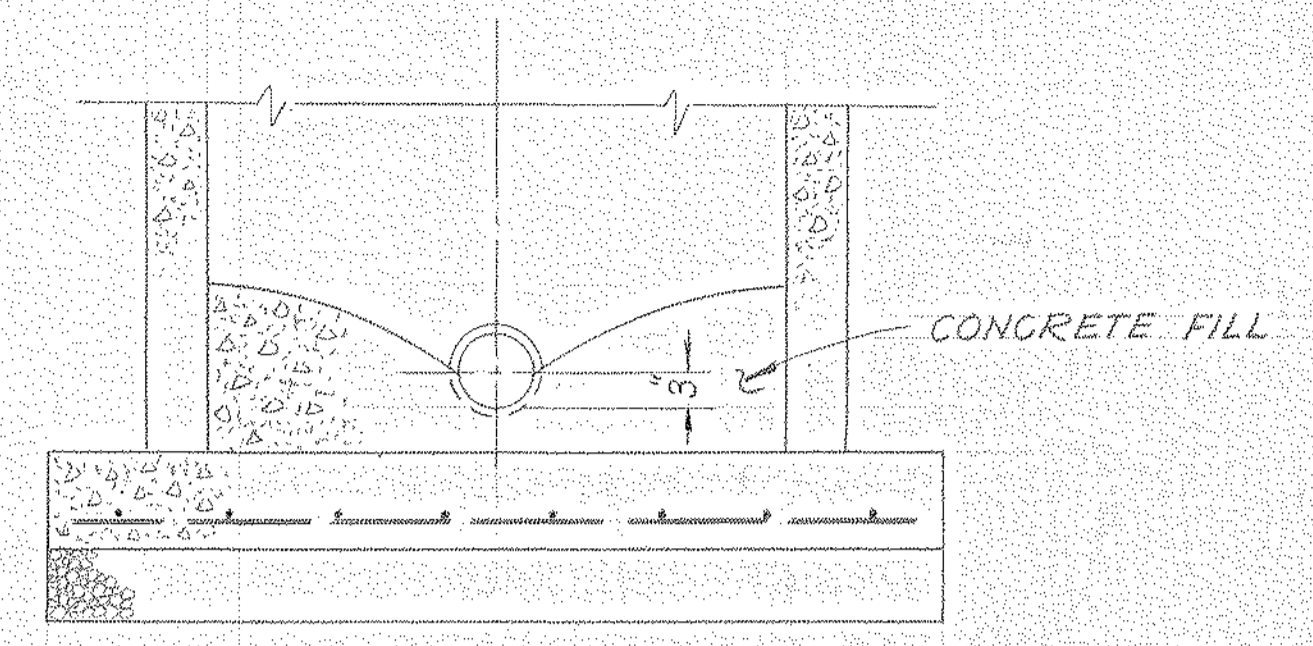
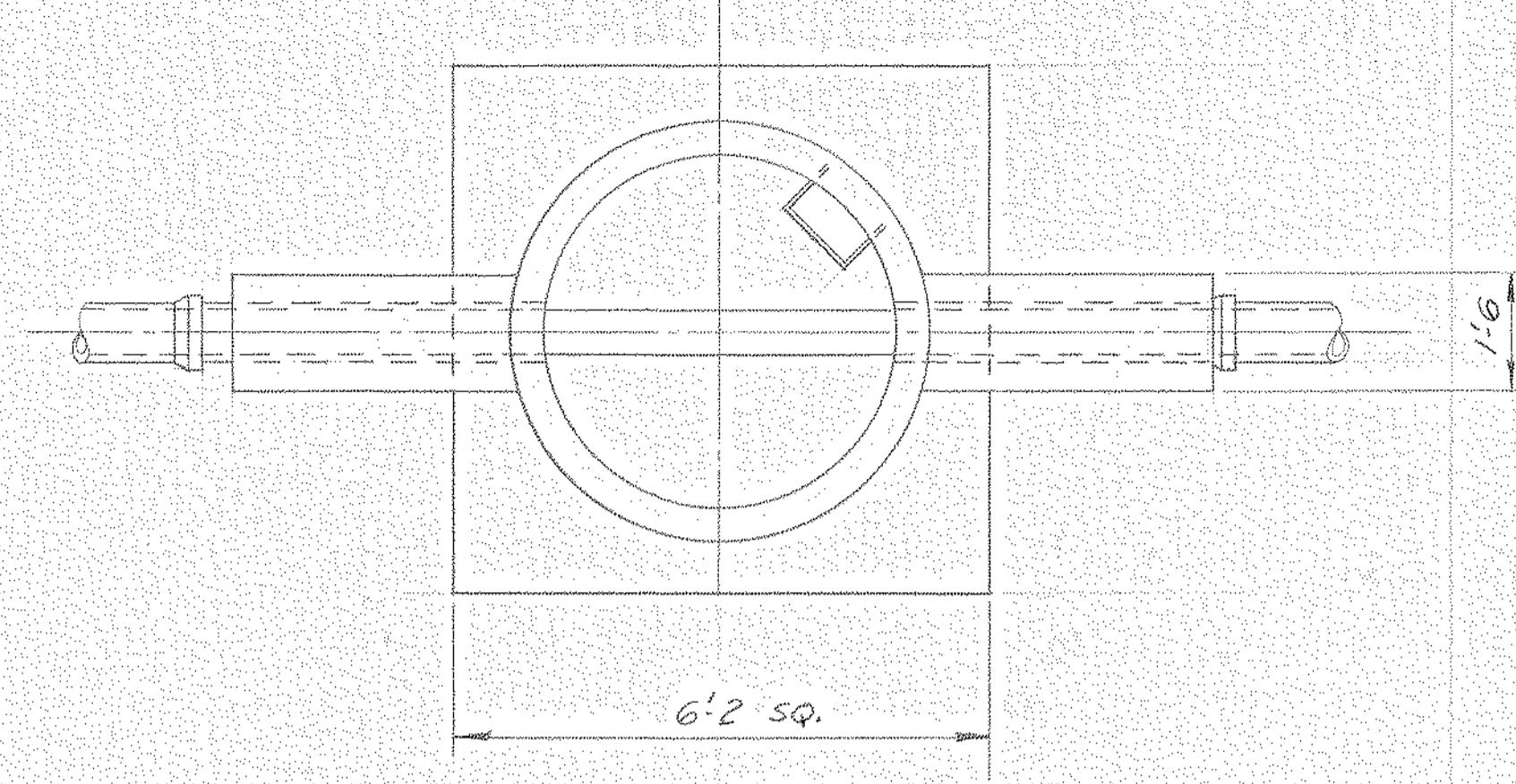
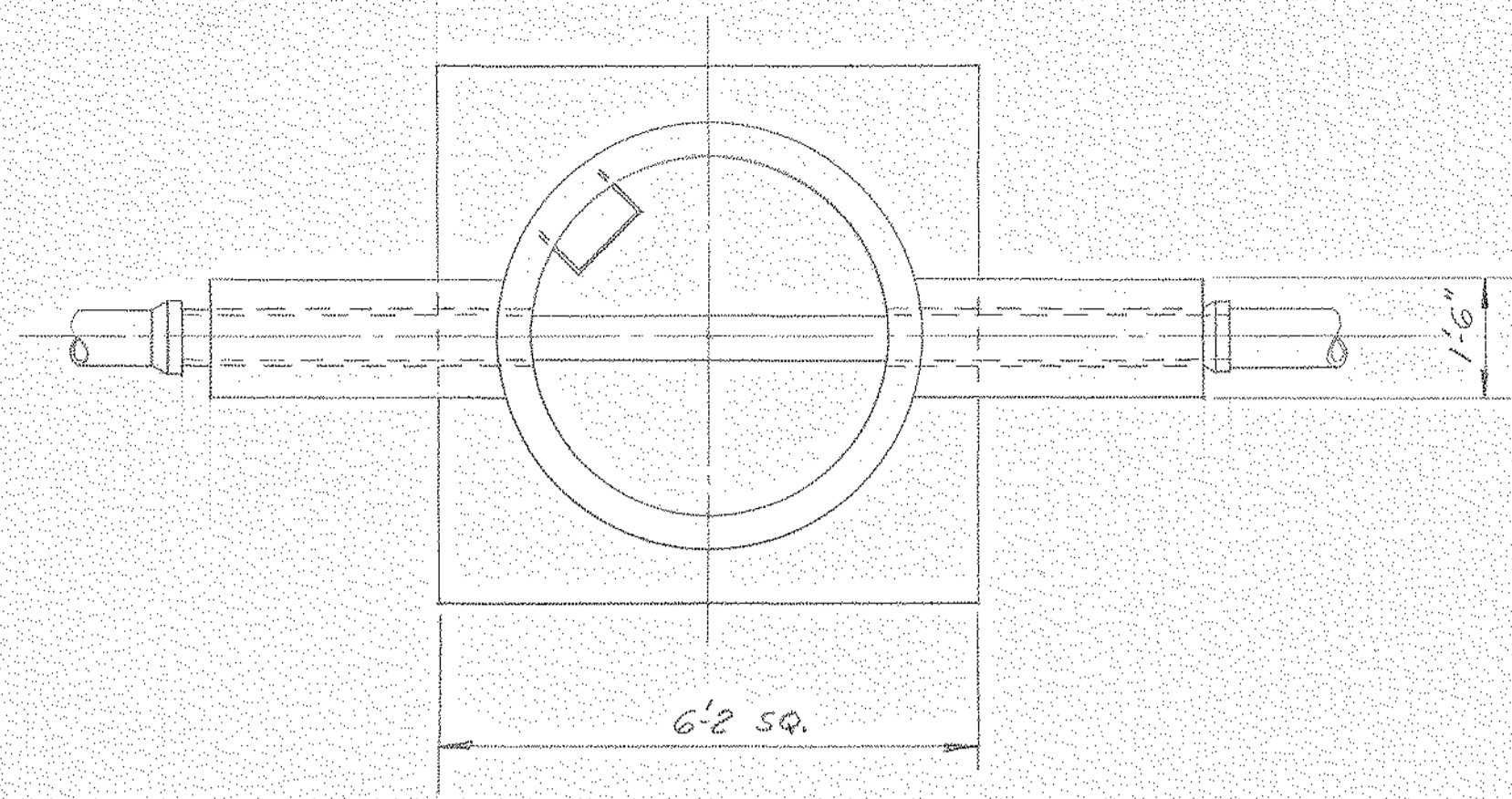
**UNDERGROUND UTILITY PLAN**

**NEW RESEARCH CENTER**

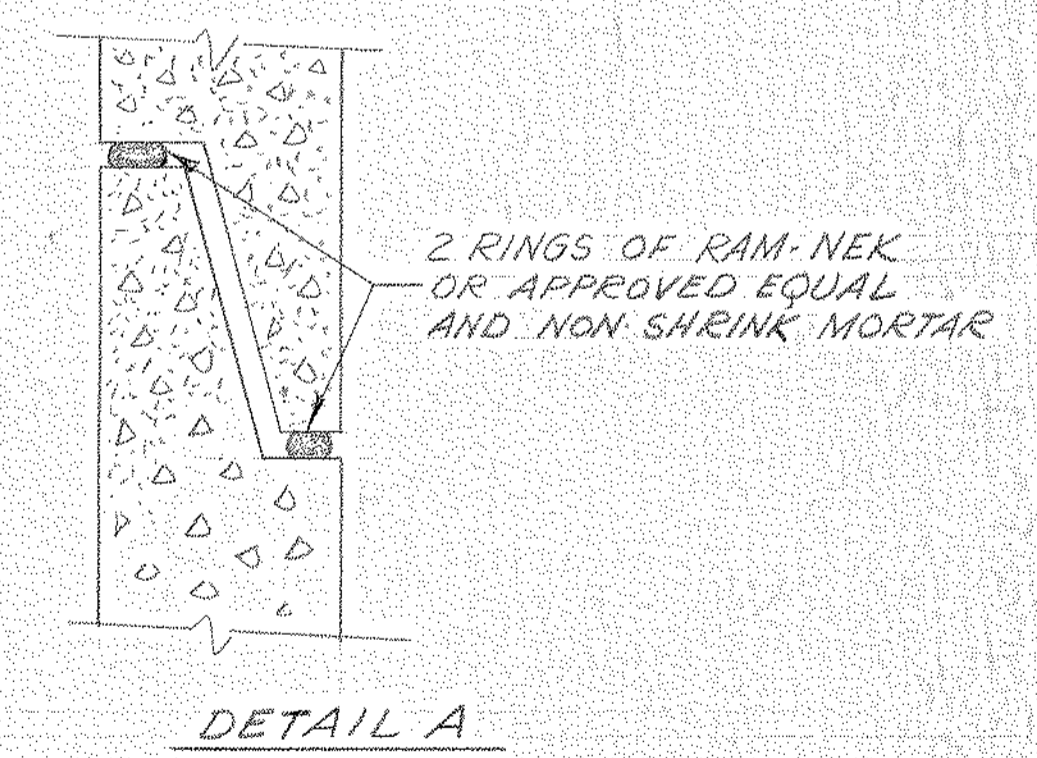
DRAWN BY: <i>JKP</i>	C.D. NO.: 55-110	55-110-P-1
CHECKED:	DATE: 2-12-81	DWG. NO.:
SCALE: 1"=40'		

NOTICE — NORTH AMERICAN REFRACTORIES CO., DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED, IN WHOLE OR IN PART, TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON. REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.





SECTION B-B



DETAIL A

44-5-A-50

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT RESEARCH CENTER  
CURWENSVILLE, PA.

MANHOLE DETAILS  
SANITARY SEWER

NEW RESEARCH CENTER

OTHERS	1/25/81								
PLANT	4-21-81								
FOREMAN	2/1/81								
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE					
		A	REV. DWG. NO. (WRS P-1)	6-7-81					

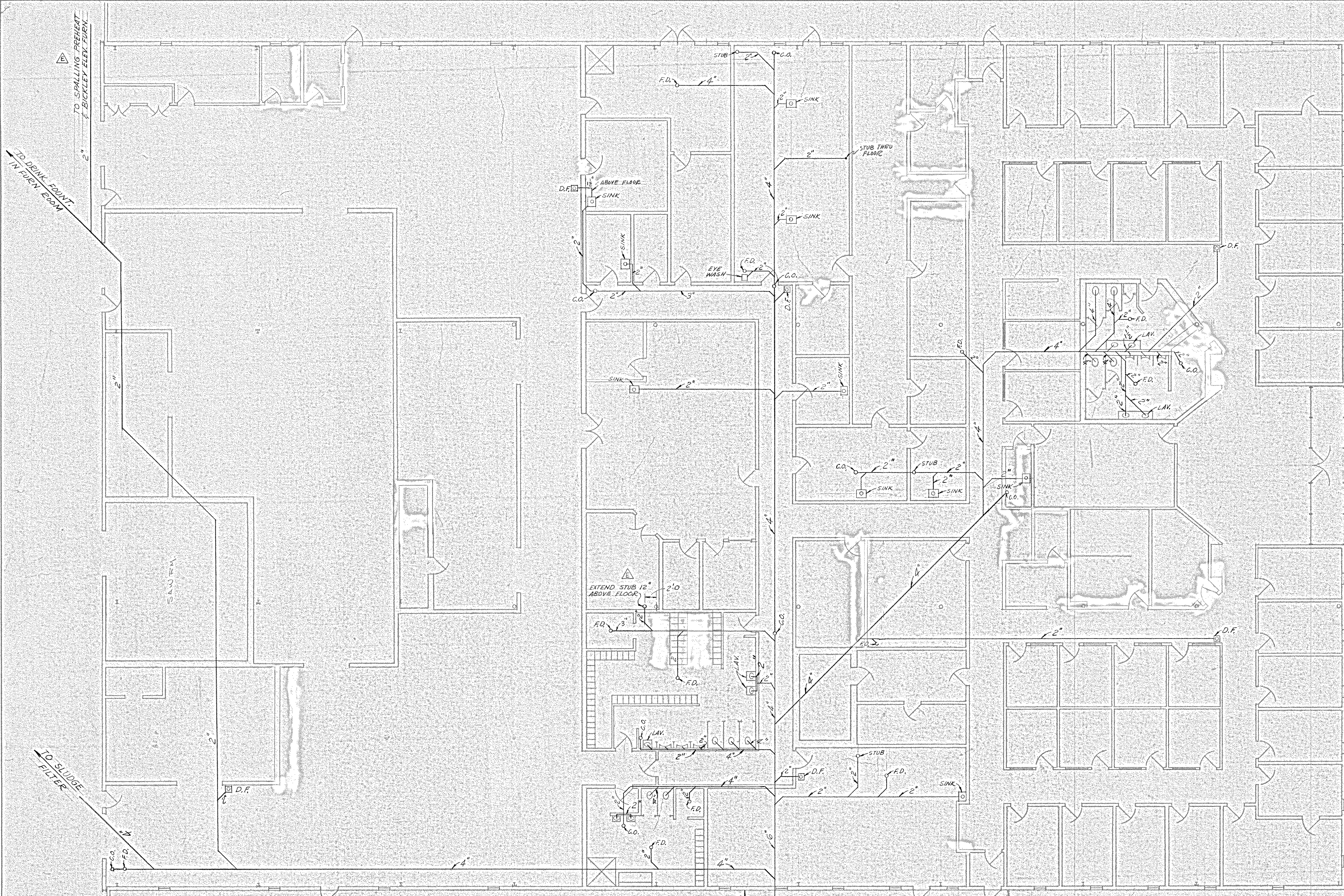
DRAWN BY	C.O. NO.	DATE	DWG. NO.
	55-110	4-21-81	55-110-P-2
CHECKED	SCALE		
	1/2" = 1'-0"		

#0064 - P2 Manhole Dtl's / Sani. Sewer - 1981 - NONE - 350107

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BRUNING 40-22 091 B-3





TO SPALLING PREHEAT & BICKLEY ELEM. FURN.  
2"

TO DRAIN FRONT IN FURN. ROOM  
2"

TO SLUDGE FILTER  
4"

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FOR SCHEMATIC OF VENT PIPES  
SEE DWG. 55-110-P-10

FOR PROFILE OF THIS LINE  
SEE DWG. 55-110-P-01

G.O. SEE DETAIL DWG. 55-110-P-01

44-5-A-51  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

SANITARY DRAIN PIPING  
BUILDING INTERIOR

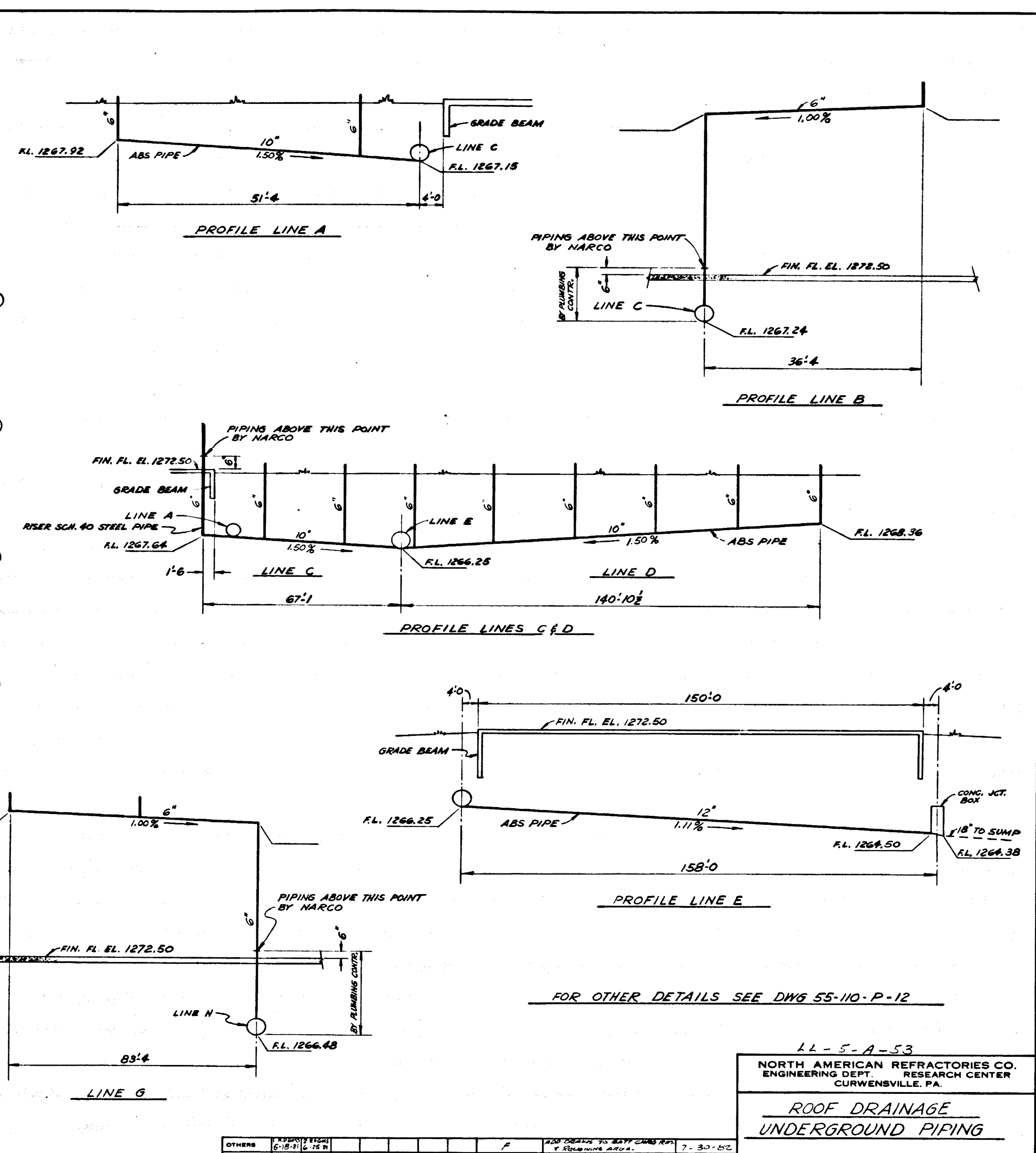
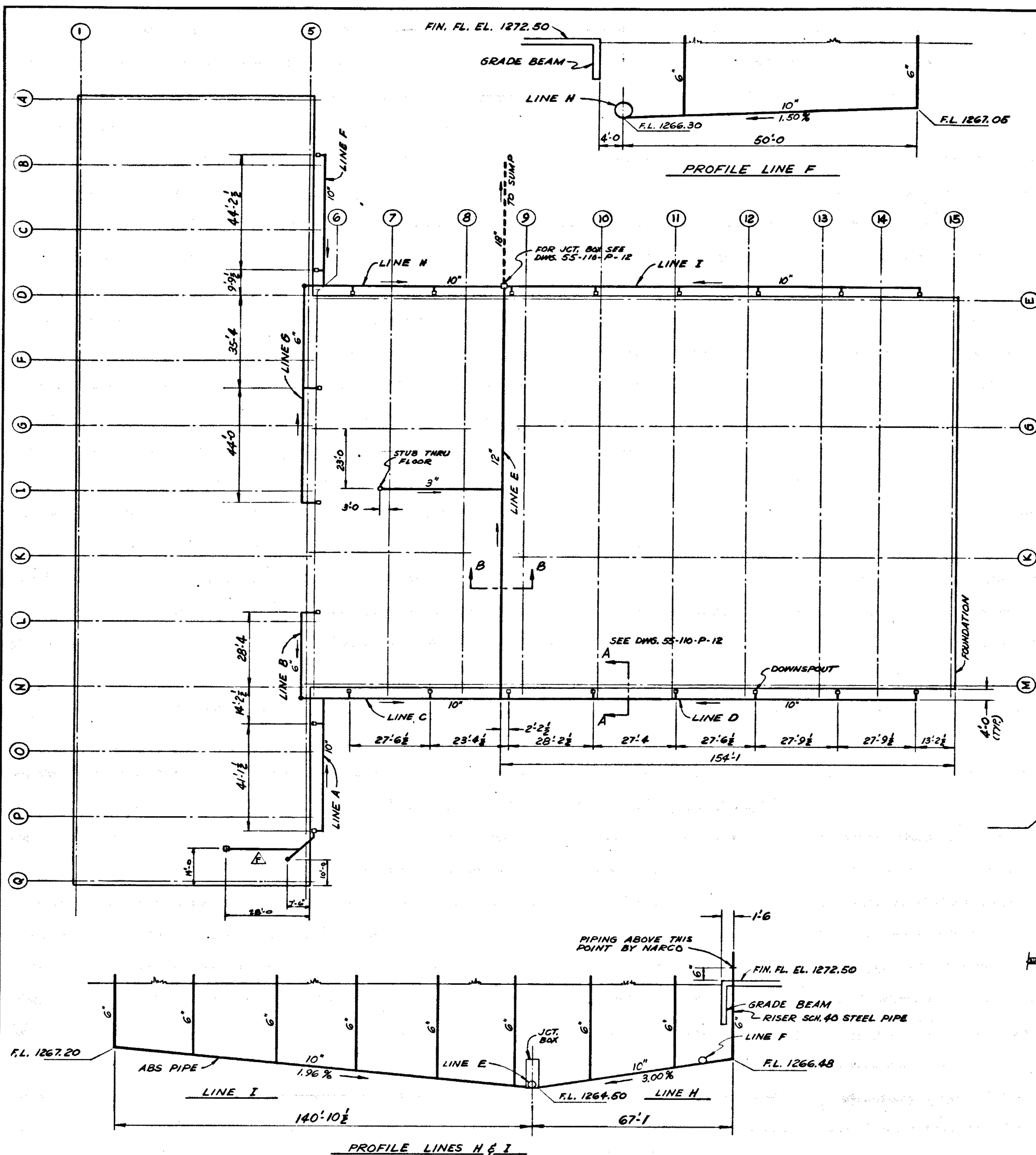
NEW RESEARCH CENTER

OTHERS	DATE	DESCRIPTION	DATE
2 ED GOSSEL R. BROWN	2-10-82	"AS BUILT" INTERIOR WALLS	7-29-82
5-3-81	5-7-81	5-14-81	7-5-81
7-5-81	7-8-81	7-21-81	7-29-81
7-29-81	8-22-82		
PLANT	4 JIM	2 JIM	1 JIM
FOREMAN	5-5-81	5-14-81	7-4-81
VENDOR	7-21-81	7-29-81	8-22-82

REVISION	DATE	DESCRIPTION
F	7-29-82	"AS BUILT" INTERIOR WALLS
E	7-28-81	ADDED STUBS TO VENT ROOM & TO FURNACES
D	7-21-81	ADDED FL. DR. IN V-REAR ROOM
C	7-8-81	ADDED LINE SLUDGE FILTER & FURN. ROOM D.F.
B	6-7-81	REV. DWG. NO. (WAS P-3)
A	5-14-81	CHG'D ALL 1 1/2" DRAIN PIPES TO 2"





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 PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

OTHERS	REVISION	DATE	DESCRIPTION
	F	7-30-82	ADD DRAIN TO EAST DRAIN RUN
	E	6-25-81	ADDED 3" DRAIN LINE FOR PRESS.
	D	6-7-81	REV. DWG. NO. (WAS P-2)
	C	5-10-81	REDRAWN

44-5-A-53  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

**ROOF DRAINAGE  
 UNDERGROUND PIPING**

**NEW RESEARCH CENTER**

DRAWN BY: [Signature]  
 CHECKED: [Signature]  
 DATE: 2-12-81  
 SCALE: NONE  
 C.O. NO.: 55-110  
 DWG. NO.: 55-110-P-5









**NOTES:**  
 WORK WITH DWGS  
 55-110-E-2 & E-3  
 FOR "LEGEND" SEE DRAWING  
 NO. 55-110-E-4

11-5-A-84  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

**EMERGENCY LIGHTING & ALARMS  
 OFFICES & WORK ROOMS  
 NEW RESEARCH CENTER**

OTHERS	DESIGNED	ALTERED	FRANCHISE	DATE	BY	REVISION	DATE	BY
				9-21-82	C	NO. 55-110-E-1	9-21-82	
				6-21-81	B	DWG. NO. 55-110-E-1	6-21-81	
				4-16-81	A	REBORN	4-16-81	

DESIGNED BY	W.A.	DRAWN BY	W.A.
CHECKED BY		DATE	7-21-80
PROJECT NO.	55-110	DWG. NO.	55-110-E-1

#0064 - E-1 Emerg. Light/ALARMS - 1981 - NONE - 6/9/07

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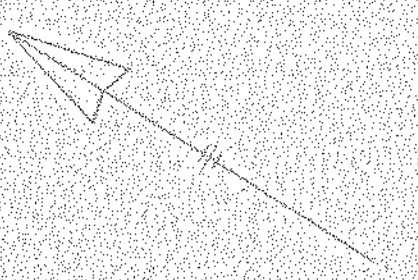












**"AS BUILT" NOTE**  
 INTERIOR & EXTERIOR WALLS, OPENINGS  
 HAVE NOT BEEN "AS-BUILT" ON THIS DWG.

**NOTE:** WORK WITH DWGS  
 55-110-E-6 & E-7  
 SEE DWG. 55-110-E-13  
 & 15 FOR LEGEND.

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

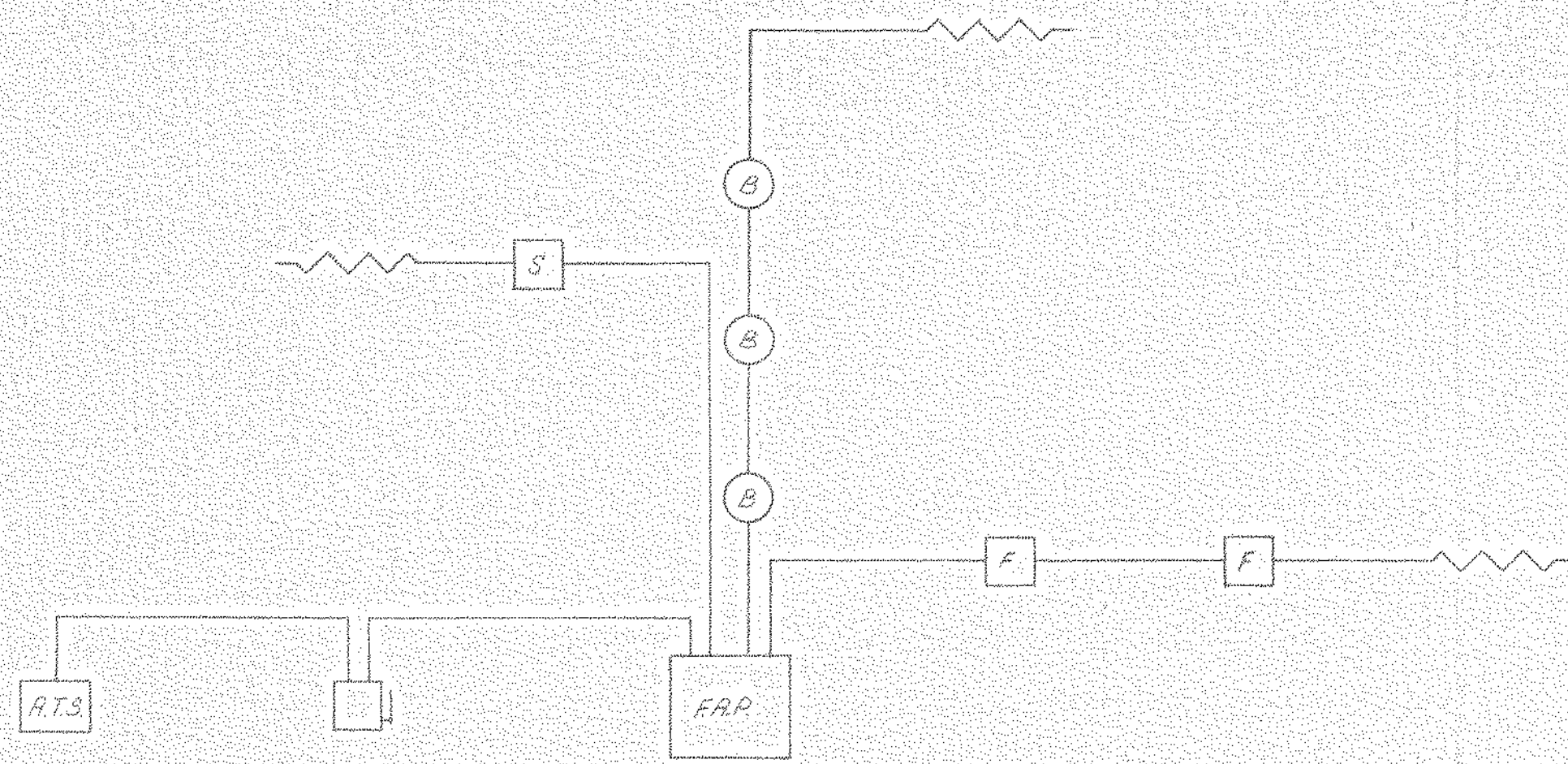
**POWER PLAN FOR**  
**STORAGE & RAW MAT'L PREPARATION**  
**NEW RESEARCH CENTER**

OTHERS	DATE	BY	DESCRIPTION
OTHERS	6-1-81	J. ALLEN	PRINTS
PLANT	6-22-81	J. ALLEN	PRINTS
FOREMAN	6-3-81	J. ALLEN	PRINTS
VENDOR	1-31-81	J. ALLEN	PRINTS

DRAWN BY	DATE	SCALE	55-110-E-13
DATE	DATE	SCALE	55-110-E-13
DATE	DATE	SCALE	55-110-E-13

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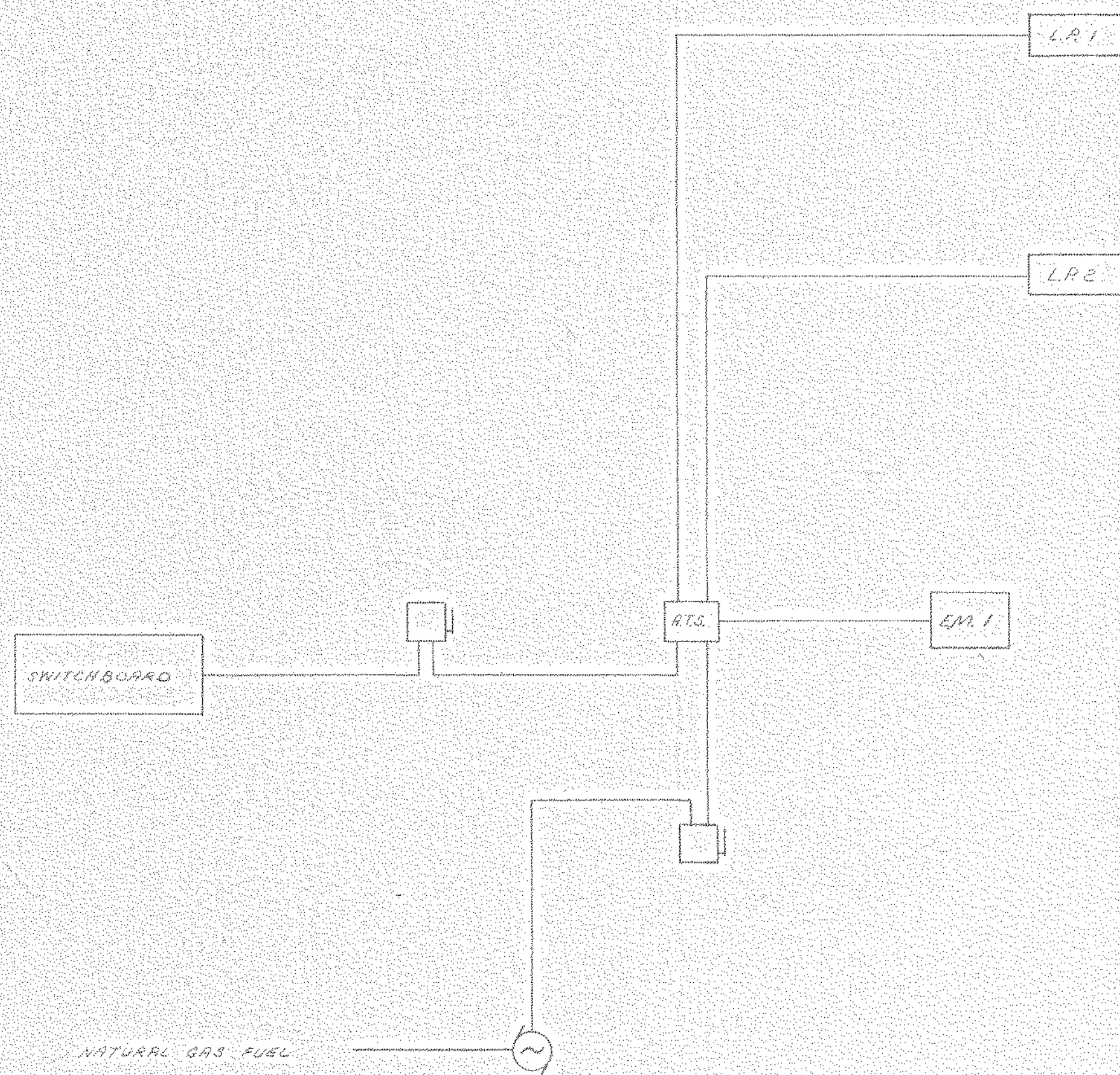




FIRE ALARM RISER

LEGEND  
FIRE ALARM

- ATS AUTOMATIC TRANSFER SWITCH
- DISCONNECT - 30 AMP, 120/240 V, SINGLE PHASE
- FAP FIRE ALARM CONTROL PANEL
- S SPRINKLER ALARM VALVE AND SUPERVISORY SWITCH
- B BELL
- F PULL STATION
- END OF LINE DEVICE



EMERGENCY LIGHTING POWER RISER

LEGEND  
EMERGENCY LIGHTING

- ATS AUTOMATIC TRANSFER SWITCH
- DISCONNECT - 60 AMP, 120/240 V, SINGLE PHASE
- L.R.1 L.R.2 LIGHTING PANEL - 877/480 V, THREE PHASE, 4W, 3/4" DIS - 20 AMP, BREAKER FEEDING ZONE PROTECTION
- EM1 NORMAL/EMERGENCY AND EMERGENCY PANEL 100 AMP M.L.O. 120/240 V, SINGLE PHASE
- GENERATOR
- 96 WATT FIXTURE, EMERGENCY ONLY
- 96 WATT FIXTURE, NORMAL/EMERGENCY
- 96 WATT FIXTURE, EMERGENCY ONLY
- 96 WATT FIXTURE, NORMAL/EMERGENCY
- EXIT FIXTURE
- 192 WATT FIXTURE
- 250 WATT FIXTURE
- 70 WATT H.P.S. FIXTURE, NORMAL/EMERGENCY
- 96 WATT FLOURESCENT FIXTURE, NOR./EMER.
- 2'-4" FLUOR. FIXT., 96 W, EMER. ONLY
- 2'-8" FLUOR. FIXT., 96 W, NOR./EMER.
- 50 W INCANDESCENT, NOR./EMER.

FOR LOCATION OF EMERGENCY LIGHTING FIXTURES AND FIRE ALARM BELLS & PULL STATIONS SEE DWG. 55-110-E1, E2, & E3

NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER LL-5-A-87 CURWENSVILLE, PA.

SCHMATIC OF FIRE ALARM RISER AND EMERGENCY LIGHTING POWER RISER

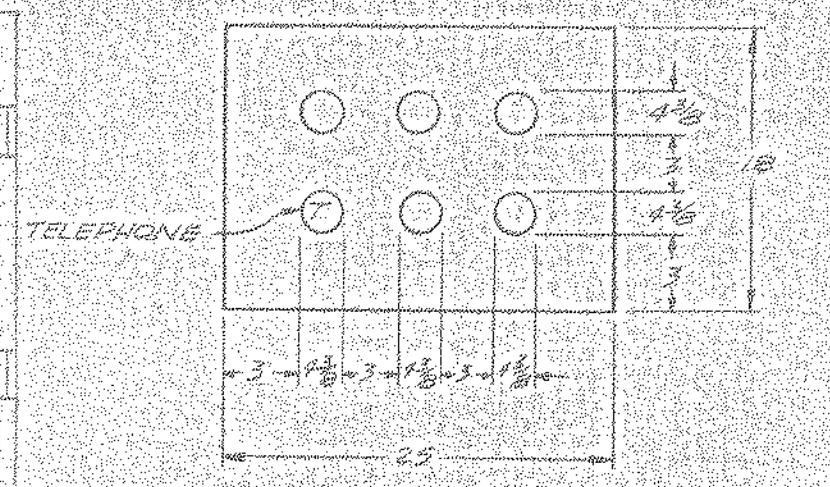
OTHERS	REVISED	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON
PLANT										
FOREMAN										
VENDOR										
PRINTS										
REVISION										
DESCRIPTION										
DATE										
SCALE										
DATE										
DWG. NO.										

#0004 E-4 Schem. F.A. Riser/E.Lght 1981 NONE 720107

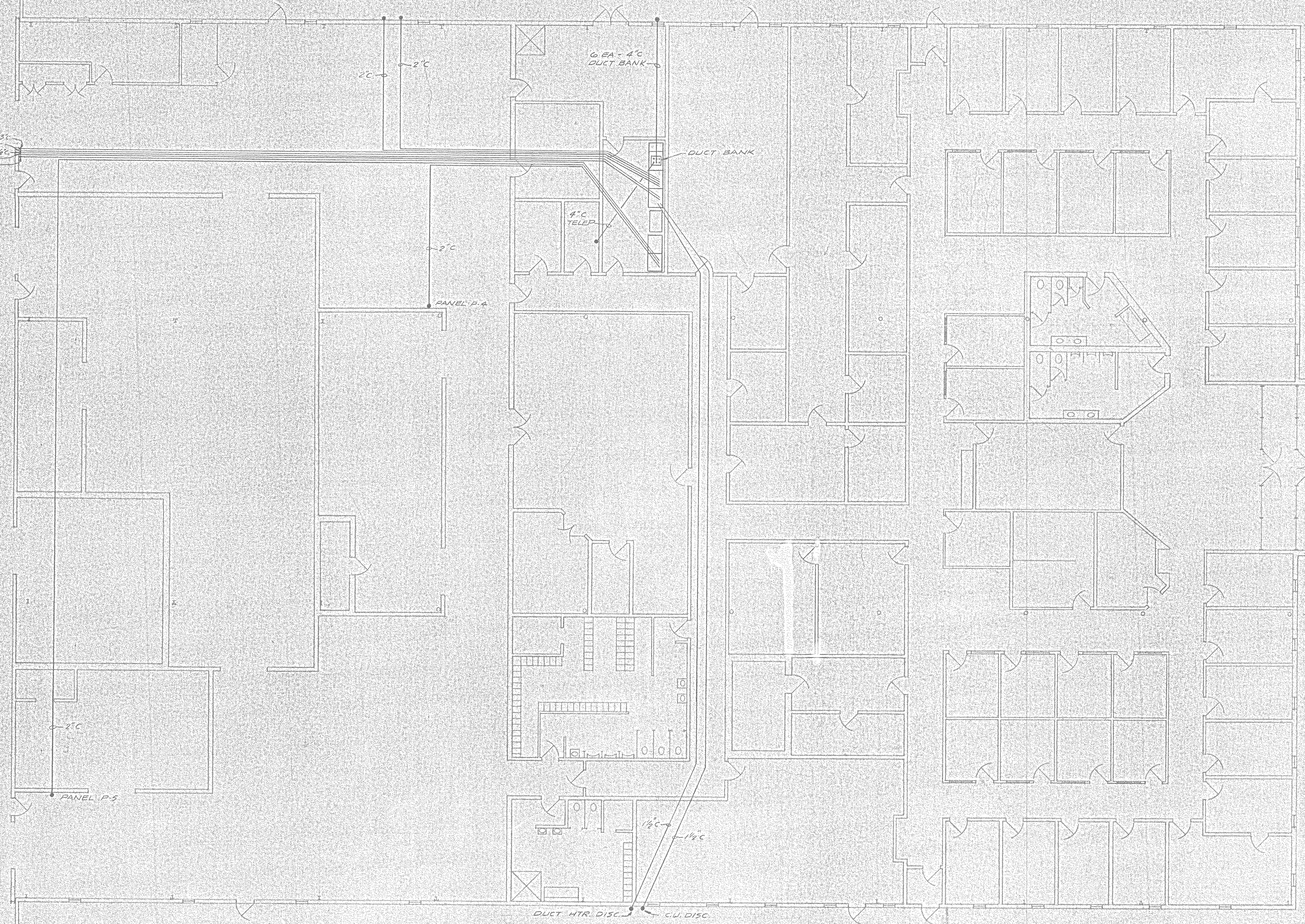
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GLASS DUCT W/ R.M. 5"  
 GLASS DUCT W/ R.M. 2"  
 GLASS DUCT W/ R.M. 2"  
 PANEL L-2 2"  
 PANEL L-4 2"



DUCT BANK  
 N.T.S.



NOTE:  
 INTERIOR WALLS SHOWN ON THIS  
 SHEET HAVE NOT BEEN "AS-BUILT"

L.L-5-A-88  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

UNDERGROUND FEEDS  
 TO BLDG "B"  
 NEW RESEARCH CENTER

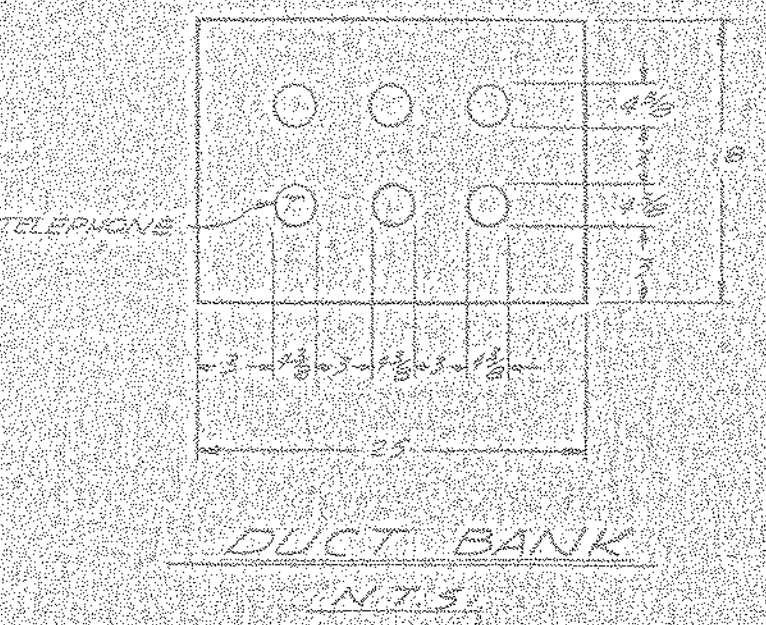
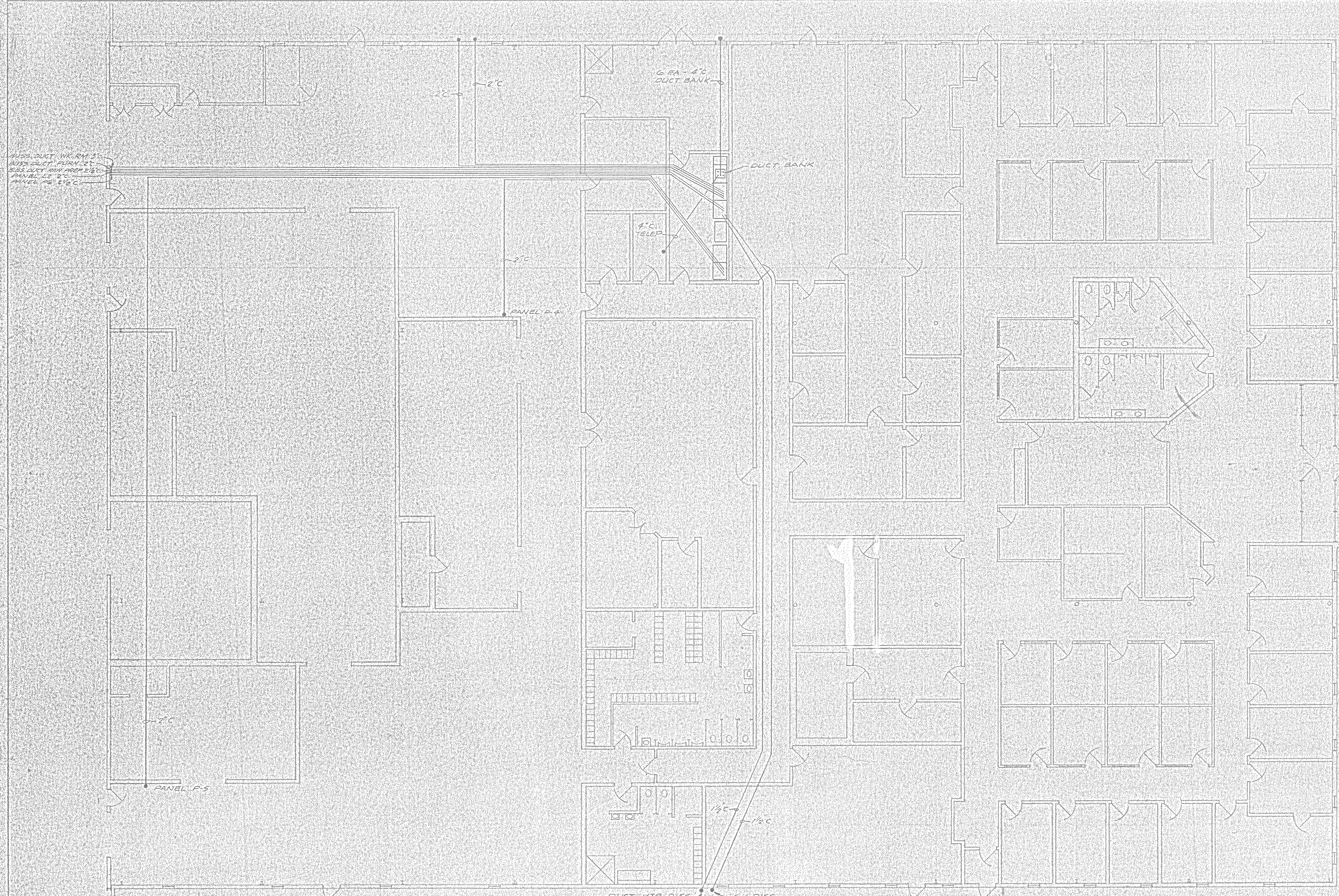
NOTICE: NORTH AMERICAN REFRACTORIES CO., DIVISION OF ULTRA CORPORATION  
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 PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

OTHERS	E.S. GOSPEL FRANKS 6-17-91 7-21-91				
PLANT					
FOREMAN	JIM 8-2-91				
VENDOR					
REVISION	A	ADD NOTE	7-22-91		
DESCRIPTION					
DATE					
SCALE	NONE				

DRAWN BY	EAL	C.D. NO.	25-110
CHECKED		DATE	5-22-91
SCALE	NONE	DWG. NO.	55-110-E-5

#0064 - E5 UNDERGRD. FEEDS "B" - 1981 - NONE - 730107





BUSS DUCT W/IN RM 30  
 BUSS DUCT TURN 20  
 BUSS DUCT W/IN RM 210  
 PANEL 22 2\"/>

PANEL P-5  
 2\"/>

DUCT HTR. DISC.      CUI DISC.

NOTE:  
 INTERIOR WALLS SHOWN ON THIS SHEET HAVE NOT BEEN "AS-BUILT"

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

**UNDERGROUND FEEDS  
 TO BLDG. "B"  
 NEW RESEARCH CENTER**

OTHERS:	R. S. GOSWAMI	6-1-81	7-21-81						
PLANT:									
FOREMAN:									
VENDOR:									
REV.	A	ADD NOTE	7-22-81						
DATE:									
SCALE:	NONE		7-22-81						
DWG. NO.:	55-110								
DWG. NO.:	55-110-E-5								

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**P-4-13**

**3/12/81**

**NOTE:** WORK WITH DWGS.  
55-110-E-7 & E-8.  
SEE DWG 55-110-E-13 & 15  
FOR LEGEND.

LL-5-A-89

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

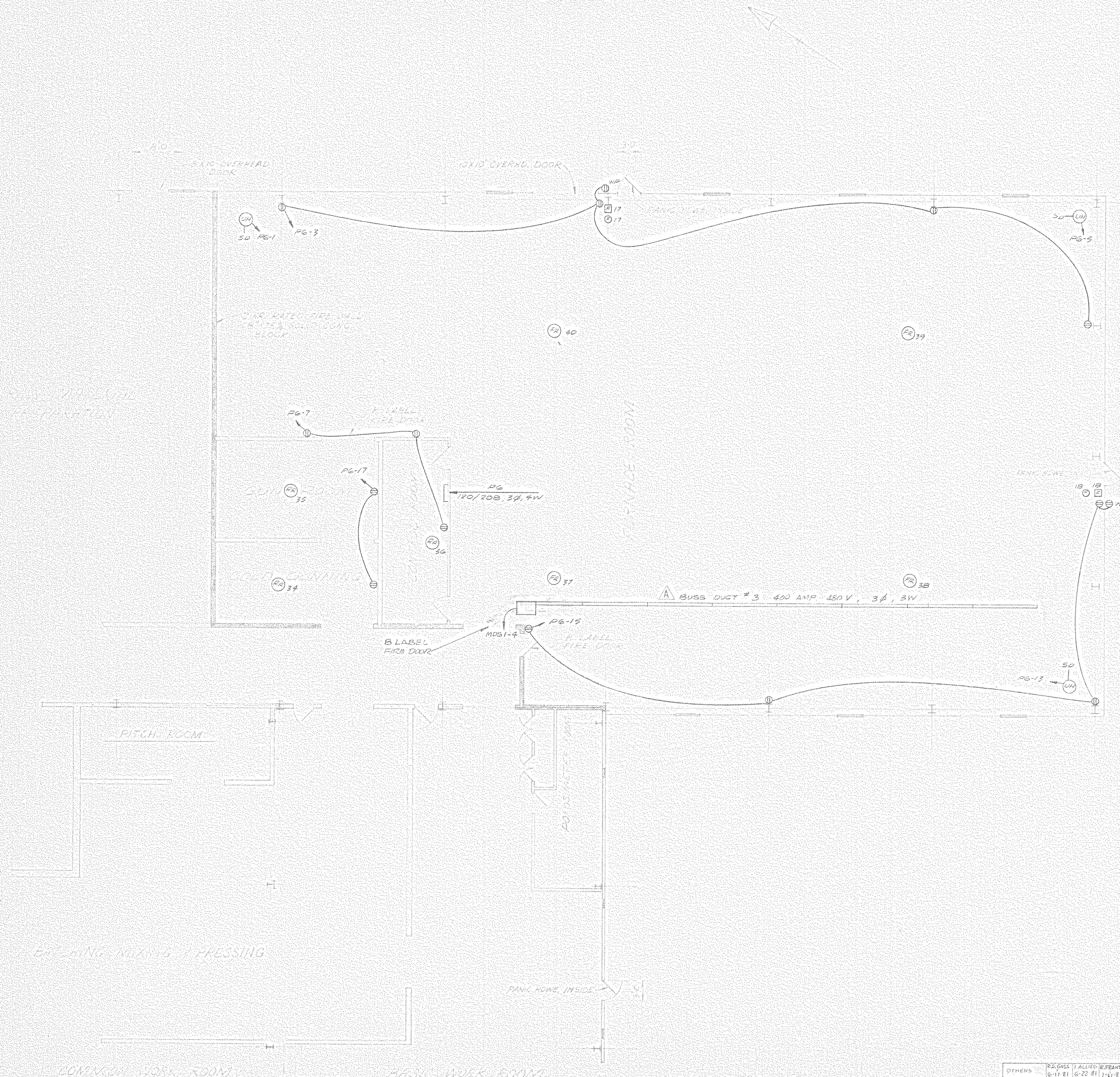
**POWER PLAN FOR  
OFFICES & WORK ROOMS  
NEW RESEARCH CENTER**

OTHERS	W.D. GAGE	ALFRED ZEGARNE			
PLANT	6-11-81	6-22-81	7-1-81		
FOREMAN	7-1-81				
VENDOR					
PRINTS					
REVISION	B	INTERIOR WIRING	7-22-82		
	A	A-BUILD REVS. BY RB.GROSS	7-14-82		

DRAWN BY	EAL	C. NO.	55-110
CHECKED		DATE	5-27-81
SCALE	NONE	DWG. NO.	55-110-E-6

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**NOTE** WORK WITH DWGS  
 55-110-E-6, E-8,  
 SEE DWG 55-110-E-13  
 & 15 FOR LEGEND.  
 INTERIOR & EXTERIOR WALLS &  
 OPENINGS HAVE NOT BEEN  
 "AS-BUILT" ON THIS DWG.

LL-5-A-90

NORTH AMERICAN REFRACTORIES CO  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA

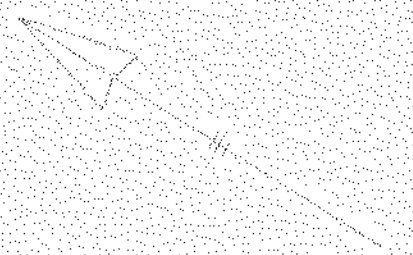
**POWER PLAN FOR  
 FURNACE ROOM  
 NEW RESEARCH CENTER**

OTHERS	DESIGN	DATE	REVISION	DESCRIPTION	DATE
	PG-15	6-17-81	B	ADD NLS	7-22-82
	PG-15	6-22-81	A	AS-BUILT REV. BY R.D.G.S.	7-14-82

DESIGNED BY	EA	CHECKED BY		DWG NO.	55-110-E-7
DRAWN BY		DATE			
SCALE	AS SHOWN				

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NOTE: WORK WITH DWGS 55-110-E-6 & E-7. SEE DWG. 55-110-E-13 & 15 FOR LEGEND.

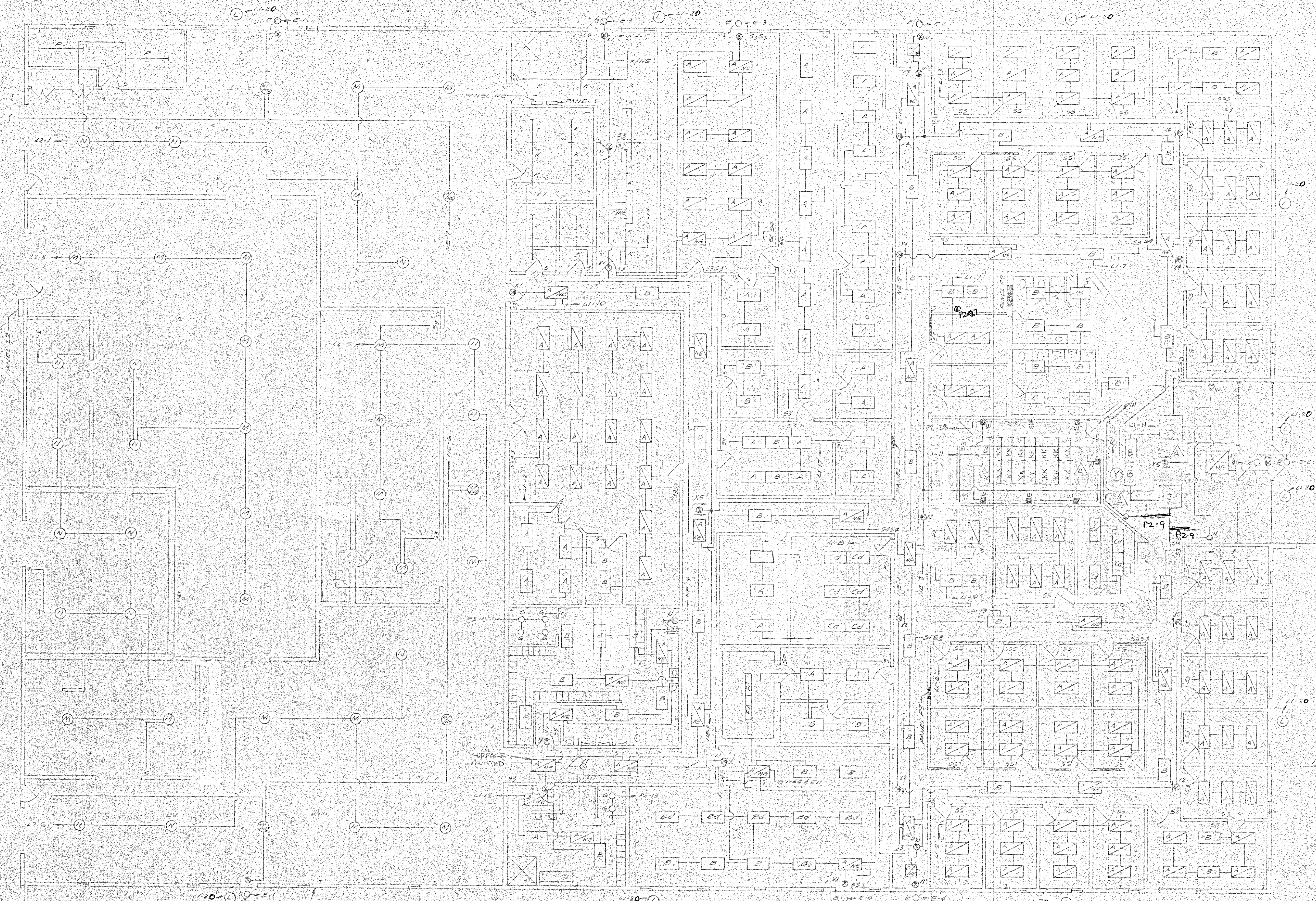
LL-5-A-91  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT.  
RESEARCH CENTER  
CURWENSVILLE, PA.

POWER PLAN FOR  
STORAGE & RAW MATL PREPARATION  
NEW RESEARCH CENTER

OTHERS:	E. B. B. (ALLIED TRUMP)						
PLANT:	6-D (11-6-22-91)						
FOREMAN:	J. J. JIM						
VENDOR:							
PRINTS		REVISION	DESCRIPTION	DATE			

DRAWN BY:	ECG	CHECKED BY:	ECG	DATE:	5-27-81
SCALE:	AS SHOWN	DATE:	5-27-81	DWG NO.	55-110-E-8





- NOTES:**
1. SWITCHES TO BE A MAXIMUM OF 48" ABOVE FLOOR.
  2. WORK WITH DWGS 55-110-E-10 & E-11.
  3. SEE DWG 55-110-E-15 FOR LEGEND.

NOTE: MOUNT ALL TYPE "M" & "N" FIXTURES TIGHT TO PURLINS.

MOUNT FLUSH IN SOFFIT (TYP)

LL-5-A-92  
 NORTH AMERICAN REFRACTORIES CO  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

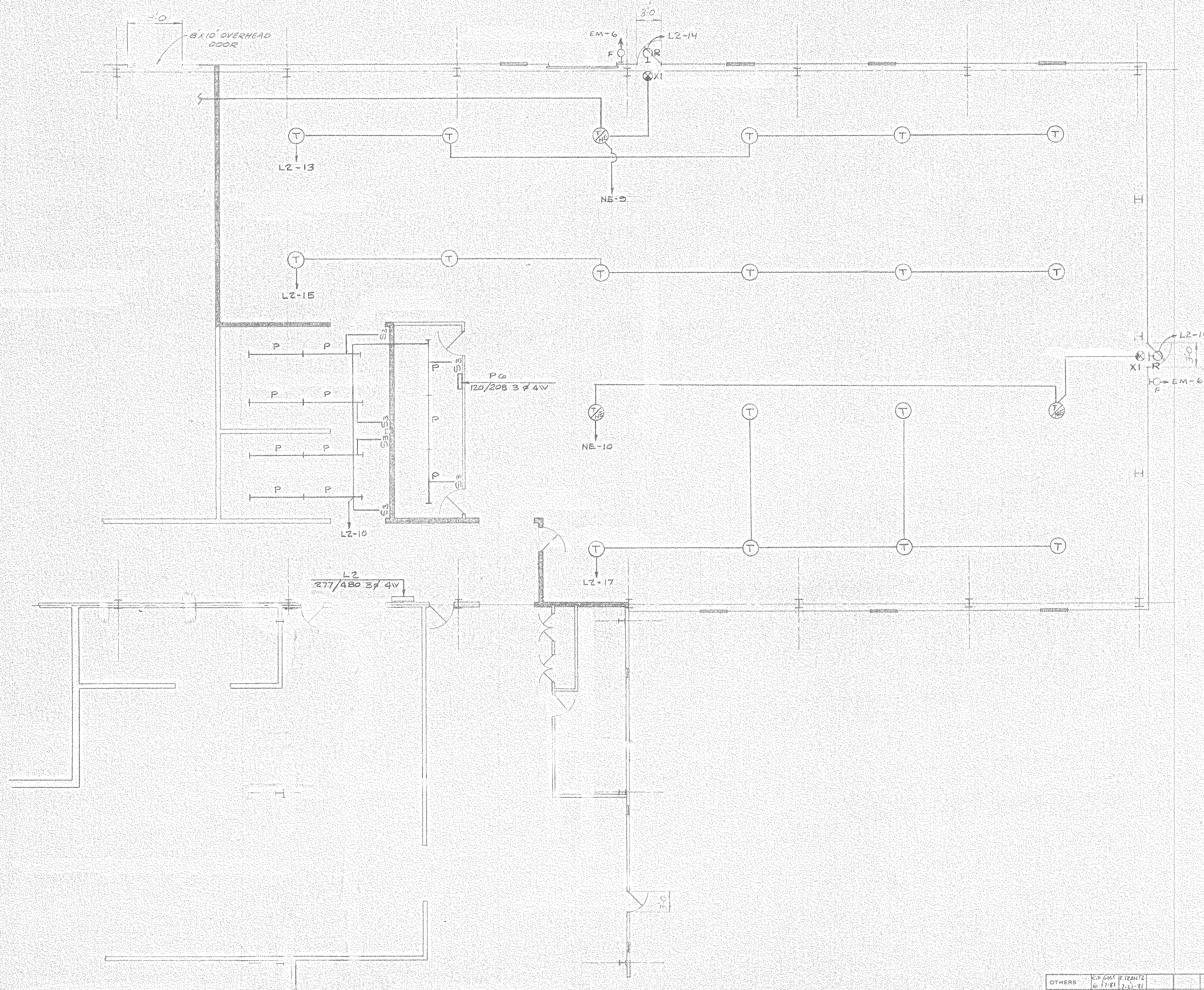
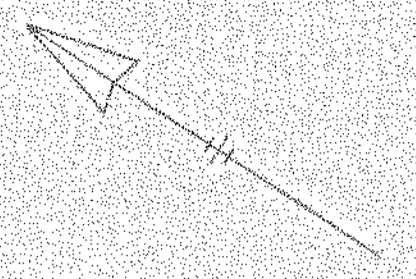
LIGHTING PLAN FOR  
 OFFICES & WORK ROOMS  
 NEW RESEARCH CENTER

OTHERS	REVISION	DATE	DESCRIPTION	DATE
RODROSS & FRANKS 6-11-81 7-21-81				
PLANT	B	7-22-82	INTERIOR WALL "AS-BUILT"	
FOREMAN	A	7-21-82	"AS-BUILT" REVISED BY G.D. CROSS	
VENDOR				

PRINTS	REVISION	DESCRIPTION	DATE	SCALE	DWG NO.
				NONE	77-107

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▲ INTERIOR & EXTERIOR WALLS &  
OPENINGS HAVE NOT BEEN  
"AS-BUILT" ON THIS DWG.

LL-5-A-93

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

LIGHTING PLAN FOR  
FURNACE ROOM  
NEW RESEARCH CENTER

OTHERS	REP. DATE	BY	DATE						
PLANT	1-21-81	J. J. J.	2-21-81						
FOREMAN	1-21-81	J. J. J.	2-21-81						
VENDOR									
PRINTS				REVISION	DESCRIPTION	DATE	SCALE		
				A	ADD NOTES	7-23-82			

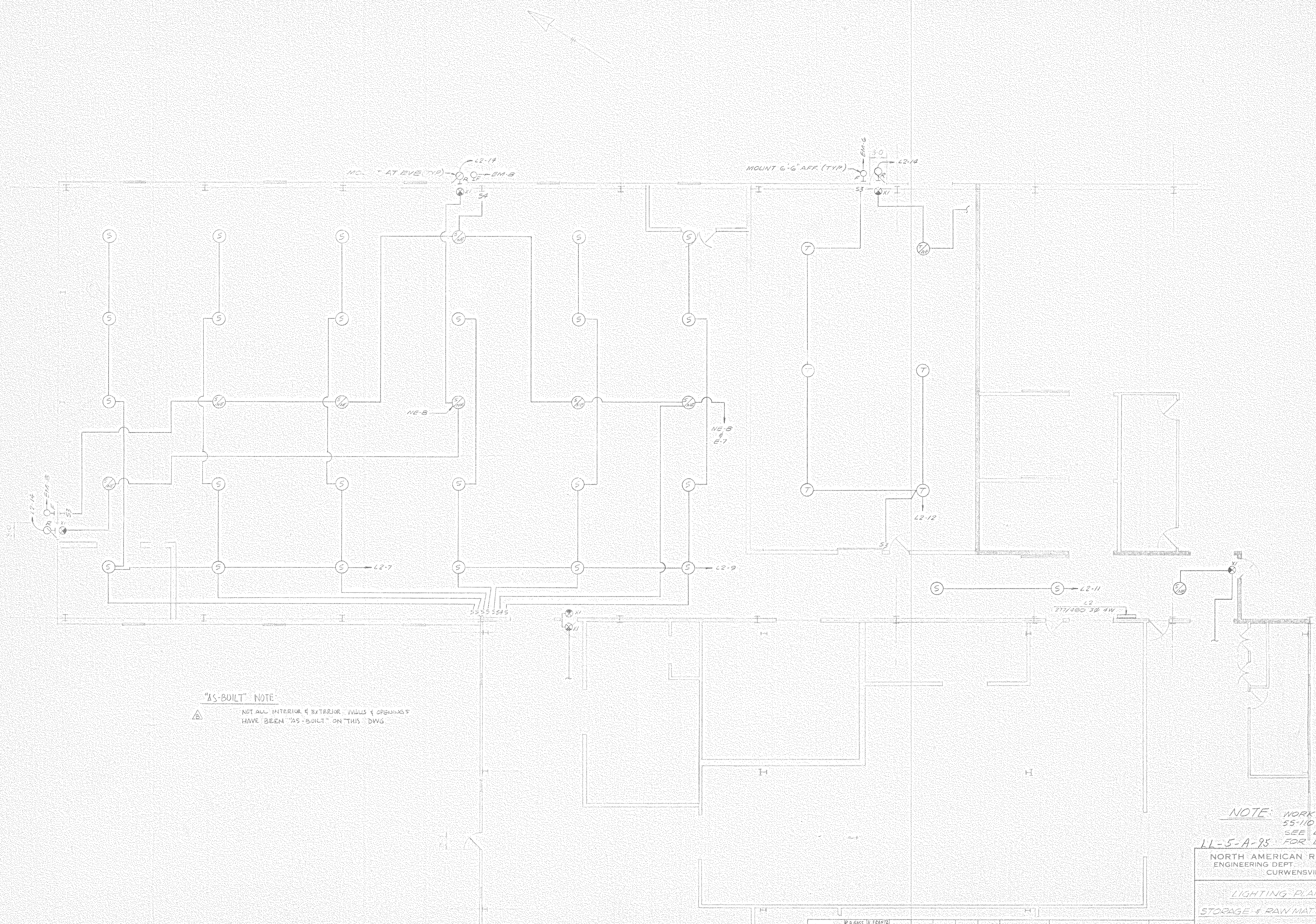
DRAWN BY	C.D. NO.	
CHECKED	55-110	
DATE		55-110-E-10
SCALE		DWG. NO.

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**"AS-BUILT" NOTE:**  
 NOT ALL INTERIOR & EXTERIOR WALLS & OPENINGS  
 HAVE BEEN "AS-BUILT" ON THIS DWG.

**NOTE:** WORK WITH DWGS.  
 55-110-E-9 & E-10.  
 SEE DWG 55-110-E-15  
 LL-5-A-25 FOR LEGEND.

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 RESEARCH CENTER  
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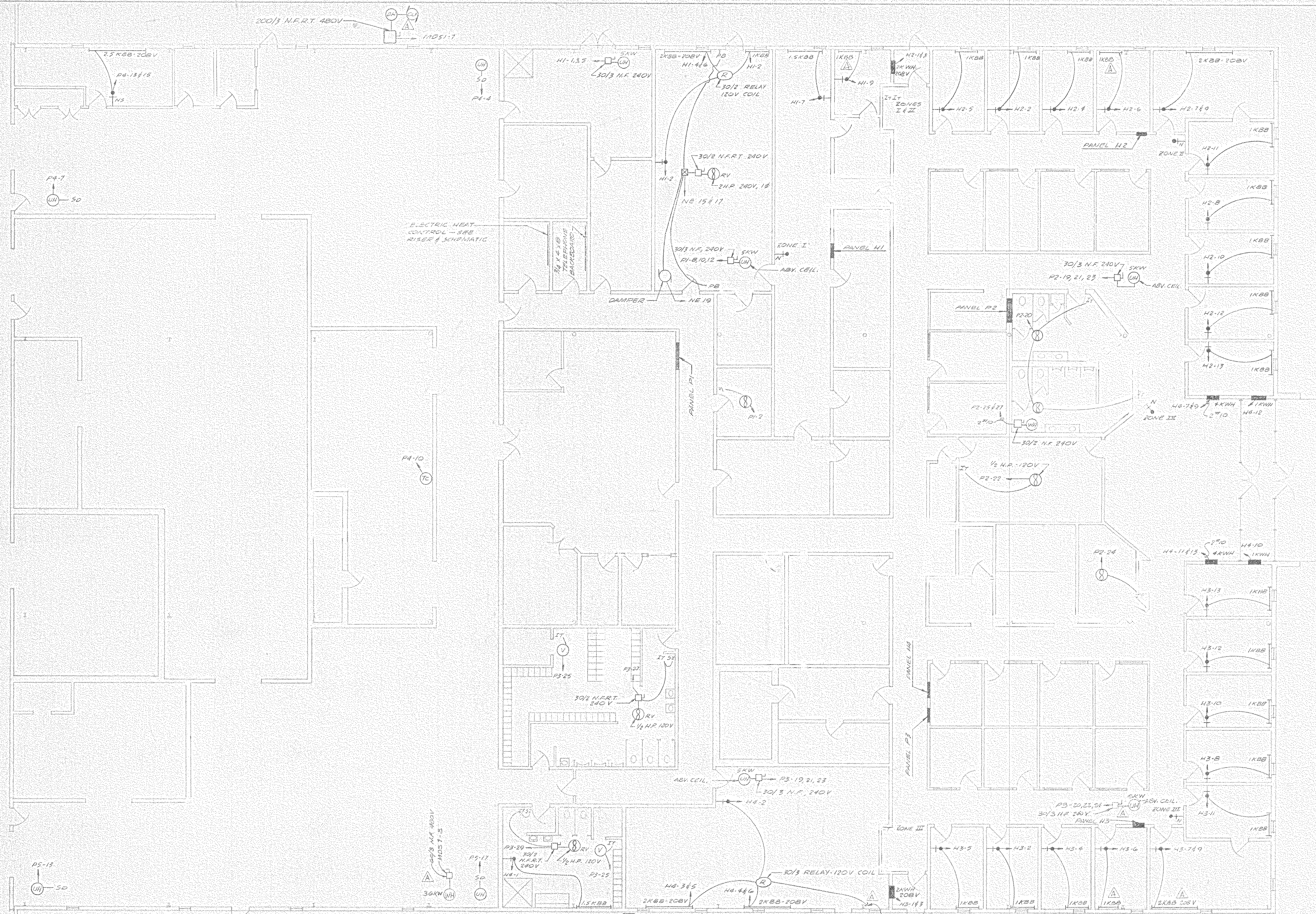
**LIGHTING PLAN FOR**  
**STORAGE & RAW MAT'L PREPARATION**  
**NEW RESEARCH CENTER**

OTHERS	RO GAGG & FEARNS								
PLANT	6-17-51	7-21-51							
FOREMAN	7-1-51	8-3-51							
VENDOR									
REVISION	A								
DESCRIPTION	230 "S. GAGE" LIGHTS								
DATE	7-23-52								
SCALE	NONE								

DRAWN BY	EAL	C.D. NO.	55-110
CHECKED BY		DATE	5-27-51
DWG NO.	55-110-E-11		

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44-5-A-96

NORTH AMERICAN REFRACTORIES CO  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**ELECTRIC HEATING PLAN  
FOR OFFICES & WORK ROOMS  
NEW RESEARCH CENTER**

OTHERS	21 200 1200 16	6 1 91	2 61 91						
PLANT									
FOR MAN									
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE	SCALE	NONE	5-27-81	55-110	55-110-E-12

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#0064 E-12 Elec Heat / OFF-WORK Rms 1981 NONE 81c107



100/3 N.F. 240V  
MDS-14



{ P-19 141064  
P-21 " "  
P-23 " "

{ P-20 - Black  
P-22 - Orange  
P-24 - Brown  
Vent - White  
P-25 Red  
Vent - Gray

H1-2 Red } White  
H1-4 Blue }  
H1-7 Black } GRAY  
H1-9 OR. }

H-4-2 Red-Gray Vent  
H-4-4 Orange  
H-4-6 Brown  
H-4-3 Yellow  
H-4-5 Blue  
H-4-1 Black-White Vent

H-12 ORANGE  
H-10 Red  
H-8 Blue  
H-4 Black  
H-13 Yellow  
H-5 ORANGE  
H-2 Red  
H-4 Black  
H-6 Blue

11-5-A-97

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

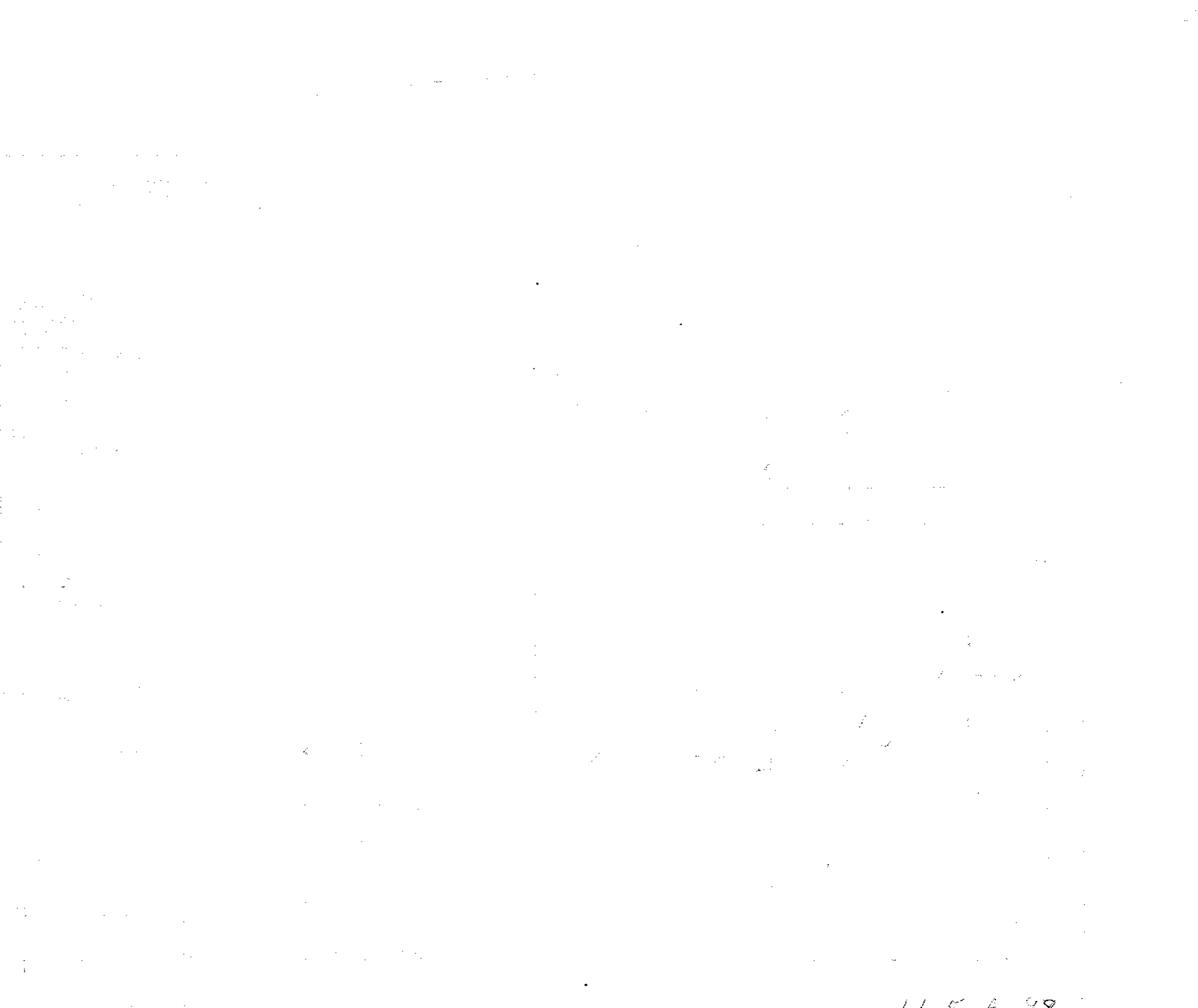
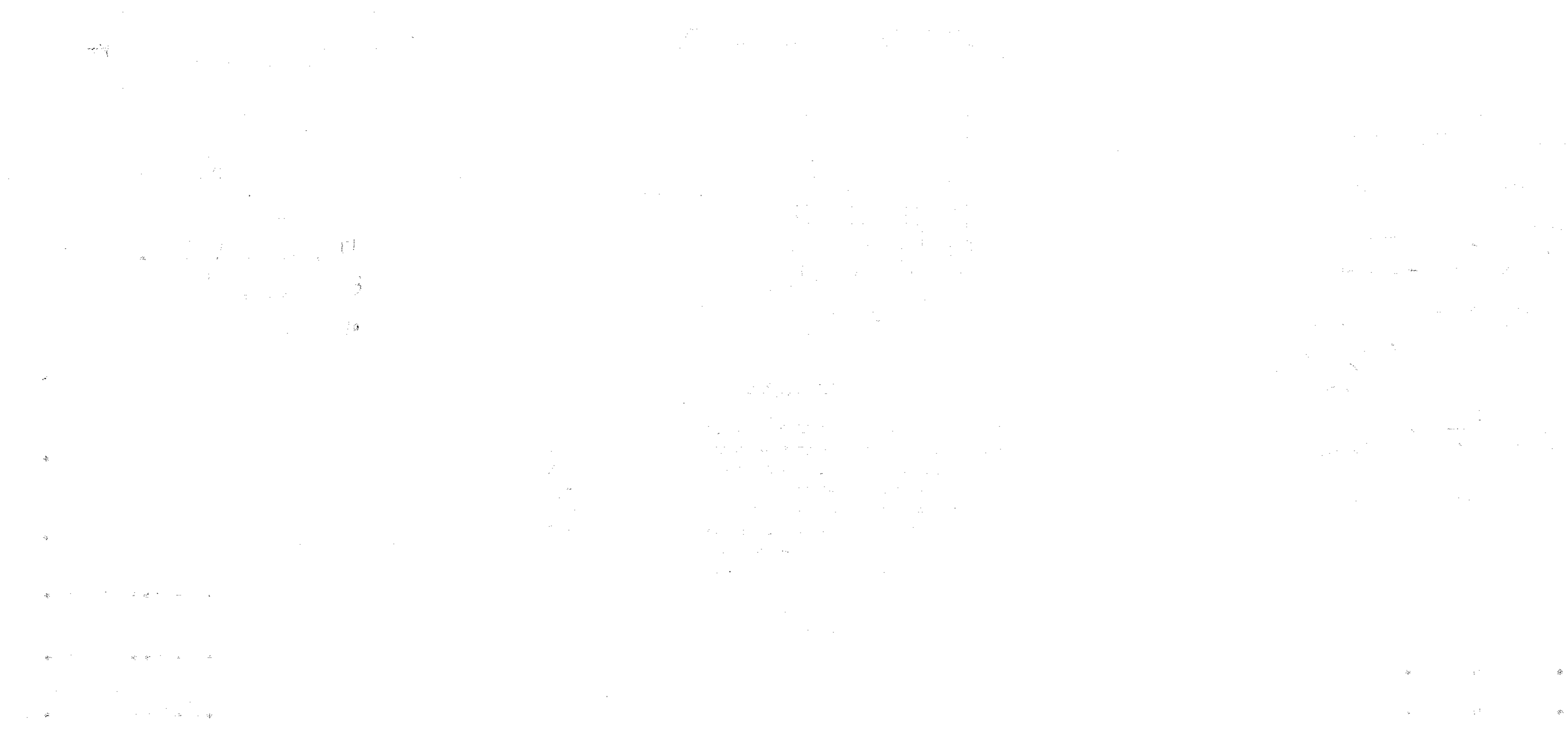
E-12  
**ELECTRIC HEATING PLAN**  
FOR OFFICES & WORK ROOMS  
NEW RESEARCH CENTER

OTHER:	8.9.2981				
PLANT:	6.7.81				
FOREMAN:					
VENDOR:					
DATE:					
REVISION:					
DESCRIPTION:					
DATE:					
BY:	EAL	55-110			
CHECKED:					
DATE:					
SCALE:	NONE	5-27-81			

#0064 - E-12 Elec. Heat - 1981 - NONE - 8.20.10.7

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44-5-7-98

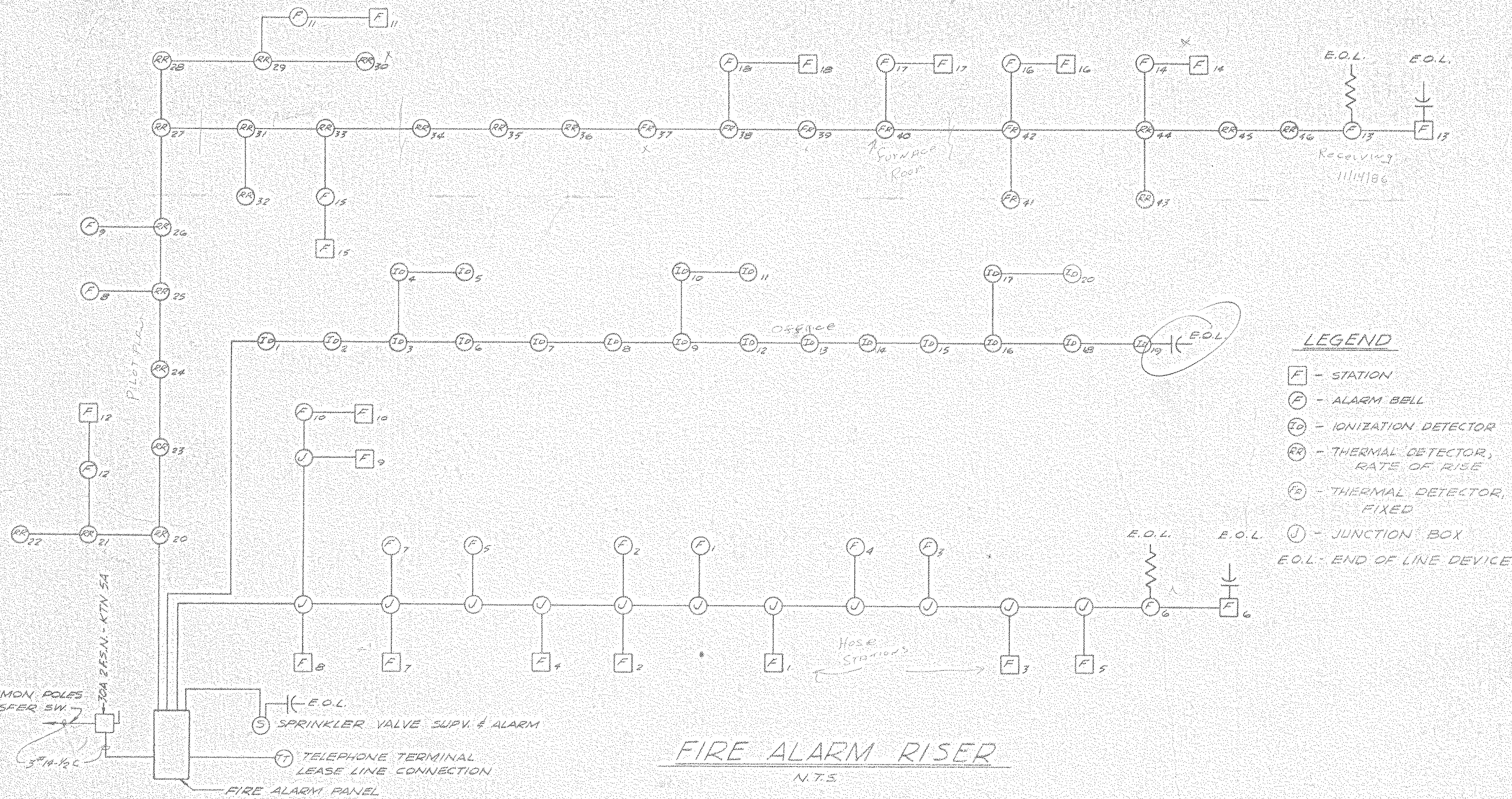
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CORWENSVILLE, PA.

44-5-1

52-11-

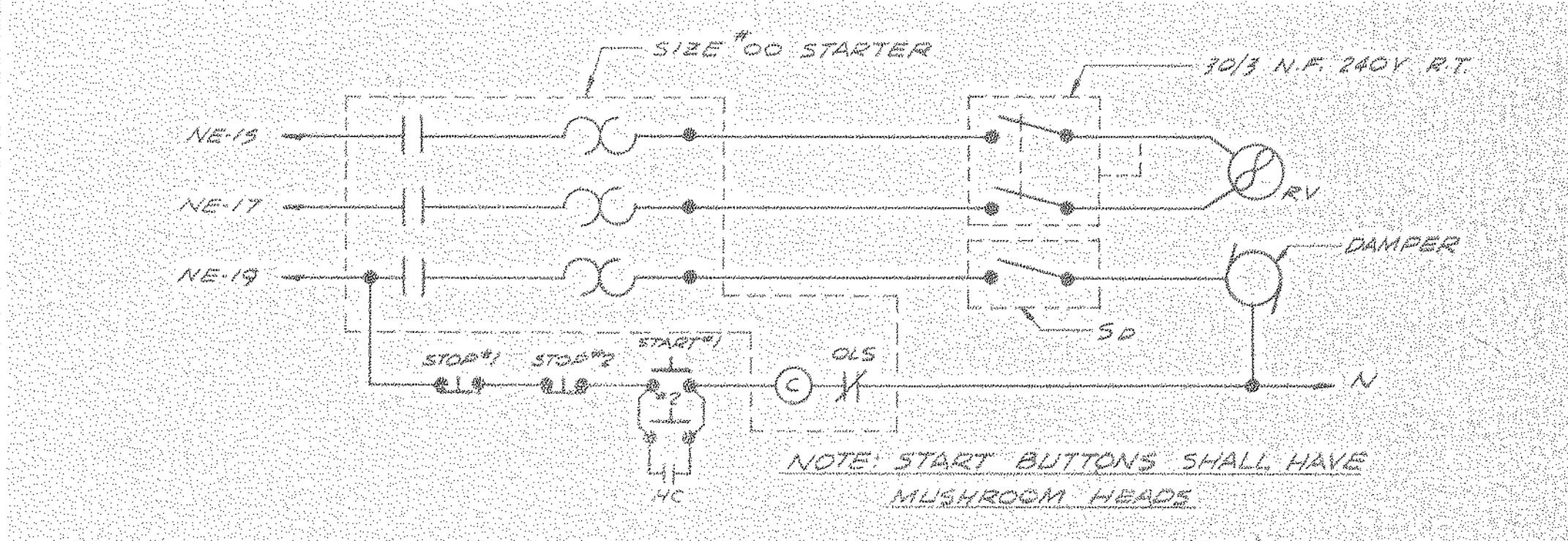
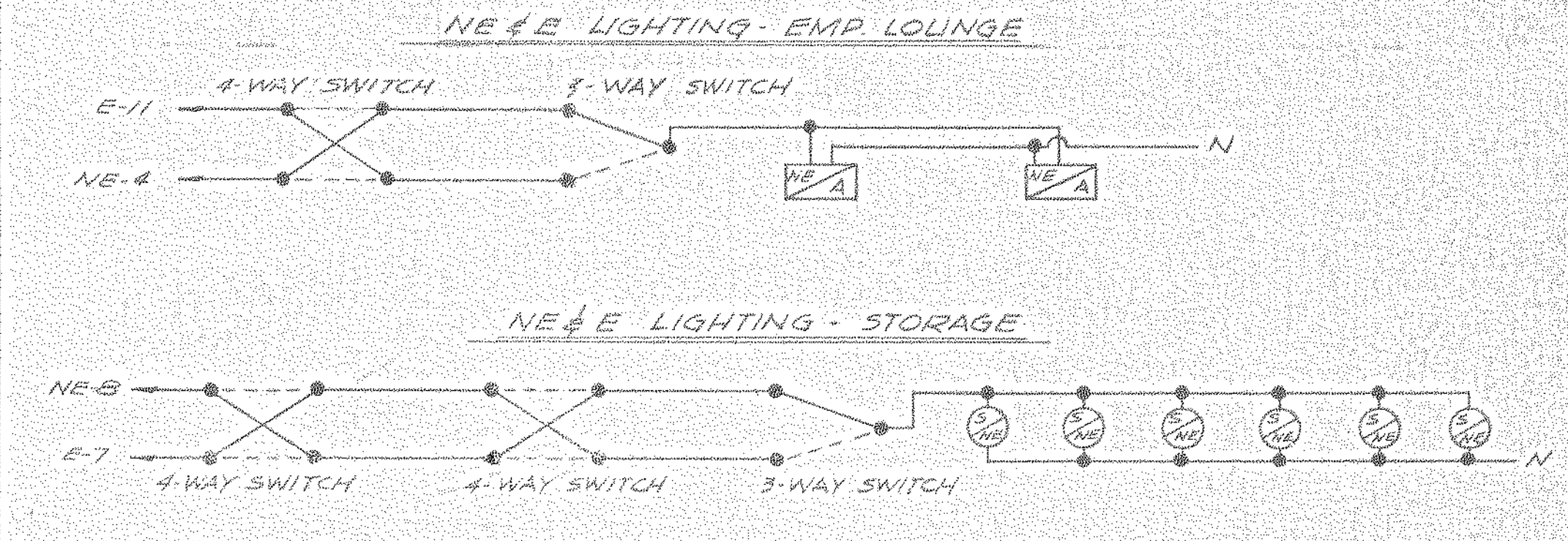
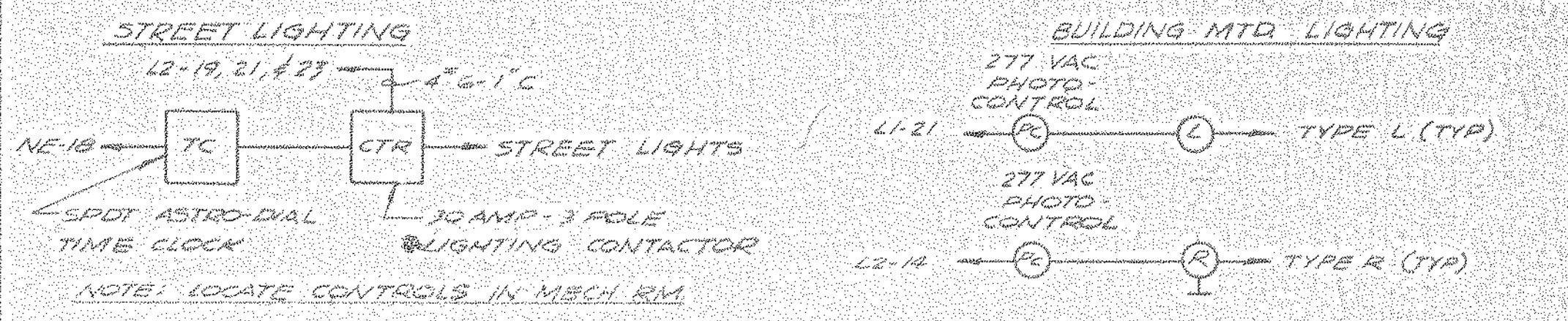
NO.	DESCRIPTION	QTY.	UNIT
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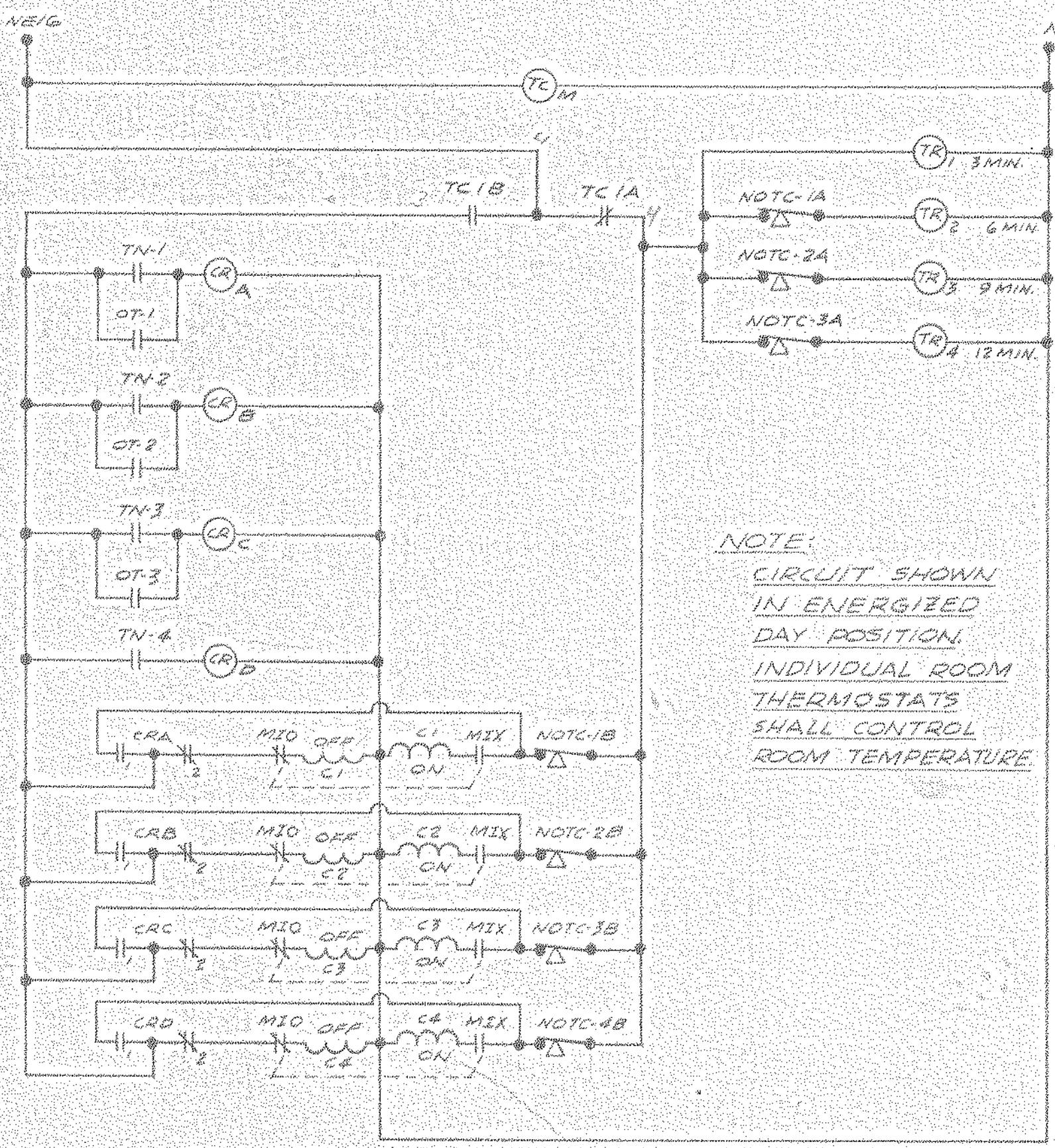


- LEGEND**
- [F] - STATION
  - [F] - ALARM BELL
  - [ID] - IONIZATION DETECTOR
  - [TK] - THERMAL DETECTOR, RATE OF RISE
  - [TK] - THERMAL DETECTOR, FIXED
  - [J] - JUNCTION BOX
  - E.O.L. - END OF LINE DEVICE

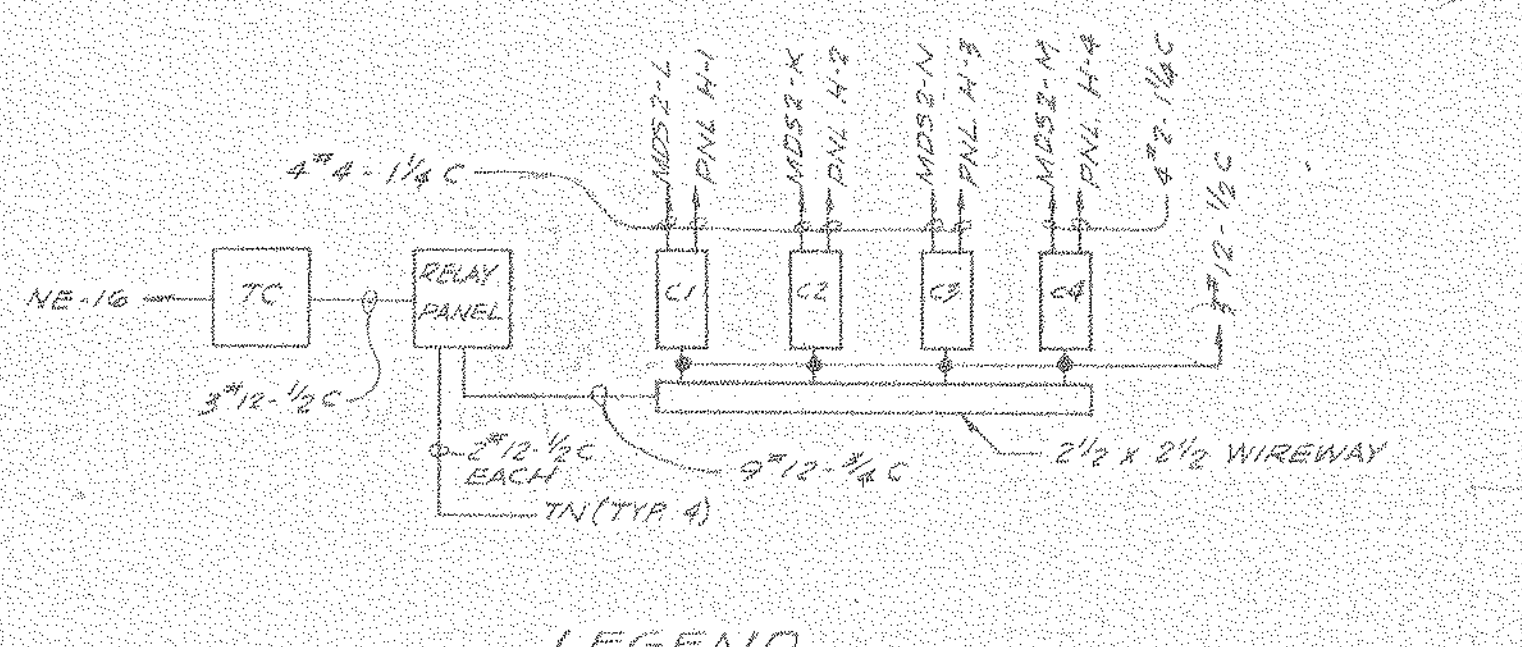
**FIRE ALARM RISER**  
N.T.S.



**CHEM. LAB. EMERGENCY EXHAUST**

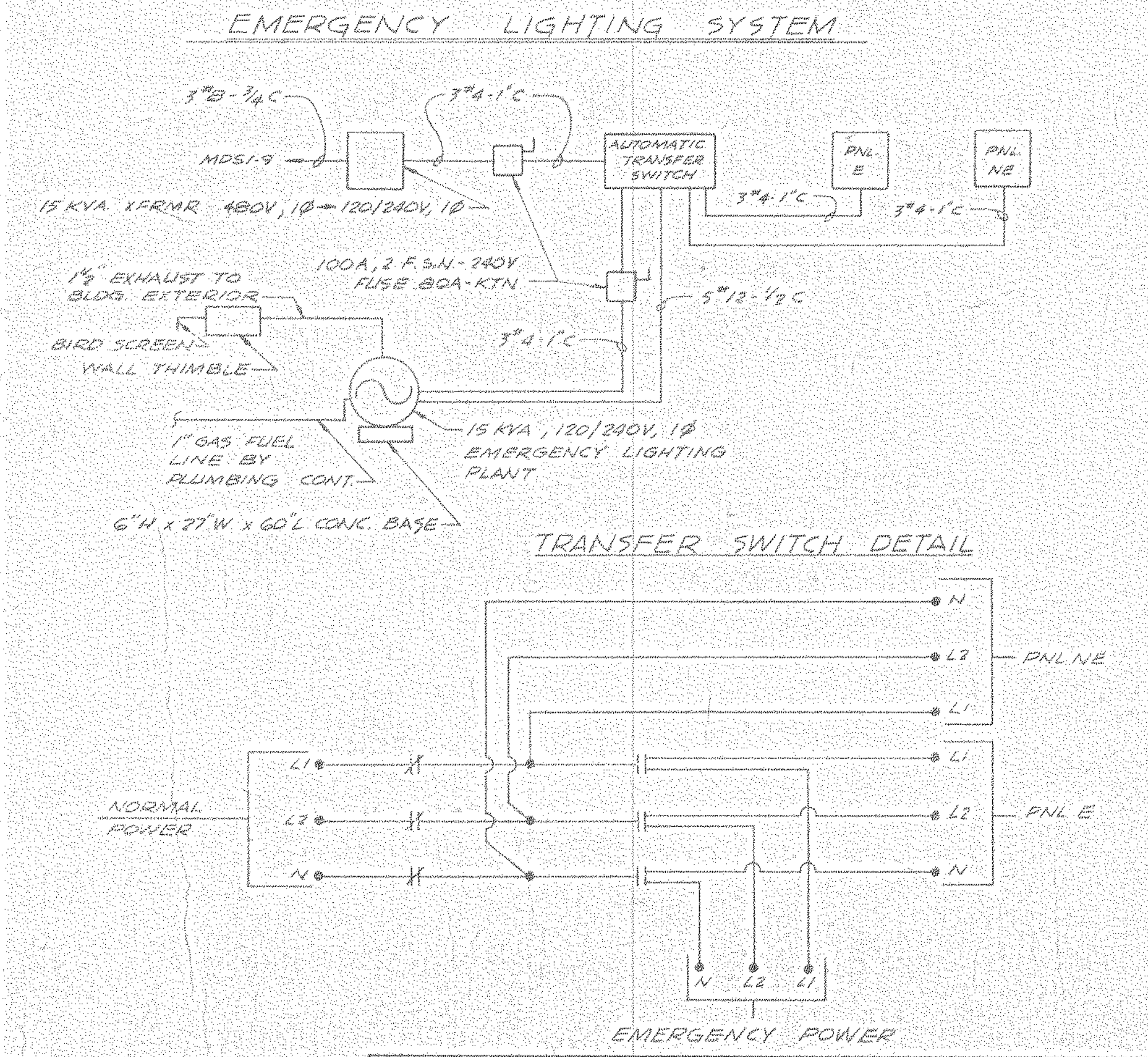


**NOTE:**  
CIRCUIT SHOWN IN ENERGIZED DAY POSITION. INDIVIDUAL ROOM THERMOSTATS SHALL CONTROL ROOM TEMPERATURE.

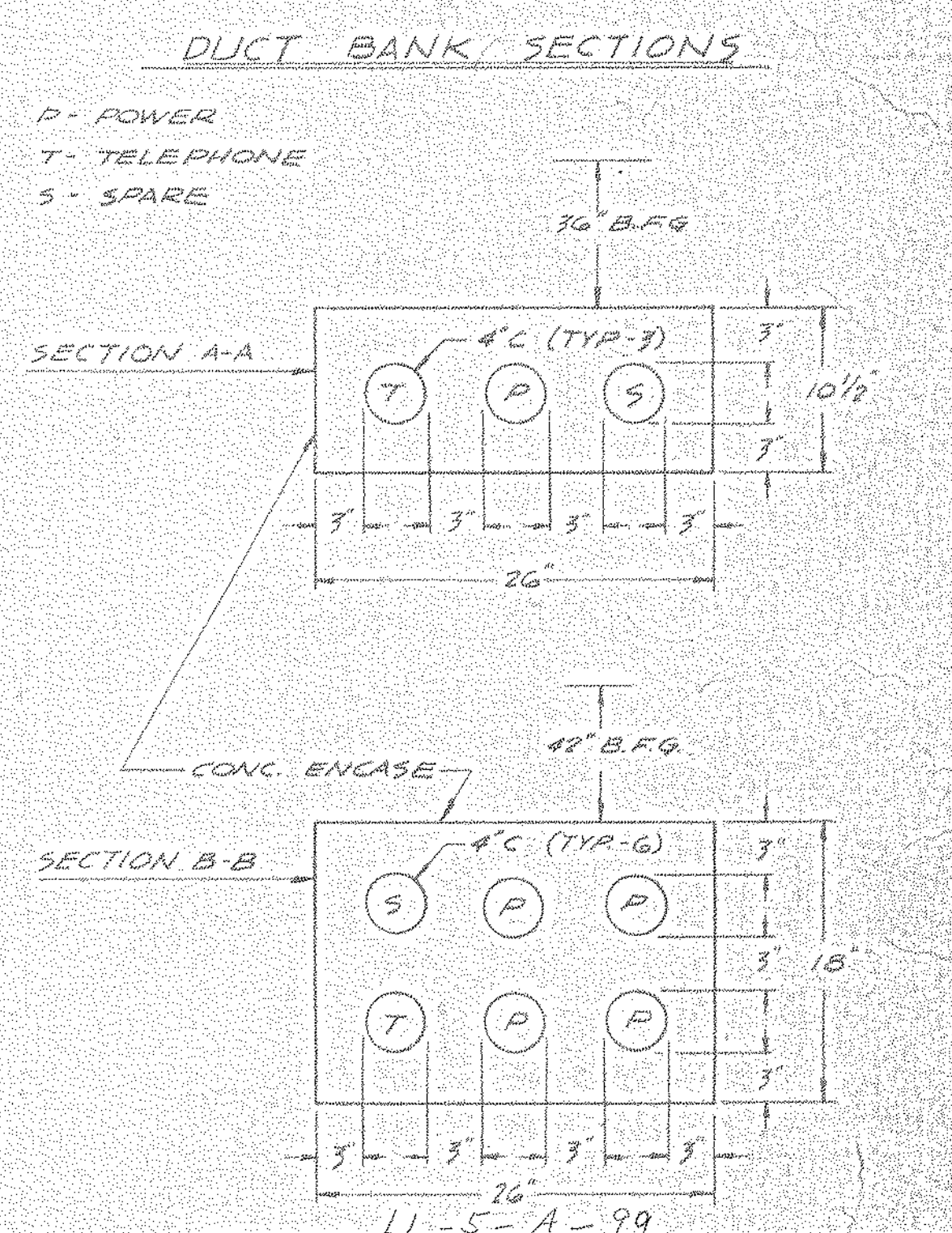


- LEGEND**
- C1-C3 - 60 AMP 3-POLE MECHANICALLY HELD CONTACTOR
  - C4 - 100 AMP 3-POLE MECHANICALLY HELD CONTACTOR
  - MIO-MIX - CONTACTOR COIL CLEARING CONTACTS
  - CR - S.P.D.T. CONTROL RELAYS
  - TN1-TN4 - NIGHT SET-BACK THERMOSTATS
  - OT1-OT3 - ZONE OVER-RIDE TIMERS
  - TR - TIMING RELAYS
  - NOTC 1A - NOTC 4B - NORMALLY OPEN TIME TO CLOSE TIMING RELAY CONTACTS
  - TC - TIME CLOCK
  - TCM - TIME CLOCK MOTOR
  - TC1A - TC1B - TIME CLOCK CONTACTS

**ELECTRIC HEAT CONTROL**



**TRANSFER SWITCH DETAIL**



NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.

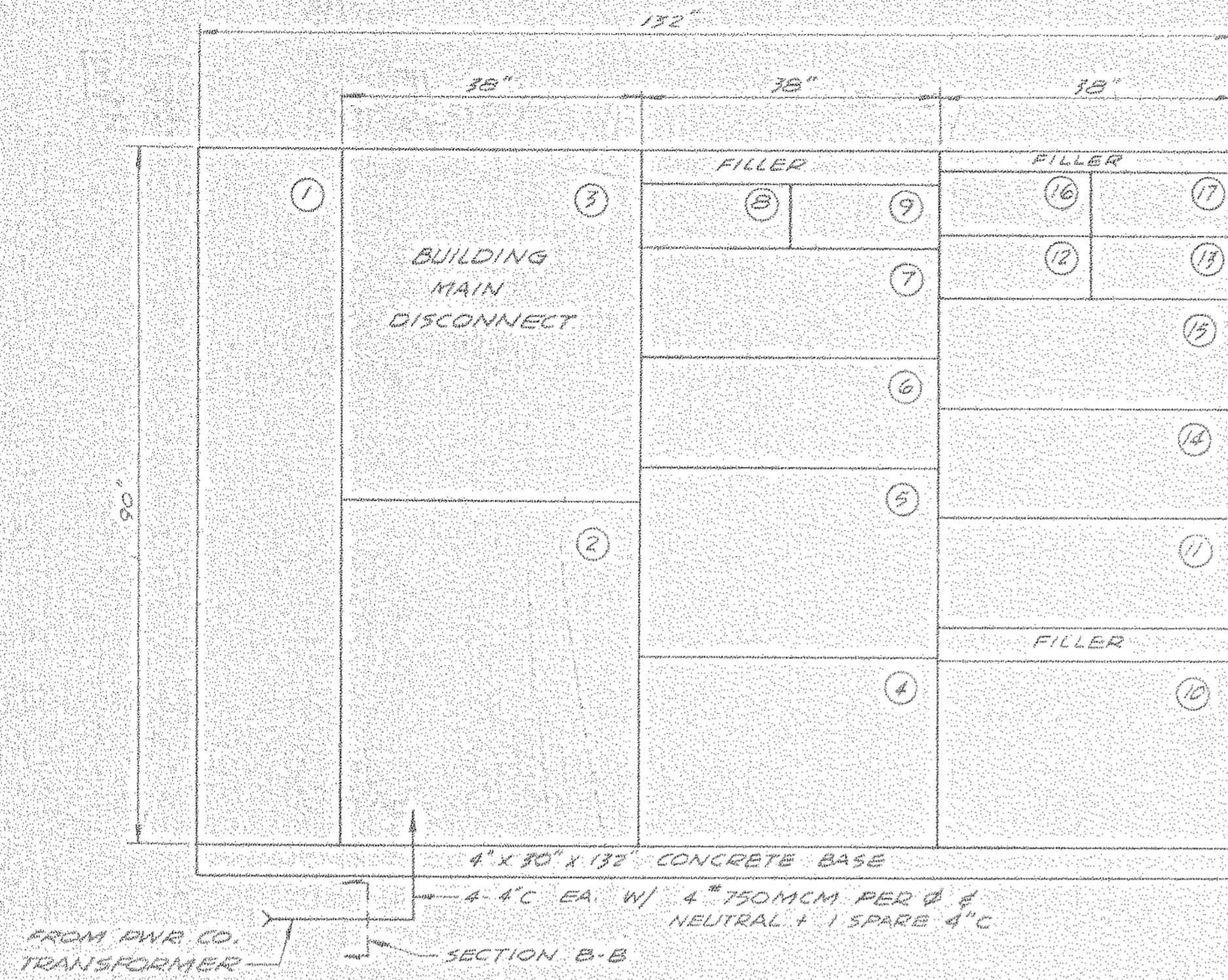
MISC. ELECTRICAL SCHEM. NEW RESEARCH CENTER

OTHERS	R.D. ORST	J. ALLEN	6-17-81	6-22-81	7-1-81
PLANT					
FOREMAN	J. JIM		2-5-81		
VENDOR					
PRINTS					
REVISION	DESCRIPTION	DATE	CHECKED	DATE	
			NONE	5-19-81	

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# POWER DISTRIBUTION



## SWITCHBOARD MDS1

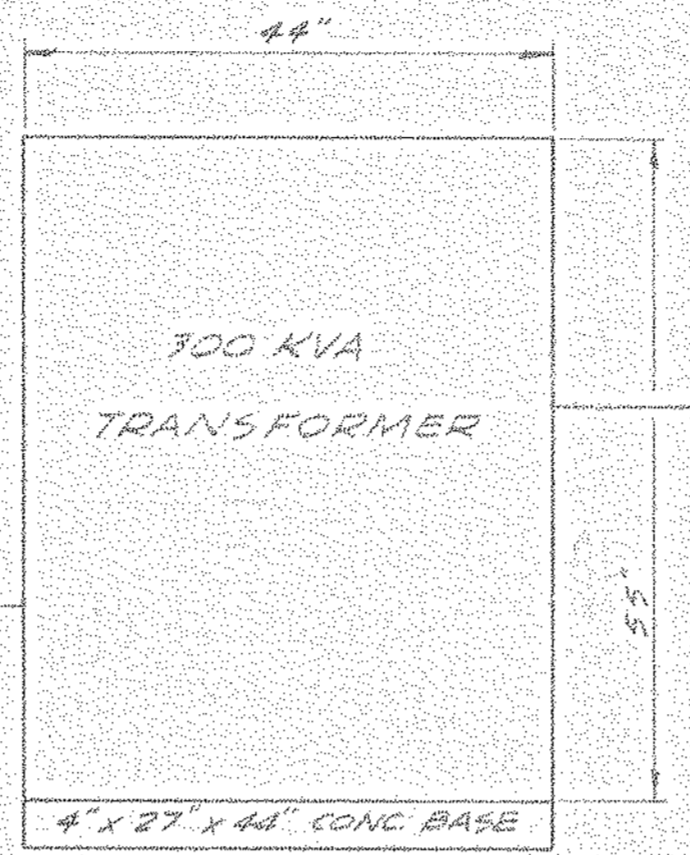
277/480 VAC 3Ø-4W

- NOTES:
- SWITCHBOARD DEPTH IS 30 INCHES.
  - PROVIDE 4Ø GROUNDING ELECTRODE CONDUCTOR TO BUILDING STEEL, DOMESTIC WATER SVC, AND TWO DRIVEN 3/4" x 8' COPPERWELD RODS.
  - SWITCHBOARD FRONT ACCESSIBLE ONLY.

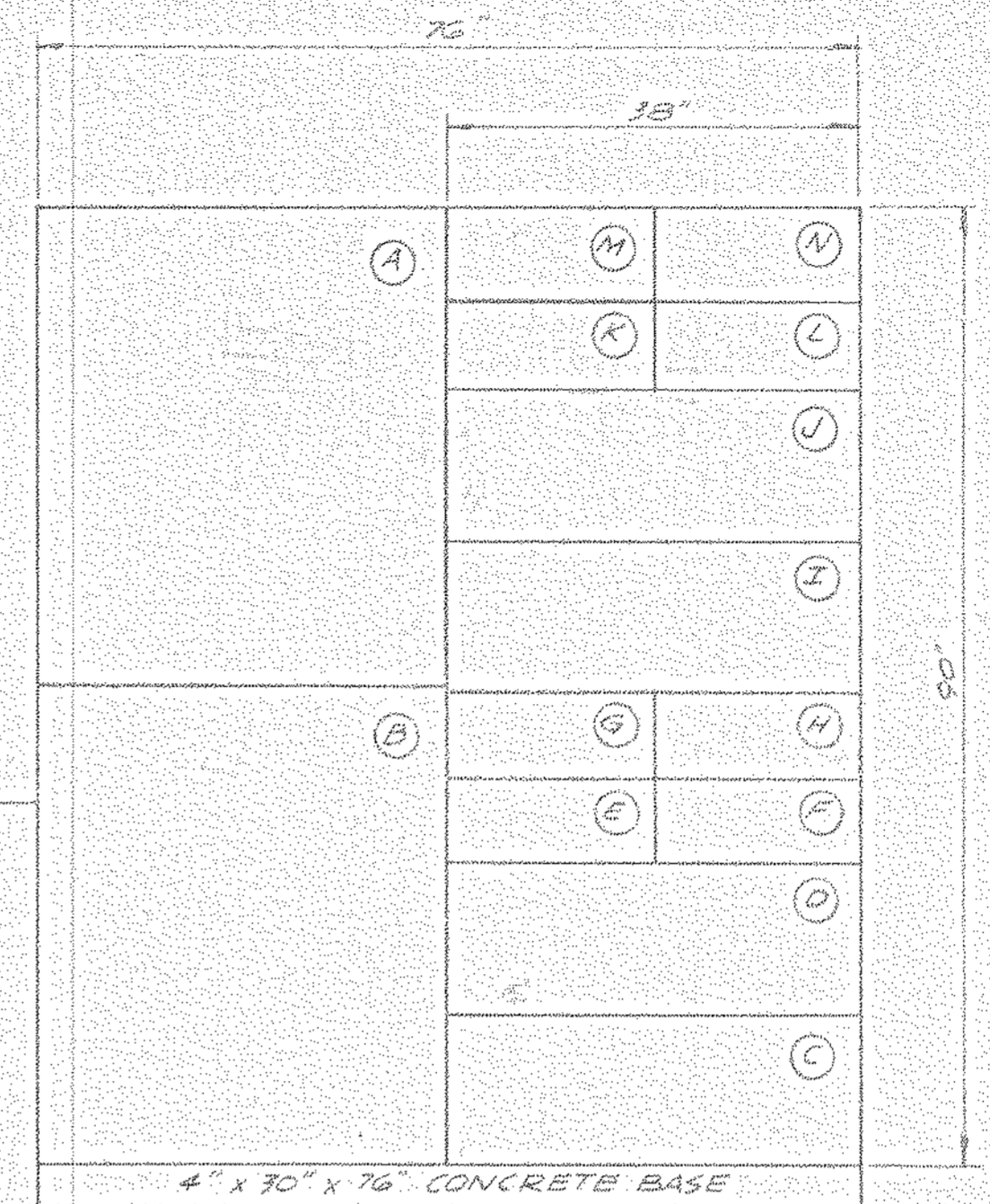
### SCHEDULE

SECTION	SIZE	FUSES	FEEDS TO	ROUTE	CONDUIT	WIRE
4	400A/3F	1-3KS 400	Bus Duct	Und. Flr. & O.H.	3" C	3#600MCM
5	400A/3F	1-3KS 400	Bus Duct	Und. Flr. & O.H.	3" C	3#500MCM
6	200A/3F	1-3KS 180	Cond. Unit	Und. Flr.	2" C	3# 3/0
7	200A/3F	1-3KS 140	Duct. Htr.	Und. Flr.	2" C	3# 1/0
8	60A/3F	1-3KS 60	Water Htr.	O.H.	1" EMT	3#6
9	60A/3F	2-3KS 40	Emerg. Xfmr.	O.H.	3/4" EMT	3#8
10	400A/3F	1-3KS 400	300KVA Xfmr.	O.H.	4" C	4#600MCM
11	200A/3F	NONE	SPARE	----	----	----
12	100A/3F	1-3KS 90	Duct Htr.	Und. Flr.	1 1/2" C	3#8
13	100A/3F	NONE	SPARE	----	----	----
14	200A/3F	1-3KS 110	Cond. Unit	Und. Flr.	1 1/2" C	3#8
15	200A/3F	1-3KS 200	Bus Duct	Und. Flr. & O.H.	2 1/2" C	3#250MCM
16	100A/3F	1-3KS 100	Panel L1	O.H.	1 1/2" EMT	4#1
17	100A/3F	1-3KS 100	Panel L2	Und. Flr. & O.H.	2" C	4#1
3	2000A/3F	1-KRPC-2000	-----	-----	-----	-----

- 2000 Amp bolted pressure switch with 1Ø & ground fault protection serving as building main.
- Incoming line and Power Co. - C.T./P.T. Metering Compartment
- Section contains customer ammeter and switch, voltmeter and switch, and ground fault indication equipment.



ABOV-3Ø DELTA TO 120/208V-3Ø 4W WYE



## SWITCHBOARD MDS2

120/208 VAC 3Ø-4W

- NOTES:
- SWITCHBOARD DEPTH IS 30 INCHES
  - SWITCHBOARD FRONT ACCESSIBLE ONLY.

### SCHEDULE

SECTION	SIZE	FUSE	FEEDS TO	ROUTE	CONDUIT	WIRE
C	200A/3F	NONE	SPARE	----	----	----
D	200A/3F	1-3KS 200	Panel P6	Und. Flr. & O.H.	2 1/2" C	4#250MCM
E	100A/3F	1-3KS 100	Panel P5	Und. Flr.	2" C	4#1
F	100A/3F	NONE	SPARE	----	----	----
G	100A/3F	1-3KS 100	Panel P3	O.H.	1 1/2" EMT	4#1
H	100A/3F	1-3KS 100	Panel P4	Und. Flr.	2" C	4#2
J	200A/3F	1-3KS 200	Panel P1	O.H.	2 1/2" EMT	4#4/0
K	60A/3F	1-3KS 60	Panel P2	O.H.	2" EMT	4#2/0
L	60A/3F	1-3KS 60	Panel H2	O.H.	1" EMT	4#6
M	100A/3F	1-3KS 80	Panel H4	O.H.	1 1/2" EMT	4#4
N	60A/3F	1-3KS 60	Panel H3	O.H.	1" EMT	4#6
B	1000A/3F	1-KT01000	-----	-----	-----	-----

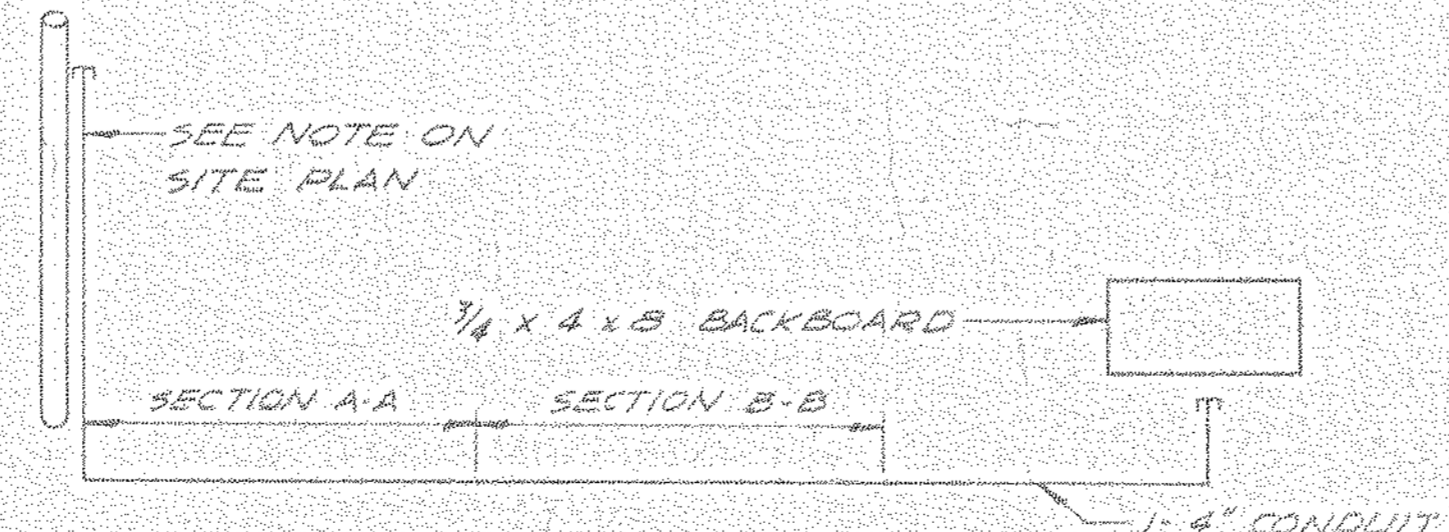
1000 Amp bolted pressure switch serving both as switchboard and transformer secondary protection.

Compartment contains customer ammeter and switch, and voltmeter and switch.

### PANEL SCHEDULE

- PANEL L1 - FLUSH  
277/480V 3Ø 4W 100A-MLO  
20 - 20 Amp - 1 Pole Breakers  
10 - 1-Pole Spaces
- PANEL L2 - SURFACE  
277/480V 3Ø 4W 100A-MLO  
20 - 20 Amp - 1 Pole Breakers  
10 - 1-Pole Spaces
- PANEL NE - SURFACE  
120/240V 1Ø 100A-MLO  
18 - 20 Amp - 1 Pole Breakers  
1 - 20 Amp - 2 Pole Breaker  
10 - 1-Pole Spaces  
19 - Lock-Ons
- PANEL E - SURFACE  
12 - 20 Amp - 1 Pole Breakers  
8 - 1-Pole Spaces  
12 - Lock-Ons
- PANEL P1 - SURFACE  
120/208V 3Ø 4W 225A-MLO  
TWO SECTION PANEL  
8 - 20 Amp - 1 Pole Breakers  
1 - 20 Amp - 2 Pole Breaker  
1 - 25 Amp - 3 Pole Breaker  
Sub-Feed Lugs - 1 Section
- PANEL P2 - FLUSH  
120/208V 3Ø 4W 225A-MLO  
22 - 20 Amp - 1 Pole Breakers  
1 - 40 Amp - 2 Pole Breaker  
1 - 50 Amp - 2 Pole Breaker  
1 - 25 Amp - 3 Pole Breaker  
13 - 1-Pole Spaces
- PANEL P3 - FLUSH  
120/208V 3Ø 4W 225A-MLO  
22 - 20 Amp - 1 Pole Breakers  
2 - 25 Amp - 3 Pole Breakers  
14 - 1-Pole Spaces
- PANEL P4 - SURFACE  
120/208V 3Ø 4W 100A-MLO  
12 - 20 Amp - 1 Pole Breakers  
1 - 20 Amp - 2 Pole Breaker  
16 - 1-Pole Spaces
- PANEL P5 - SURFACE  
120/208V 3Ø 4W 100A-MLO  
9 - 20 Amp - 1 Pole Breakers  
15 - 1-Pole Spaces
- PANEL P6 - SURFACE  
120/208V 3Ø 4W 225A-MLO  
9 - 20 Amp - 1 Pole Breakers  
21 - 1-Pole Spaces
- PANEL H1 - FLUSH  
120/208V 3Ø 4W 100A-MLO  
3 - 20 Amp - 1 Pole Breakers  
1 - 20 Amp - 2 Pole Breaker  
1 - 25 Amp - 3 Pole Breaker  
12 - 1-Pole Spaces
- PANEL H2 - FLUSH  
120/208V 3Ø 4W 100A-MLO  
9 - 20 Amp - 1 Pole Breakers  
2 - 20 Amp - 2 Pole Breakers  
7 - 1-Pole Spaces
- PANEL H3 - FLUSH  
120/208V 3Ø 4W 100A-MLO  
9 - 20 Amp - 1 Pole Breakers  
12 - 20 Amp - 2 Pole Breakers  
7 - 1-Pole Spaces
- PANEL H4 - FLUSH  
120/208V 3Ø 4W 100A-MLO  
3 - 20 Amp - 1 Pole Breakers  
2 - 20 Amp - 2 Pole Breakers  
7 - 1-Pole Spaces

## TELEPHONE RISER



LL-5-A-100

NORTH AMERICAN REFRACTORIES CO. ENGINEERING DEPT. RESEARCH CENTER CURWENSVILLE, PA.

### POWER DISTRIBUTION FOR NEW RESEARCH CENTER

OTHERS:	2-06-51	1-10-02	2-17-81	7-15-82																
PLANT:																				
FOREMAN:																				
VENDOR:																				
PRINTS										REVISION	DESCRIPTION	DATE	C.D. NO.	CHECKED	DATE	SCALE	DWG. NO.			
H-0064										E-14 Pwr. Dist.	1981	NONE	85-107	55-110	5-28-81	NONE	55-110-E-14			

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LEGEND

POWER	
M D S 1	MAIN DISTRIBUTION SWITCHBOARD #1 - 277/480V-3Ø 4W
M D S 2	MAIN DISTRIBUTION SWITCHBOARD #2 - 120/208V-3Ø 4W
	300 KVA - 480V 3Ø Δ TO 120/208V 3Ø 4W Y DRY TRANSFORMER
	PLUSH BRANCH CIRCUIT PANELS
	SURFACE BRANCH CIRCUIT PANELS
	BUS DUCT - SIZE PER DRAWING
	FUSIBLE BUS PLUG - SIZE PER DRAWING
	DISCONNECT SWITCH - SIZE AS NOTED - ALL HEAVY DUTY
	EXAMPLE: 30/3 N.F. - 240V - N3R
	30 = AMPERE SIZE
	/3 N.F. = 3 POLE - NON FUSED
	/3 - 3 P.S.N. = 3 FUSE SOLID NEUTRAL
	240V OR 600V = VOLTAGE RATING
	- N3R = NEMA 3R
	15 KW 120/240V-1Ø EMERGENCY GENERATOR
	60 AMP 120/240V-1Ø AUTOMATIC TRANSFER SWITCH
FIXTURES	
	4 LAMP 2 x 4 TROFFER 277VAC
	4 LAMP 2 x 4 TROFFER - 277VAC SPLIT WIRE - TWO OUTER LAMPS / ONE BALLAST - TWO INNER LAMPS / ONE BALLAST
	4 LAMP 2 x 4 TROFFER - TWO OUTER LAMPS / ONE BALLAST 277V NORMAL POWER AND TWO INNER LAMPS / ONE BALLAST NORMAL - EMERGENCY POWER 120V
	2 LAMP 2 x 4 TROFFER 277V
	2 LAMP 2 x 4 TROFFER (DIMMING BALLAST) 277V
	4 LAMP 2 x 4 TROFFER 277V
	4 LAMP 2 x 4 TROFFER (DIMMING BALLAST) 277V
	4 LAMP 2 x 4 TROFFER - TWO OUTER / ONE BALLAST 277V NORMAL POWER AND TWO INNER LAMPS / ONE BALLAST NORMAL-EMERGENCY POWER 120V
	2 LAMP 10x4 SURF. MOUNT FLOOR 277V

	3 LAMP 4x4 TROFFER 277 VAC
	3 LAMP 4x4 TROFFER - FOUR OUTER LAMPS / ONE BALLAST 277V NORMAL POWER AND FOUR INNER LAMPS / ONE BALLAST NORMAL - EMERGENCY POWER 120V

	TWO LAMP 2 x 2 TROFFER 277V
	TWO LAMP 2 x 2 TROFFER 120V
	60 WATT RECESSED INCANDESCENT
	60 WATT INCANDESCENT WALL MOUNTED
	60 WATT INCANDESCENT RECESSED
	4 FT. LAMP 4 FT. INDUSTRIAL 277V
	TWO LAMP 4 FT. INDUSTRIAL 120V
	70 WATT HIGH PRESS. SODIUM SURFACE MT. 277V
	400 WATT HIGH PRESS. SODIUM LOW BAY 277V
	400 WATT HIGH PRESS. SODIUM LOW BAY W/RESTRICK 120V
	250 WATT HIGH PRESS. SODIUM LOW BAY 277V
	250 WATT HIGH PRESS. SODIUM LOW BAY W/RESTRICK 120V
	TWO LAMP 8 FT. HIGH OUTPUT INDUSTRIAL 277V
	70 WATT HIGH PRESS. SODIUM WALL PACK 277V
	150 WATT HIGH PRESS. SODIUM HIGH BAY 277V
	150 WATT HIGH PRESS. SODIUM HIGH BAY W/RESTRICK 120V
	400 WATT HIGH PRESS. SODIUM HIGH BAY 277V
	400 WATT HIGH PRESS. SODIUM HIGH BAY W/RESTRICK 120V
	250 WATT QUARTZ HEAT RECESSED 120V
	60 WATT INCANDESCENT RECESSED WALL WASHER 120V
	ORNAMENTAL FIXTURE BY OWNER 120V
	100 WATT HIGH PRESS. SODIUM POLE MTD. 277V
	150 WATT HIGH PRESS. SODIUM POLE MTD. 277V
	70 WATT HIGH PRESS. SODIUM GROUND MTD. 277V
	EXIT WALL MOUNTED - SEE SPEC.
	EXIT CEILING MOUNTED - SEE SPEC.
	TWO LAMP 4 FT STRIP 277V
	150 WATT INCANDESCENT WALL MOUNTED 120V

DEVICES	
	CONVENIENCE RECEPTACLE
	CONVENIENCE RECEPTACLE - WEATHERPROOF
	MULTI-OUTLET STRIP (REFER TO SPEC.)
	CONVENIENCE RECEPTACLE - FLOOR
	30 AMP 120/240V 1Ø OUTLET
	TELEPHONE OUTLET - FLOOR
	S - SINGLE POLE SWITCH
	S3 - THREE WAY SWITCH
	S4 - FOUR WAY SWITCH
	IT - INTERNAL TIMER
	FD - FLUORESCENT DIMMER 277V
	WD - INCANDESCENT DIMMER 120V
	SD - SINGLE POLE SWITCH/DISCONNECT
	SP - PILOT LIGHT SINGLE POLE SWITCH
	SZ - TWO SPEED FAN SWITCH (BY HVAC CONT.)
ELECTRIC HEAT	
	1500 WATT BASEBOARD - 120V
	1500 WATT BASEBOARD - 120V
	2000 WATT BASEBOARD - 208V-1Ø
	2500 WATT BASEBOARD - 208V-1Ø
	1000 WATT WALL INSERT HEATER
	2000 WATT WALL INSERT HEATER
	4000 WATT WALL INSERT HEATER
	RELAY - SIZE & NO. OF POLES AS NOTED
	ROOM THERMOSTAT
	NIGHT SETBACK THERMOSTAT
	ROOM THERMOSTAT W/AUTO. SETBACK
	5000 WATT SUSPENSION UNIT HEATER 208V-3Ø

EQUIPMENT CONNECTION	
	480V-3Ø WATER HEATER
	60W-208V-1Ø WATER HEATER
	TEMPERATURE CONTROL (POWER ONLY)
	MAGNETIC MOTOR STARTER
	START-STOP STATION
	CILING EXHAUST FAN
	RAMP MTD. EXHAUST FAN
	GAS UNIT HEATER - 120V
	CONDENSING UNIT
	DUCT HEATER
	MAKE-UP AIR UNIT

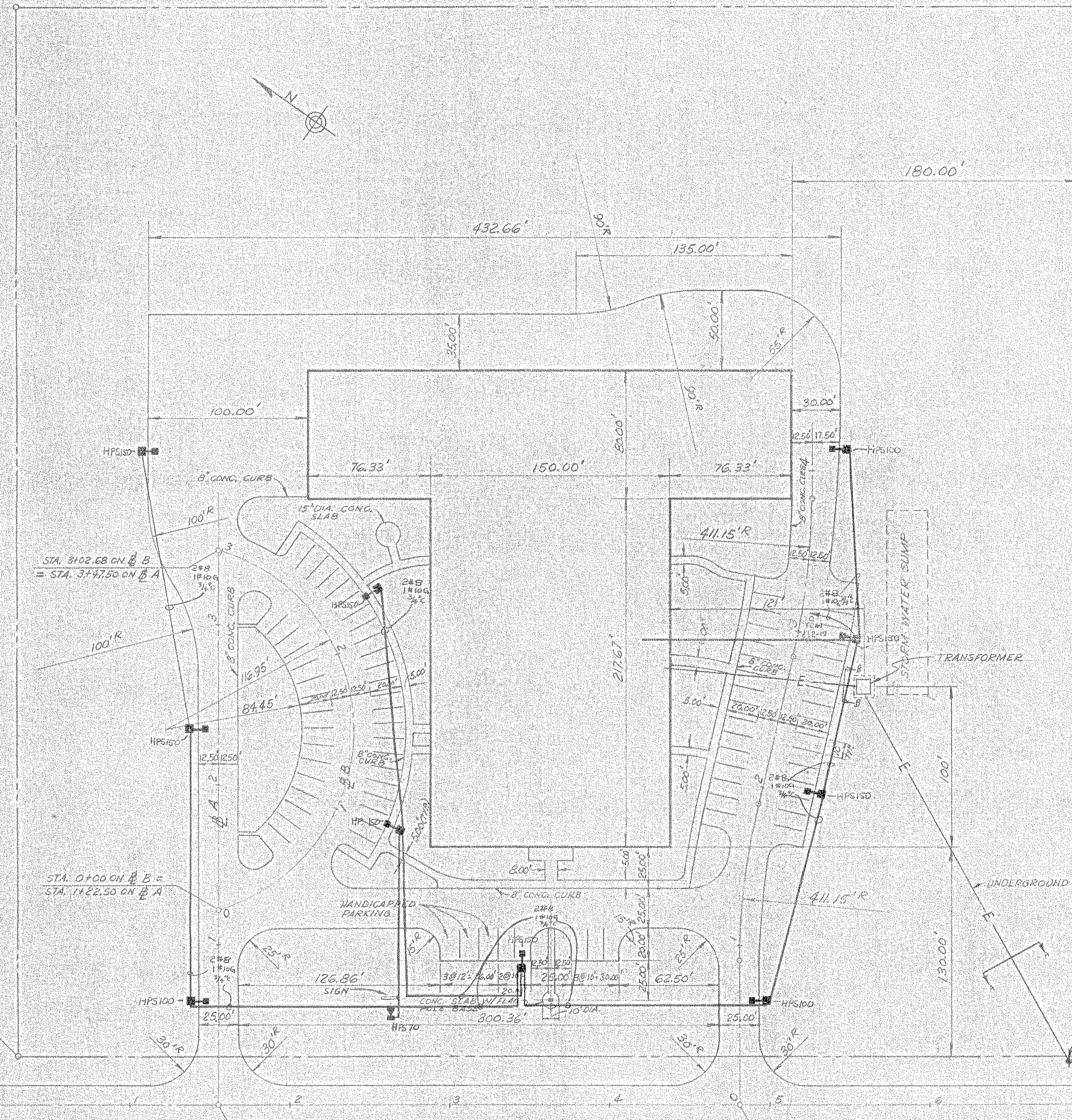
44-5-A-101  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.  
**LEGEND FOR  
 ELECTRICAL PLANS  
 NEW RESEARCH CENTER**

OTHERS	PLANT	FOREMAN	VENDOR	REVISION	DESCRIPTION	DATE	SCALE	SCALE	SCALE	SCALE
				A	"As-Built" Revs. by RD/GES	7-21-82				
PRINTS								SCALE	NONE	
#0064								SCALE	NONE	

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55-110  
 55-110-E-15  
 5-28-81  
 860107





90° ELBOWS AT POLE SHALL BE GALVANIZED RIGID - CAP ONE SPARE POWER CONDUITS AT BASE OF POLE - EXTEND GALVANIZED RIGID CONDUIT UP POLE TO HEIGHT AS CO-ORDINATED WITH UTILITY INVOLVED

SEE DWG. NO. 55-110-E-13 FOR SECTIONS A-A & B-B

72 EMPLOYEE PARKING SPACES  
5 VISITOR PARKING SPACES  
3 HANDICAPPED PARKING SPACES

FOR ADDITIONAL PARKING LOT LAYOUT INFO. SEE DWG. 55-110-51

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OTHERS	R. W. GOSSE, PROJECT ENGINEER	5-17-81					
PLANT							
FOREMAN	R. W. GOSSE	7-15-81					
VENDOR							
PRINTS		REVISION	DESCRIPTION	DATE			
#0064		E-16 Plot Plan	1981	NONE	87689 876107		

LL-5-A-102

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**ELECTRICAL  
PLOT PLAN**

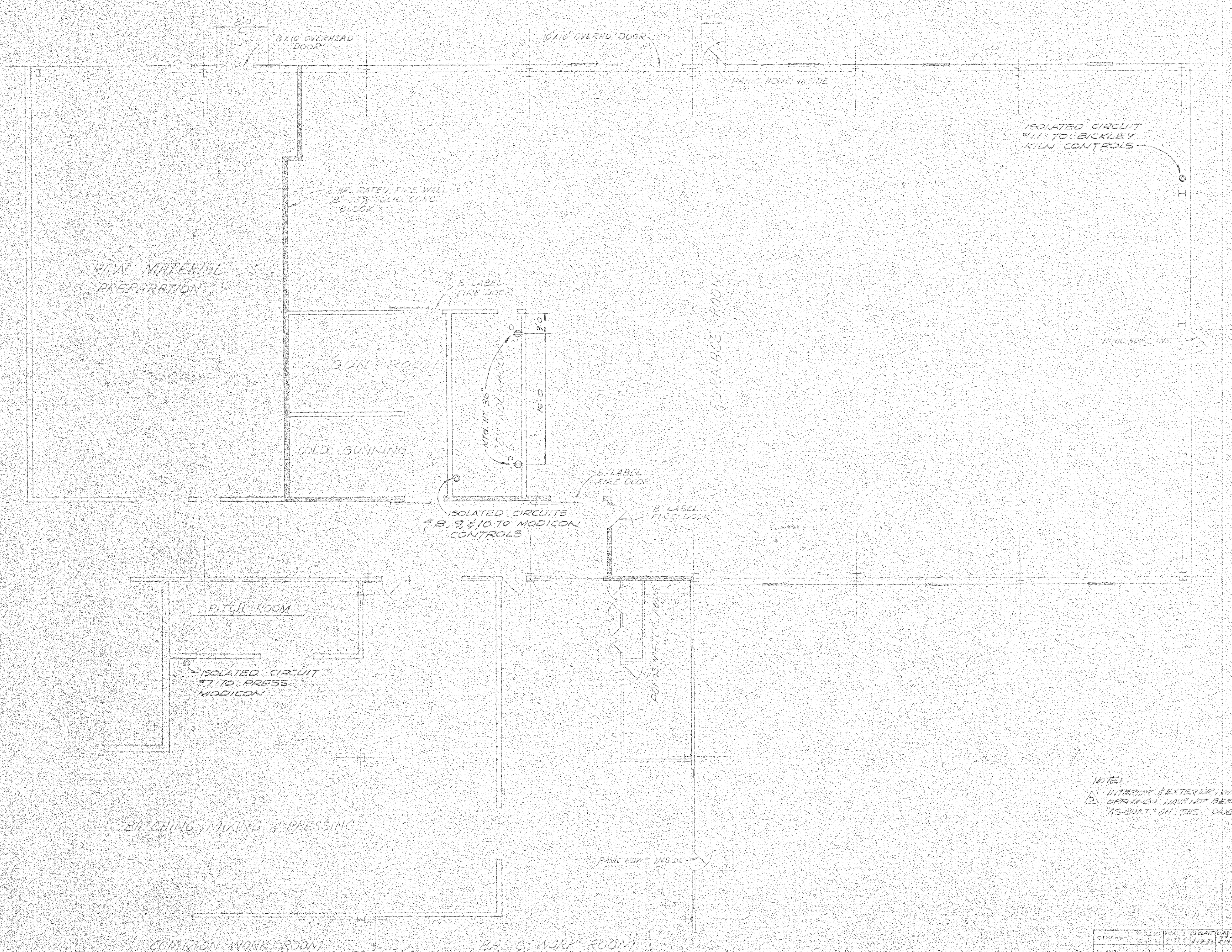
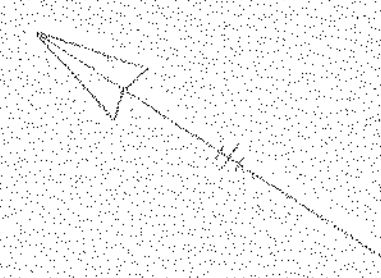
NEW RESEARCH CENTER

DRAWN BY	J. W. GOSSE	C.D. NO.	55-110
CHECKED BY	R. W. GOSSE	DATE	5-19-81
DATE	7-15-81	DWG. NO.	55-110-E-16
SCALE	1" = 40'	DWG. NO.	









FOR LEGEND & NOTES SEE DWG. 55-110-E-18

NOTE:  
 INTERIOR & EXTERIOR WALLS & OPENINGS HAVE NOT BEEN "AS-BUILT" ON THIS DRAWING.

LL-5-A-104  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

FLOOR PLAN OF  
 FURNACE ROOM  
 NEW RESEARCH CENTER  
 ISOLATED ELECTRICAL OUTLETS

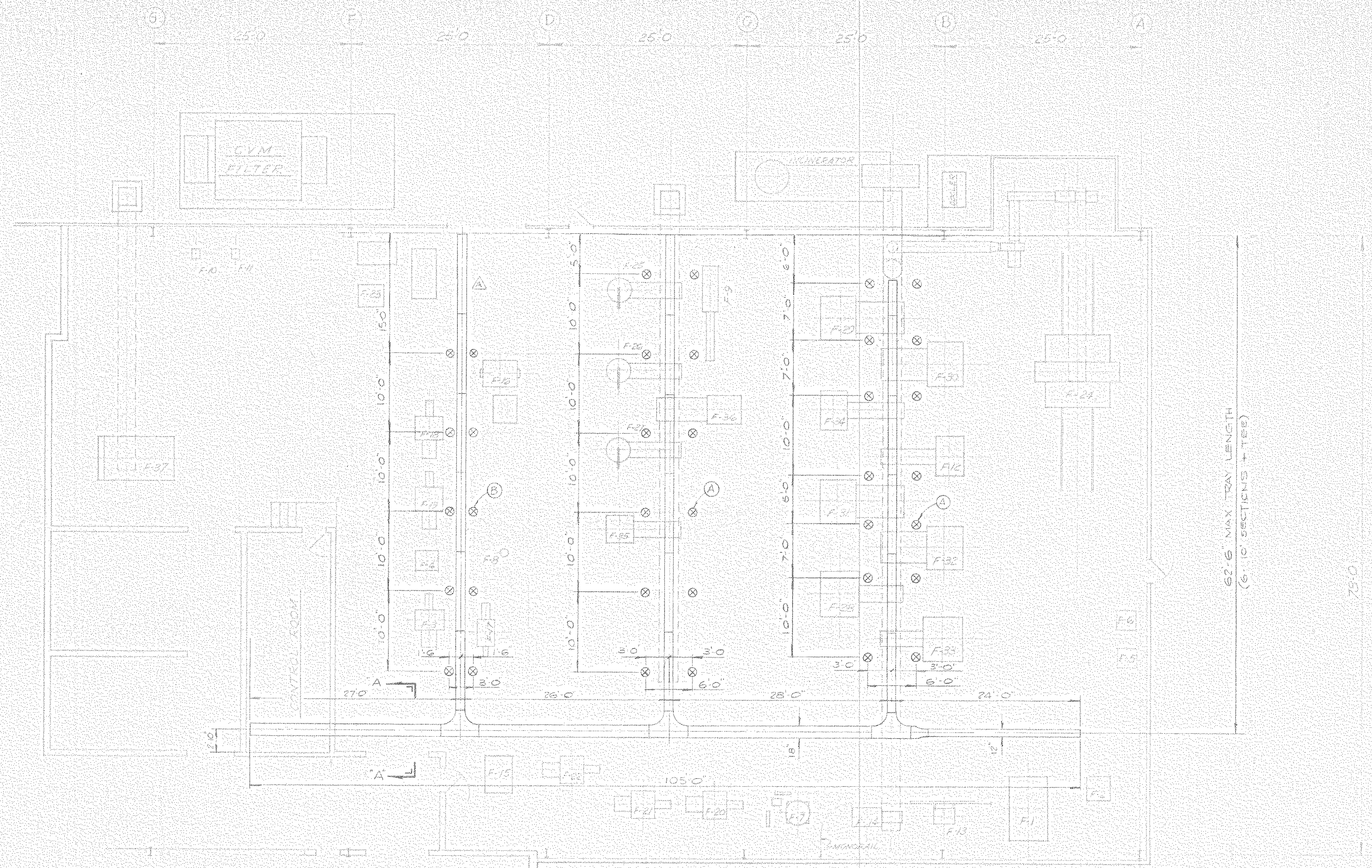
OTHERS	DATE	BY	DESCRIPTION	DATE
PLANT	6-25-51	W. G. H. / J. B. E.	D ADD NOTE	7-23-52
FOREMAN	3-16-52	JIM / J. B. E.	C ADDED CIRCUIT IN BATCHING RM, MOVED DUPLEX	4-19-52
MENDOR			B ADDED CIRCUITS #8, 9 & 10	3-17-52

DRWING NO.	55-110-E-19
CHECKED BY	
DATE	
SCALE	
APP'D.	

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- F-1 ALUMINUM MELTING FURNACE
- F-2 ALUMINUM MELTING FURNACE
- F-3 COIL TYPE FURNACE
- F-4 GLO BAR FURNACE
- F-5 GAS MIXING EQUIP
- F-6 CO DISINTEGRATION
- F-7 BICKLEY ELEVATOR
- F-8 PCE FURNACE
- F-9 RIBBON SPALLING FURNACE
- F-10 ROTARY SLAG TEST KILN
- F-11 ROTARY SLAG TEST KILN
- F-12 SMALL REHEAT FURNACE
- F-13 SPALLING TEST FURNACE
- F-14 SPALLING PREHEAT FURNACE
- F-15 RESISTANCE FURNACE
- F-16 ESC FURNACE
- F-17 BLUE M FURNACE
- F-18 PERENEY HOT M/R FURNACE
- F-19 PERENEY HOT M/R FURNACE
- F-20 PERENEY HOT M/R FURNACE
- F-21 PERENEY HOT M/R FURNACE
- F-22 PERENEY HOT M/R FURNACE
- F-23 INDUCTION FURNACE
- F-24 BELL KILN
- F-25 ASTM LOAD FURNACE
- F-26 ASTM LOAD FURNACE
- F-27 ASTM LOAD FURNACE
- F-28 LARGE REHEAT FURNACE
- F-29 CATENARY ARCH, 16 POS.
- F-30 CATENARY ARCH, 16 POS.
- F-31 CATENARY ARCH, 16 POS.
- F-32 CATENARY ARCH, 16 POS.
- F-33 LARGE REHEAT FURNACE
- F-34 SMALL REHEAT FURNACE
- F-35 TRANSVERSE LOAD FURNACE
- F-36 CHECKER CYCLING FURNACE
- F-37 HOT GUNNING FURNACE

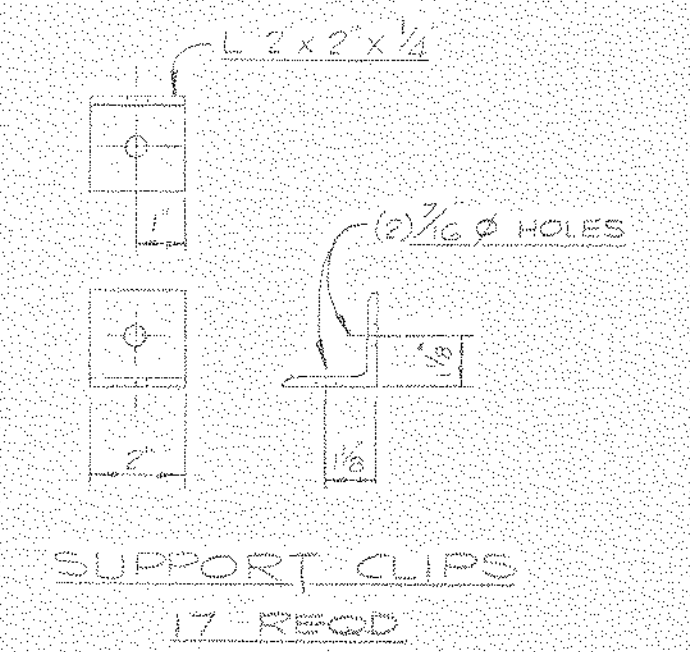
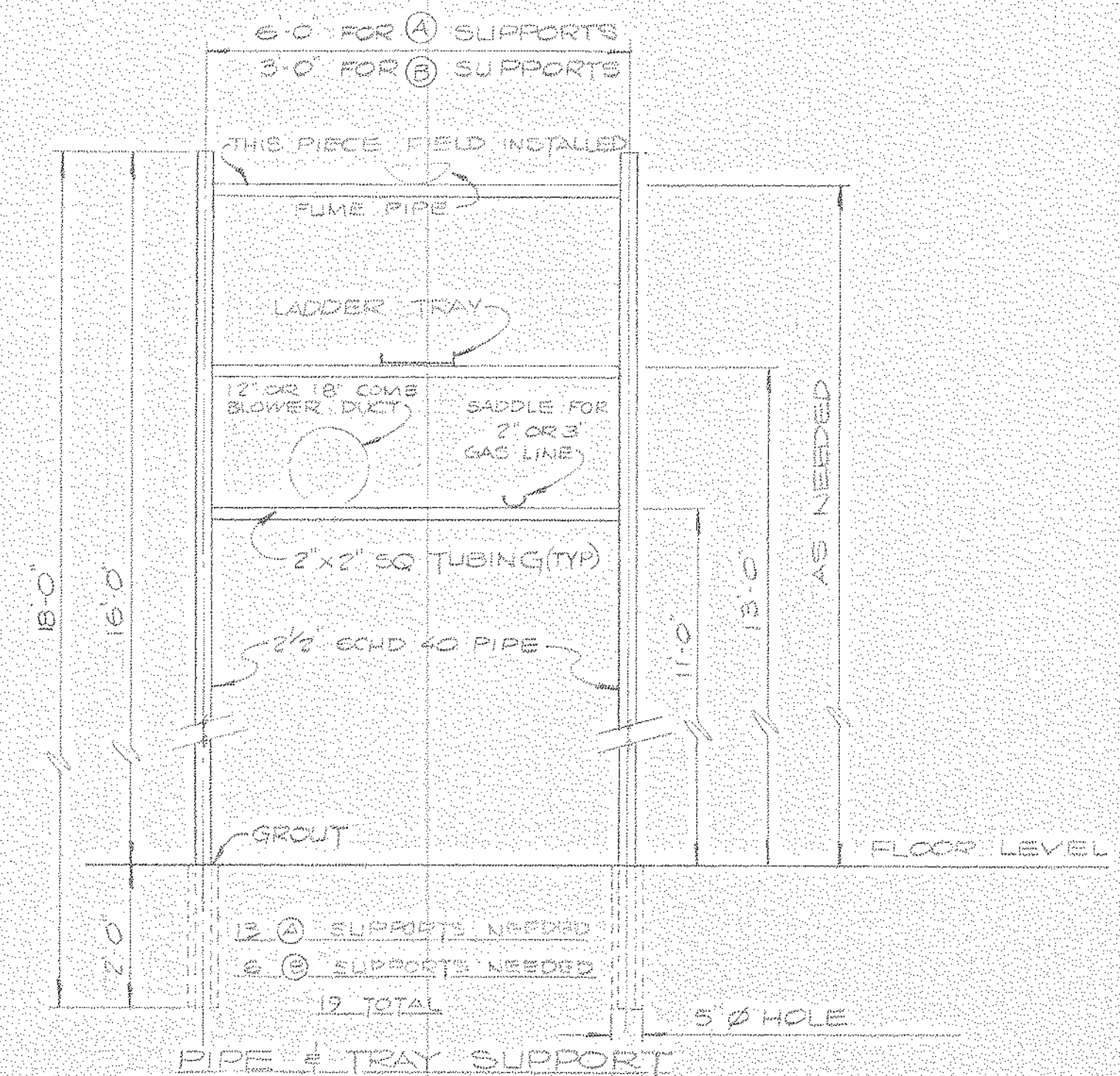


62'-6" MAX TRAY LENGTH  
(6'-0" SECTIONS + TEE)



**NOTES**

- 1 MOUNT CABLE TRAY @ 13'-0" AFF TO BOTTOM
- 2 MOUNT BUS DUCT @ 15'-3" AFF TO TOP
- 3 USE SHIELDED CABLE IN CABLE TRAY FOR ALL LOW LEVEL SIGNALS, eg THERMOCOUPLES, MV, MV, MV, IN ADDITION TO ALL 120 V CONTROL & POWER PLUS 480 V POWER
- 4 ⊗ DENOTES HOLE LOCATION FOR SUPPORTS



OTHERS	ENG STAR #				
PLANT	1591	2/8			
FOREMAN	1/8/81				
VENDOR					

44-5-A-105

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

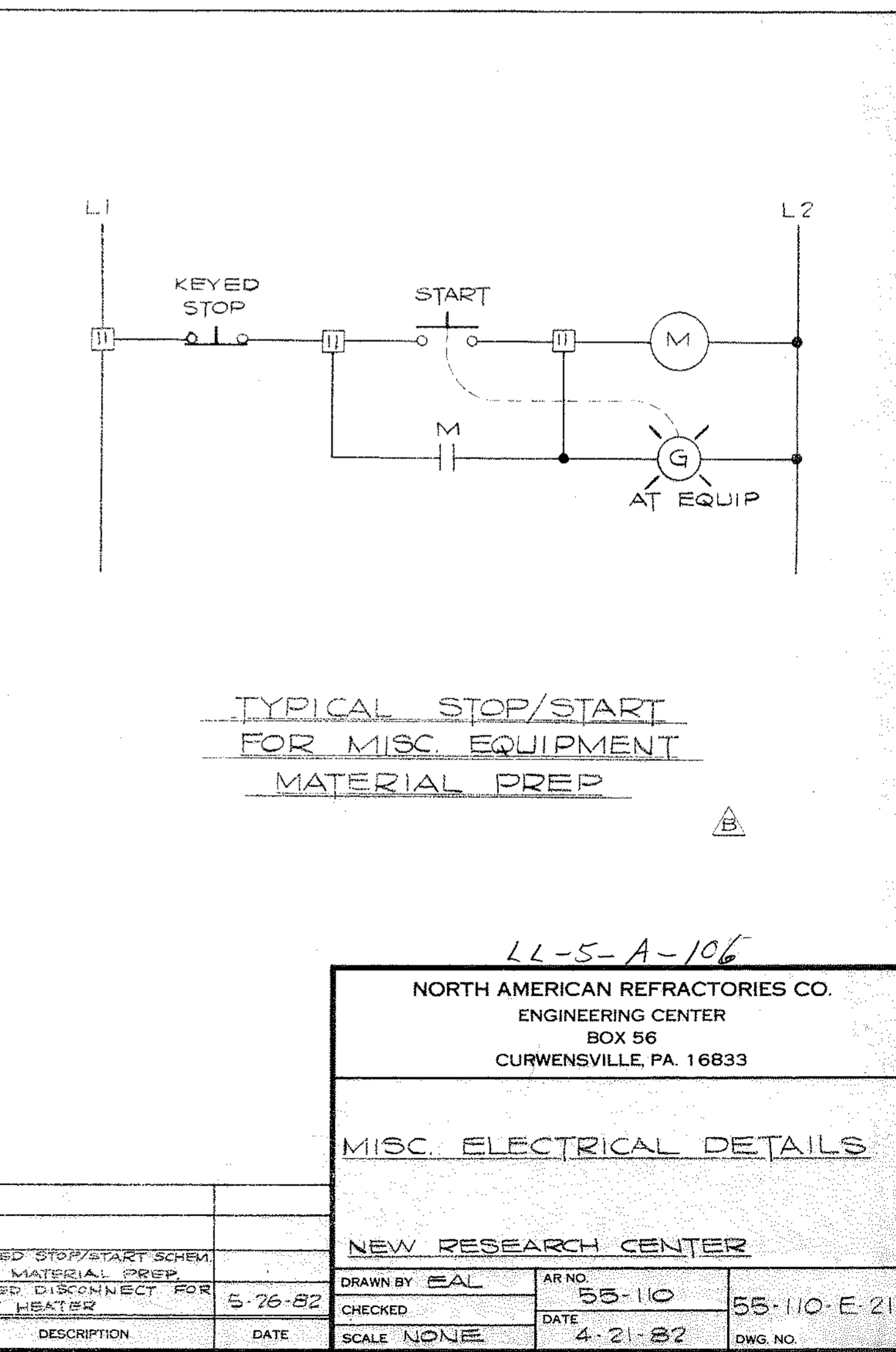
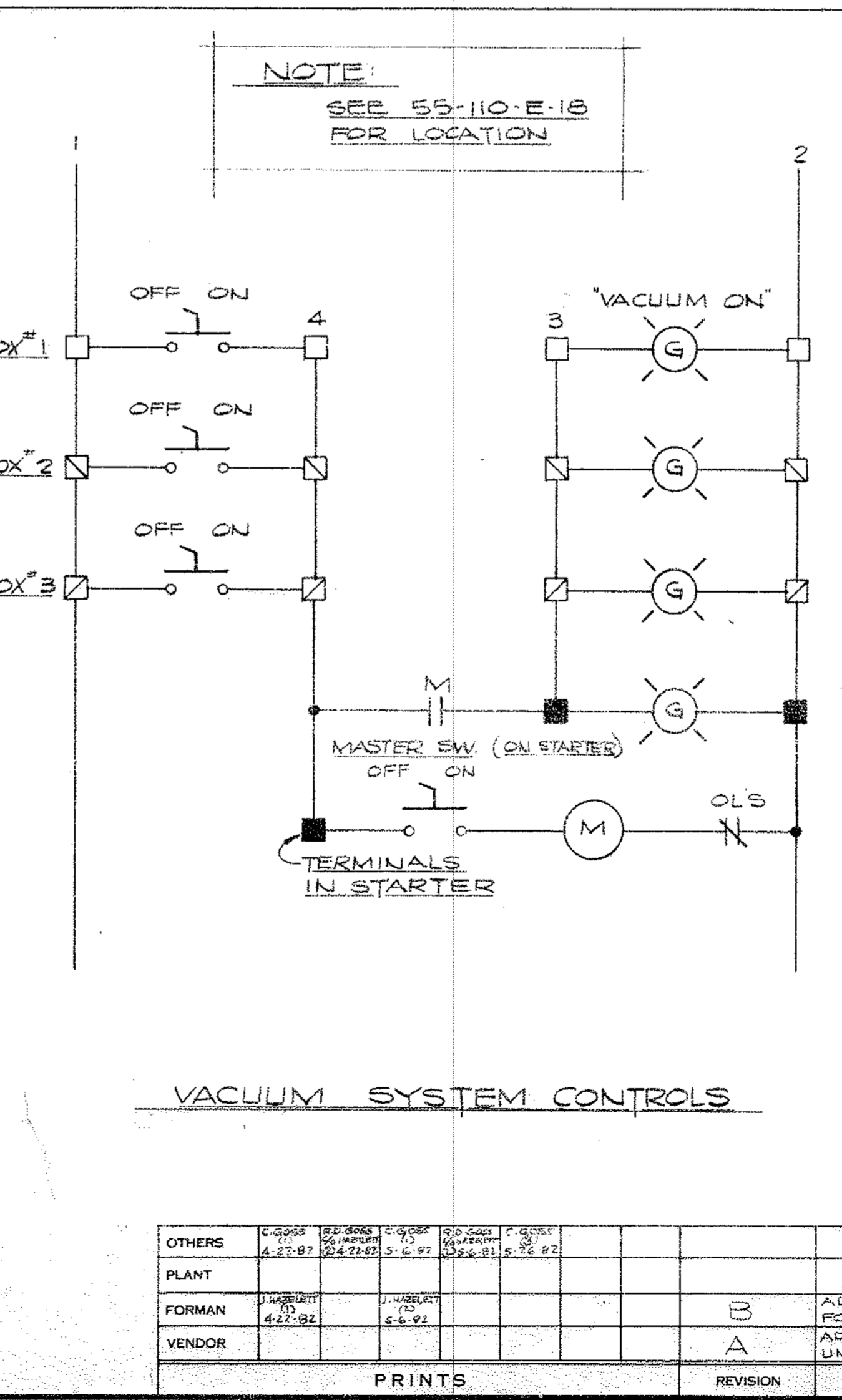
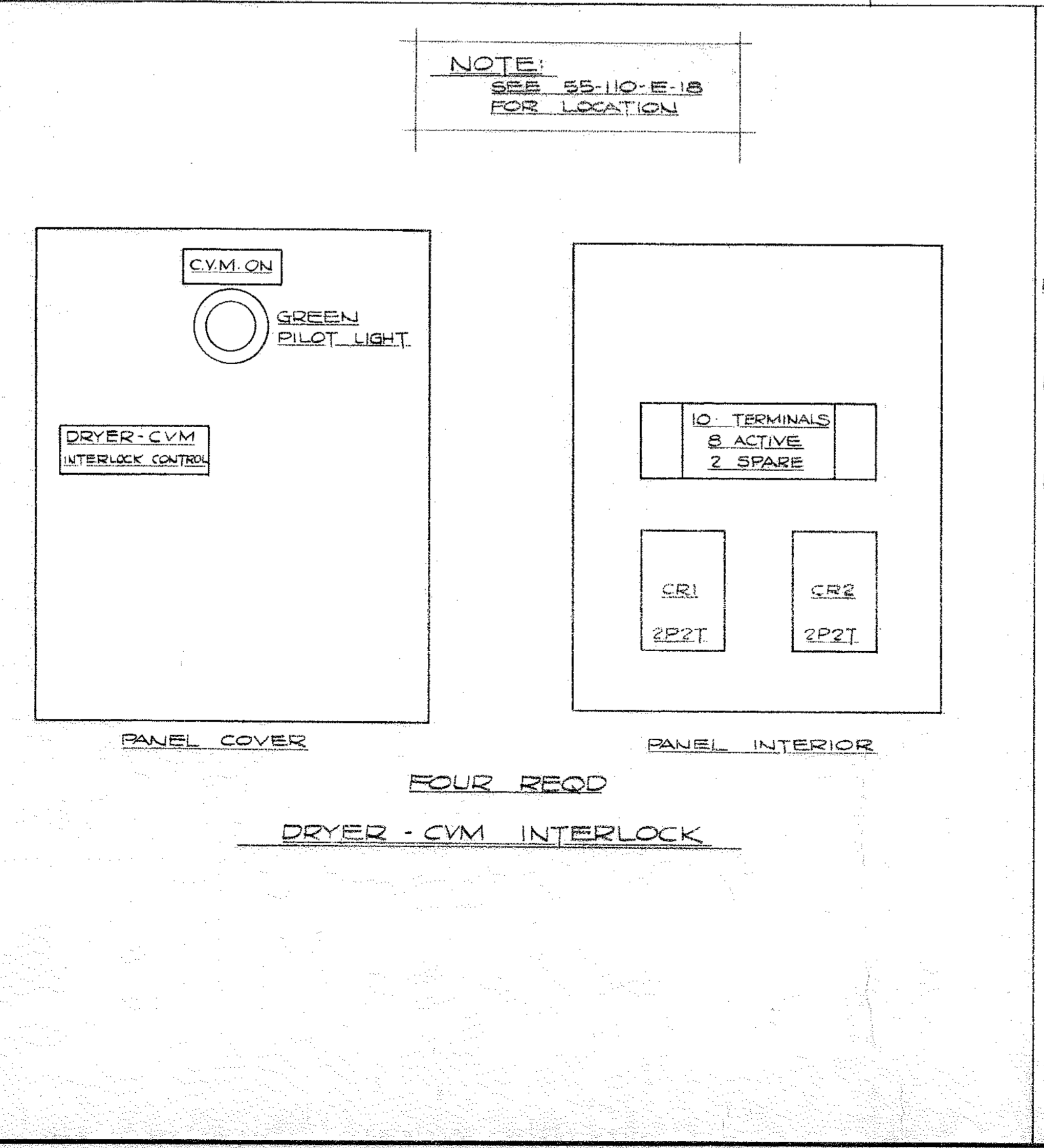
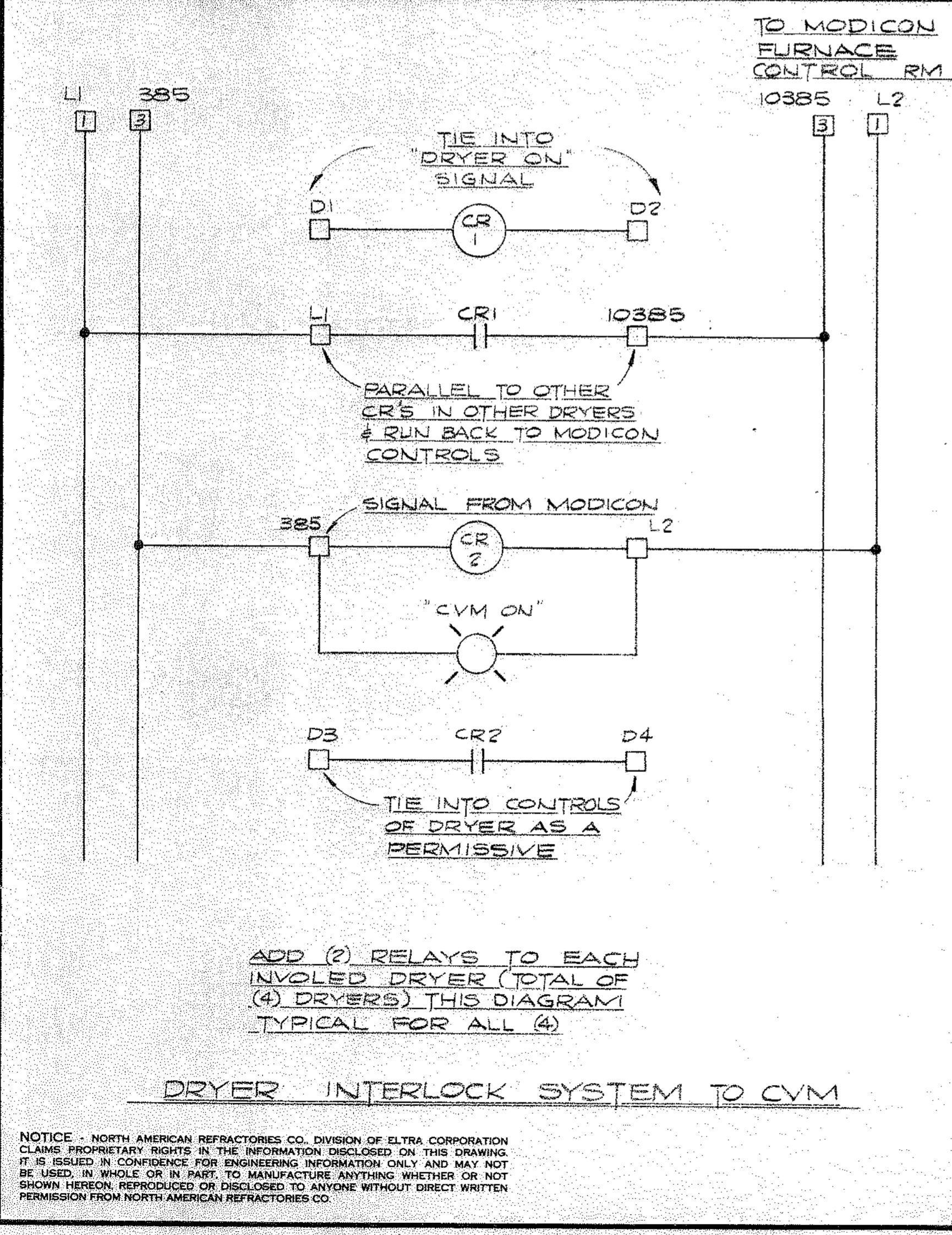
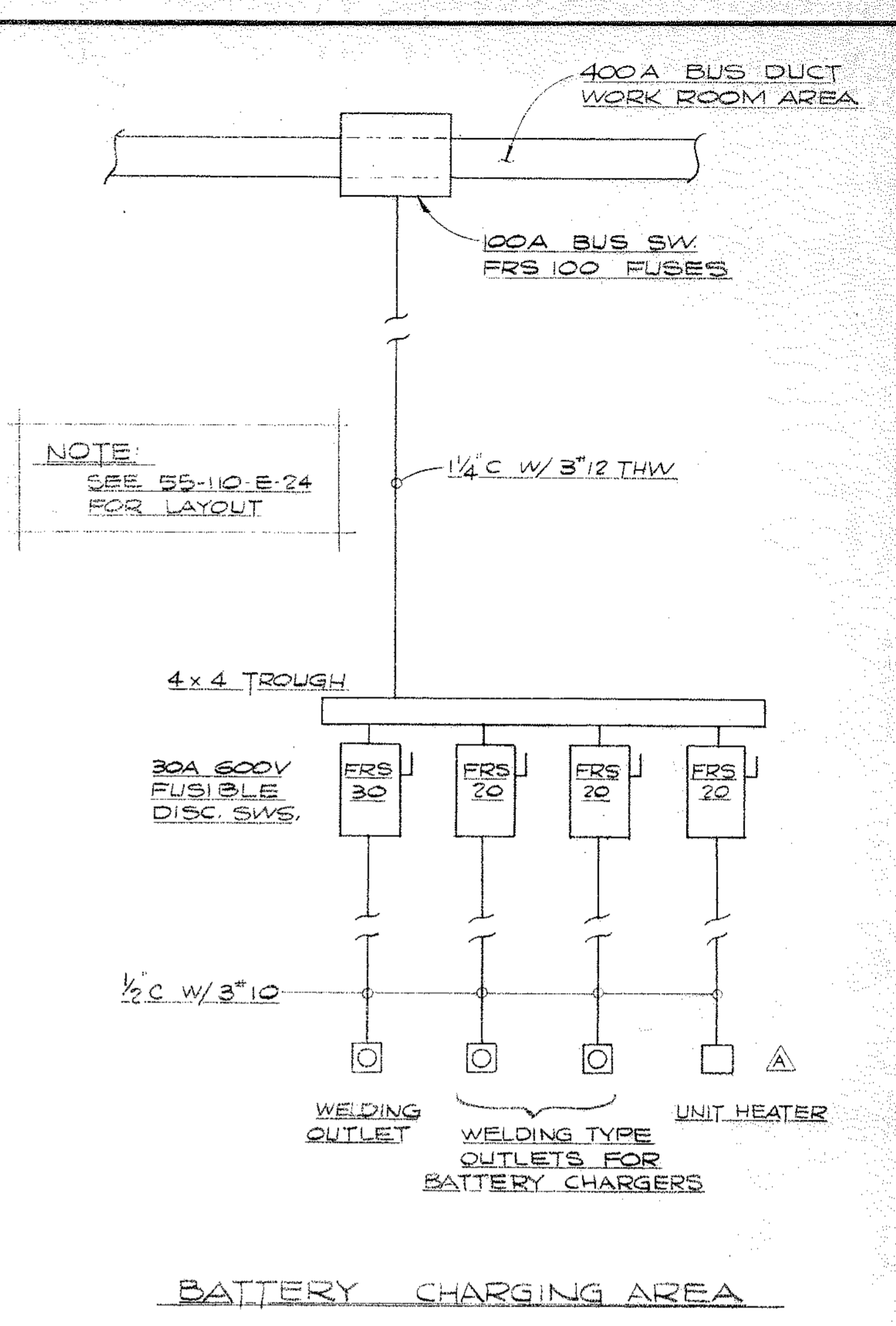
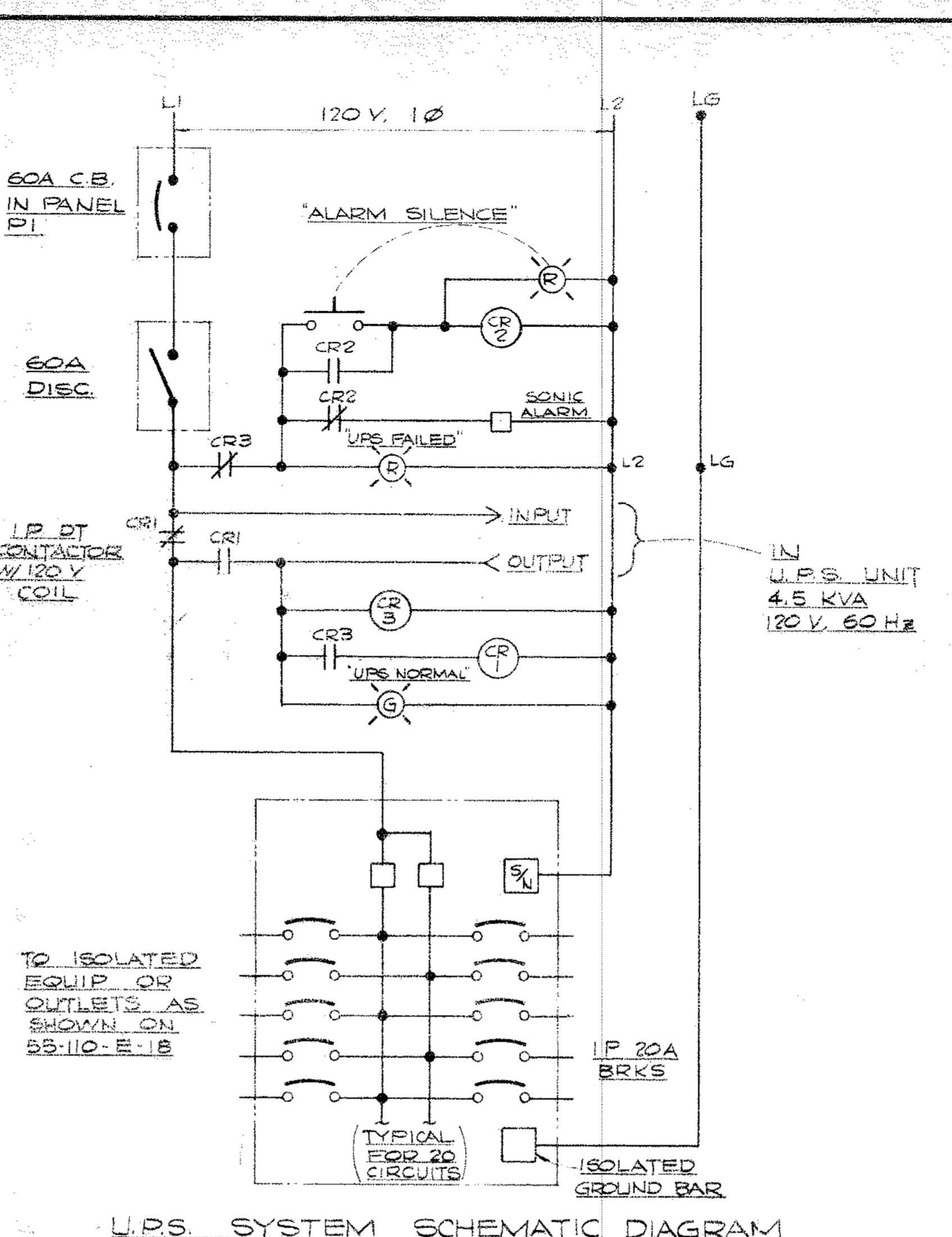
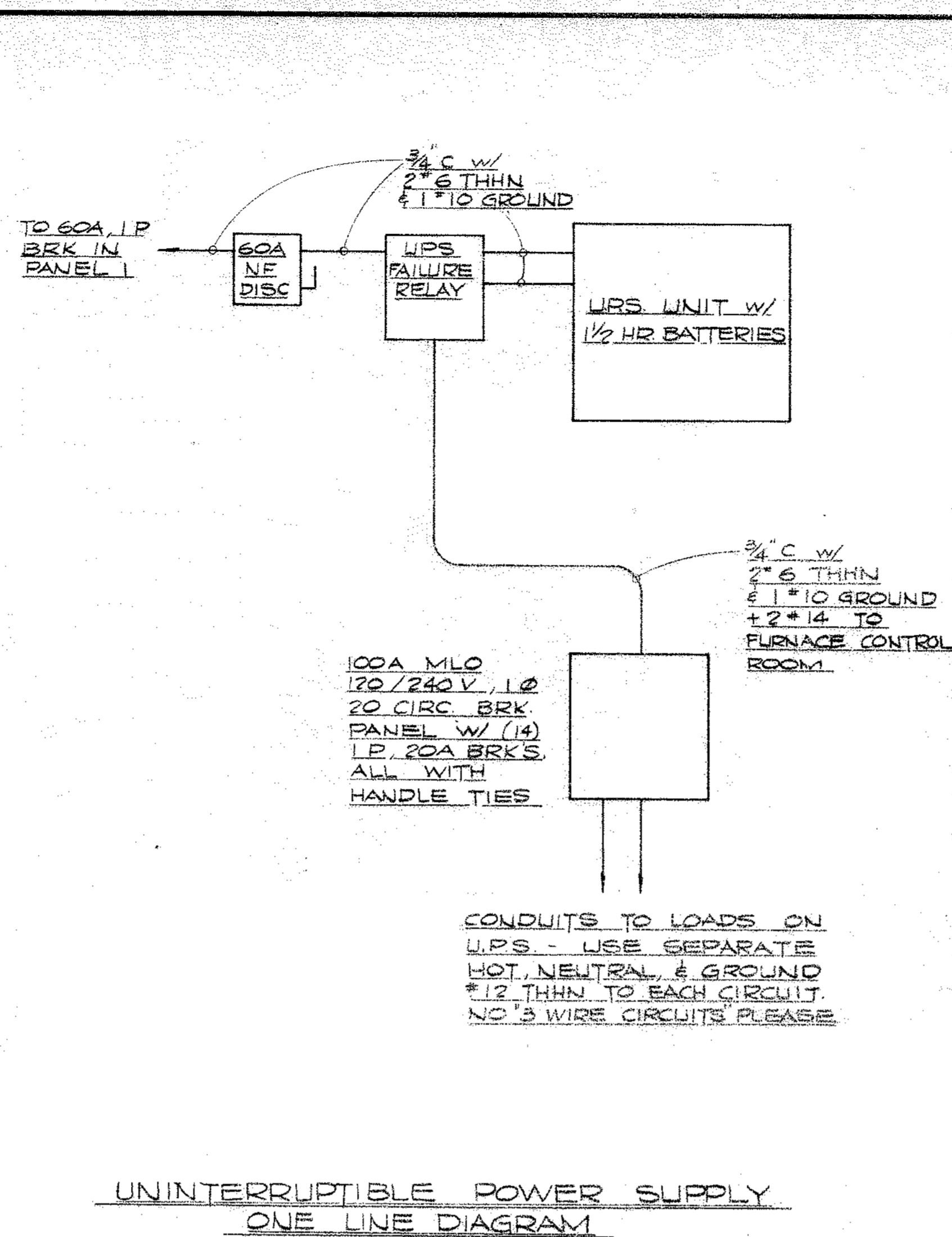
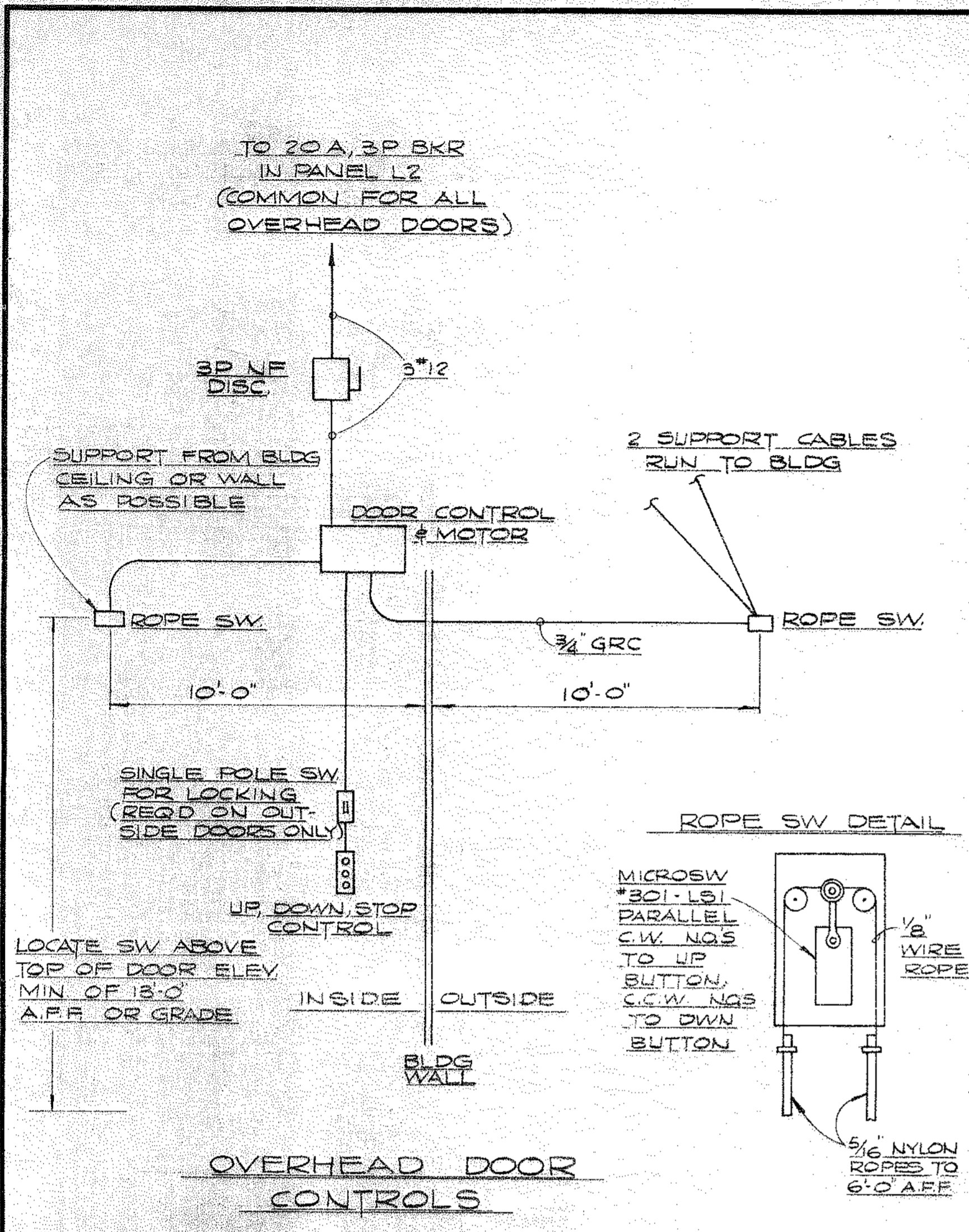
FURNACE ROOM AREA  
CABLE TRAY & SUPPORT LAYOUT.

NEW RESEARCH CENTER

DATE	5-11-82	BY	55110
REVISED	3-12-82	BY	55110 E-20

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DRAWING 40-22-291187

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OTHERS	6-22-82	6-22-82	6-22-82	6-22-82	6-22-82	6-22-82	6-22-82	6-22-82	6-22-82
PLANT	11-22-82	11-22-82	11-22-82	11-22-82	11-22-82	11-22-82	11-22-82	11-22-82	11-22-82
FORMAN	4-22-82	4-22-82	4-22-82	4-22-82	4-22-82	4-22-82	4-22-82	4-22-82	4-22-82
VENDOR									
PRINTS									
REVISION	B	A							
DESCRIPTION	ADDED STOP/START SCHEM FOR MATERIAL PREP	ADDED DISCONNECT FOR UNIT HEATER							
DATE	5-26-82								
SCALE	NONE								

#0064 E-21 Misc Elec Dtl's 1981 NONE 91-107

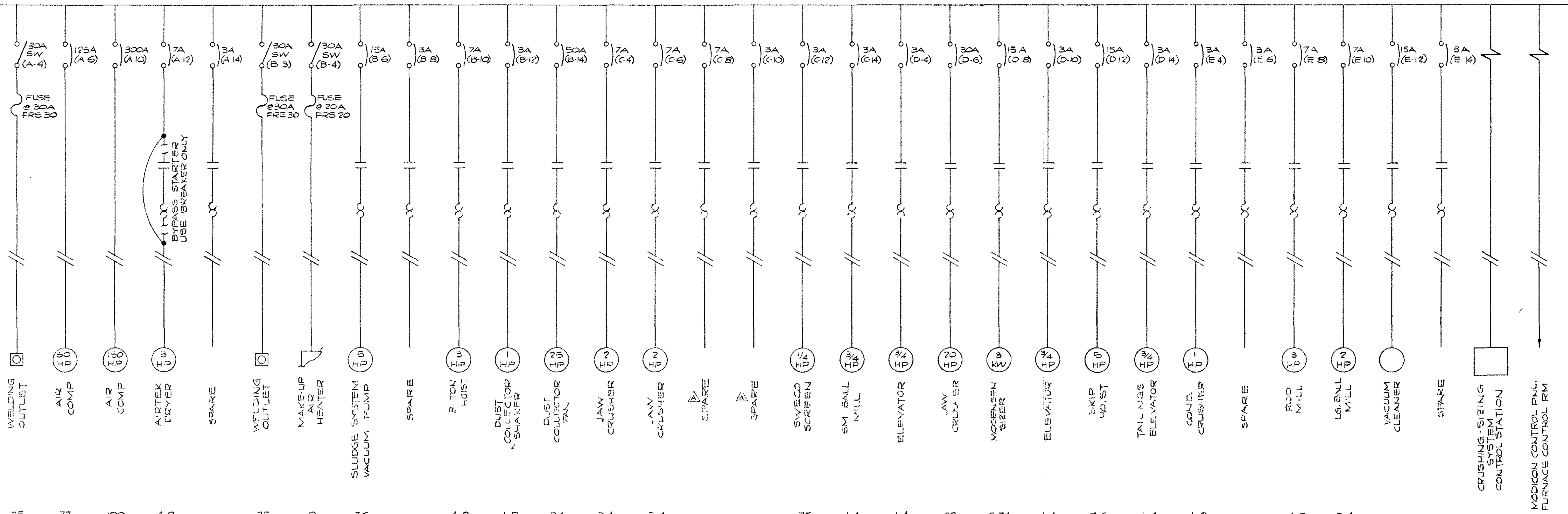






400A FEED FROM MAIN SWITCHGEAR

600A INCOMING LUGS & MAIN BUS (A 3)



FLAS	25	77	180	4.8	25	8	7.6	4.8	1.8	34	3.4	3.4	.75	1.4	1.4	27	6.74	1.4	7.6	1.4	1.8	4.8	3.4				
WIRE SIZE & TYPE	3"0THN	3"3THW	3-1/2"THW	3"12THN	3"10THN	3"12THN 3"14THN	3"12THN 15"14THN	3"12THN	3"12THN	3"8THN 6"14THN	3"12THN 5"14THN	3"12THN	5"12THN 3"14THN	3"12THN 3"14THN	3"12THN	3"10THN	3"12THN	3"12THN	3"12THN	5"12THN 4"14THN	3"12THN	3"12THN	3"12THN 4"14THN	3"12THN	3"12THN	30"14THN	30"14THN
HOME RUN NO	*1	*7	*8	*1	*6	*2	*6	*6	*2	*2	*4	*4	*4	*4	*3	*3	*3	*3	*3	*3	*3	*3	*5	*5		*9	*10
CONDUIT SIZE TO EQ OR MOTOR	1/2"	1 1/4"	2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	3/4"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1"	1"	
EQUIPMENT NO	-	M3	M2	M-4	-	-	M1	-	-	-	R10	R11	R-16	R-13	R4	R3	R-8	R-7	R1	R9	R-6	R-13	R14				

- HOME RUNS TO MCC
- \*1 - 1" w/6"14, 6"12, & 3"10
  - \*2 - 1 1/4" w/12"14, 9"12, & 3"8
  - \*3 - 1 1/2" w/16"14, 25"12 & 3"10
  - \*4 - 1 1/4" w/23"14 & 21"12
  - \*5 - 1" w/11"14 & 9"12
  - \*6 - 1 1/2" w/18"14, 12"12, & 3"10
  - \*7 - 1 1/4" w/3"8 THW
  - \*8 - 2" w/3"4/8 THW
  - \*9 - 1" w/30"14 THN
  - \*10 - 1" w/30"14 THN

**NOTE!**  
SEE 55-110-E 22 FOR LAYOUT OF MCC

LL-5-A-108

NORTH AMERICAN REFRACTORIES CO  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA 16833

ONE LINE DIAGRAM FOR  
MOTOR CONTROL CENTER IN  
RAW MAT'L PREP ROOM

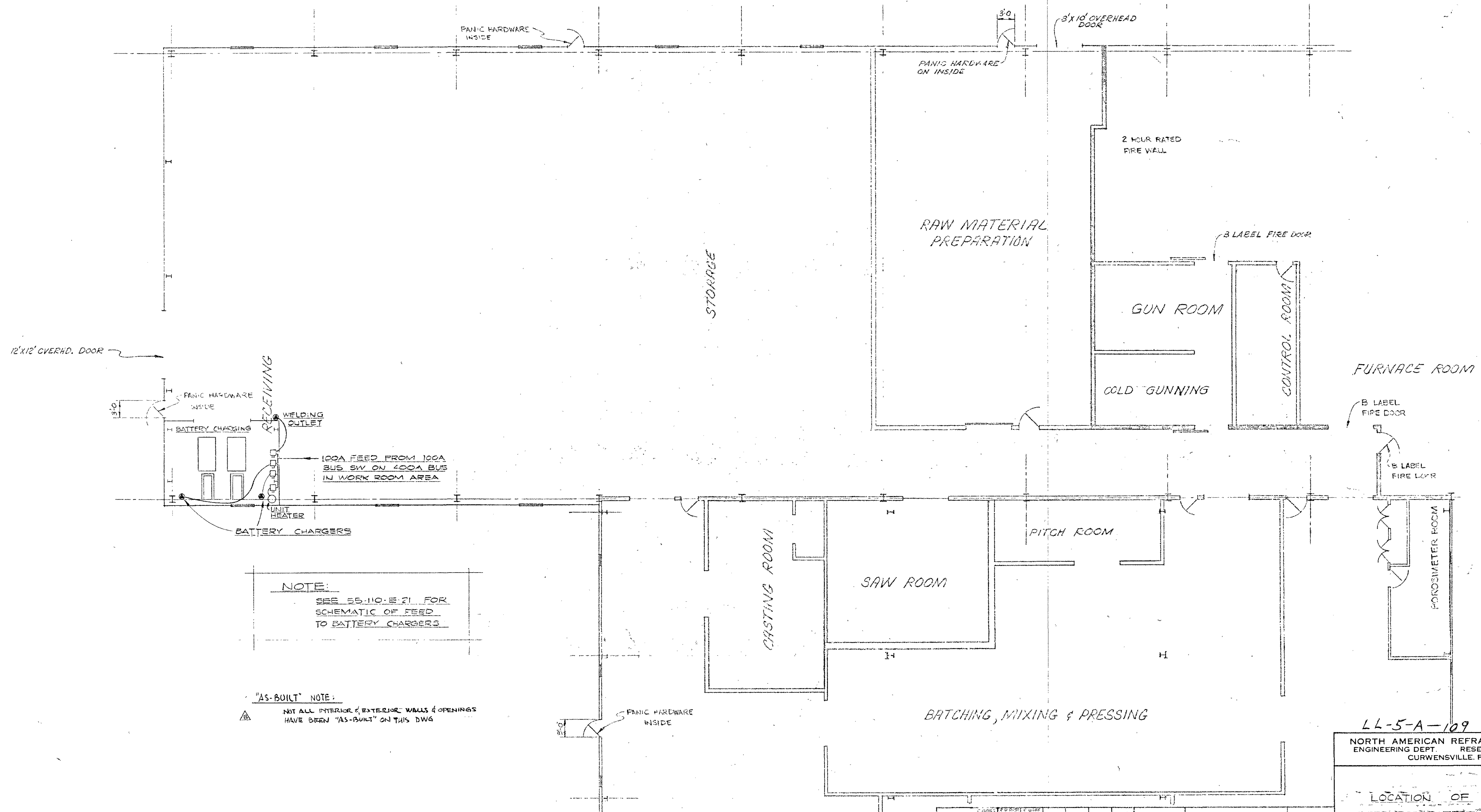
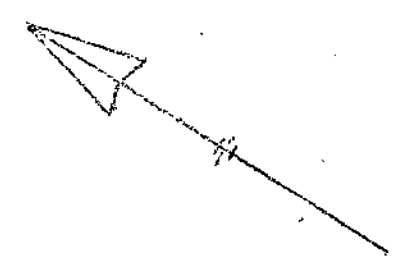
NEW RESEARCH CENTER

DRAWN BY EAL	AR NO 55-110	55-110 E-23
CHECKED	DATE 4-30-82	DWG NO
SCALE NONE		

OTHERS	PLANT	FORMAN	VENDOR	REVISION	DESCRIPTION	DATE
				A	CB WAS JAW CRUSHER E-12 C10 WAS JAW MILL E-12	5 24 82

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**NOTE:**  
SEE 55-110-E-21 FOR SCHEMATIC OF FEED TO BATTERY CHARGERS

**"AS-BUILT" NOTE:**  
NOT ALL INTERIOR & EXTERIOR WALLS & OPENINGS HAVE BEEN "AS-BUILT" ON THIS DWG

LL-5-A-109  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

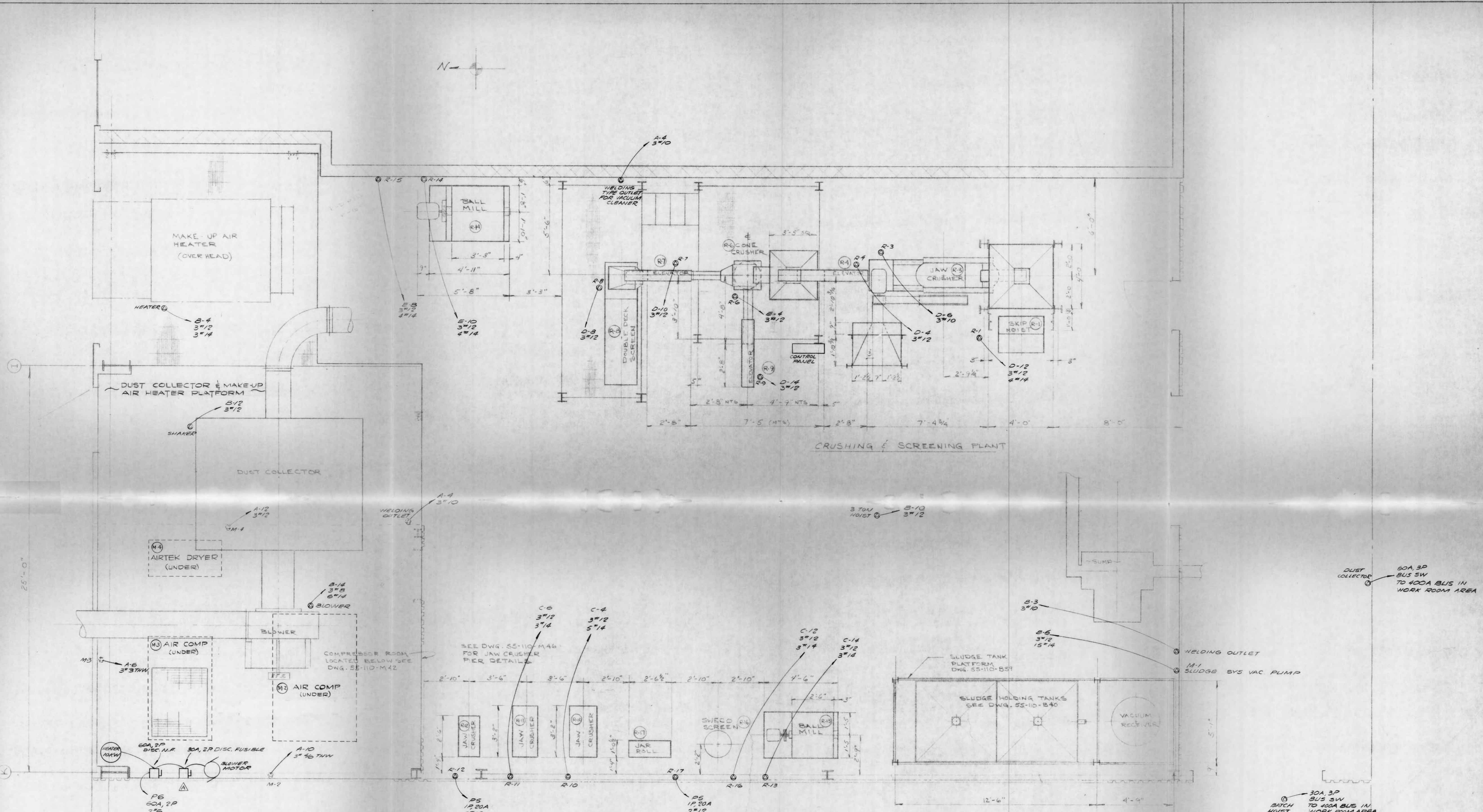
LOCATION OF  
OUTLETS FOR BATTERY CHARGING  
NEW RESEARCH CENTER

OTHER	DATE	DESCRIPTION	DATE
AL-N1	7-22-82	ADD "AS-BUILT" NOTE	7-22-82
FOR MAN	8-26-82	ADD'D UNIT HEATER & DISCONNECT	8-26-82
VENDOR			

CHECKED	DATE	SCALE	DWG NO.
	8-5-82	1/8" = 1'-0"	55-110-E-24

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CRUSHING & SCREENING PLANT

NOTES:

- 1 FIRST NO SHOWN FOR EACH HOOK-UP IS THE COMPARTMENT NO IN THE MCC. THE SECOND NO IS THE WIRE SIZE (TYPE THHN UNLESS NOTED)
- 2 SEE 55-110-E-22 FOR LAYOUT OF MCC & 55-110-E-23 FOR THE ONE-LINE DIAGRAM

LL-5-A-110  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

EQUIPMENT HOOK-UPS FOR  
 RAW MATERIAL PREP

OTHERS	DATE	BY	DESCRIPTION	DATE
PLANT	5-16-82	5-16-82	CHANGED HOOK-UPS FOR R-12 & R-17	5-24-82
FOREMAN	5-18-82	5-18-82	ADDED DISCONNECTS FOR HEATER & BLOWER MOTOR	5-21-82
VENDOR				

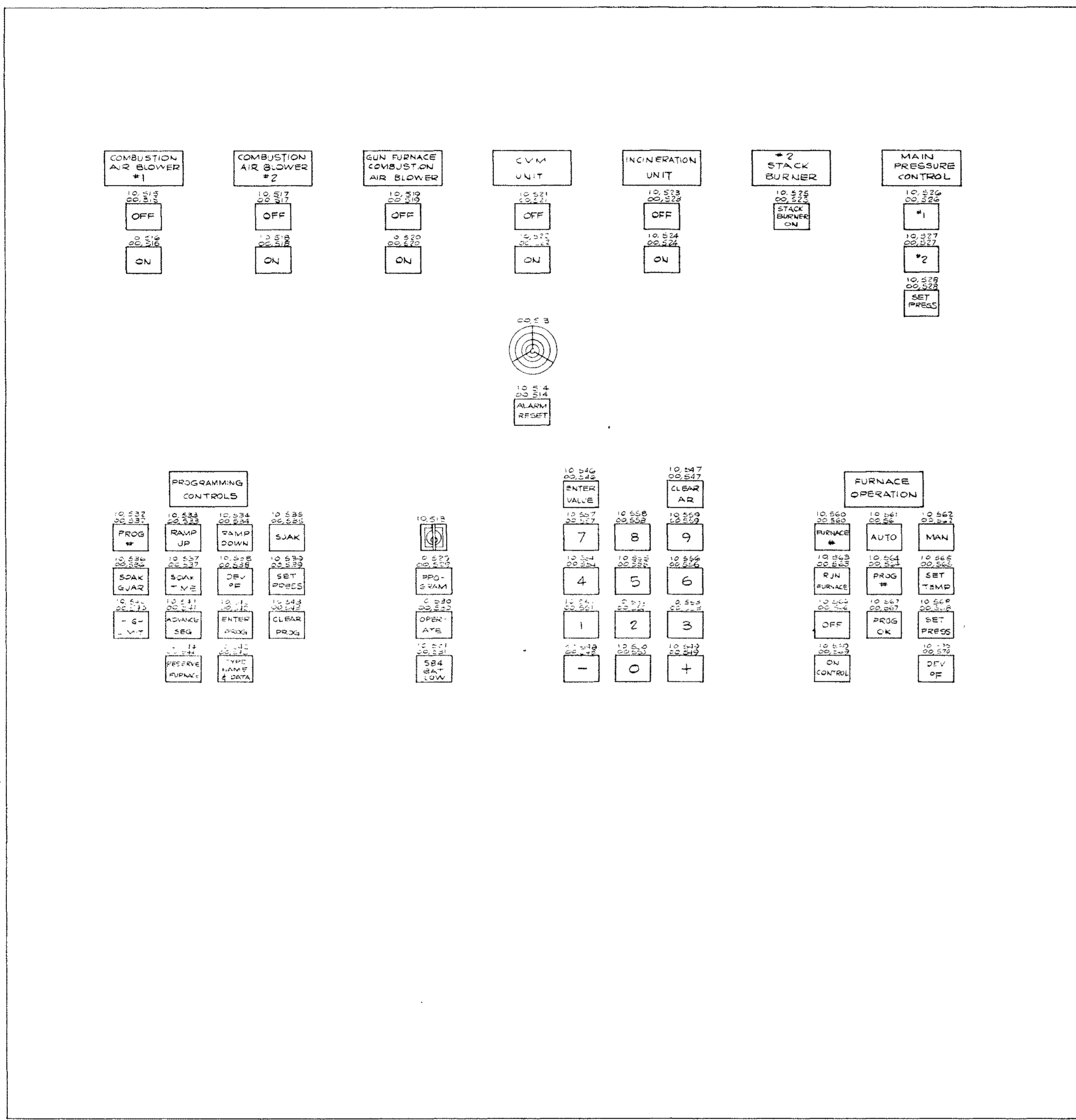
SCALE	DATE	DWG NO
SCALE	5-10-82	55-110-E-25

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LL-5-A-112

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833

PANEL LAYOUT FOR  
FURNACE CONTROL CONSOLE

NEW RESEARCH CENTER

DRAWN BY: EAL	AR NO: 55-110
CHECKED:	DATE: 5-14-82
SCALE: 1/4" = 1"	DWG NO: 55-110-E-27

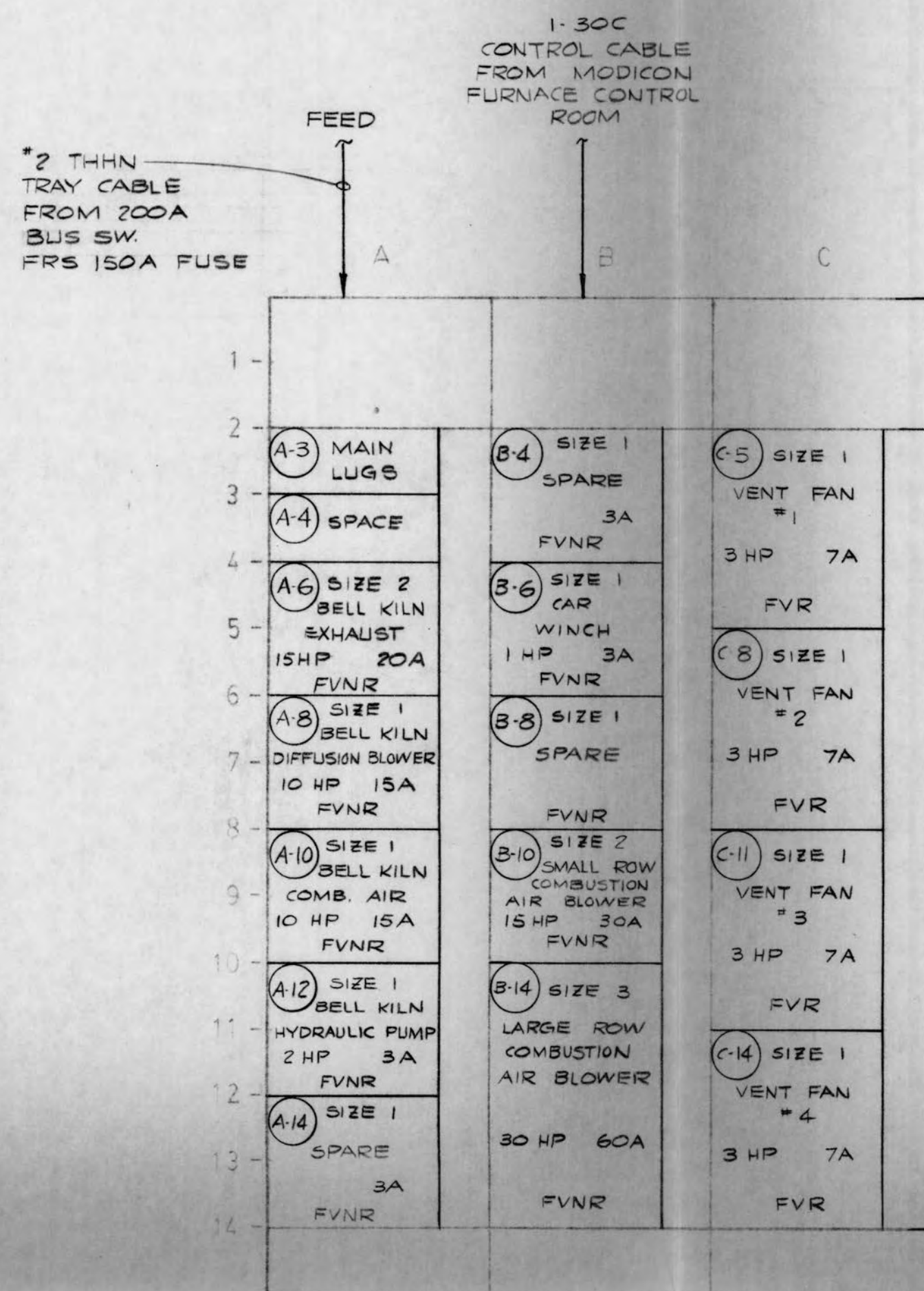
OTHERS	PLANT	FORMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

#0064 — F-27 Panel Layout Furn. — 1981 — NONE — 97.107.









NOTE:  
SEE 55-110-E-33 FOR ONE LINE DIAGRAM OF MCC

SECT NO	1	2	3	4	5	6	7
SECT W X D	FRONT						
VERT BUS (AMP)							

44-5-A-114

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833

LAYOUT-MOTOR CONTROL  
CENTER FOR  
FURNACE ROOM  
NEW RESEARCH CENTER

DRAWN BY	EAL	DATE	5-25-82
CHECKED		DATE	5-25-82
SCALE	NONE		

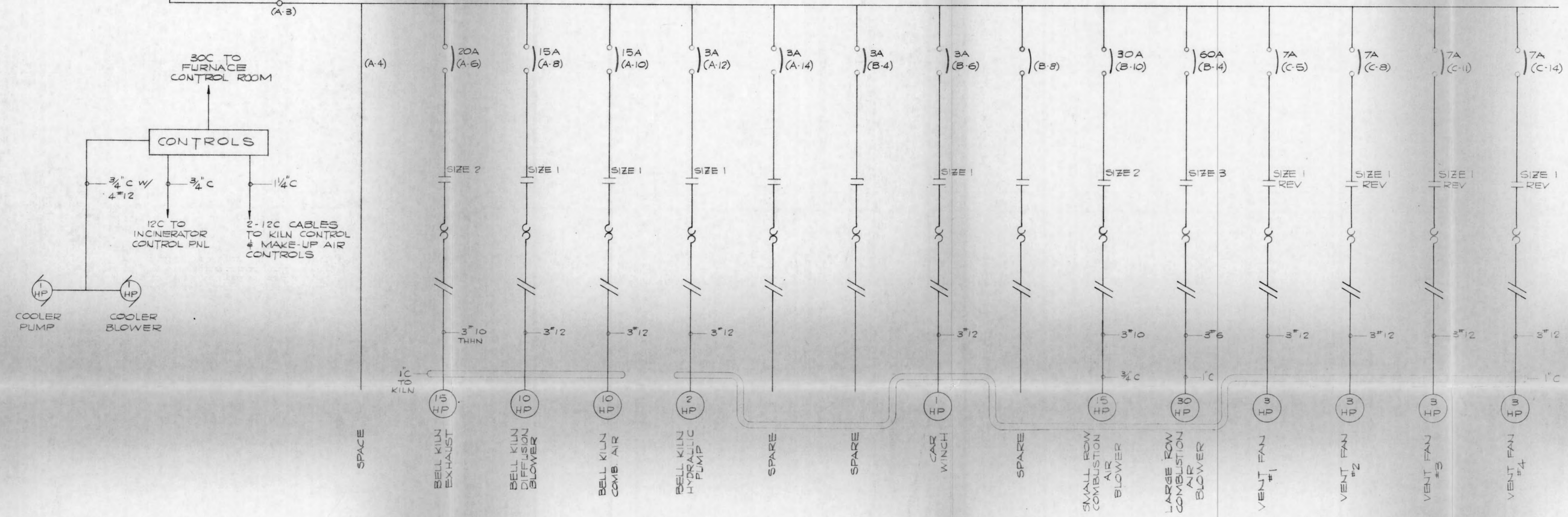
55-110  
55-110-E-32  
DWG NO

OTHERS							
PLANT							
FORMAN							
VENDOR							
PRINTS							
REVISION	A	DESCRIPTION	ADDED BLOWER TO B-10. WAS 2-30C CONTROL CABLES	DATE	6-1-82		

NOTICE - NORTH AMERICAN REFRACTORIES CO. DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED, IN WHOLE OR IN PART, TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON, REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.



FEED FROM 400A BUS DUCT  
FURNACE ROOM  
#2 THHN TRAY CABLE  
200A SW FRS 150 FUSES



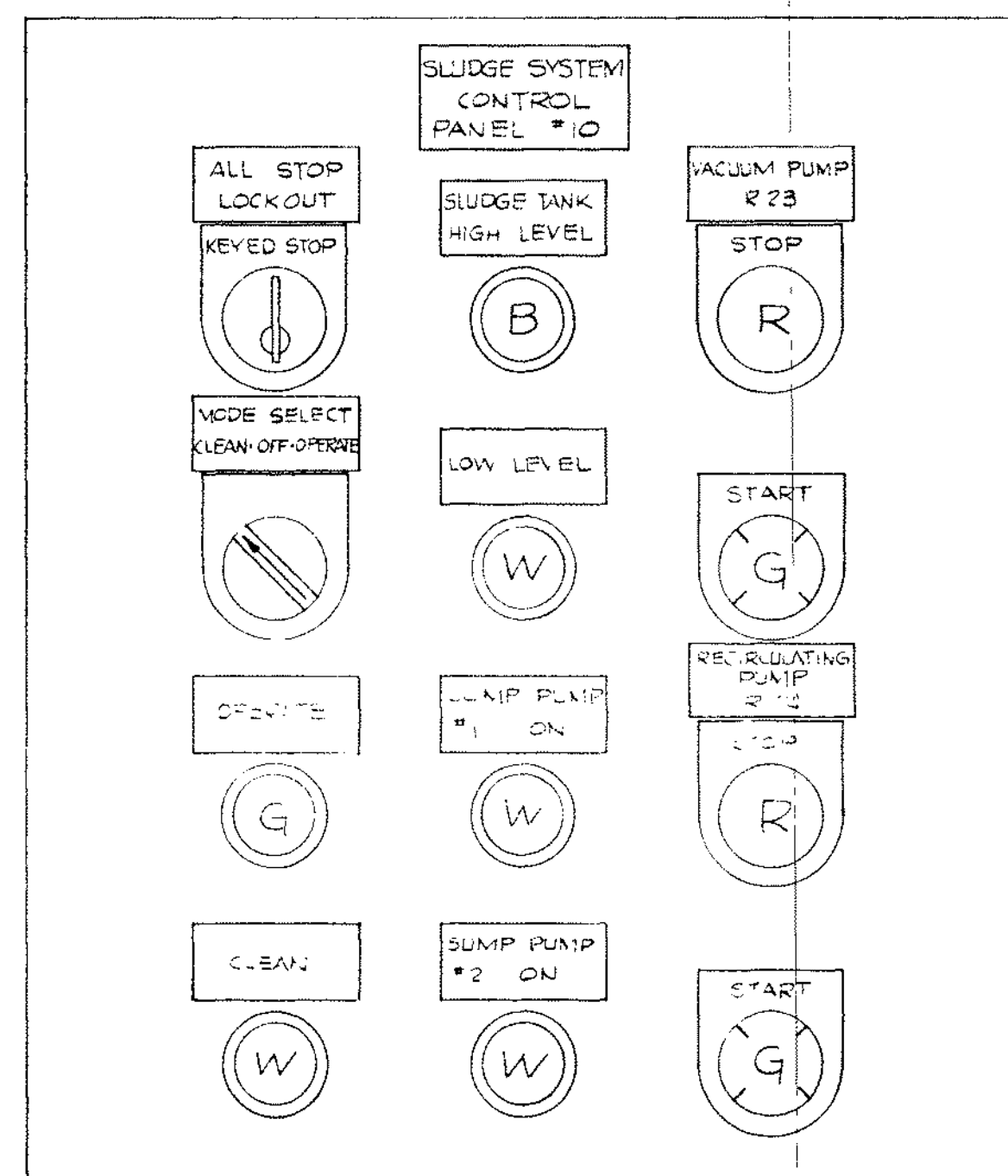
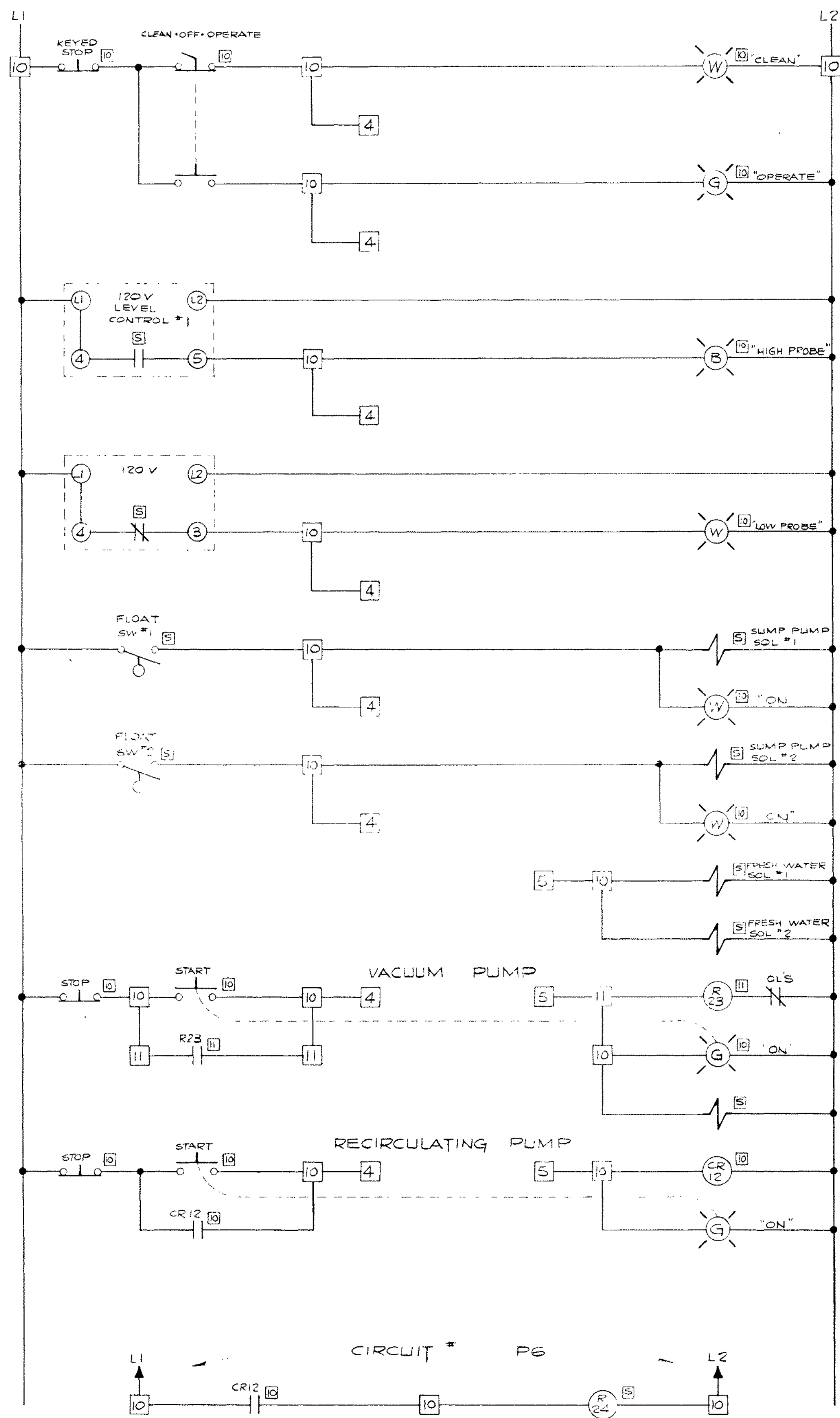
NOTICE - NORTH AMERICAN REFRACTORIES CO. DIVISION OF ELTRA CORPORATION  
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LL-5-A-115  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833  
ONE LINE DIAGRAM FOR  
MOTOR CONTROL CENTER  
IN FURNACE ROOM  
NEW RESEARCH CENTER

OTHERS									
PLANT									
FORMAN									
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE					
		A	ADDED BLOWER TO 8-10. GENERAL REVISIONS	6-1-82					
		CHECKED	SCALE NONE	DATE	DRAWN BY	AR NO.			
				5-25-82	EAL	55-110			
							55-110-E-33		

#0064 - E-33 Fur. Rm/Motor C./One Line - 1981 - None - 100, 107





LL-5-A-116

NORTH AMERICAN REFRACTORIES CO. ENGINEERING CENTER BOX 56 CURWENSVILLE, PA. 16833			
CONTROL DIAGRAM & PANEL LAYOUT FOR SLUDGE SYSTEM - PNL #10			
NEW RESEARCH CENTER			
DRAWN BY EAL CHECKED SCALE HALF SIZE	AR NO 55-110 DATE 6-4-82	55-110-E-52 DWG NO	

NOTICE - NORTH AMERICAN REFRACTORIES CO. DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED IN WHOLE OR IN PART TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

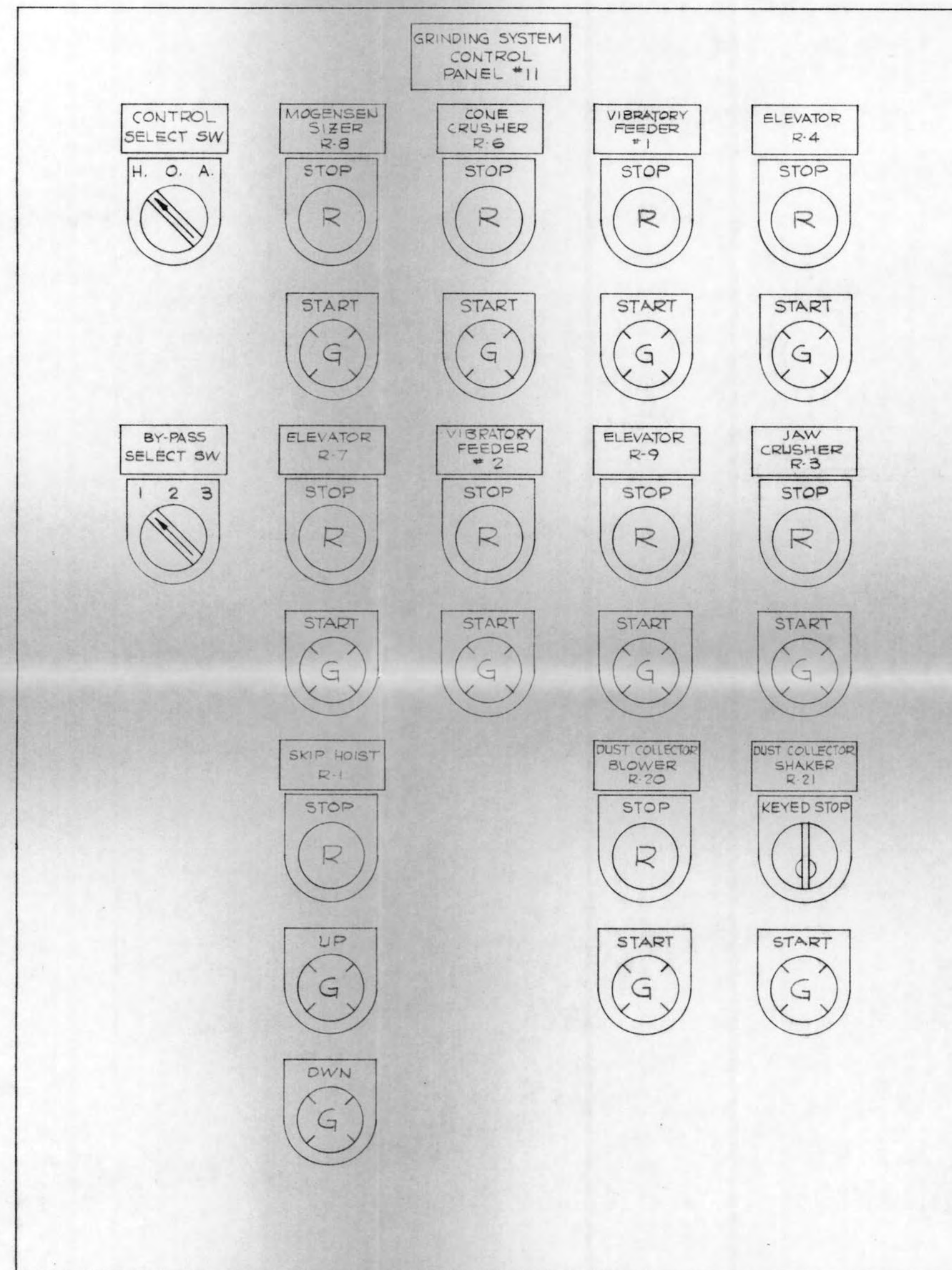
OTHERS	PLANT	FORMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

#0064 E-52 Sludge Sys D416 - 1981 None 1010107









NOTE:  
FOR CONTROL DIAG.,  
PANEL #11, SEE DWG  
55-110-E-53

LL-5-A-118

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833

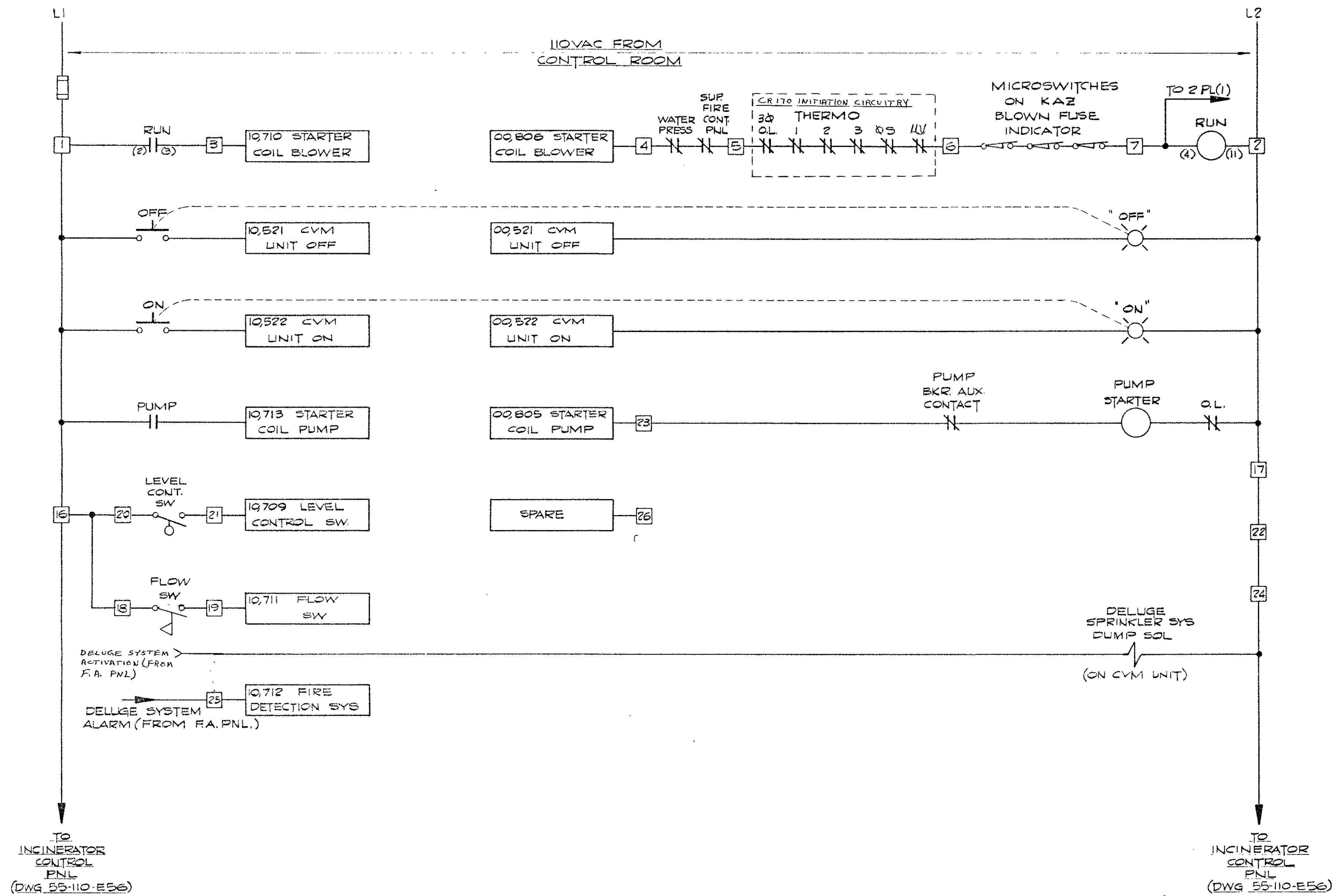
PANEL LAYOUT FOR  
GRINDING SYSTEM  
PANEL #11  
NEW RESEARCH CENTER

DRAWN BY	EAL	AR NO.	55-110
CHECKED		DATE	6-8-82
SCALE	HALF SIZE	DWG. NO.	55-110-E-54

OTHERS	PLANT	FORMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE

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□ TERMINALS AT SOLID STATE STARTER (TERMINAL BLOCK ITB)

▭ MODICON 1/0 TERMINALS

L1-5-A-119

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833

CVM UNIT  
WIRING SCHEMATIC

TECHNICAL CENTER

OTHERS	DATE	DESCRIPTION	DATE
	6/9/87	Deluge activation + flow meter	

DRAWN BY: EAL	AR NO:	
CHECKED:	DATE:	55-110-E55
SCALE: NONE	DATE: 4-20-83	DWG NO:

NOTICE - NORTH AMERICAN REFRACTORIES, AN ALLIED COMPANY CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED, IN WHOLE OR IN PART, TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON. REPRODUCED OR DISCLOSED TO ANYONE WITHOUT DIRECT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.



SEE DWG 55-110-F-6,  
DETAIL "A" FOR  
ENTRANCE PIPING

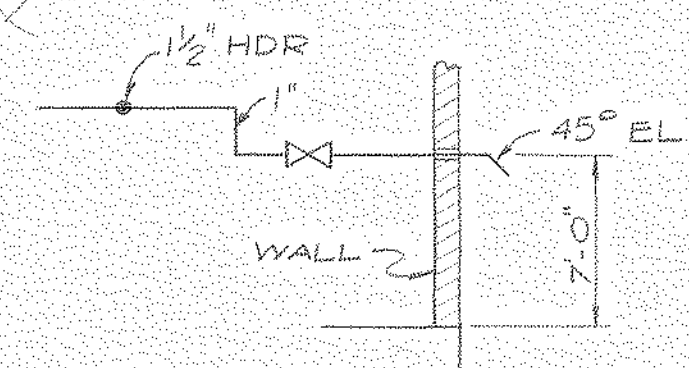


**LEGEND**

- - 1/2" PENDANT SPRINKLER - WET
- + - 1/2" UPRIGHT SPRINKLER - WET
- \* - 1 1/2" PENDANT SPRINKLER - DRY
- ⊠ - 1 1/2" UPRIGHT SPRINKLER - DRY

ALL SPRINKLER HEADS ARE 165° TYPE

NOTE: WORK WITH DWG  
55-110-F-5



INSPECTOR'S TEST  
ALARM VALVE SYSTEM  
SECTION "A-A"

11-5-A-37

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT RESEARCH CENTER  
CURWENSVILLE, PA.

LAYOUT - SPRINKLER SYSTEM FOR  
OFFICES AND WORKROOMS

DRAWN BY BC		I.C. NO. 55-110		55-110-F-4
CHECKED		DATE 4-28-81		
SCALE 1/8"=1'-0"		DWG. NO.		

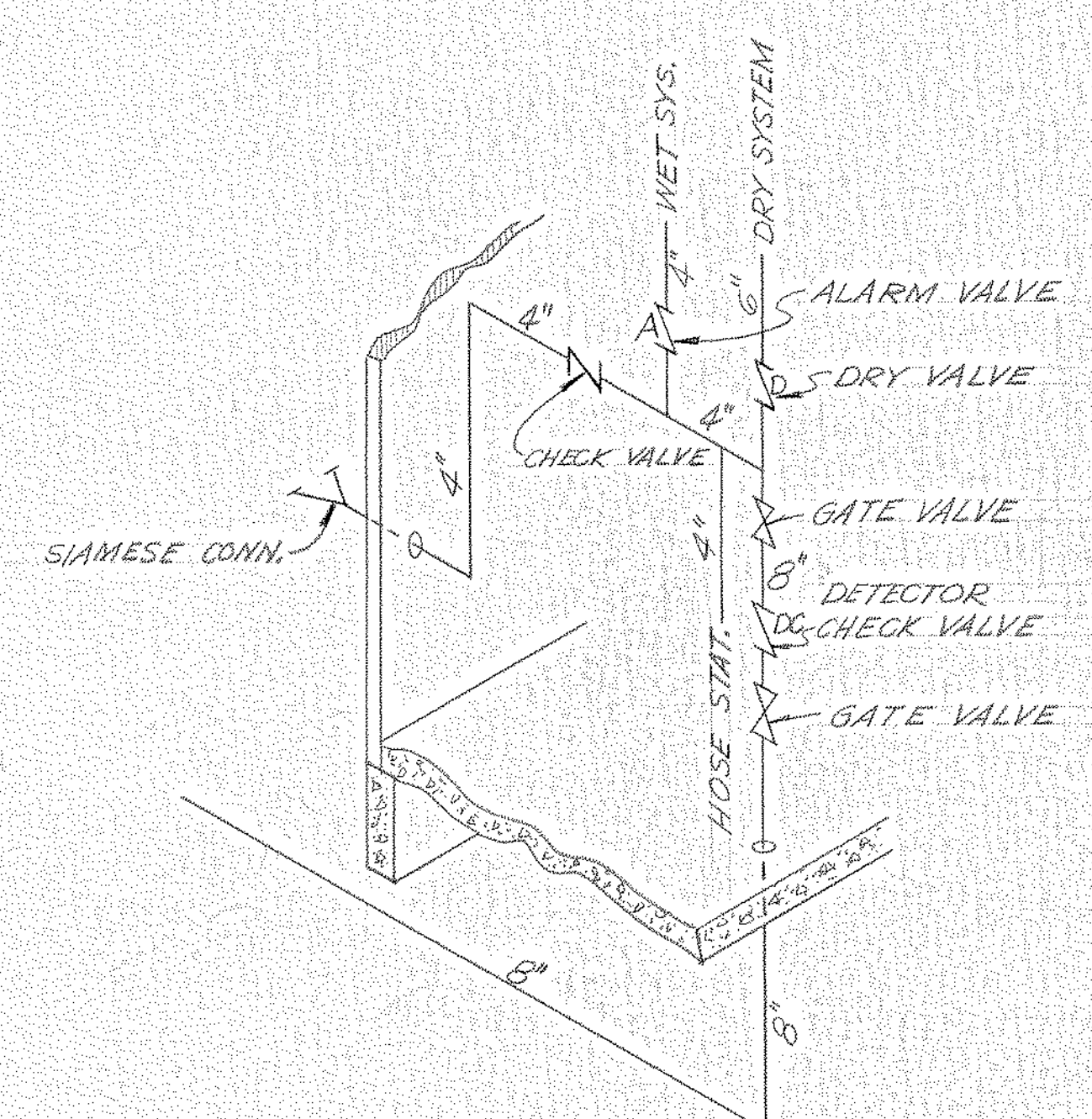
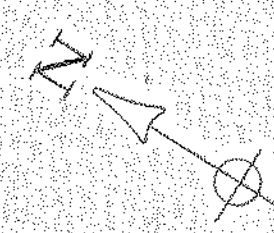
OTHERS	DESIGNED	CHECKED	DATE	REVISION	DESCRIPTION	DATE
				D	"AS BUILT" INTERIOR WALLS	7-28-87
				C	REVISED ENTRANCE PIPING	6-12-81
				B	ADDED LEGEND	6-7-81
				E	DWG. NO. WAS 55-110-FP-1	6-5-81
				A	GEN. REV.	
					ADDED ALARM VALVE	
					SYSTEM TEST	

#0064 F4 SpKlr. Sys./OFF. & WkRm. 1981 NONE 220107

NOTICE - NORTH AMERICAN REFRACTORIES CO., DIVISION OF ELTRA CORPORATION  
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BRUNING 40-22 291 B-3





NOTE:  
 NOT ALL INTERIOR & EXTERIOR WALLS  
 HAVE BEEN "AS-BUILT" ON THIS DWG.

NOTE: SEE DWG. 55-110-F-4  
 FOR LEGEND.

46-5-A-38

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

LAYOUT- SPRINKLER SYSTEM FOR  
 STORAGE AND RAW MAT'L PREPARATION  
 BUILDING

RESEARCH CENTER  
 C. O. NO. 55-110  
 DRAWN BY: B.C.  
 CHECKED: DATE 4-28-81  
 SCALE: 1/8" = 1'-0"  
 55-110-F-5  
 DWG NO.

OTHERS	PLANT	FOREMAN	VENDOR	REVISION	DESCRIPTION	DATE
ADD. GOS. 11/11/81				C	Add Notes	7-28-82
6-16-81				B	Add Powder mtl's Room	7-28-82
6-17-81				A	REV. DWG. NO. (VAS - FR 2)	6-7-81

#0064 F-5 Spk In. Sys/Strg & Prep Rm 1981 NONE 230107

NOTICE: NORTH AMERICAN REFRACTORIES CO., DIVISION OF ULTRA CORPORATION  
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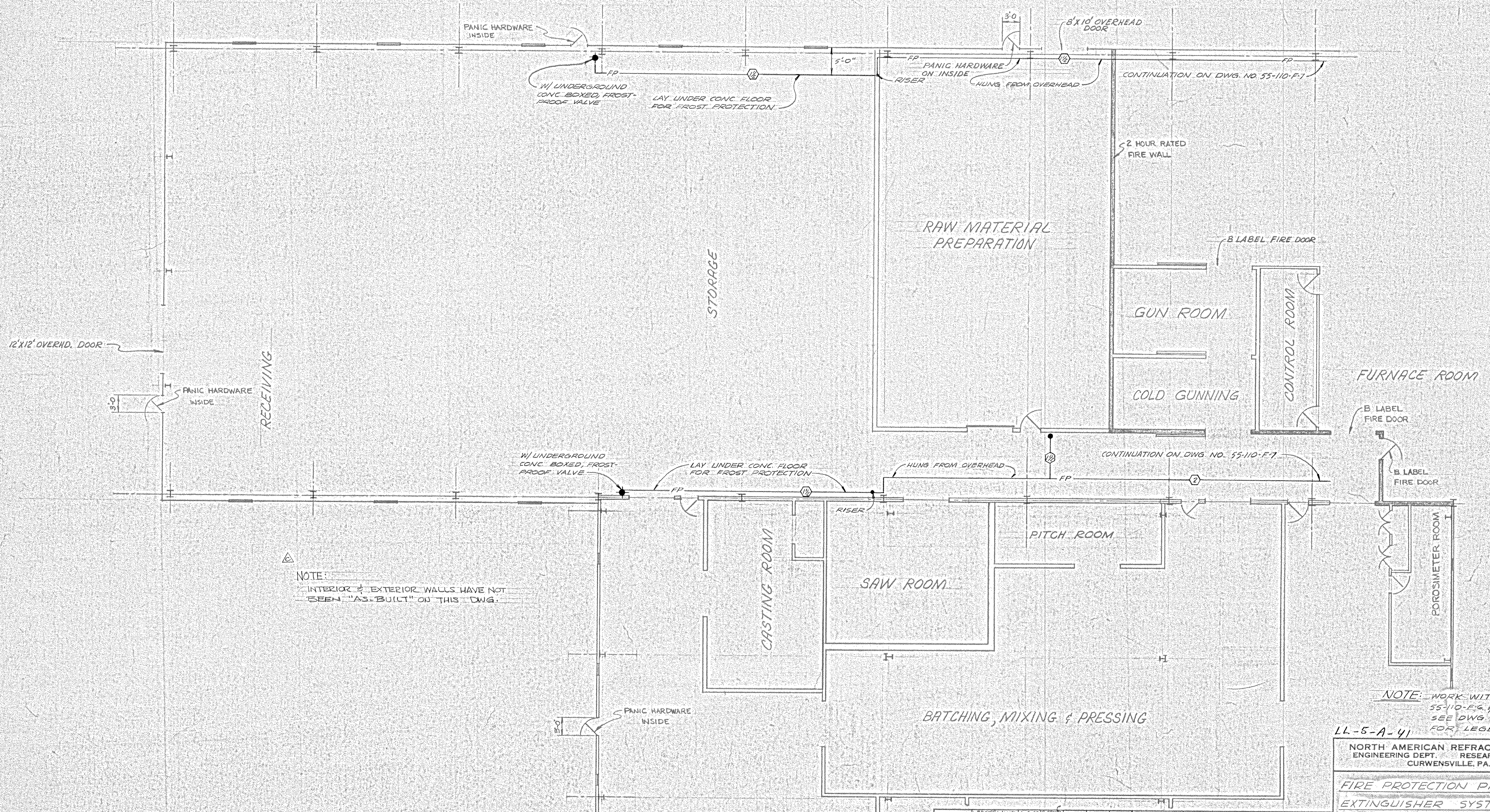












NOTE:  
 INTERIOR & EXTERIOR WALLS HAVE NOT  
 BEEN "AS-BUILT" ON THIS DWG.

NOTE: WORK WITH DWGS.  
 55-110-F-6 & F-7.  
 SEE DWG. 55-110-F-6  
 FOR LEGEND.

LL-5-A-41  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

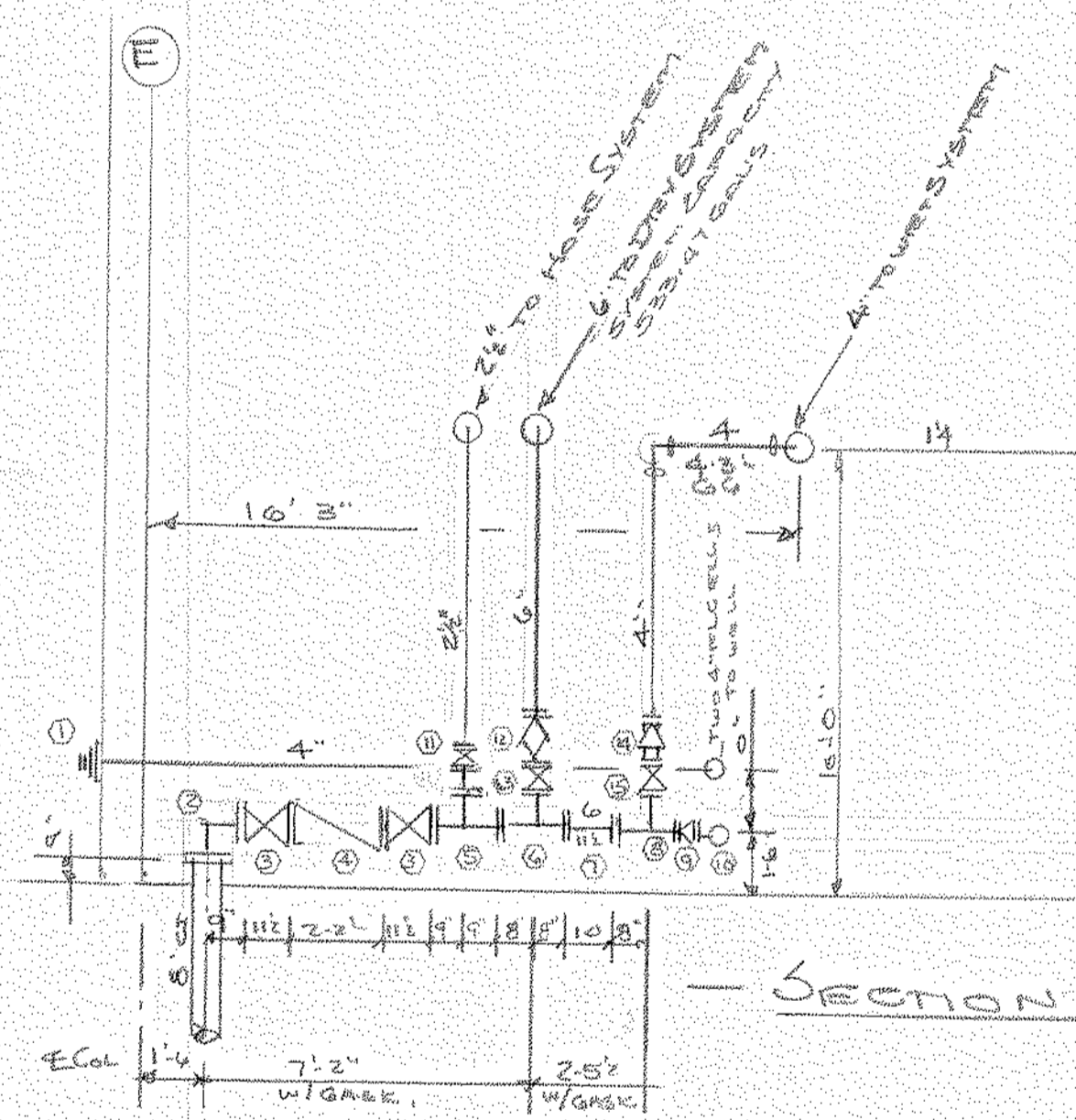
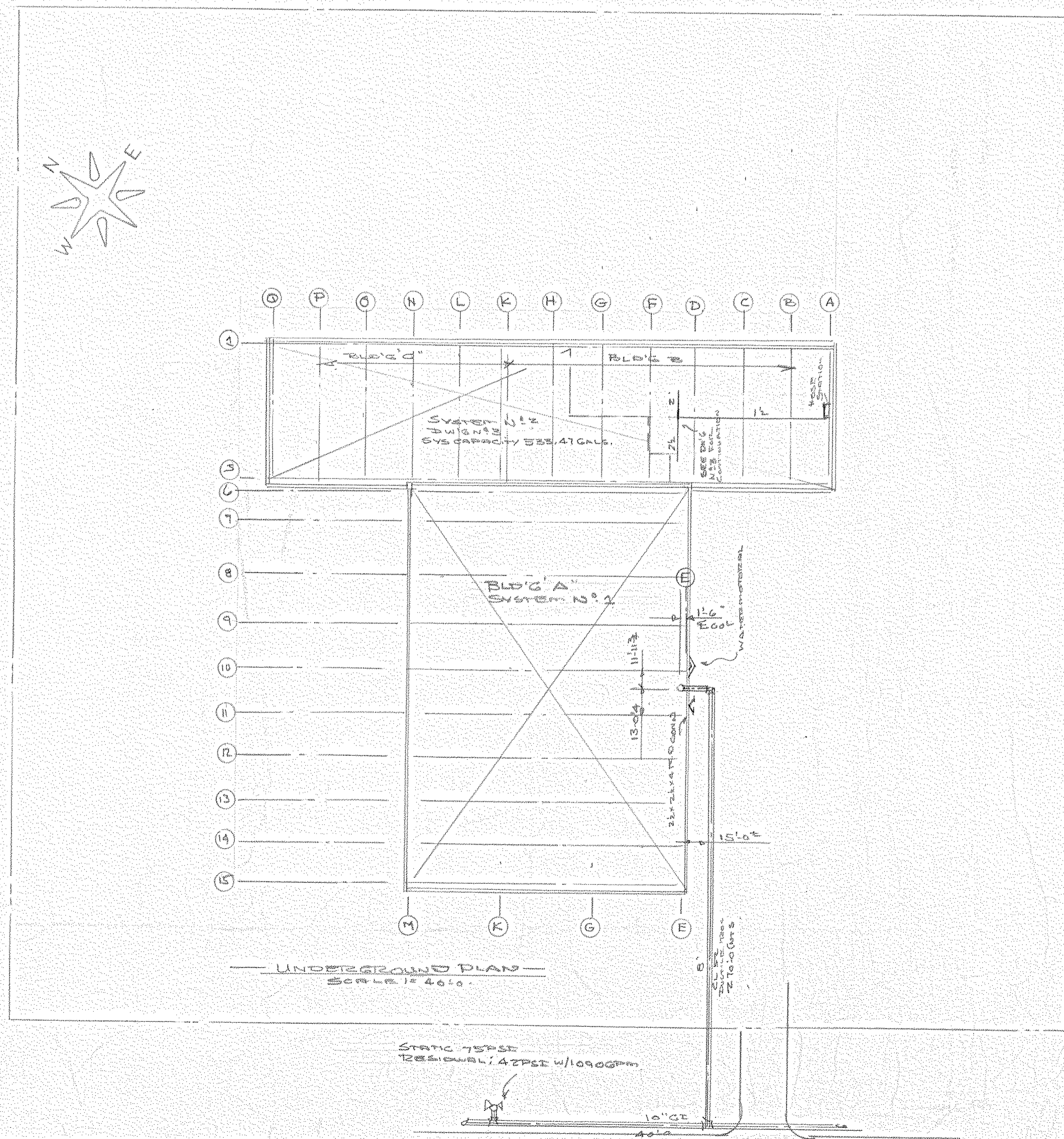
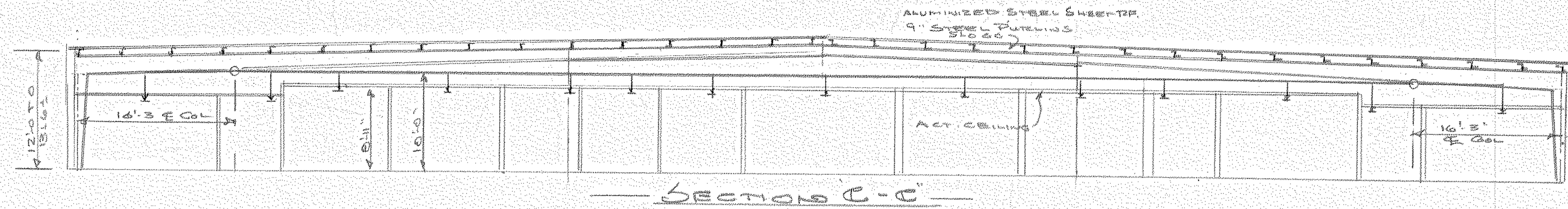
FIRE PROTECTION PIPING  
 EXTINGUISHER SYSTEM  
 NEW RESEARCH CENTER

OTHERS	1-14-81	1-14-81	1-14-81	1-14-81	1-14-81	1-14-81	1-14-81	1-14-81	1-14-81
PLANT									
FOREMAN									
VENDOR									
REVISION	A	B	C	D	E	F	G	H	I
DESCRIPTION	ADD TO GEN. REV.	ADDED NOTE							
DATE	6-8-81	6-11-81	7-28-82						

DRAWN BY: RWK  
 C.O. NO. 55-110  
 CHECKED: DATE 2-12-81  
 SCALE: 1/8" = 1'-0"  
 DWG NO. 55-110-F-8

NOTICE: NORTH AMERICAN REFRACTORIES CO., DIVISION OF ELTRA CORPORATION  
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 PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.





- KEY**
1. 2x2x4 RD CONNECTION
  2. 8\"/>
  - 3. 6\"/>
  - 4. 8\"/>
  - 5. 8\"/>
  - 6. 6\"/>
  - 7. 6\"/>
  - 8. 6\"/>
  - 9. 4\"/>
  - 10. 4\"/>
  - 11. 4\"/>
  - 12. 6\"/>
  - 13. 6\"/>
  - 14. 4\"/>
  - 15. 4\"/>

- SYMBOLS**
- UPPER BRASS SYMBOLIC SYMBOLS
  - LOWER BRASS SYMBOLIC SYMBOLS
  - CEMENT SYMBOLIC SYMBOLS
  - SPRINKLER HEAD
  - INDICATES CENTER OF PIPE OR CONDUIT
  - INDICATES CENTER OF PIPE ABOVE FLOOR
  - INDICATES PIPE COVER THAT IS TO BE MAINTAINED

**GENERAL NOTES**

1. REFER TO SPECIFICATIONS FOR ALL MATERIALS AND WORKMANSHIP.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
3. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
4. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
5. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
7. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
8. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
9. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.
10. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.

11-5-A-42

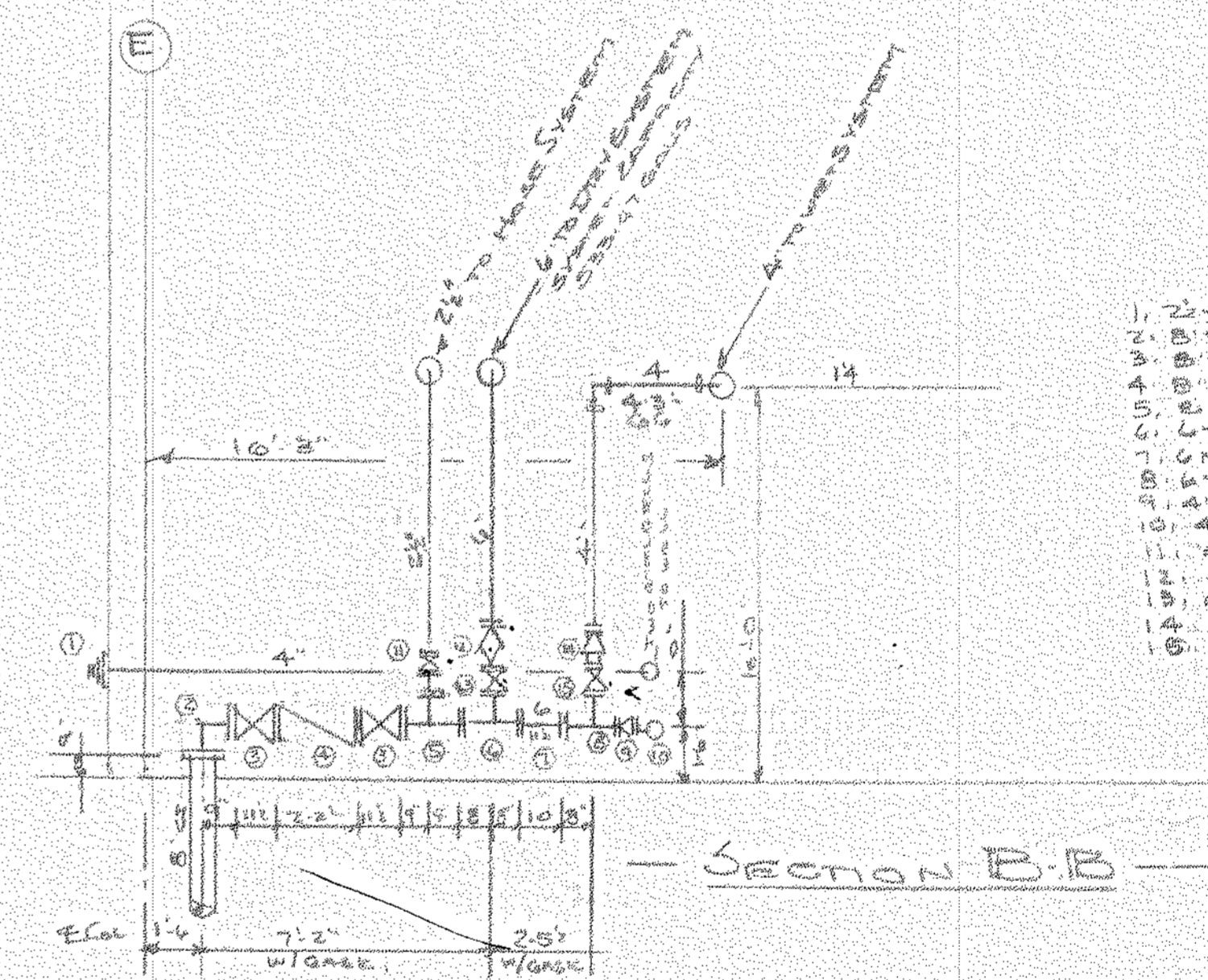
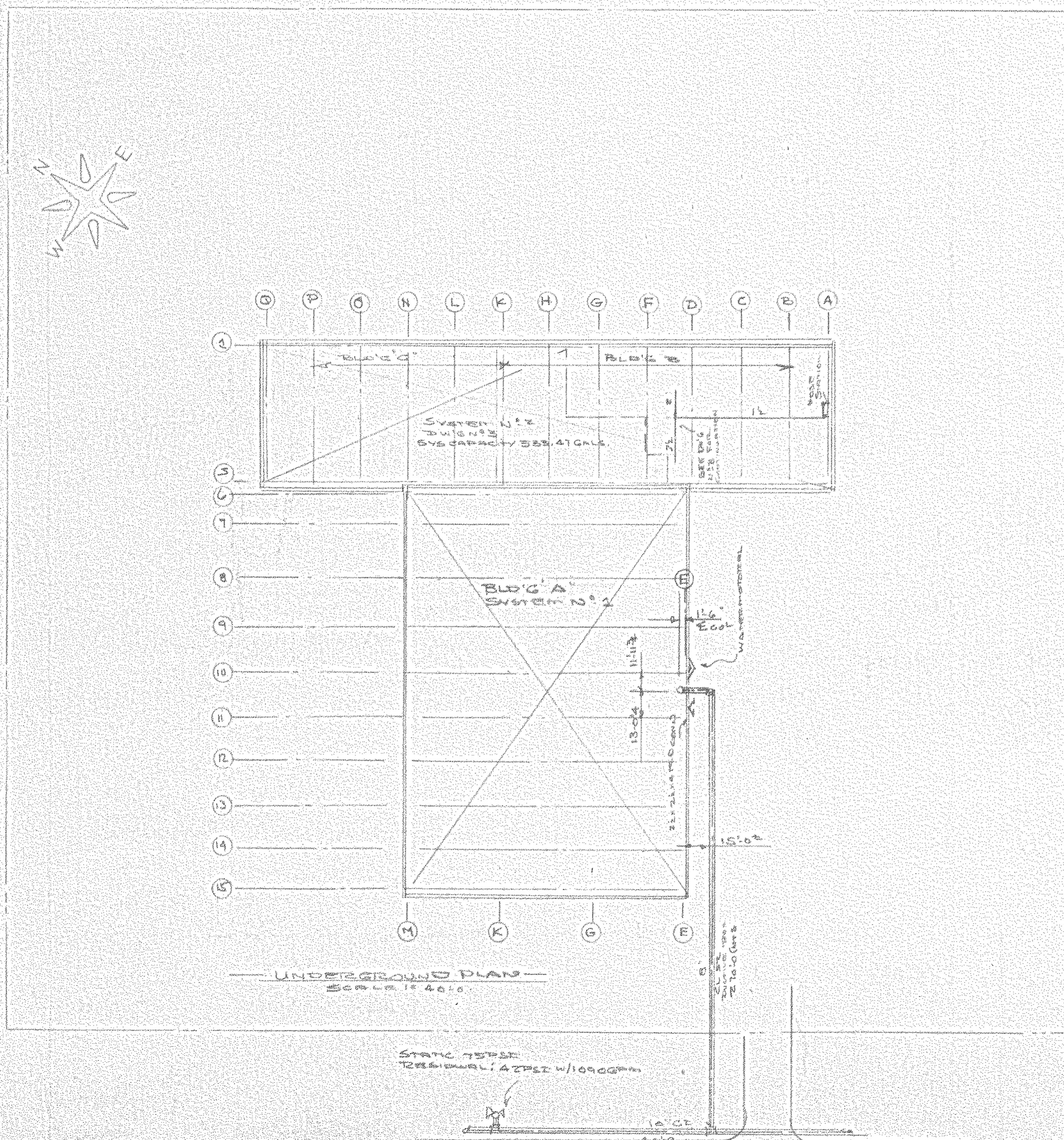
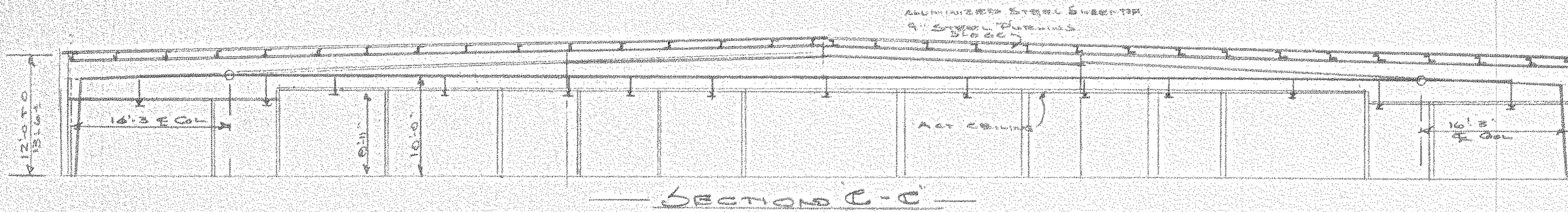
**UNDERGROUND & SECTIONS**

**NORTH AMERICAN REFRACTORIES Co**  
CURWENSVILLE  
PENNSYLVANIA

**R. D. GOSS INC.**  
P. 519 WILLIAMS ST.  
CLEARFIELD  
PENNSYLVANIA

SURVEY	PLAN
DRAWN	BY
ACCEPTANCE	DATE
SCALE	NOTED
SHEET NO.	TOTAL





- KEY**
- 2" x 2" x 4" FD CONNECTION
  - 3" 90° FLG BELL
  - 3" 90° GATE VA
  - 3" DEFLECTOR CHECK (HORIZONTAL)
  - 2" x 2" x 4" FLG TREE
  - 4" x 4" FLG TREE
  - 4" x 4" SPOOL PL (90°)
  - 4" x 4" FLG TREE
  - 4" CHECK VA
  - 4" x 4" 2" x 1/4" F. G. CONN.
  - 4" 90° GATE VA
  - 6" 90° VALVE
  - 6" 90° GATE VA
  - 4" ALARM VA
  - 4" 90° GATE VA

- SYMBOLS**
- UPRIGHT BRASS AUTOMATIC SPRINKLER
  - PENDENT BRASS AUTOMATIC SPRINKLER
  - PENDENT CHROME AUTOMATIC SPRINKLER
  - SPRINKLER RISER
  - (X) INDICATES CENTER OF PIPE BELOW ROOF DECK
  - (E) INDICATES CENTER OF PIPE ABOVE FINISHED FLOOR
  - APPROVED PIPE HANGER INSTALLED IN ACCORDANCE

- GENERAL NOTES**
- ENTIRE SPRINKLER SYSTEM TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO. 13.
  - SPRINKLER DESIGNED FOR 1.2 G.P.M. AT 138.15' ± 48.88 P.S.I. @ 10' OF RISER
  - SPRINKLER DEFLECTOR TO BE A MINIMUM OF (1'-0" ) TO A MAXIMUM OF (1'-2 1/2" ) BELOW FINISHED FLOOR.
  - HIGH DEGREE SPRINKLER HEADS TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO. 13.
  - HAZARD: *General*
  - SPACING: 17' x 17' TO 20' x 20'
  - PIPE SIZING: *See Schedule*
  - GENERAL CONSTRUCTION: *See Schedule*
  - PITCH PIPE (1/4" x 1") FOR 10' OF RISE OR 5'
  - HEIGHT OF BUILDING: 22'-0"
  - APPROVING UNDERWRITERS
  - ALL HANGERS AS N.F.P.A. 13

UNDERGROUND & SECT. (1/4" = 1'-0")

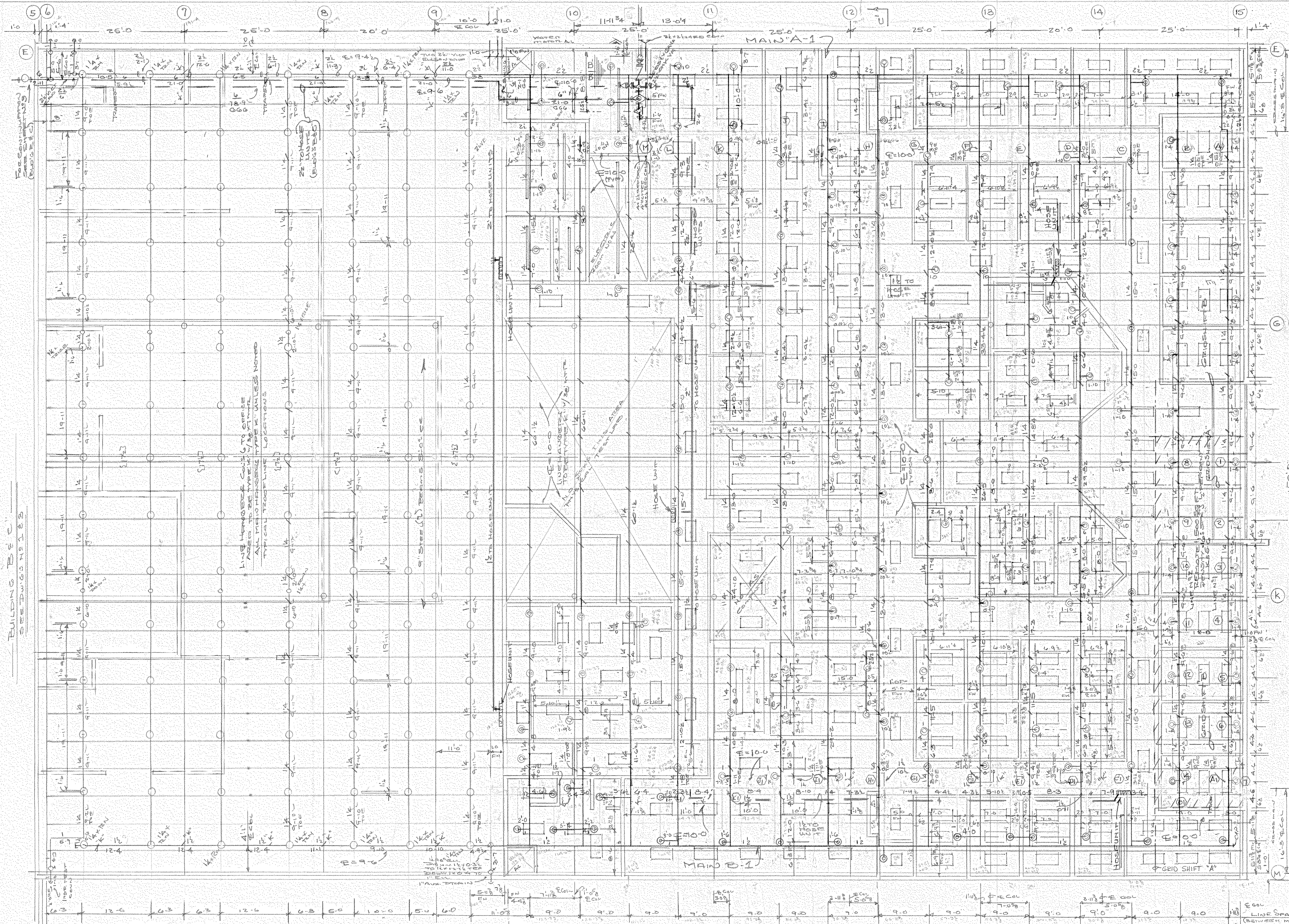
**NORTH AMERICAN REFRACTORIES CO**  
CURWENSVILLE  
PENNSYLVANIA

**R.D. GOSS INC.**  
P. 519 WILLIAMS ST.  
CLEARFIELD  
PENNSYLVANIA

Duplicate

SYMBOL	PLAN
90°	90°
DEFLECTOR	DEFLECTOR
SCALE	NOTED
SHEET NO.	1 OF 3

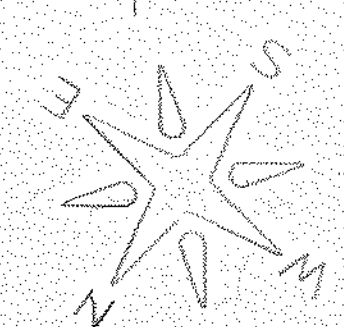




BUILDING B  
SEE DWG. NO. 5

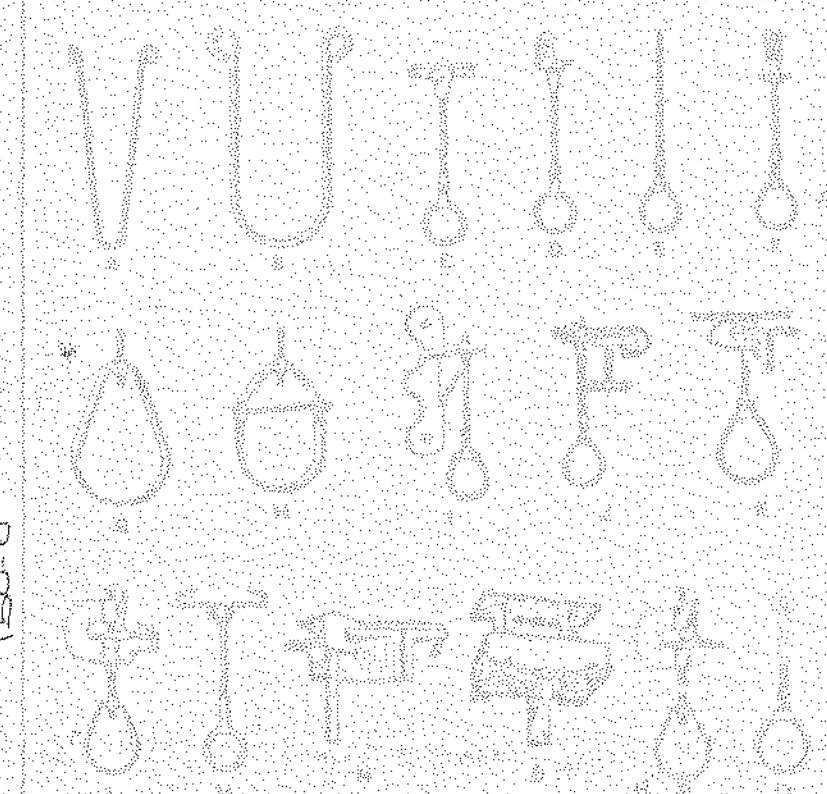
LINE HANGERS SHALL BE USED TO THE TYPE AND SIZE AS SHOWN ON THIS DRAWING UNLESS NOTED OTHERWISE.

**PIPE NOTES**  
 1. TOP POS. (ELEVATION) TO BE SHOWN AS V. THREAD ON ONE END  
 2. ALL 1/2" PIPE TO BE CLASS. 40 & THREADED  
 3. ALL 1/2" INTERIOR PIPE BETWEEN MAINS A-1 TO A-17  
 4. LITE WALL  
 5. DIMENSIONS SHOWN ON 1/2" INTERIOR PIPE ARE AT TOP OF PIPE  
 6. MAIN "A-1" TO BE 1/2" CLASS. 40 & THREADED  
 7. MAIN "A-2" TO BE 1/2" CLASS. 40 & THREADED  
 8. MAIN "A-3" TO BE 1/2" CLASS. 40 & THREADED  
 9. MAIN "A-4" TO BE 1/2" CLASS. 40 & THREADED  
 10. MAIN "A-5" TO BE 1/2" CLASS. 40 & THREADED  
 11. MAIN "A-6" TO BE 1/2" CLASS. 40 & THREADED  
 12. MAIN "A-7" TO BE 1/2" CLASS. 40 & THREADED  
 13. MAIN "A-8" TO BE 1/2" CLASS. 40 & THREADED  
 14. MAIN "A-9" TO BE 1/2" CLASS. 40 & THREADED  
 15. MAIN "A-10" TO BE 1/2" CLASS. 40 & THREADED  
 16. MAIN "A-11" TO BE 1/2" CLASS. 40 & THREADED  
 17. MAIN "A-12" TO BE 1/2" CLASS. 40 & THREADED  
 18. MAIN "A-13" TO BE 1/2" CLASS. 40 & THREADED  
 19. MAIN "A-14" TO BE 1/2" CLASS. 40 & THREADED  
 20. MAIN "A-15" TO BE 1/2" CLASS. 40 & THREADED  
 21. MAIN "A-16" TO BE 1/2" CLASS. 40 & THREADED  
 22. MAIN "A-17" TO BE 1/2" CLASS. 40 & THREADED



BUILDING A  
 176' x 160' HUNG CEILING AREA  
 105' x 160' UNHUNG AREA  
 281' TOTAL

**GENERAL NOTES**  
 1. THIS DRAWING IS FOR THE HUNG CEILING AREA OF BUILDING A ONLY.  
 2. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.  
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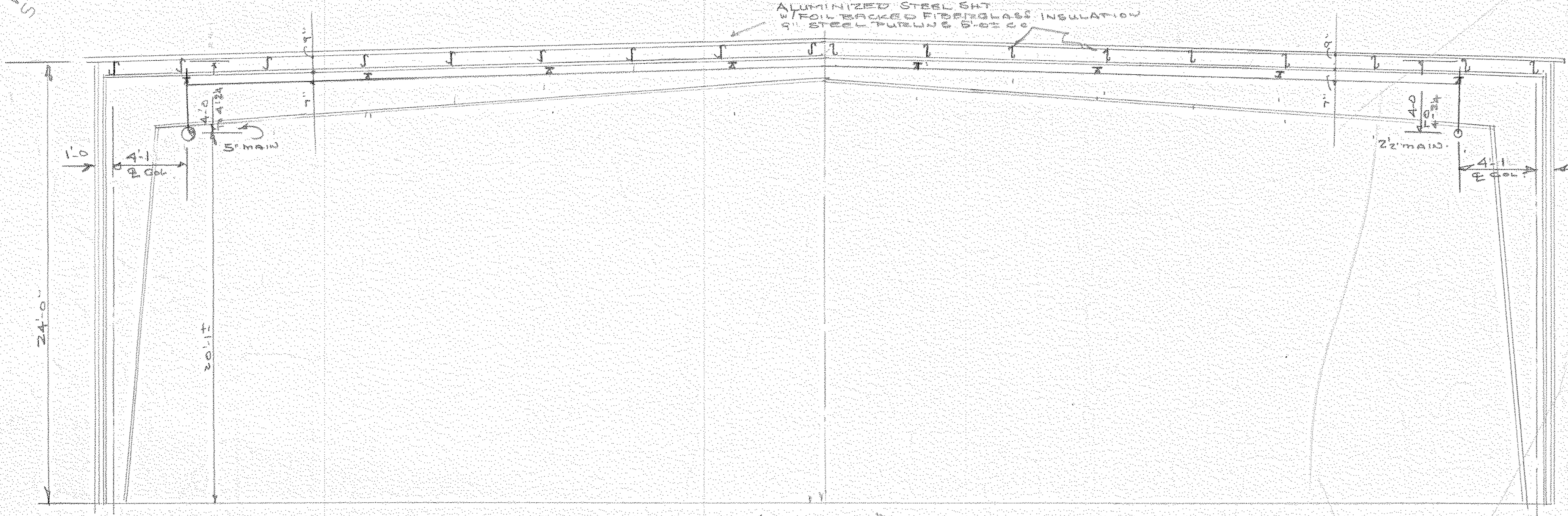
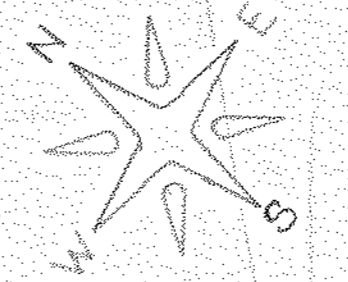
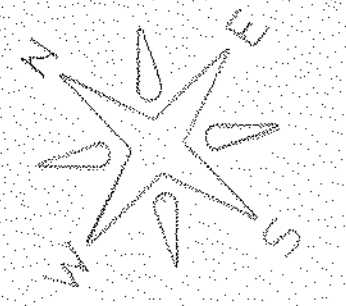
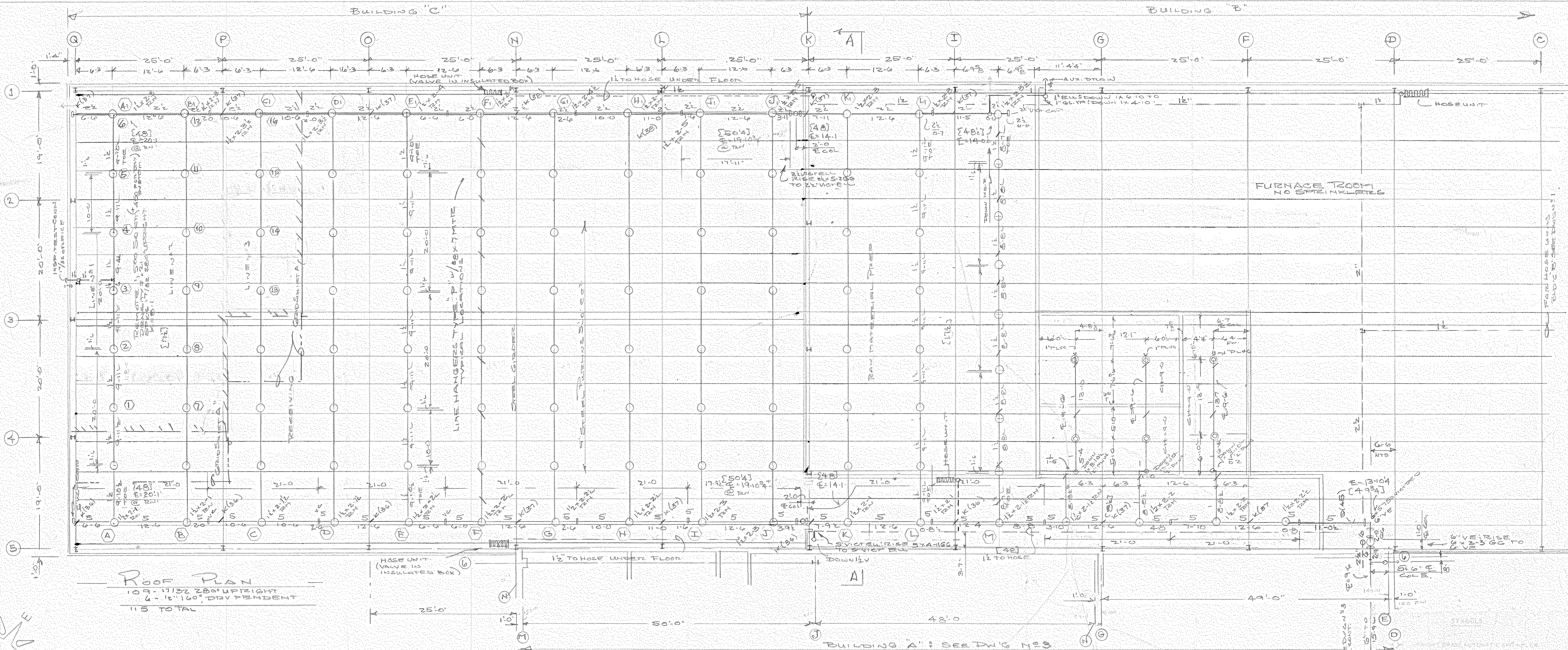
11-5-A-44

NORTH AMERICAN REFRACTORIES CO.  
 CURWENSVILLE  
 PENNSYLVANIA  
 R. P. GOSIS INC.  
 R. S. WILLIAMS  
 CLEARFIELD  
 PENNSYLVANIA  
 A RECORDED PLANS A/F 5/1  
 11-5-81  
 SURVEYED BY  
 DRAWN BY  
 ACCURACY  
 SCALE 1/8" = 1'-0"  
 SHEET NO. 281









SECTION A-A

- SYMBOLS**
- HORIZONTAL BRASS AUTOMATIC SPRINKLER
  - PENDENT BRASS AUTOMATIC SPRINKLER
  - PENDENT CURVED AUTOMATIC SPRINKLER
  - SPECIALTY ITEM
  - INDICATES CENTER OF PIPE AS SHOWN ON FLOOR PLAN
  - INDICATES CENTER OF PIPE AS SHOWN ON FLOOR PLAN
  - APPROVED PIPE HANGER OR ALL EQUIVALENTS

- GENERAL NOTES**
1. SPRINKLER SYSTEM TO BE INSTALLED IN ACCORDANCE WITH IFC - 9.4. PARAGRAPHS 904.11, 904.12, 904.13, 904.14, 904.15, 904.16, 904.17, 904.18, 904.19, 904.20, 904.21, 904.22, 904.23, 904.24, 904.25, 904.26, 904.27, 904.28, 904.29, 904.30, 904.31, 904.32, 904.33, 904.34, 904.35, 904.36, 904.37, 904.38, 904.39, 904.40, 904.41, 904.42, 904.43, 904.44, 904.45, 904.46, 904.47, 904.48, 904.49, 904.50, 904.51, 904.52, 904.53, 904.54, 904.55, 904.56, 904.57, 904.58, 904.59, 904.60, 904.61, 904.62, 904.63, 904.64, 904.65, 904.66, 904.67, 904.68, 904.69, 904.70, 904.71, 904.72, 904.73, 904.74, 904.75, 904.76, 904.77, 904.78, 904.79, 904.80, 904.81, 904.82, 904.83, 904.84, 904.85, 904.86, 904.87, 904.88, 904.89, 904.90, 904.91, 904.92, 904.93, 904.94, 904.95, 904.96, 904.97, 904.98, 904.99, 905.00.
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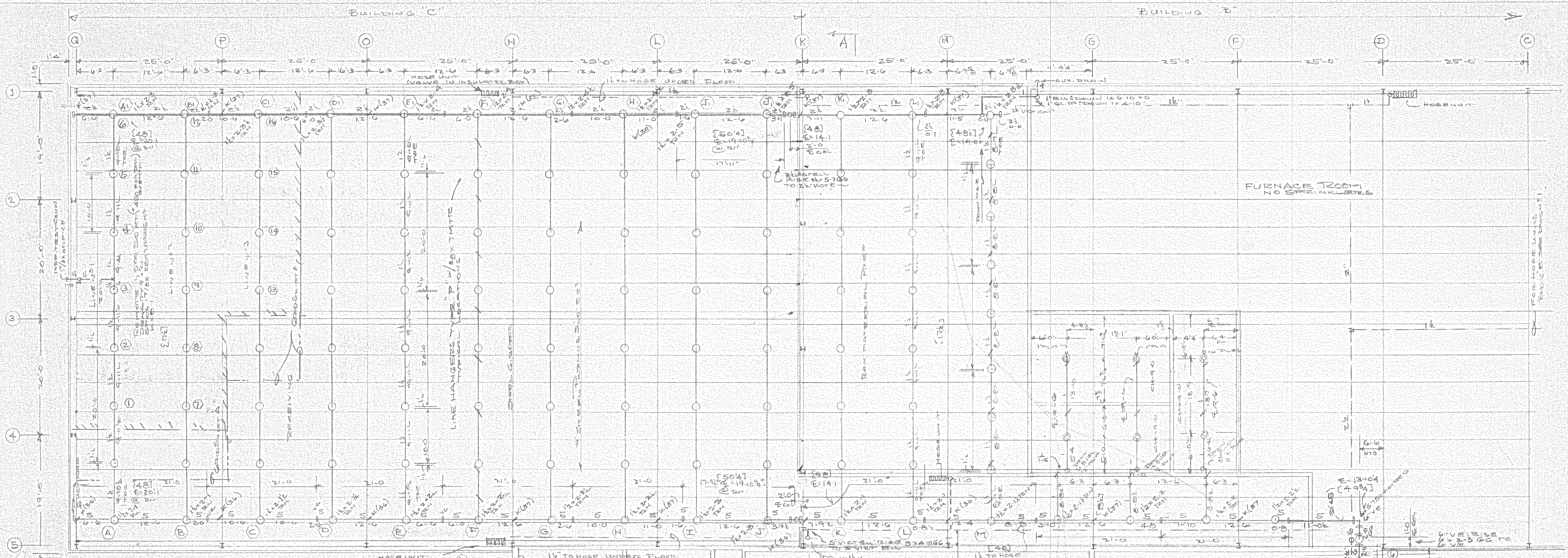
BUILD'G 'C' PART BLDG 'B' 11-5-A-46

**NORTH AMERICAN REFRACTORIES CO**  
CURWENSVILLE  
PENNSYLVANIA

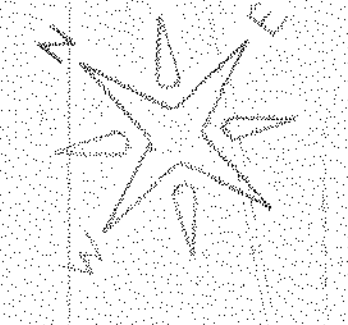
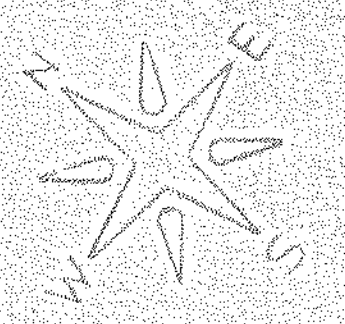
**R. D. GOSS INC.**  
R. 519 WILLIAMS ST.  
CLEARFIELD  
PENNSYLVANIA

10/1781	CHANGED BY TO 6/11/81	DESIGNED BY	RAW	RESPONSIBLE ENGINEER
	BY 6/11/81	DRAWN BY	115	ON SHEET
	REVISIONS TO 5/10/81	ACCEPTANCE		NO SPARKS ON JOBS
	DATE	SCALE	1/8" = 1'-0"	
		SHEET NO.	3 OF 3	



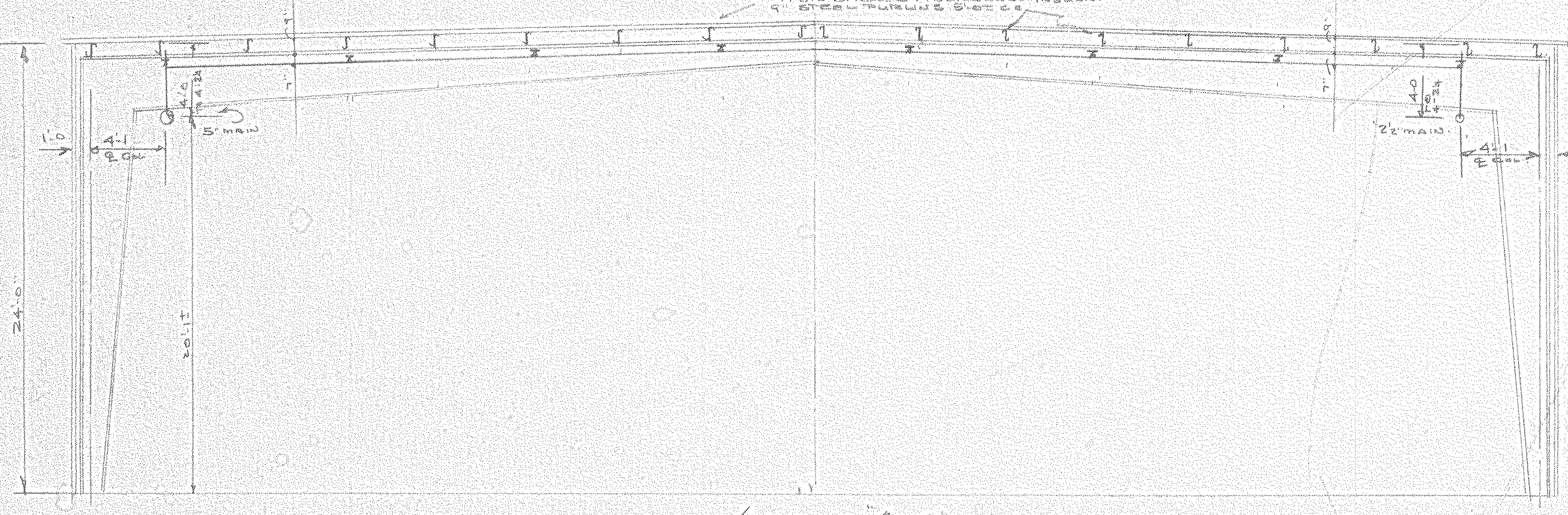


**ROOF PLAN**  
 109-1122 280' UP LIGHT  
 4-1/2" DIA. DRIP PENDENT  
 11'S TOTAL

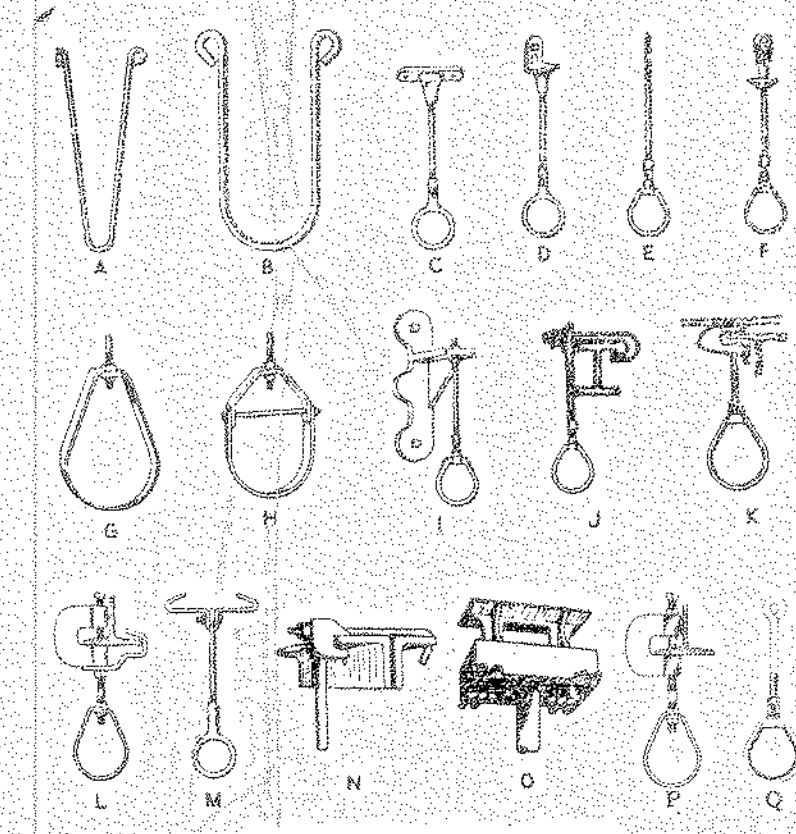


- SYMBOLS**
- UPRIGHT BRASS AUTOMATIC SPRINKLER
  - PENDENT BRASS AUTOMATIC SPRINKLER
  - ⊙ PENDENT CHROME AUTOMATIC SPRINKLER
  - ⊕ SPRINKLER RISER
  - (\*) INDICATES CENTER OF PIPE BELOW ROOF DECK
  - ⊖ INDICATES CENTER OF PIPE ABOVE FINISHED FLOOR
  - APPROVED PIPE HANGER INSTALLED IN ACCORDANCE

- GENERAL NOTES**
1. ENTIRE SPRINKLER SYSTEM TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO. 13
  2. SPRINKLER DESIGNED FOR 14.4 G.P.M. AT 175 PSI. 1" B.S. TOP OF RISER
  3. SPRINKLER DEFLECTOR TO BE A MINIMUM OF 1" TO A MAXIMUM OF 1 1/2" BELOW TOP OF RISER
  4. HIGH DEGREE SPRINKLER HEADS TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO. 13
  5. HAZARD CLASS II
  6. PIPE SIZING: 2" MAIN
  7. GENERAL CONSTRUCTION:
  8. PITCH PIPE 1/8" PER FOOT FOR 10'0"
  9. HEIGHT OF BUILDING: 24'-0"
  10. APPROVING UNDERWRITERS: AIA
  11. ALL HANGERS AS N.F.P.A. 13



SECTION A-A



- COMMON TYPES OF ACCEPTABLE HANGERS**
- A - U-TYPE HANGER FOR BRANCH LINES
  - B - U-TYPE HANGER FOR CROSS MAINS AND FEED MAINS
  - C - ADJUSTABLE CLIP FOR BRANCH LINES
  - D - SIDE BEAM ADJUSTABLE HANGER
  - E - ROD AND EYE HANGER
  - F - ADJUSTABLE VERTICAL RING HANGER WITH EXPANSION CASE
  - G - ADHS-100 FLAT IRON HANGER
  - H - ADJUSTABLE CLEVIS HANGER
  - I - CANTILEVER BRACKET
  - J - ROD AND EYE HANGER
  - K - "J" TOP BEAM CLAMP
  - L - C-TYPE CLAMP WITH RETAINING STRAP
  - M - CENTER BEAM CLAMP FOR BRANCH LINES
  - N - TOP BEAM CLAMP
  - O - "CONCRETE" CONCRETE INSERT
  - P - C-TYPE CLAMP WITHOUT RETAINING STRAP
  - Q - EYE ROD AND RING HANGER

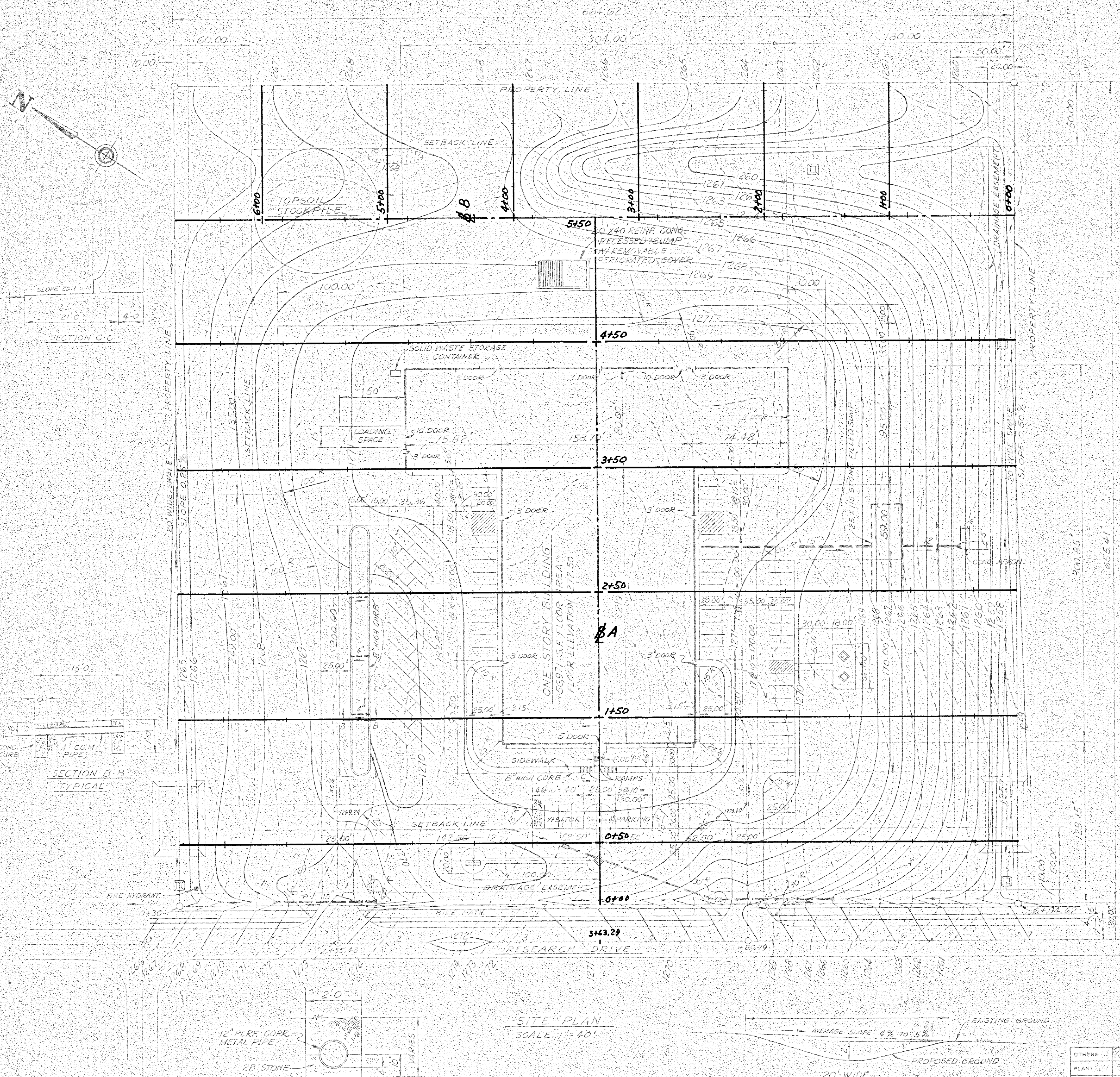
11-5-A-47

BLDG. C & PART BLDG. E  
**NORTH AMERICAN REFRACTORIES CO.**  
 CURWENSVILLE  
 PENNSYLVANIA  
**R.D. GOSS INC.**  
 R. 519 WILLIAMS ST.  
 CLEARFIELD  
 PENNSYLVANIA

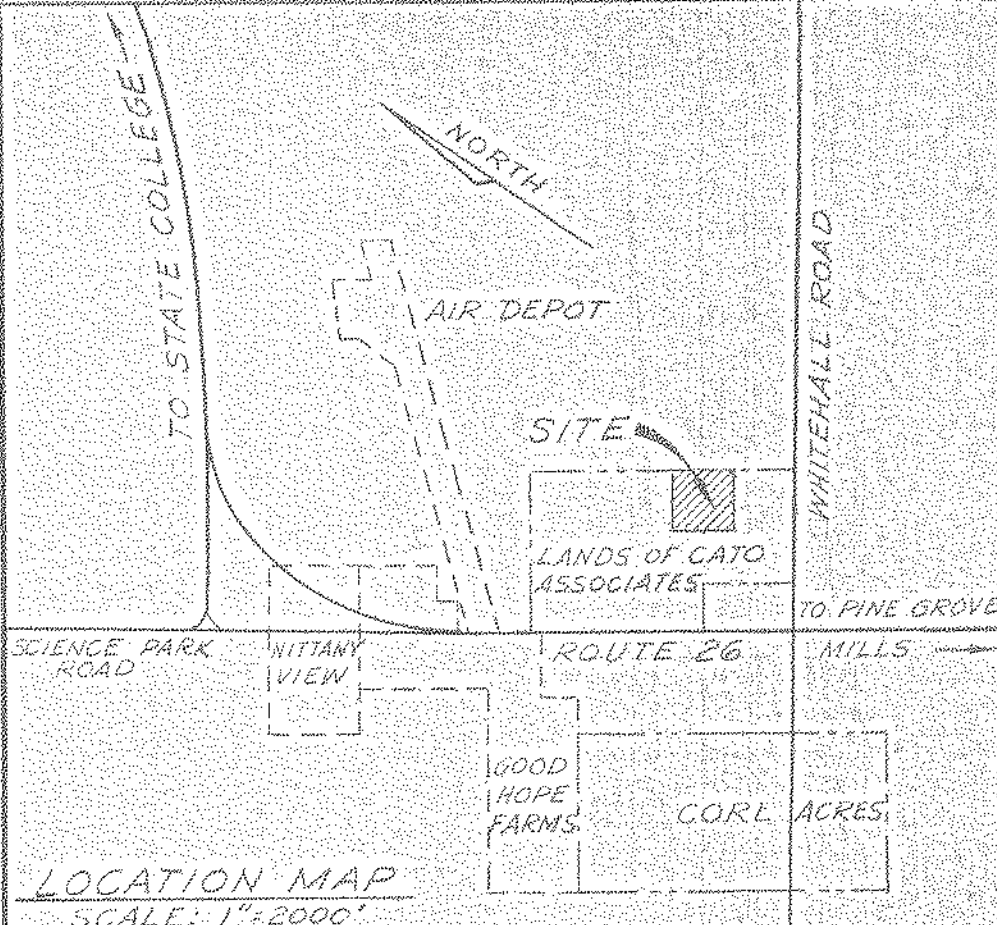
DATE	BY	REVISION
11/17/51	GOSS	15
11/17/51	GOSS	15
11/17/51	GOSS	15
11/17/51	GOSS	15



ZONING DISTRICT R-2 (LOW DENSITY RESIDENCE)



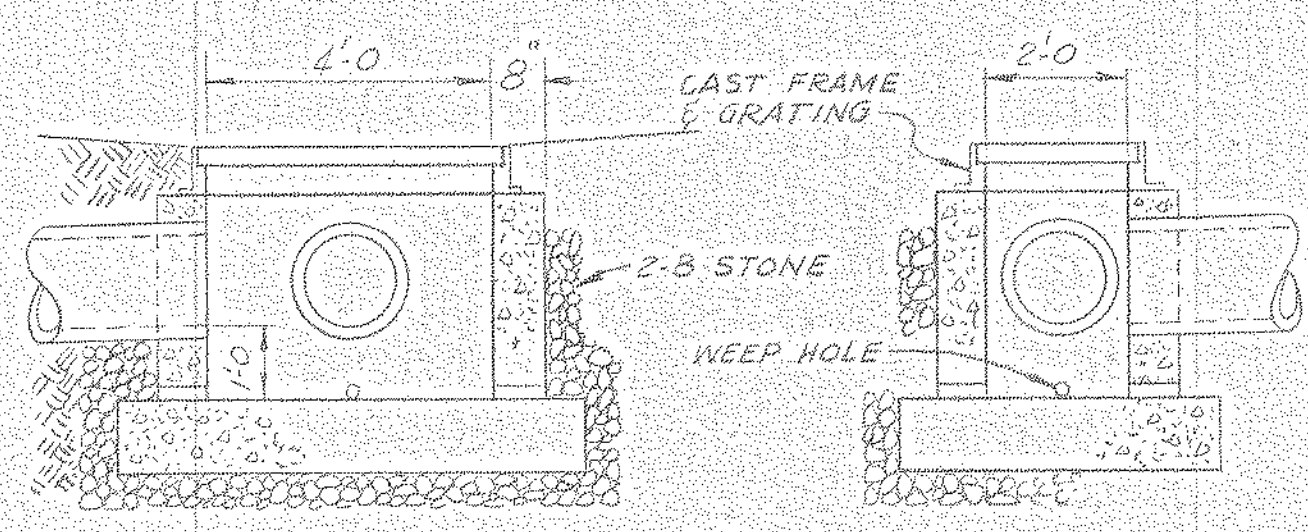
- NOTES**
- GENERAL SITE INFORMATION
    - A. LOT USE: OFFICE BUILDING AND RESEARCH CENTER
    - B. ZONING: R-2 (RESEARCH DEVELOPMENT, LIGHT INDUSTRY)
    - C. TOTAL NUMBER OF LOTS ONE
    - D. TOTAL ACREAGE: 10.00
  - UTILITY INFORMATION
    - A. SEWAGE: PATTON FERGUSON JOINT AUTHORITY
    - B. WATER: STATE COLLEGE WATER AUTHORITY
    - C. ELECTRIC: WEST PENN. POWER COMPANY
    - D. PHONE: BELL OF PENNSYLVANIA
    - E. CABLE TV: CENTRE VIDEO
    - F. GAS: COLUMBIA GAS COMPANY
  - ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM
  - FOR ADDITIONAL INFORMATION SEE DRAWING ENTITLED CATO ASSOCIATES PRELIMINARY SUBDIVISION PLAN, PREPARED BY UNIVERSAL TECHNICAL, INC.
  - ALL STORM WATER DRAINAGE FACILITIES WITHIN THE CONFINES OF THE PROPERTY BOUNDARY LINES WILL BE MAINTAINED BY NORTH AMERICAN REFRACTORIES CO.
  - PARKING
    - A. 66 EMPLOYEE SPACES (10' X 20')
    - B. 6 VISITOR SPACES (10' X 20')
  - ALL DRIVEWAYS, LOADING AND PARKING AREAS TO BE SURFACED WITH 1" OR 1 1/2" BITUMINOUS WEARING COURSE ON BITUMINOUS BASE COURSE ON CRUSHED STONE SUBBASE.
  - FOR LANDSCAPE PLANTINGS AND OUTDOOR LIGHTING SEE NARGO DRAWING NO. 55-110-10



FERGUSON TOWNSHIP PLANNING COMMISSION  
APPROVED BY  
 Chairman: *Donald E. Anton* DATE: 10/15/80  
 Secretary: *William B. Deigh* DATE: 10/13/80

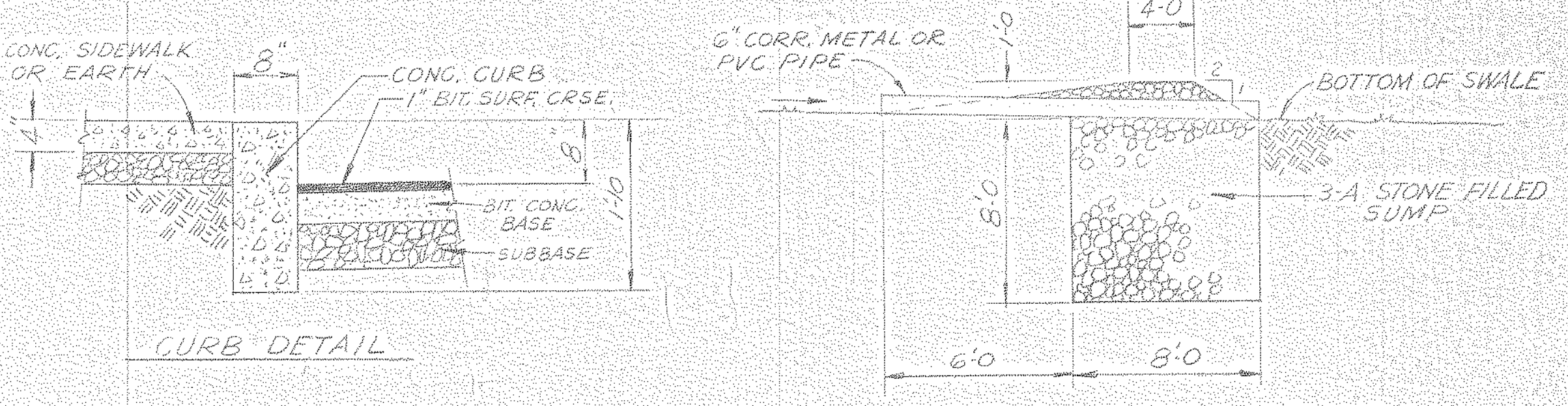
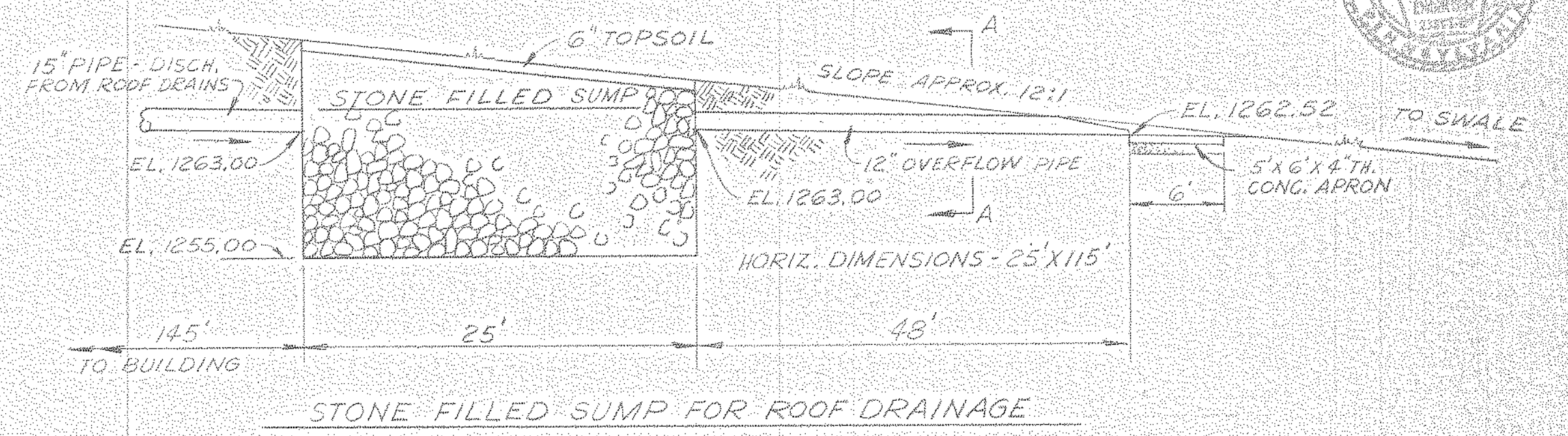
FERGUSON TOWNSHIP SUPERVISORS  
APPROVED BY  
 Chairman: *Anthony P. May* DATE: 10/14/80  
 Secretary: *Donald H. Seachman* DATE: 10-15-80

**ENGINEERING CERTIFICATION**  
 I, *Thomas F. Songer*, HEREBY CERTIFY THAT THE STORM WATER MANAGEMENT PLAN MEETS ALL DESIGN CRITERIA OF THE STORM WATER MANAGEMENT CONTROLS AS REQUIRED BY THE TOWNSHIP OF FERGUSON.



**DROP INLET**

OUTLET VELOCITIES FROM PIPES	SIZE & LOCATION	VEL. - FPS.
15" CROSS PIPE, DRIVEWAY 33' LT. STA. 1155.43		4.5
15" CROSS PIPE, DRIVEWAY 33' LT. STA. 4180.79		4.3
12" DISCH. PIPE FROM STONE FILLED SUMP		4.0



- LEGEND**
- EXISTING CONTOUR
  - 1270 DESIGN CONTOUR
  - STORM SEWER
  - STORM SEWER W/END SECTION
  - DROP INLET
  - SWALE BLOCK W/ SUMP
  - TEMPORARY SILTATION BASIN SEE DET. IN STORM WATER NARRATIVE

NOTICE: NORTH AMERICAN REFRACTORIES CO., DIVISION OF ELTRA CORPORATION CLAIMS PROPRIETARY RIGHTS IN THE INFORMATION DISCLOSED ON THIS DRAWING. IT IS ISSUED IN CONFIDENCE FOR ENGINEERING INFORMATION ONLY AND MAY NOT BE USED, IN WHOLE OR IN PART, TO MANUFACTURE ANYTHING WHETHER OR NOT SHOWN HEREON. REPRODUCED OR DISCLOSED TO ANYONE WITHOUT WRITTEN PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

OTHERS	DATE	DESCRIPTION
PLANT		
FOREMAN	B	CRD. SWALE BLOCK, ADDED AND CHECKED 9-26-80
VENDOR	A	CON. REVISION FOR PLANNING COMM. APPROVAL 8-28-80

LL-5-A-48

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. - RESEARCH CENTER  
CURWENSVILLE, PA.

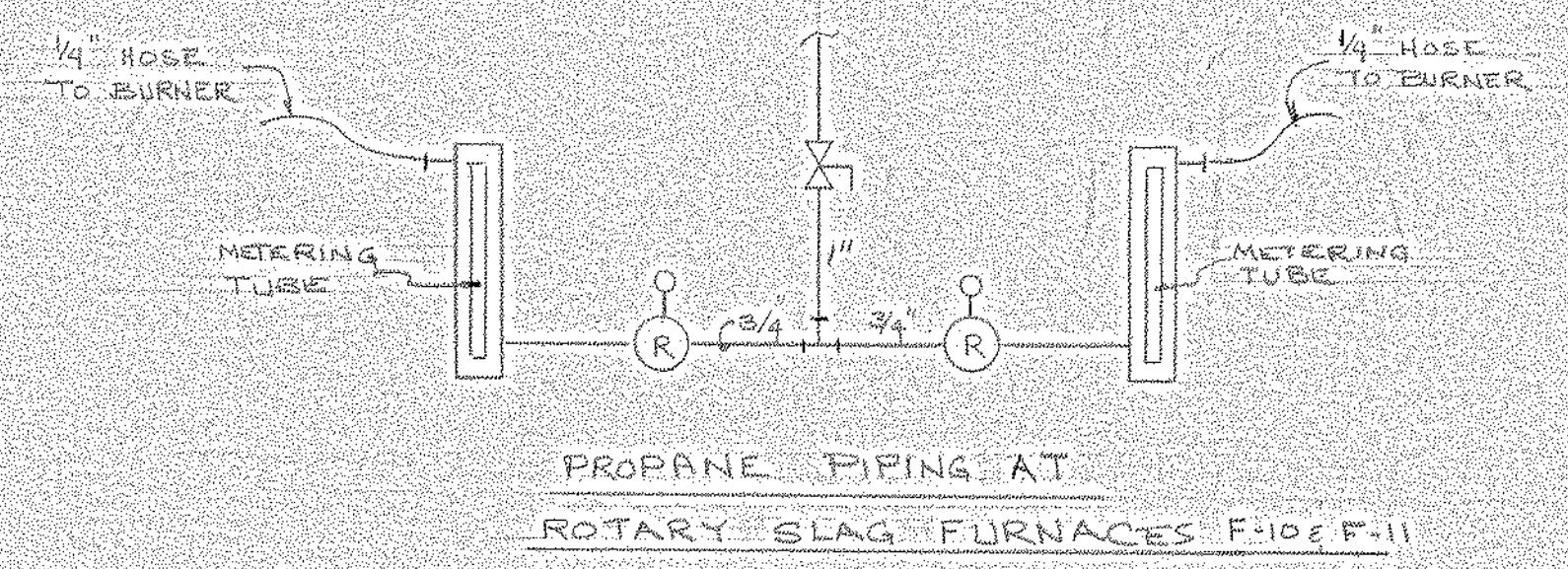
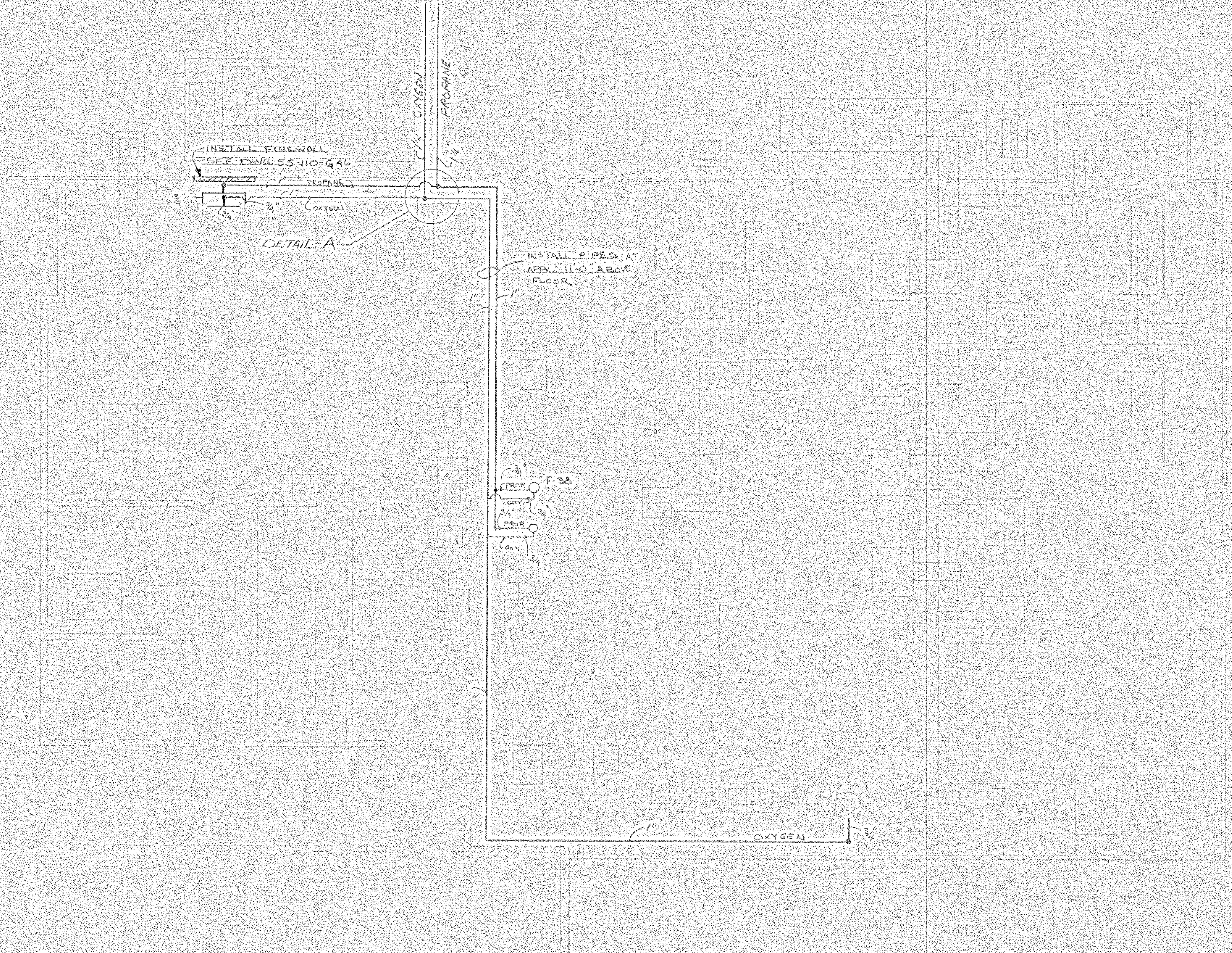
**SITE PLAN**

NEW RESEARCH CENTER

DRABY: *[Signature]* DATE: 3-27-80  
 CHECKED: DATE: 3-27-80  
 SCALE: 1/2" = 40'

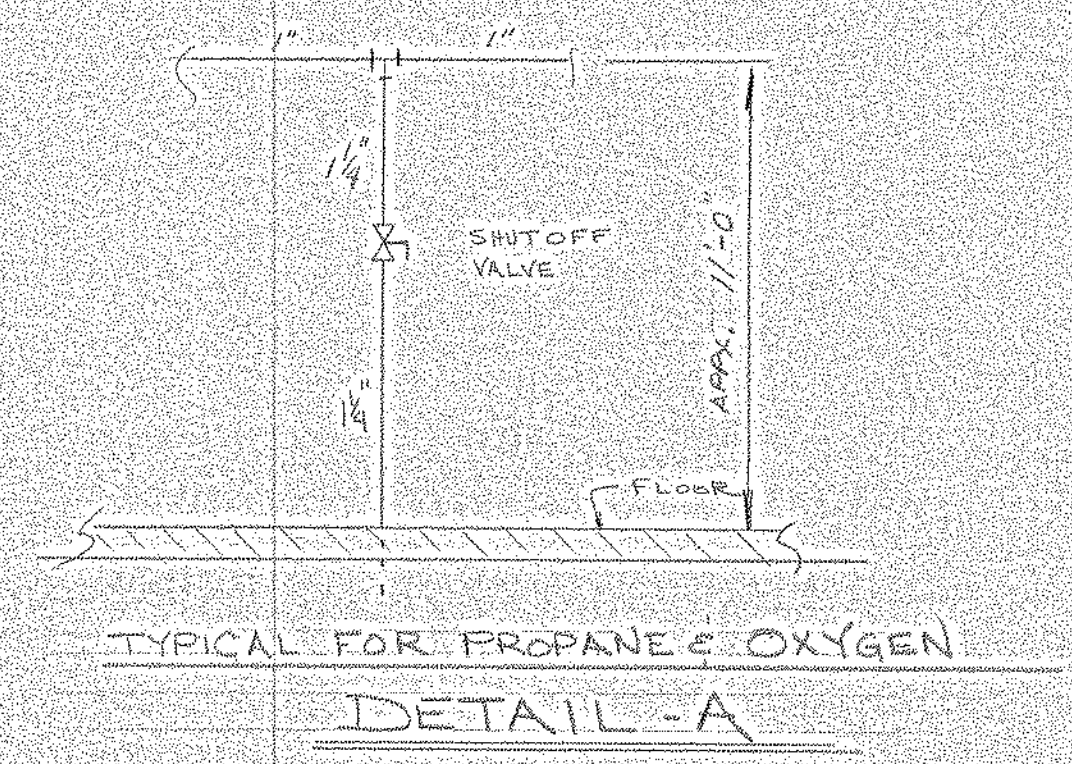
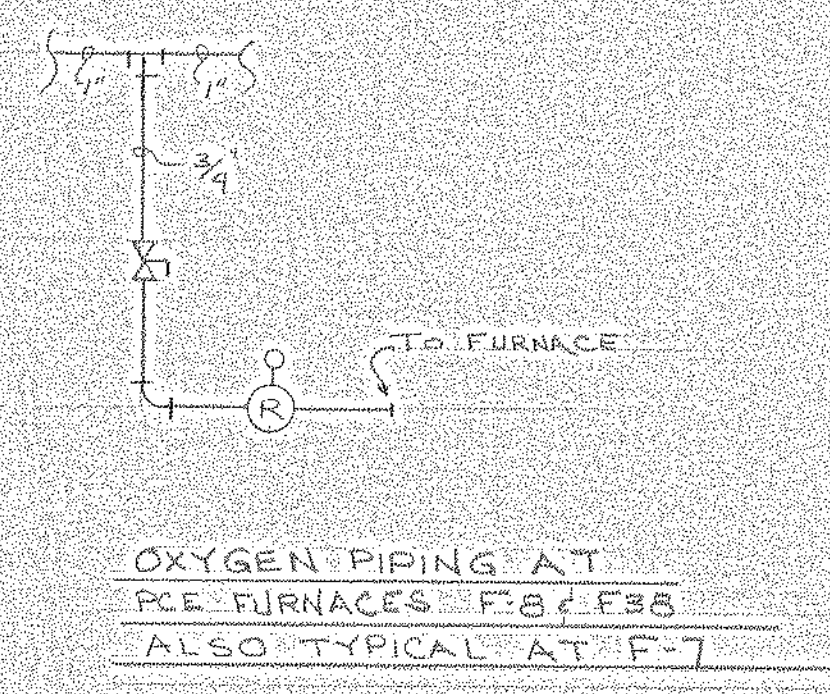
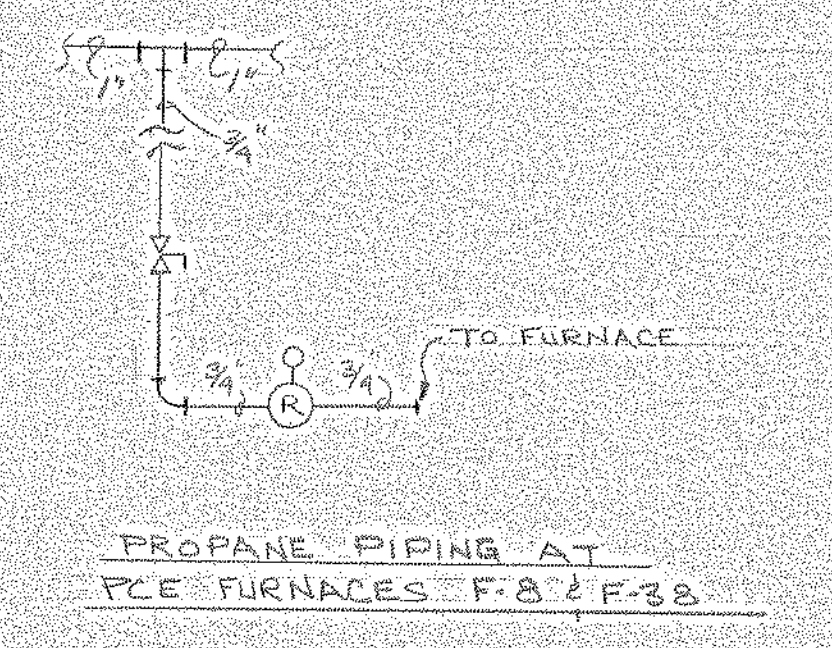
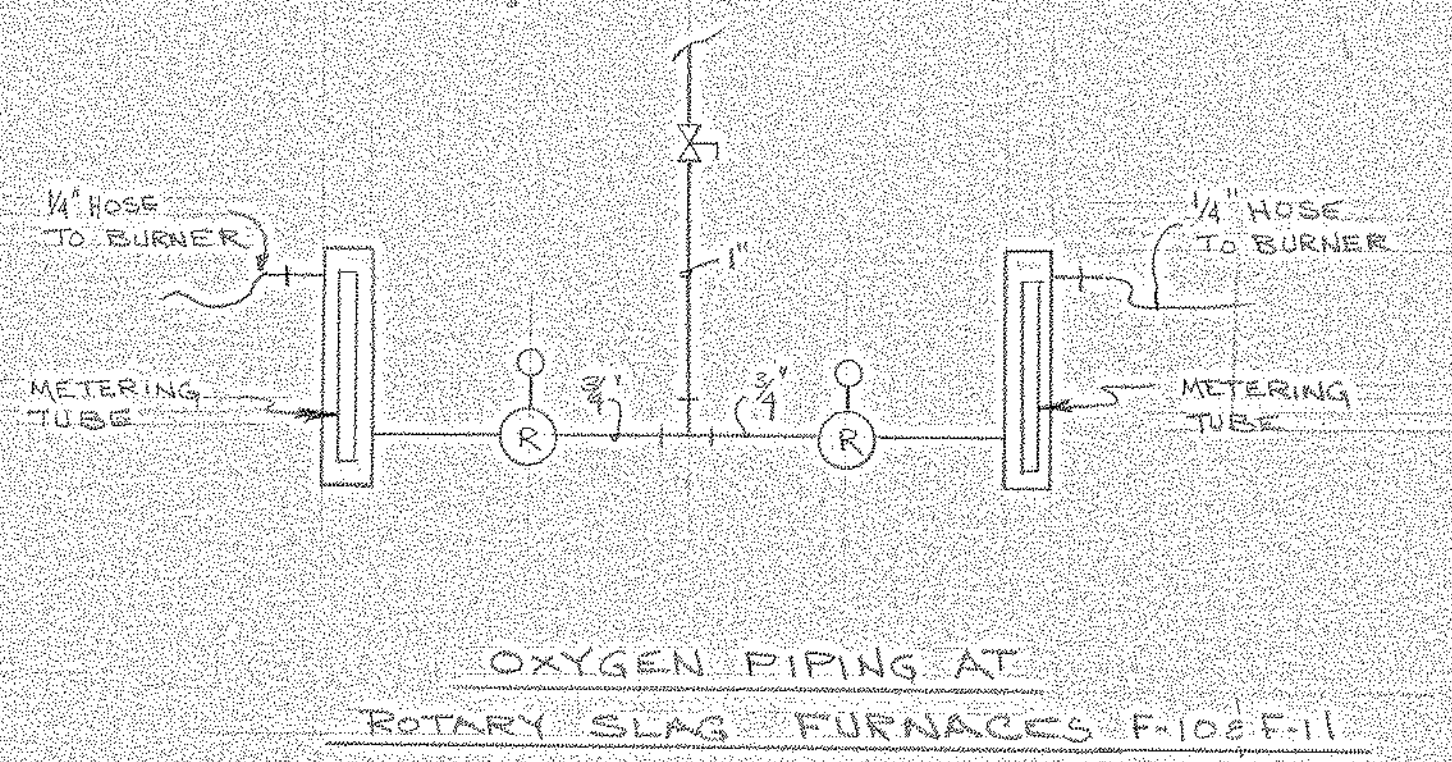


- F-1 ALUMINUM MELTING FURNACE
- F-2 ALUMINUM MELTING FURNACE
- F-3 COOLING FURNACE
- F-4 GLOVE FURNACE
- F-5 GLOVE FURNACE
- F-6 COOLING FURNACE
- F-7 BICKLEY PCE FURNACE
- F-8 PCE FURNACE
- F-9 PCE FURNACE
- F-10 PCE FURNACE
- F-11 ROTARY SLAG FURNACE
- F-12 SMALL ROTARY FURNACE
- F-13 SMALL ROTARY FURNACE
- F-14 SMALL ROTARY FURNACE
- F-15 SMALL ROTARY FURNACE
- F-16 SMALL ROTARY FURNACE
- F-17 BLIND
- F-18 PERCENT ROTARY FURNACE
- F-19 PERCENT ROTARY FURNACE
- F-20 PERCENT ROTARY FURNACE
- F-21 PERCENT ROTARY FURNACE
- F-22 PERCENT ROTARY FURNACE
- F-23 INDUSTRIAL FURNACE
- F-24 BLIND
- F-25 ASTM LOAD FURNACE
- F-26 ASTM LOAD FURNACE
- F-27 ASTM LOAD FURNACE
- F-28 LARGE ROTARY FURNACE
- F-29 LARGE ROTARY FURNACE
- F-30 LARGE ROTARY FURNACE
- F-31 LARGE ROTARY FURNACE
- F-32 LARGE ROTARY FURNACE
- F-33 LARGE ROTARY FURNACE
- F-34 SMALL ROTARY FURNACE
- F-35 FRAMING ROTARY FURNACE
- F-36 ROTARY FURNACE
- F-37 ROTARY FURNACE
- F-38 BICKLEY PCE FURNACE



- NOTES:
- 1) USE PRE-CLEANED PIPE FOR OXYGEN LINE ONLY
  - 2) USE TEFLON TAPE ONLY AT SCREWED JOINTS.  
**DO NOT USE PIPE DOPE!!!**

- NOTES, CONT'D
- 3) ALL VALVES MUST HAVE TEFLON SEALS
  - 4) ALL VALVES & FITTINGS MUST BE CLEANED WITH APPROVED SOLVENT & DRIED WITH NITROGEN GAS



REVISED	5-27-82
BY	JM
DATE	5-27-82

ITEM# LL-5-A-82

NORTH AMERICAN LABORATORIES CO.  
ENGINEERING & RESEARCH CENTER  
CUMBERLAND, PA

**FURNACE ROOM - PROPANE  
& OXYGEN PIPING**

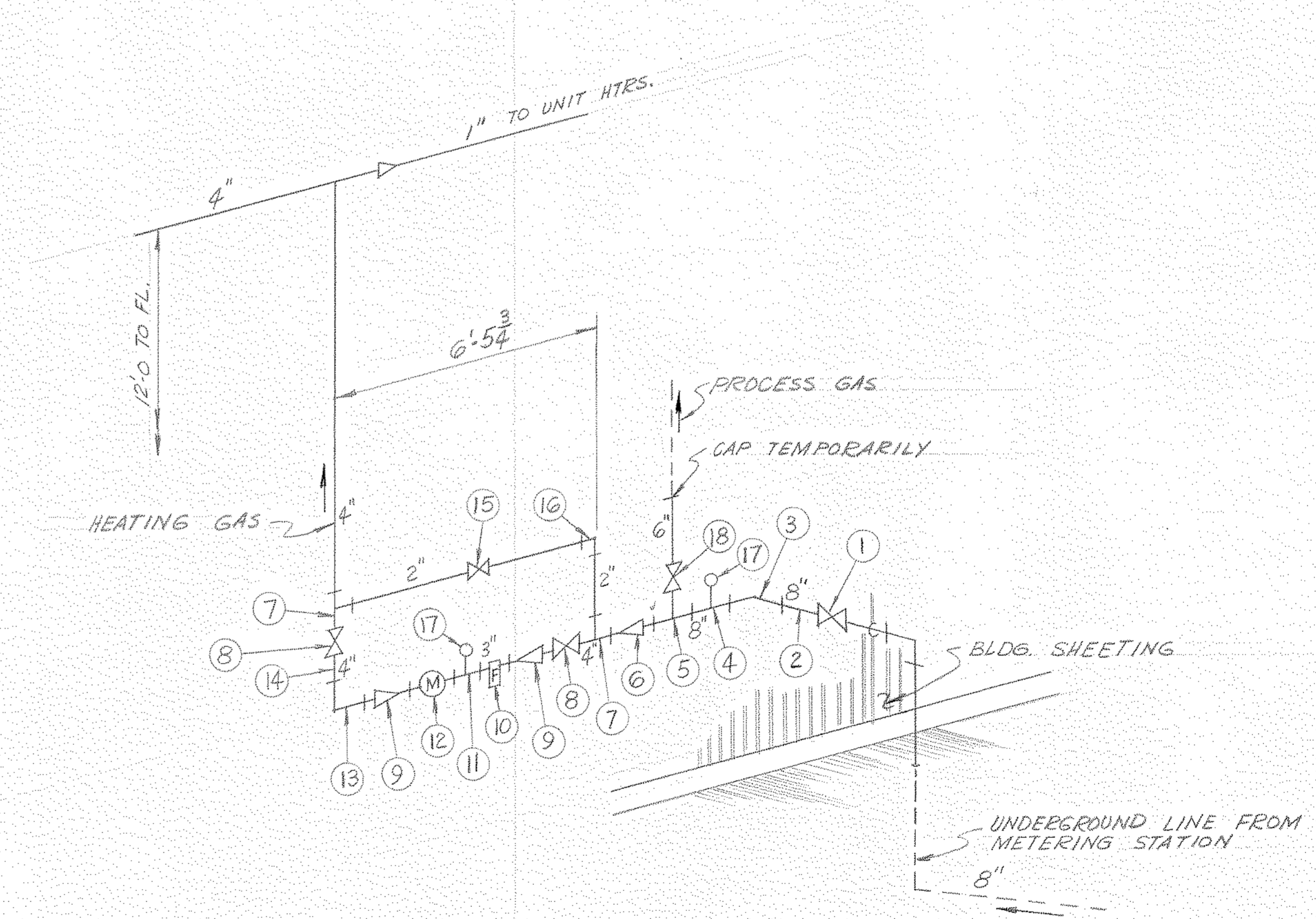
NEW RESEARCH CENTER

DTP

5-25-82



ITEM NO.	QUN.	DESCRIPTION	REMARKS
1	1	3" VALVE	ON HAND
2	1	STRAIGHT PIPE, 8" DIA. W/SLIP-ON FLANGE EA. END, 12" LG. OVERALL	
3	1	8" 90° ELBOW W/ WELDING NECK EA. END	
4	1	STR. PIPE, 8" DIA. W/SLIP-ON FLANGE EA. END & GAGE TAP, 8" LG. OVERALL	
5	1	8" X 8" X 6" TEE W/ WELDING NECKS, 1-6" & 2-8"	
6	1	8" X 4" REDUCER W/ WELDING NECKS, 1-8" & 1-4"	
7	2	4" X 4" X 2" TEE W/ WELDING NECKS, 1-2" & 2-4"	
8	2	4" PLUG VALVE, FLANGED	
9	2	4" X 3" REDUCER W/ WELDING NECKS, 1-4" & 1-3"	
10	1	3" FILTER, FLANGED	
11	1	STR. PIPE, 3" DIA. W/SLIP-ON FLANGE EA. END & GAGE TAP, 12" LG. OVERALL	
12	1	POSITIVE DISPLACEMENT METER, 3"	
13	1	4" 90° ELBOW W/ WELDING NECK EA. END	
14	1	STR. PIPE, 4" DIA. W/SLIP-ON FLANGE EA. END, 8" LG. OVERALL	
15	1	2" PLUG VALVE, FLANGED	
16	1	2" 90° ELBOW W/ WELDING NECK EA. END	
17	2	PRESSURE GAGE	
18	1	6" PLUG VALVE, FLANGED	
-	180 L.F.	4" PIPE, SCH. 40	
	80 L.F.	3" PIPE, SCH. 40	
	60 L.F.	2 1/2" PIPE, SCH. 40	
	40 L.F.	2" PIPE, SCH. 40	
	60 L.F.	1 1/2" PIPE, SCH. 40	
	160 L.F.	1" PIPE, SCH. 40	
	380 L.F.	3/4" PIPE, SCH. 40	



SCHEMATIC OF SERVICE ENTRANCE

LL-5-A-83

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

GAS PIPING FOR HEATING

RESEARCH CENTER

OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE
		JIM 12-8-81					

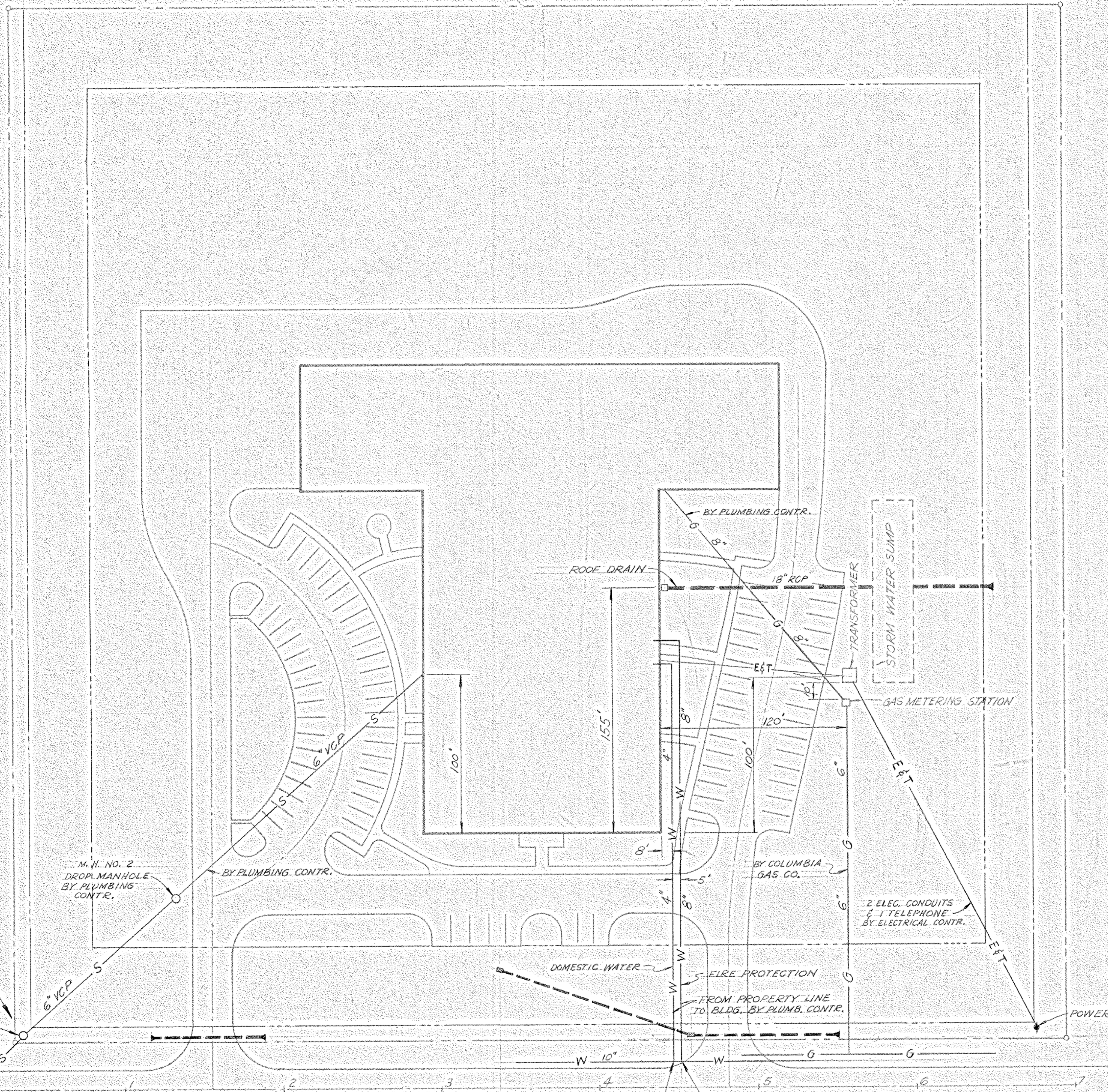
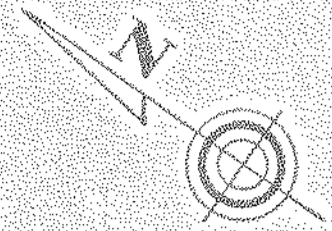
DRAWN BY	C. D. NO.	55-110
CHECKED	DATE	12-8-81
SCALE	NONE	

55-110-H-7  
DWG NO.

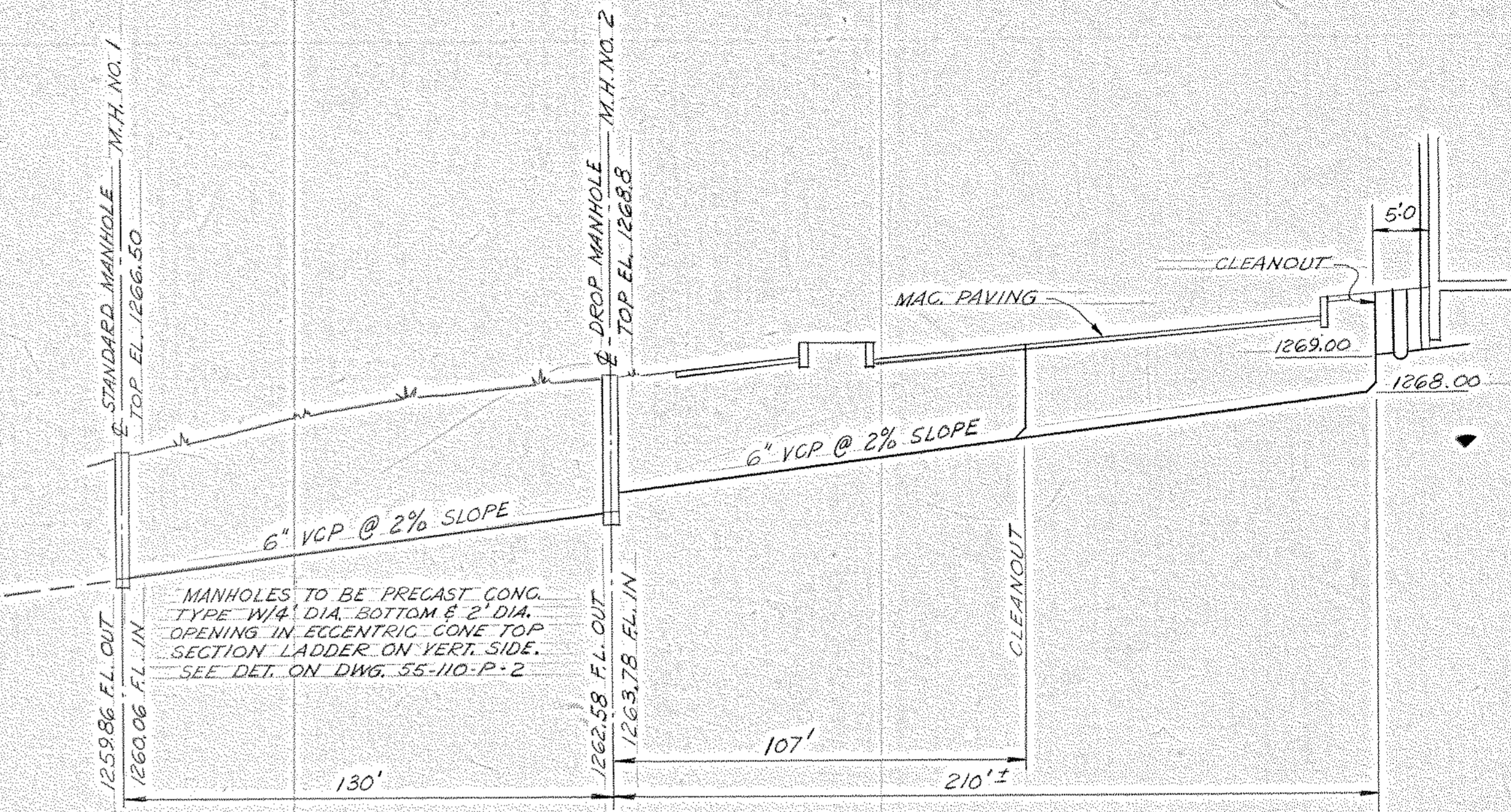
#0064 - H-7 Gas Piping - 1981 - NONE - 680107

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PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

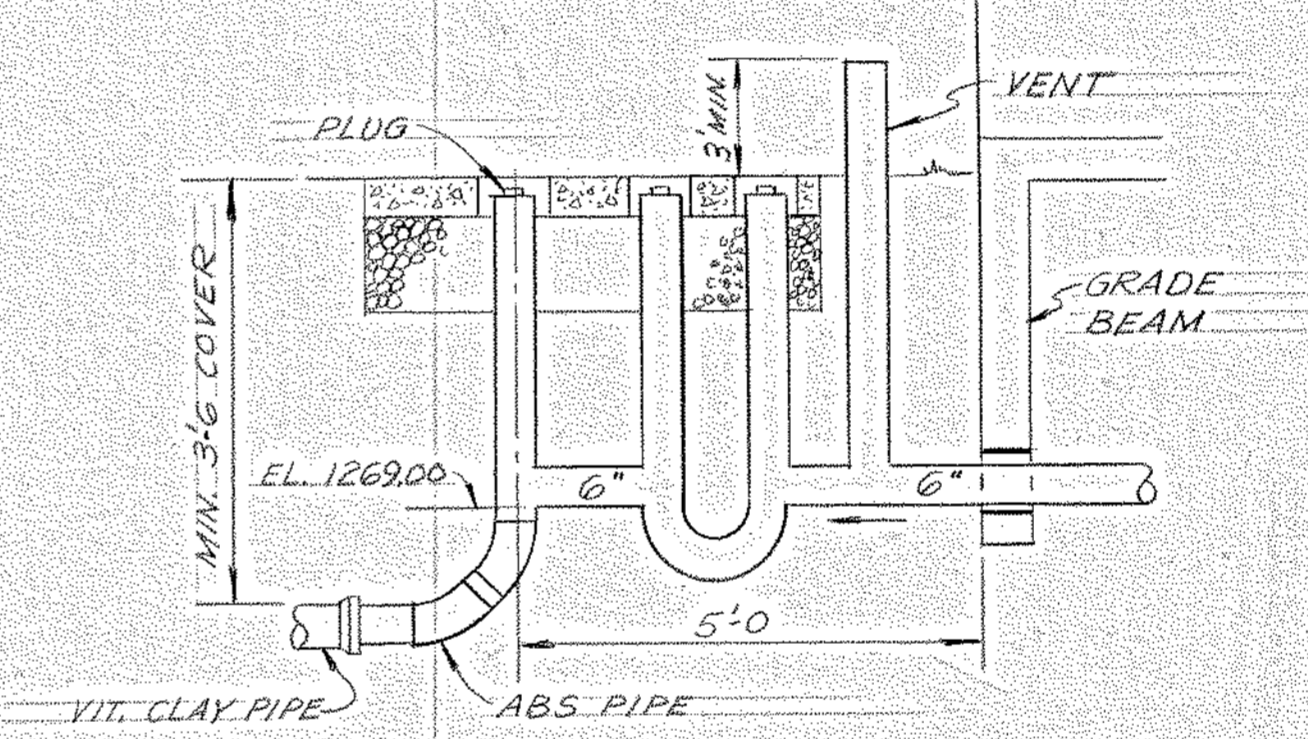




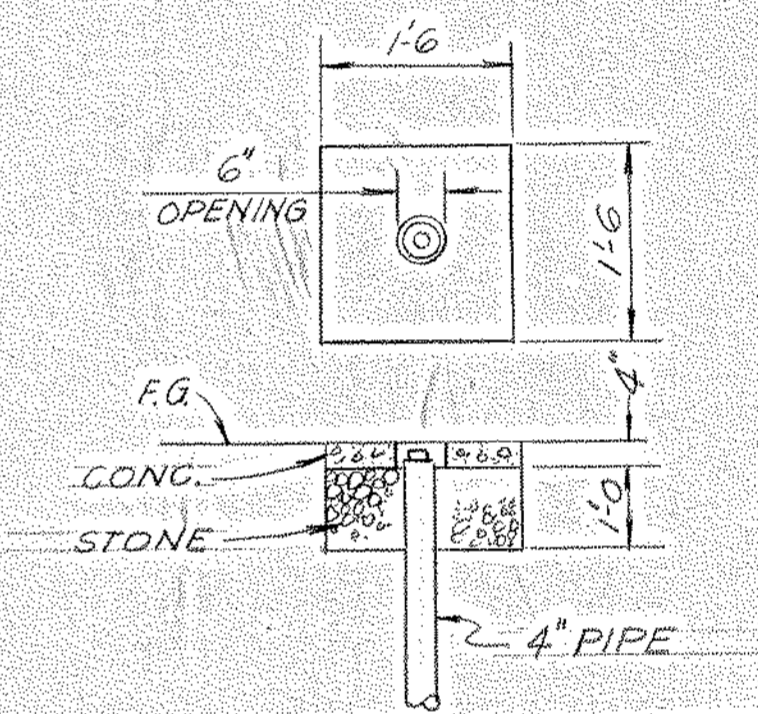
PLOT PLAN  
SCALE: 1"=40'



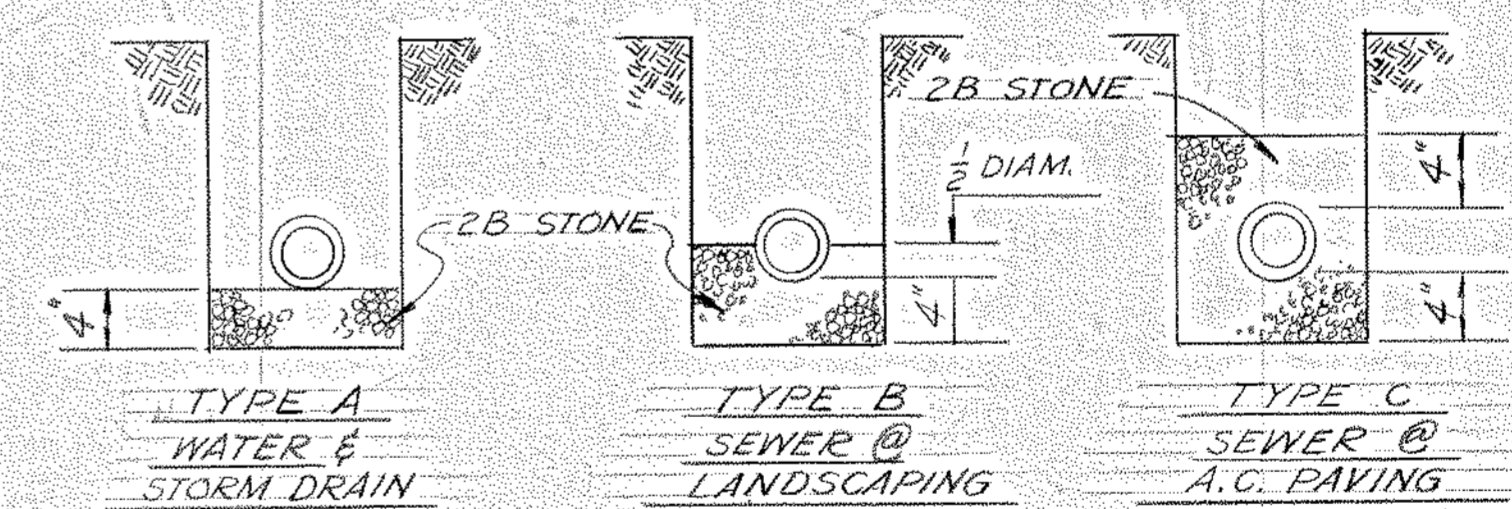
SEWER PROFILE - LINE A  
SCALE: HORIZ. 1"=30' VERT. 1"=5'



DETAIL OF CLEANOUT AND BUILDING LINE CONNECTION



DETAIL OF CONCRETE APRON & SEWER CLEANOUT RISER



DETAIL - PIPE BEDDING TYPES

LEGEND

- ELECTRIC — E —
- TELEPHONE — T —
- GAS — G —
- SANITARY SEWER — S —
- STORM SEWER — W —
- WATER — W —

OTHERS	R.B. GOSB	R.B. GOSB	R.B. GOSB	R.B. GOSB
PLANT	6-18-81	7-9-81	8-27-81	
FOREMAN	J. JIM	J. JIM	J. JIM	
VENDOR	6-18-81	8-27-81		
PRINTS				
REVISION	C	REDRAWN	6-18-81	
DESCRIPTION				
DATE				

11-5-A-49

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

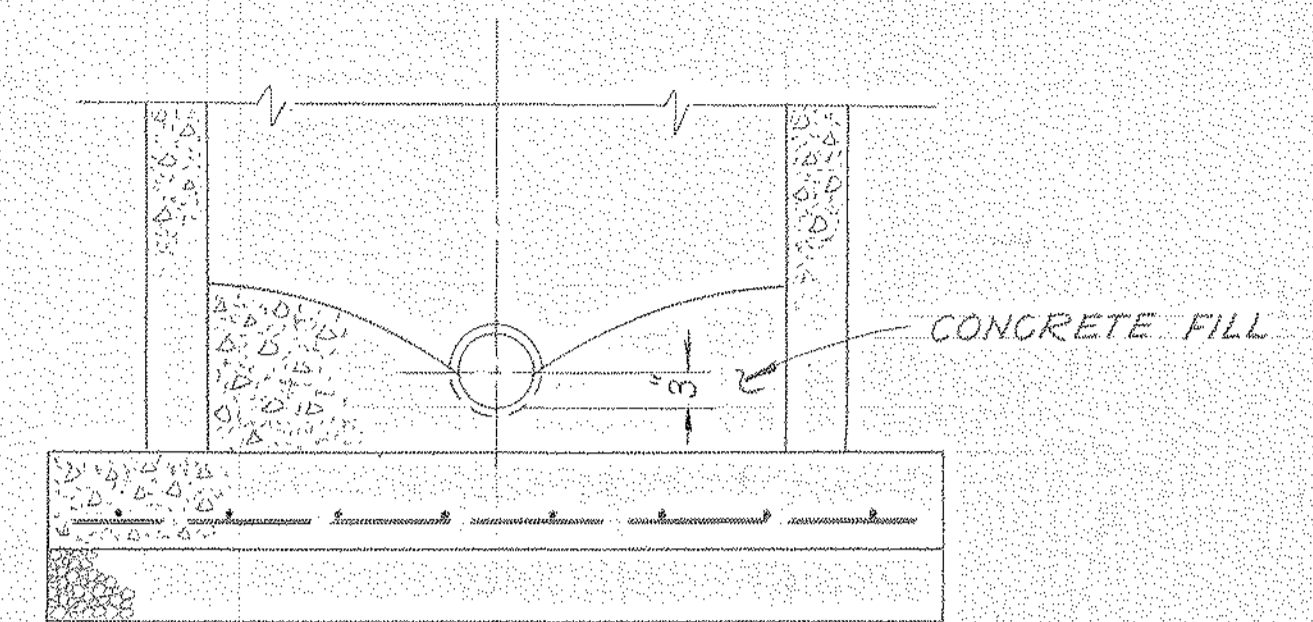
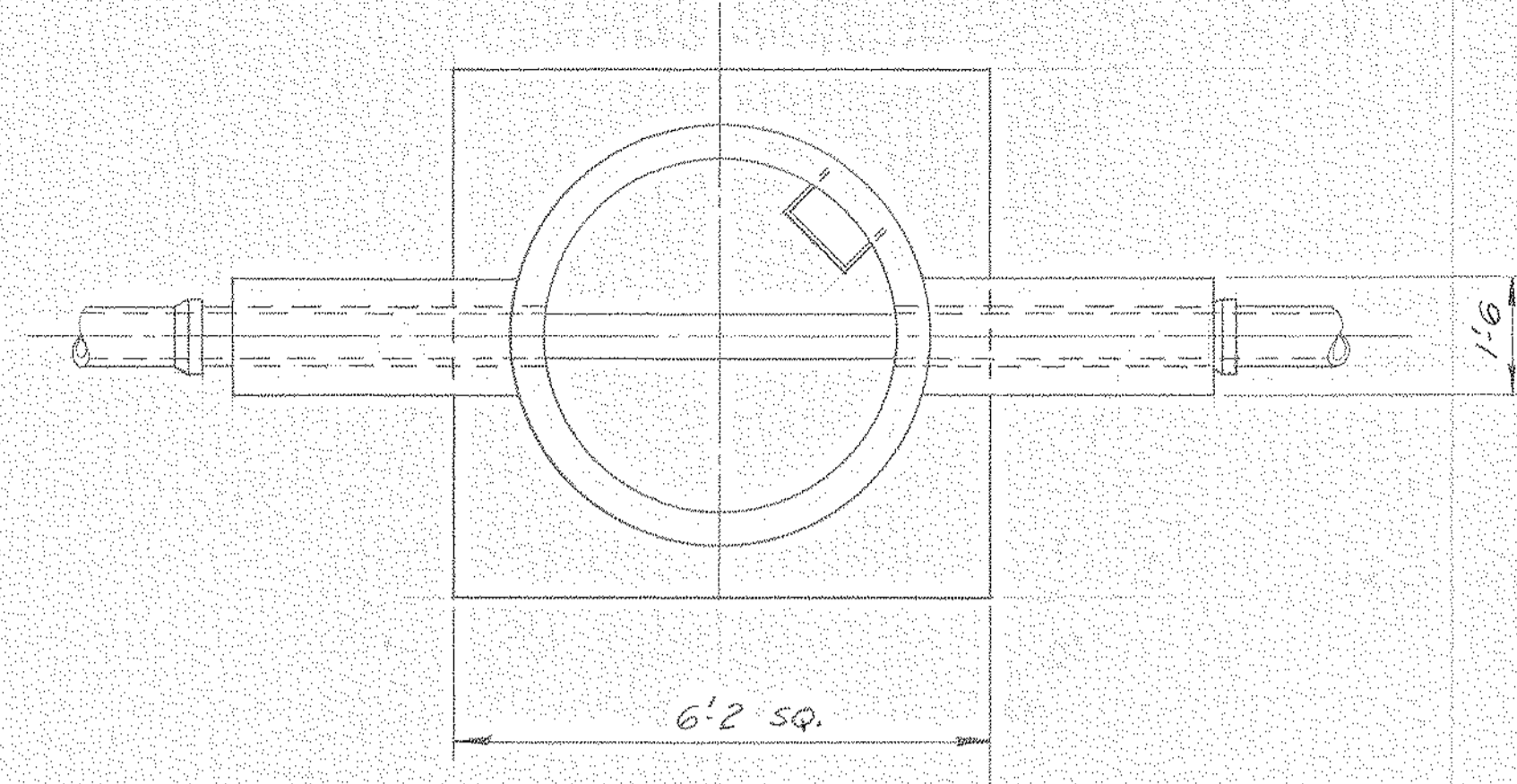
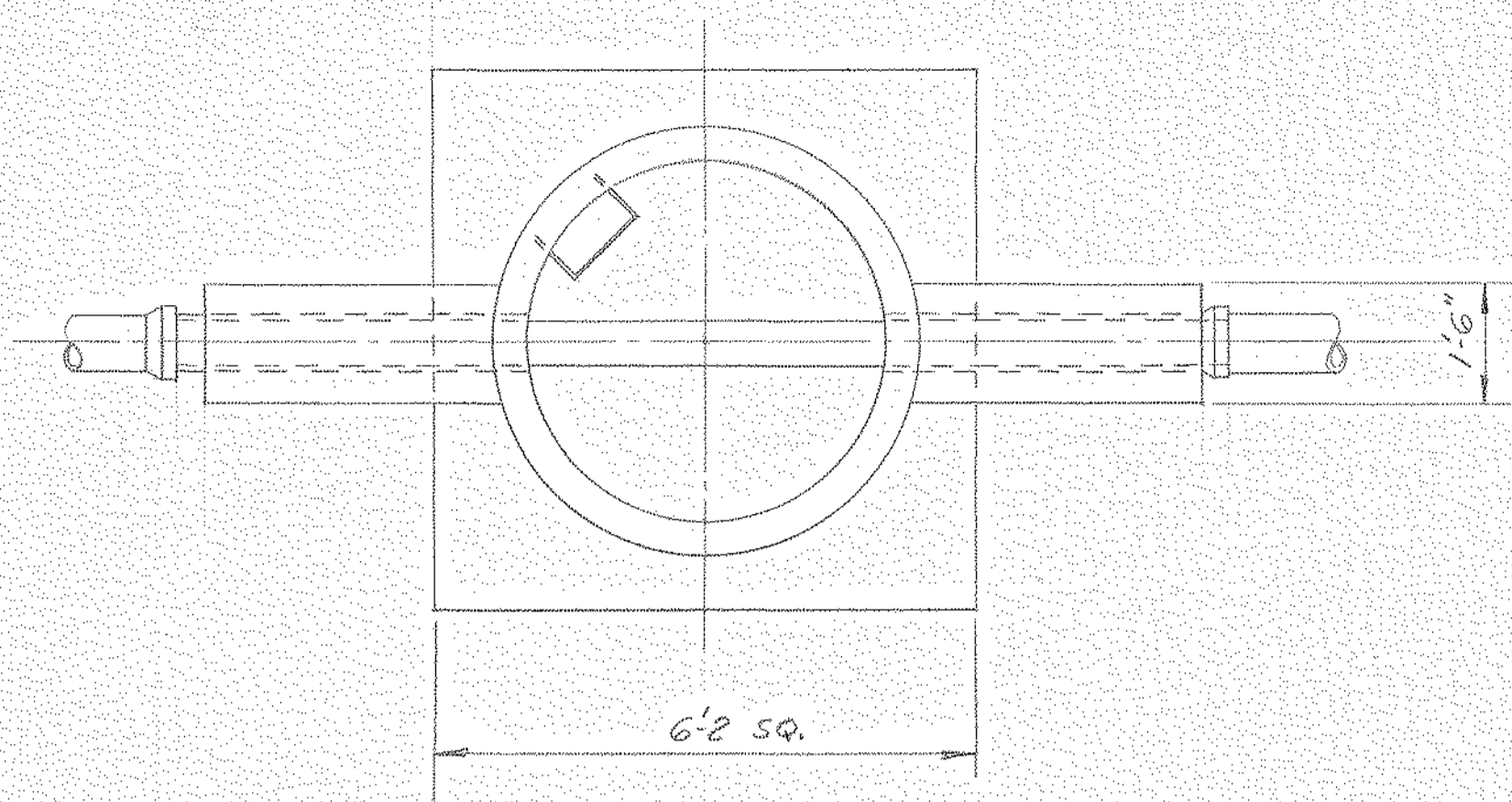
UNDERGROUND UTILITY PLAN

NEW RESEARCH CENTER

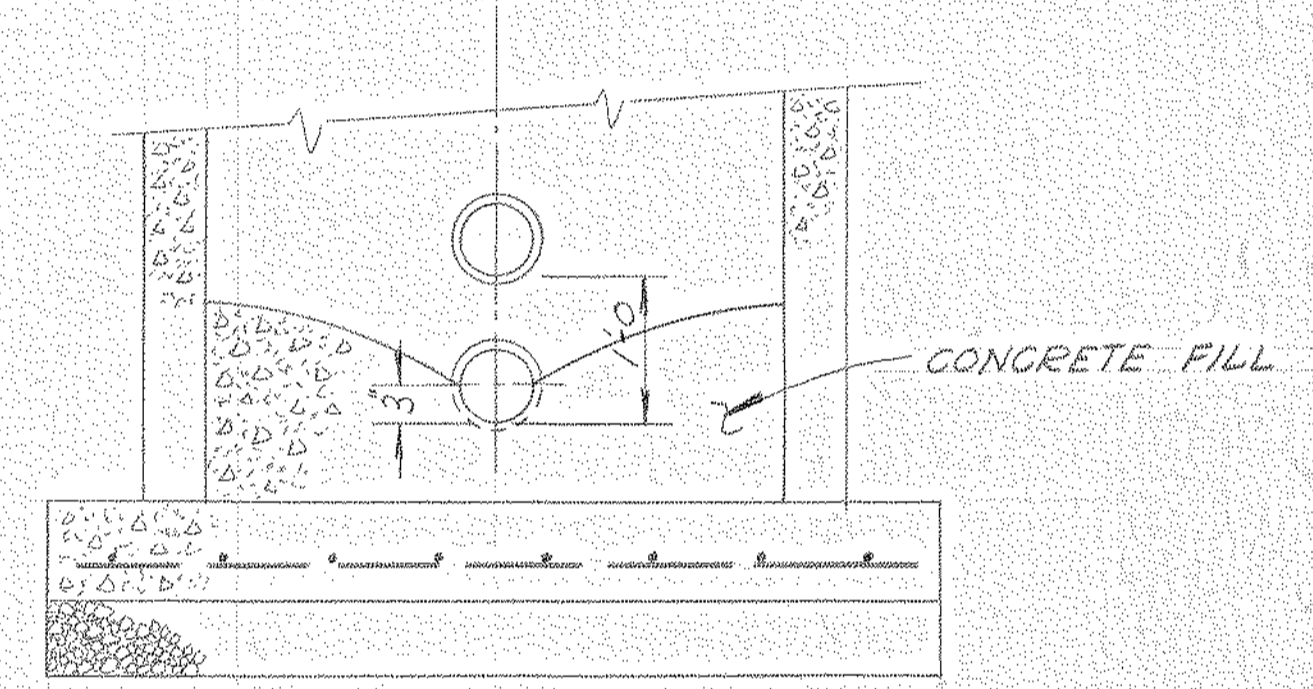
DRAWN BY: *JKP* C.D. NO. 55-110  
CHECKED: *JKP* DATE: 2-12-81  
SCALE: 1"=40' DWG. NO. 55-110-P-1

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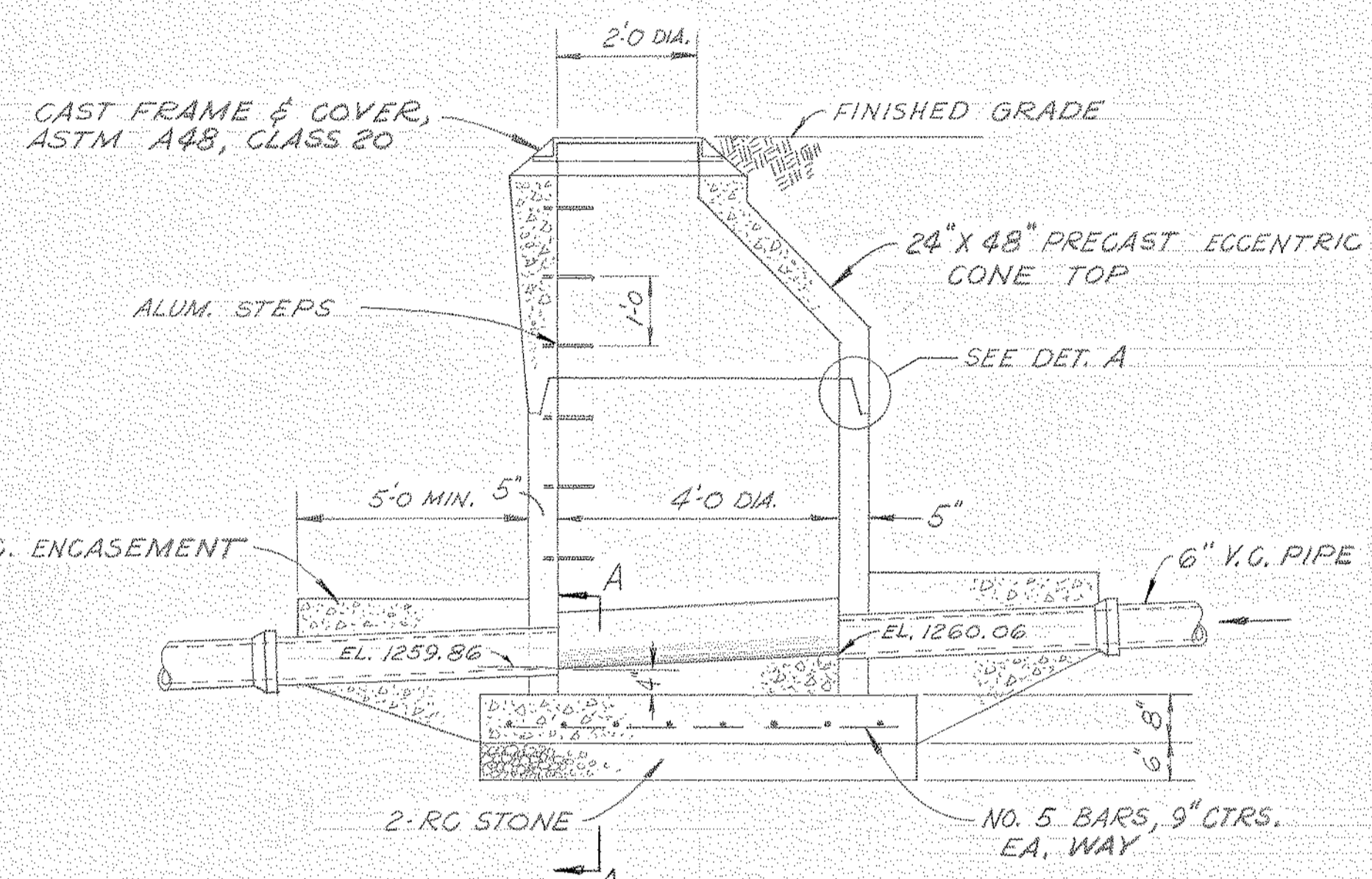




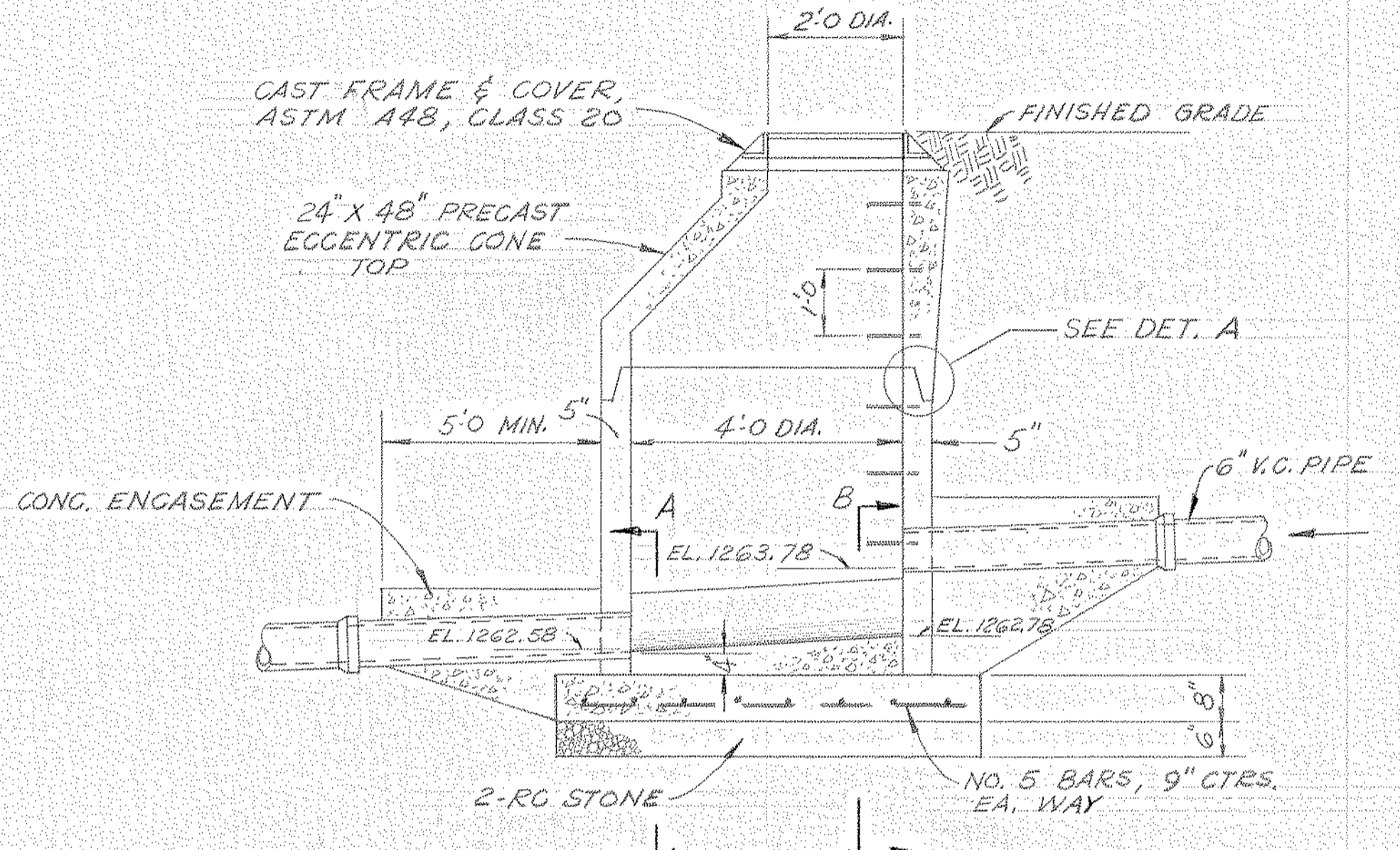
SECTION A-A



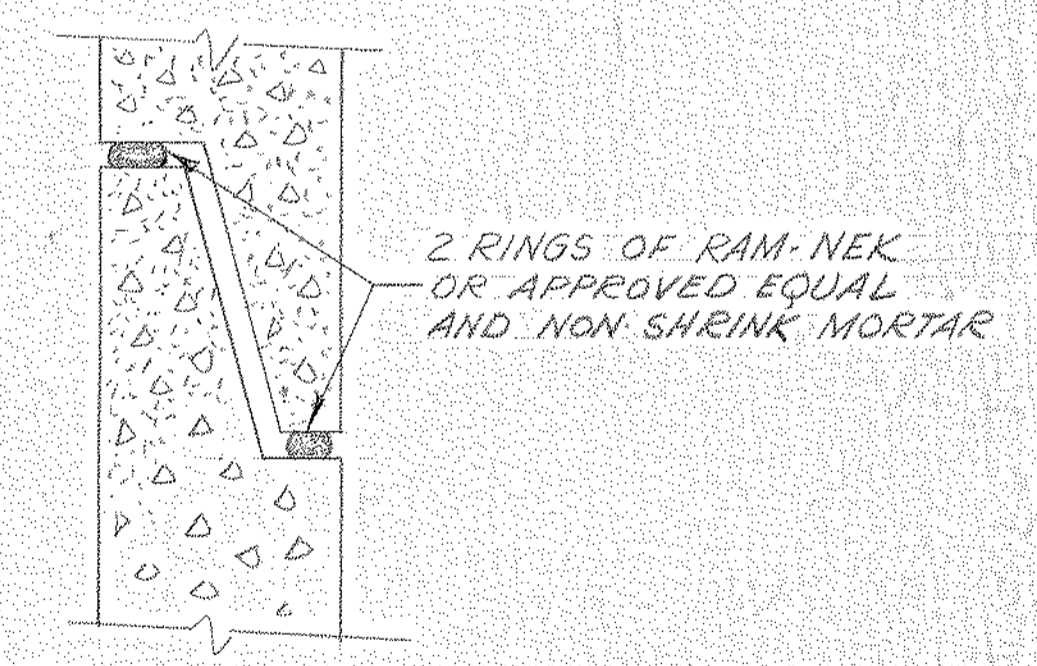
SECTION B-B



DETAIL MANHOLE NO. 1



DETAIL MANHOLE NO. 2



DETAIL A

44-5-A-50

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT RESEARCH CENTER  
CURWENSVILLE, PA.

MANHOLE DETAILS  
SANITARY SEWER

NEW RESEARCH CENTER

OTHERS	1/25/81								
PLANT	4-21-81								
FOREMAN	2/1/81								
VENDOR									
PRINTS		REVISION	DESCRIPTION	DATE					
		A	REV. DWG. NO. (WRS P-1)	6-7-81					

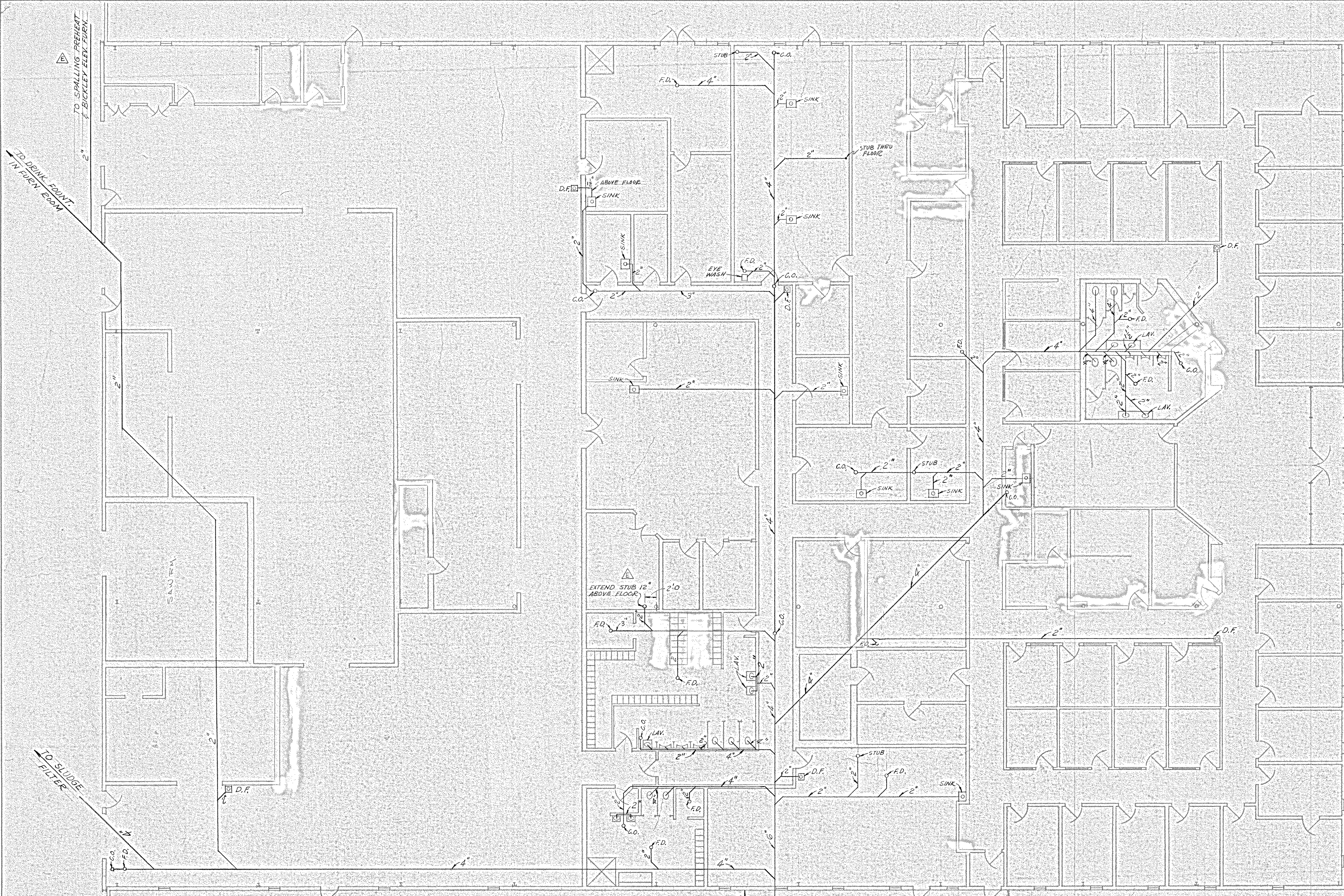
DRAWN BY	C.O. NO.	DATE	DWG. NO.
	55-110	4-21-81	55-110-P-2
CHECKED	SCALE		
	1/2" = 1'-0"		

#0064 - P2 Manhole Dtls / Sani. Sewer - 1981 - NONE - 350107

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PERMISSION FROM NORTH AMERICAN REFRACTORIES CO.

BRUNING 40-22 091 B-3





TO SPALLING PREHEAT & BICKLEY ELEM. FURN.  
2\"/>

TO DRAIN FRONT IN FURN. ROOM  
2\"/>

TO SLUDGE FILTER  
4\"/>

FOR SCHEMATIC OF VENT PIPES  
SEE DWG. 55-110-P-10

FOR PROFILE OF THIS LINE  
SEE DWG. 55-110-P-01

G.O. SEE DETAIL DWG. 55-110-P-01

44-5-A-51  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

**SANITARY DRAIN PIPING**  
**BUILDING INTERIOR**

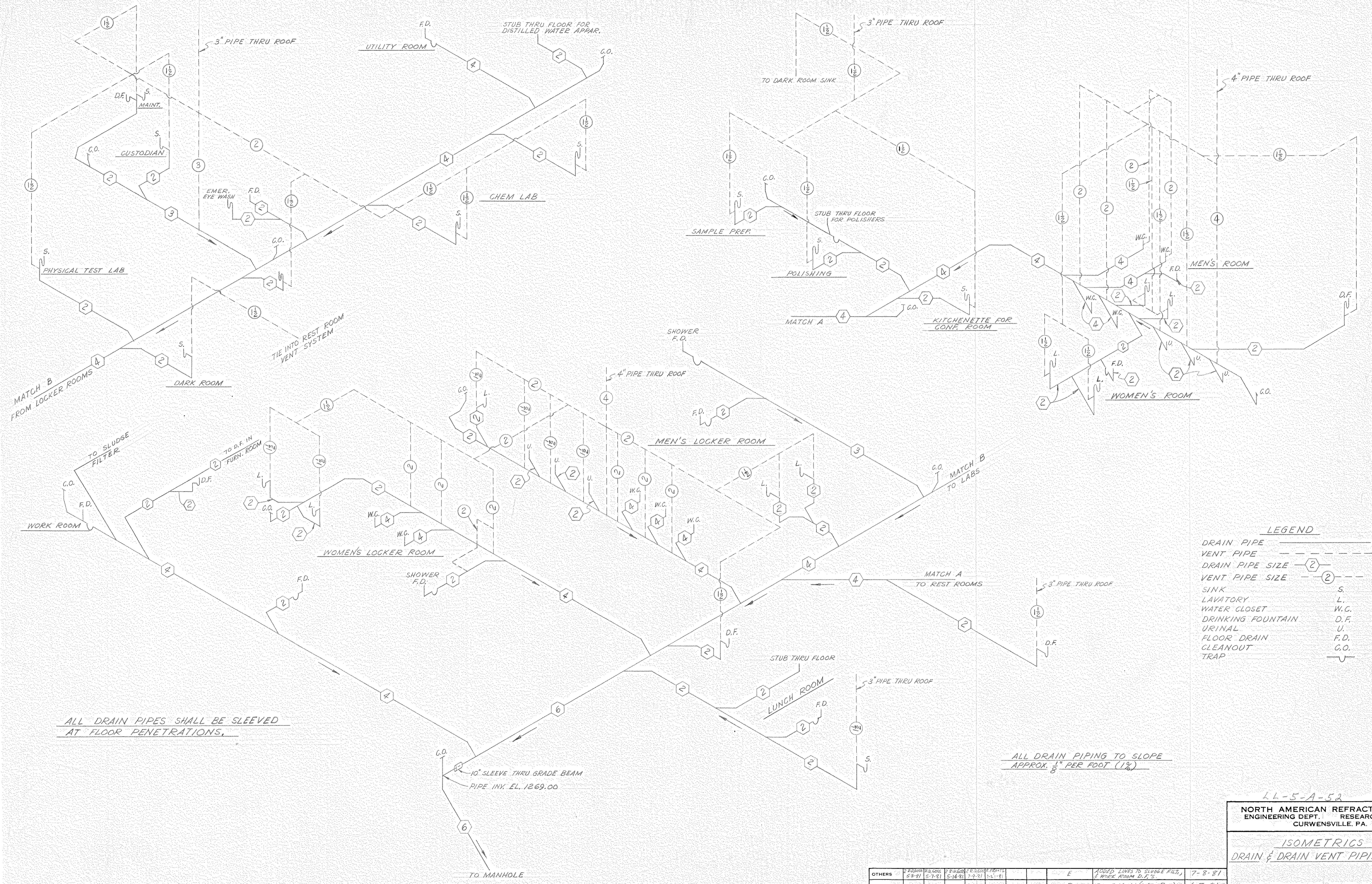
NEW RESEARCH CENTER

OTHERS	DATE	DESCRIPTION	DATE
2 ED GOSSEL R. BROWN	2-10-82	"AS BUILT" INTERIOR WALLS	7-29-82
5-3-81	5-7-81	5-14-81	7-5-81
7-5-81	7-8-81	7-21-81	7-29-81
7-29-81	8-22-82		
PLANT	4 JIM	2 JIM	1 JIM
FOREMAN	5-5-81	5-14-81	7-4-81
VENDOR	7-21-81	7-29-81	8-22-82

DRWN BY	C.O. NO.	55-110
CHECKED	DATE	4-28-81
SCALE	1/8" = 1'-0"	DWG NO.
		55-110-P-3

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ALL DRAIN PIPES SHALL BE SLEEVED AT FLOOR PENETRATIONS.

ALL DRAIN PIPING TO SLOPE APPROX. 1/8" PER FOOT (1%)

**LEGEND**

DRAIN PIPE	—————
VENT PIPE	- - - - -
DRAIN PIPE SIZE 2	②
VENT PIPE SIZE 2	②
SINK	S
LAVATORY	L
WATER CLOSET	W.C.
DRINKING FOUNTAIN	D.F.
URINAL	U
FLOOR DRAIN	F.D.
CLEANOUT	G.O.
TRAP	⌋

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OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE
					E	ADDED LINES TO SLUDGE FILTER & WORK ROOM D.F.'S	7-8-81
					D	REV. DRG. N/A (WAS P-R)	6-7-81
					C	CHG 1" DR. PIPES TO 2"	5-18-81
					B	REDRAWN	5-1-81

44-5-A-52

**NORTH AMERICAN REFRACTORIES CO.**  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

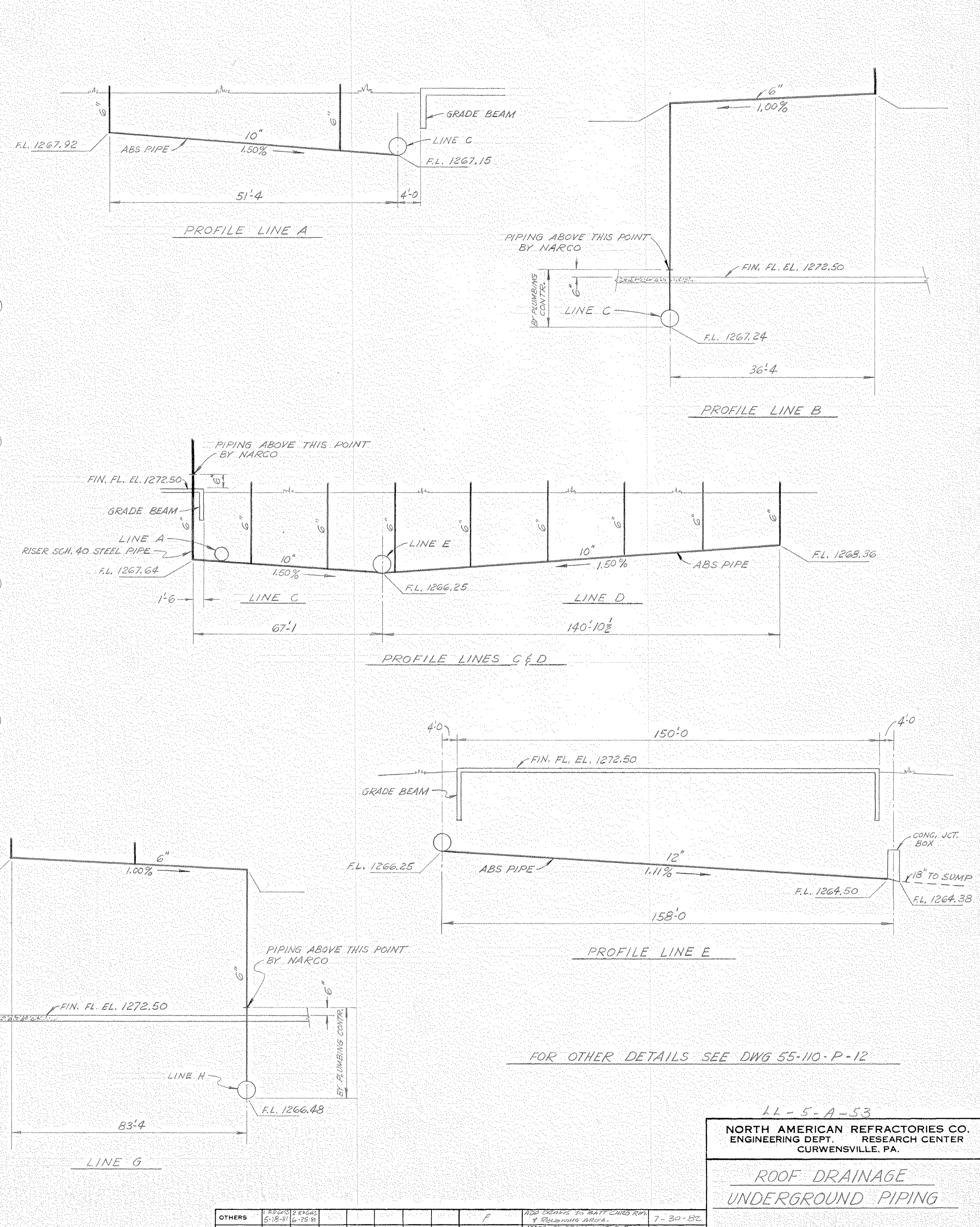
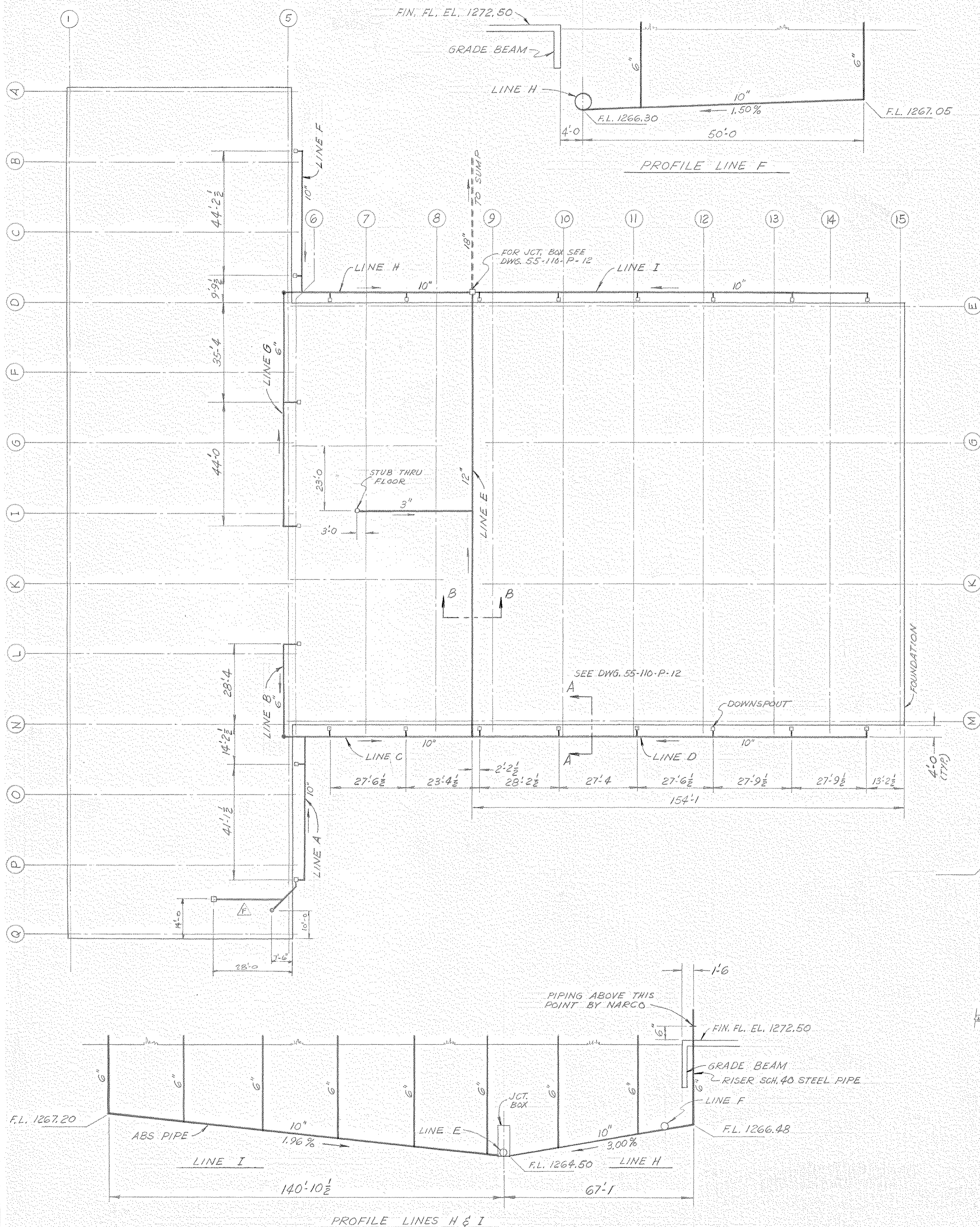
**ISOMETRICS**  
**DRAIN & DRAIN VENT PIPING**

**NEW RESEARCH CENTER**

DRAWN BY	C. O. NO.	55-110	55-110-P-4
CHECKED	DATE	2-12-81	DWG. NO.
SCALE	NONE		

#0064 - P4 Isomet./Drain Dtl's - 1981 - NONE - 376107





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OTHERS	REVISED	DATE	DESCRIPTION	DATE
	F	7-30-82	ADD CHANGES TO BATTERS RUN	
	E	6-25-81	ADDED 3" DEATH LINE FOR PRESS	
	D	6-7-81	REV. DWG. NO. (WAS P-2)	
	C	5-10-81	REDRAWN	

LL-5-A-53

**NORTH AMERICAN REFRACTORIES CO.**  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

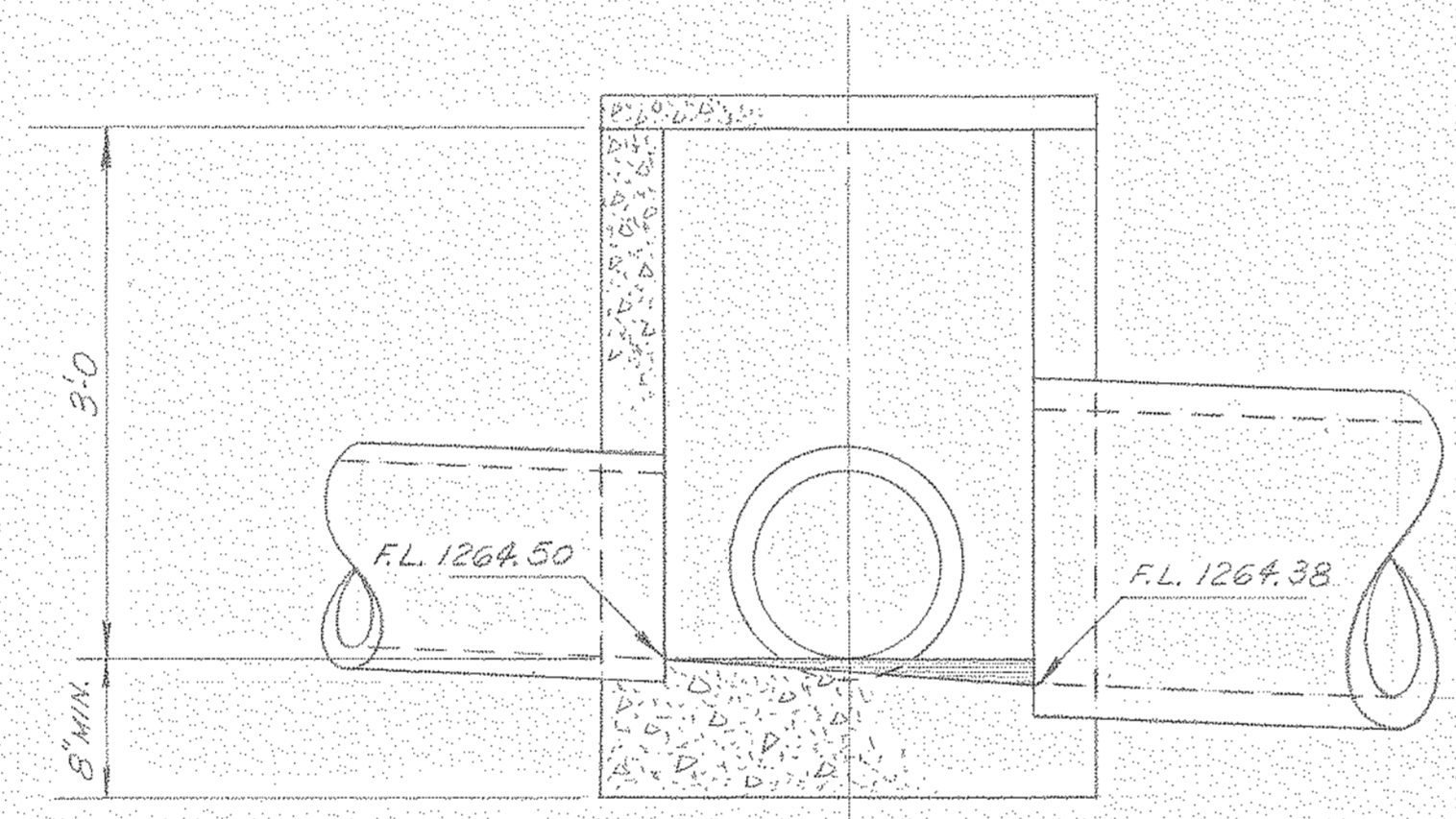
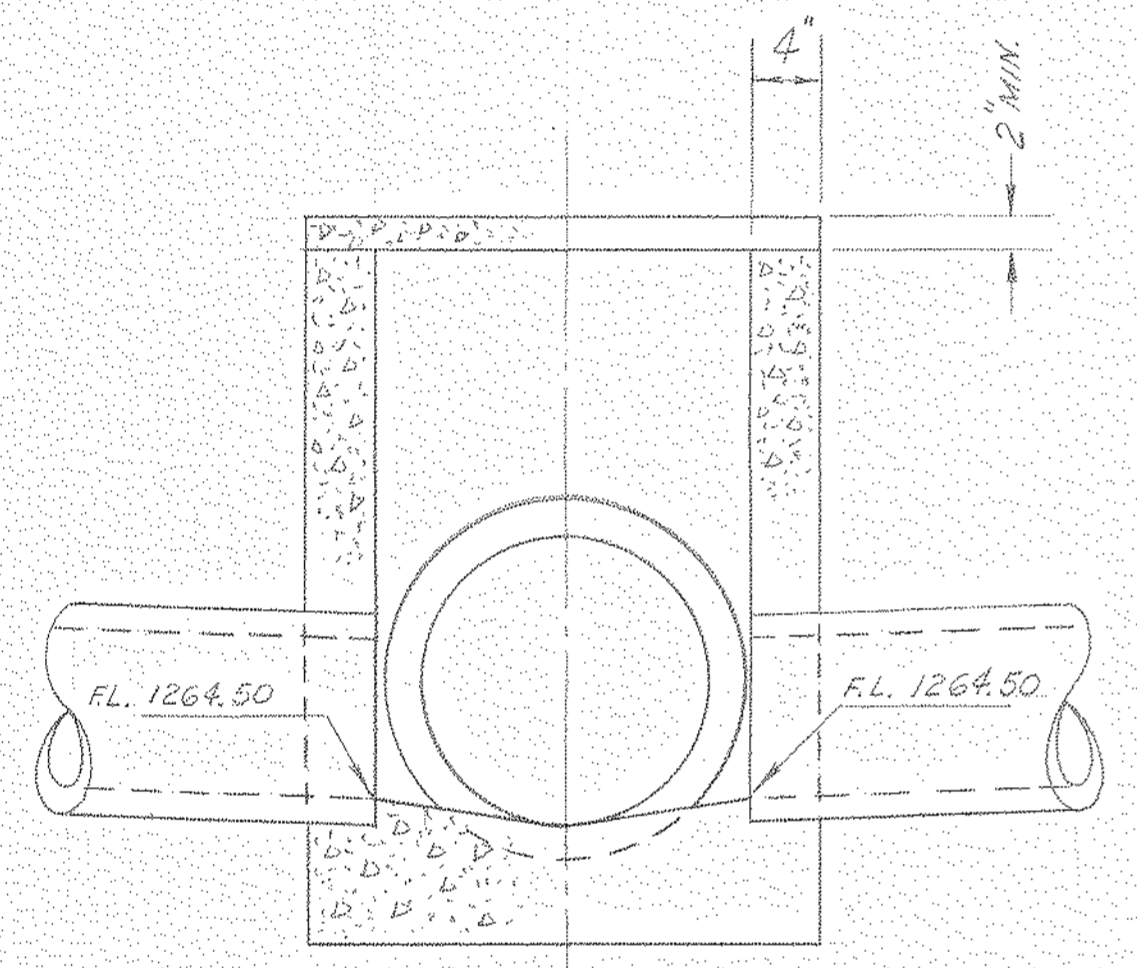
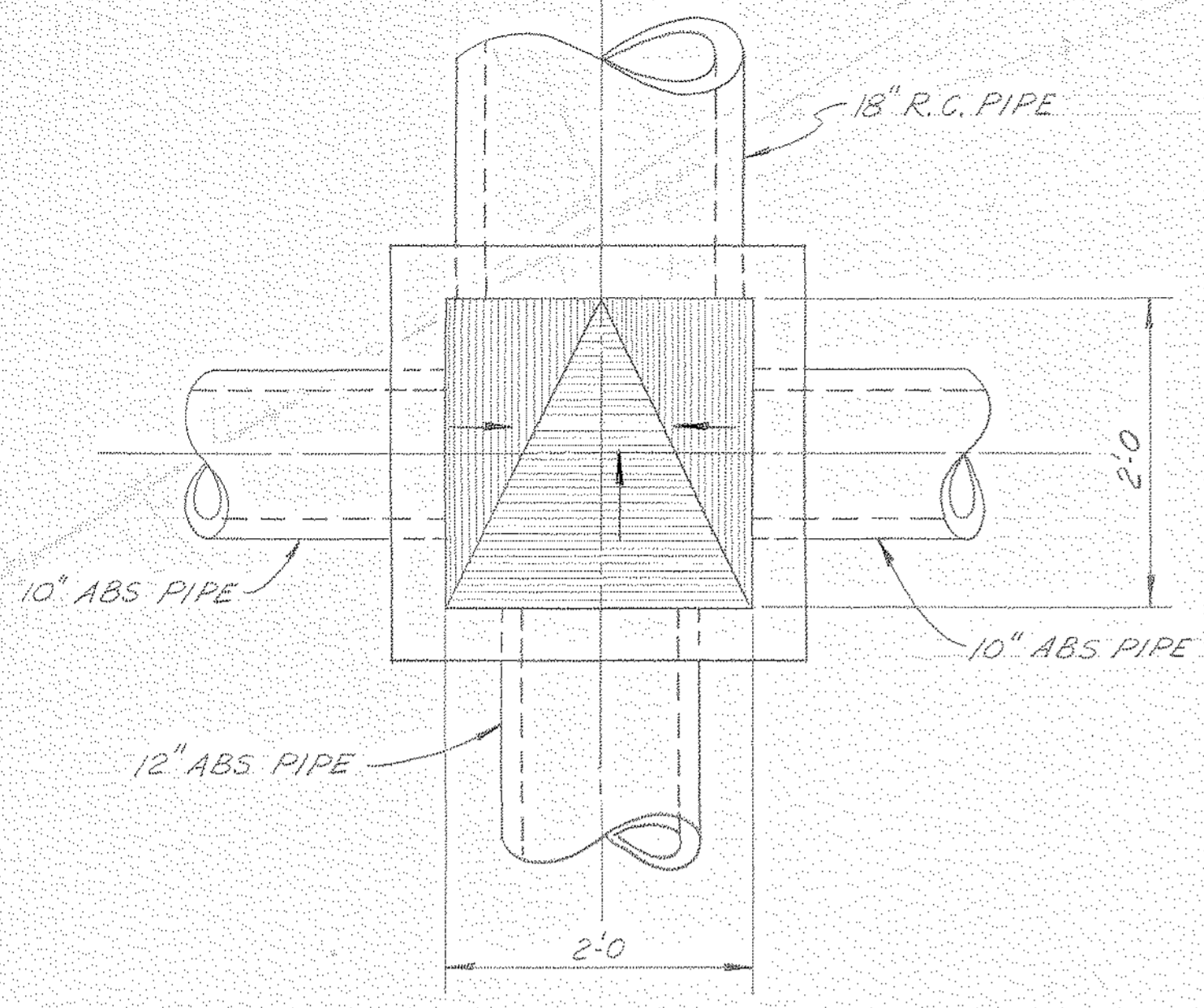
**ROOF DRAINAGE  
 UNDERGROUND PIPING**

**NEW RESEARCH CENTER**

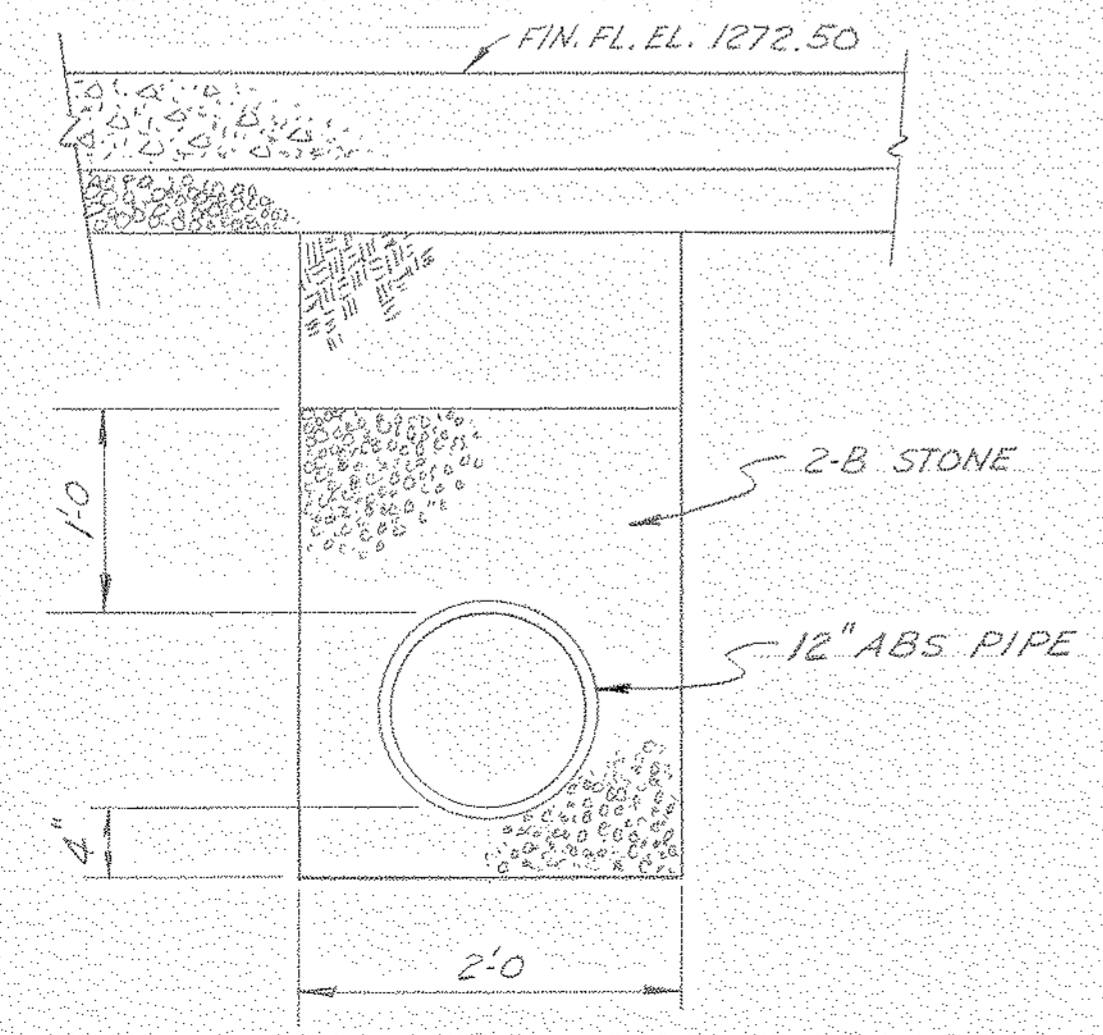
DRAWN BY: [Signature] C.O. NO. 55-110  
 CHECKED: [Signature] DATE 2-12-81  
 SCALE: NONE DWG. NO. 55-110-P-5

#0064 - P-5 R.F. Drain/UnGrd. Pipe - 1981 - NO NE 380107

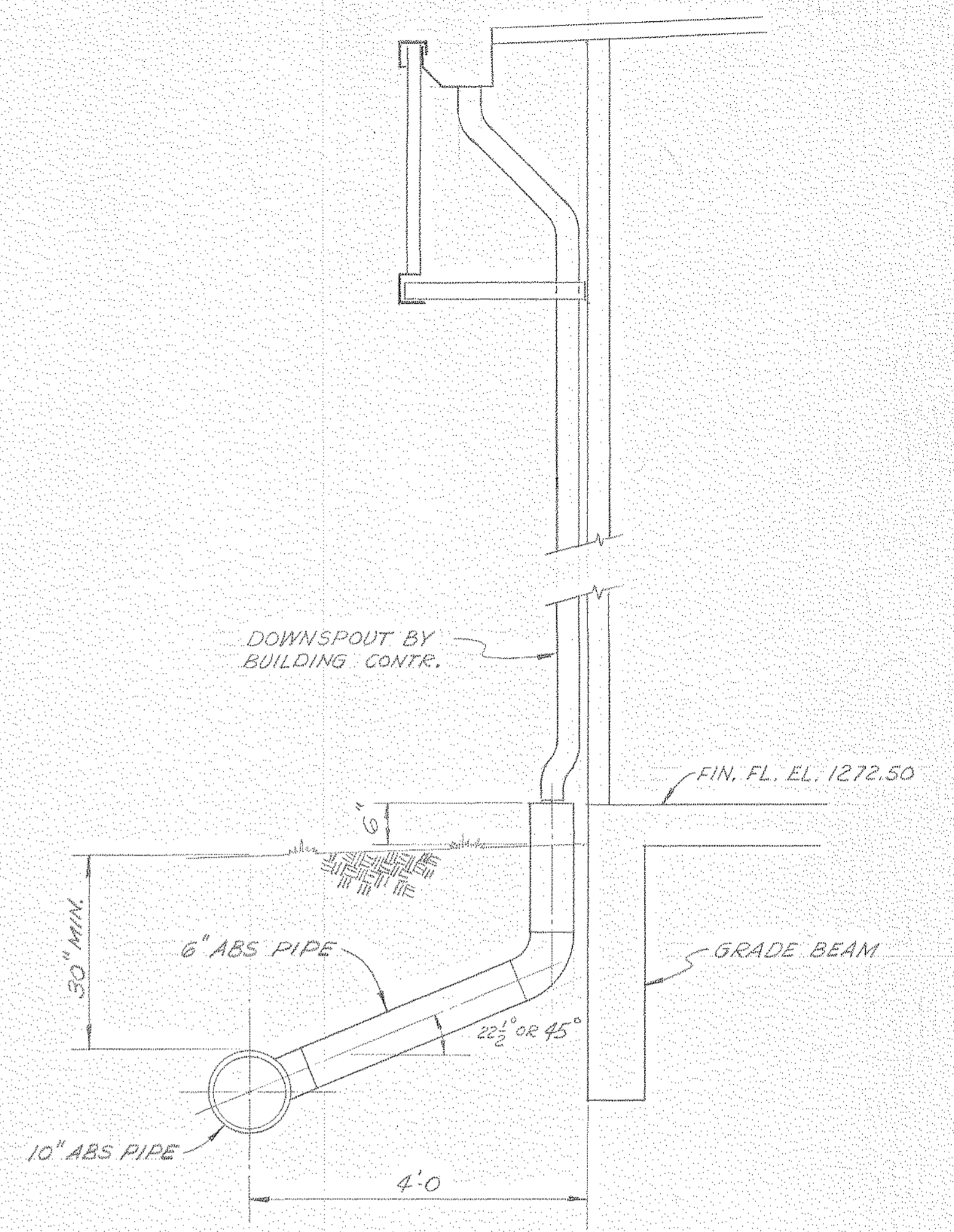




DETAILS CONCRETE JUNCTION BOX



SECTION B-B  
SEE DWG. 55-110-P-2



SECTION A-A  
SEE DWG. 55-110-P-2

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LL-5-A-54  
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

ROOF DRAINAGE  
DETAILS

NEW RESEARCH CENTER

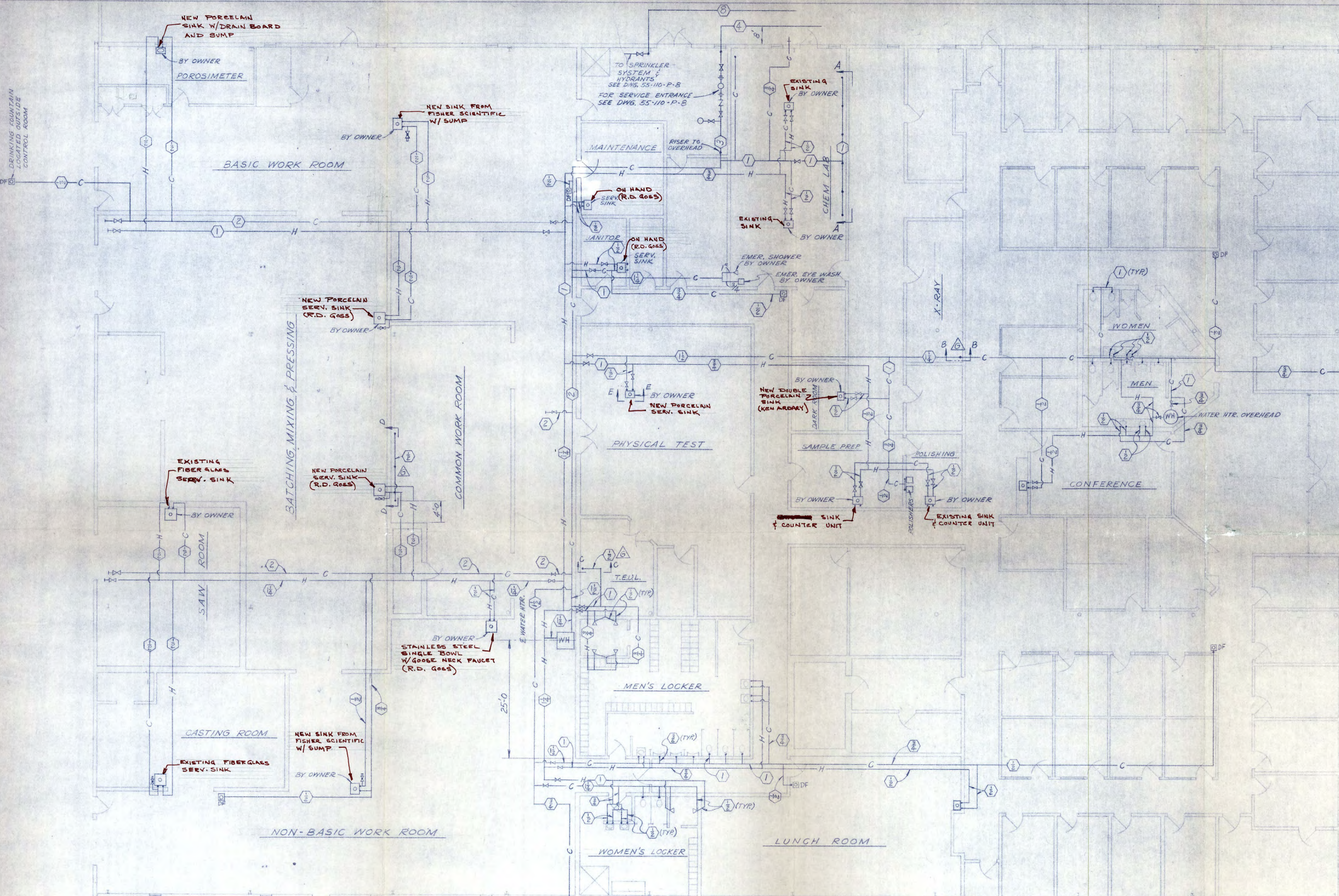
OTHERS	PLANT	FOREMAN	VENDOR	PRINTS	REVISION	DESCRIPTION	DATE
1 P.D.G. 5-18-77		3 JIM 2-14-81			A	(REV. DWG. NO. (WAS P.12))	6-7-81

DRAWN BY	C. O. NO.	DWG. NO.
SCALE	DATE	

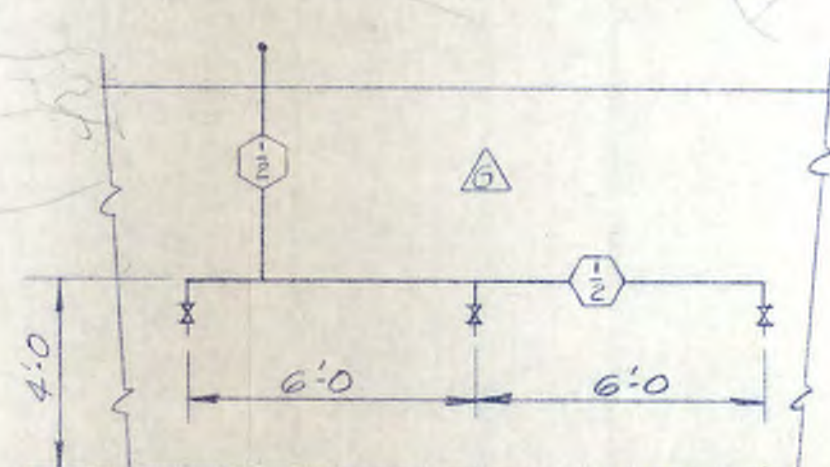
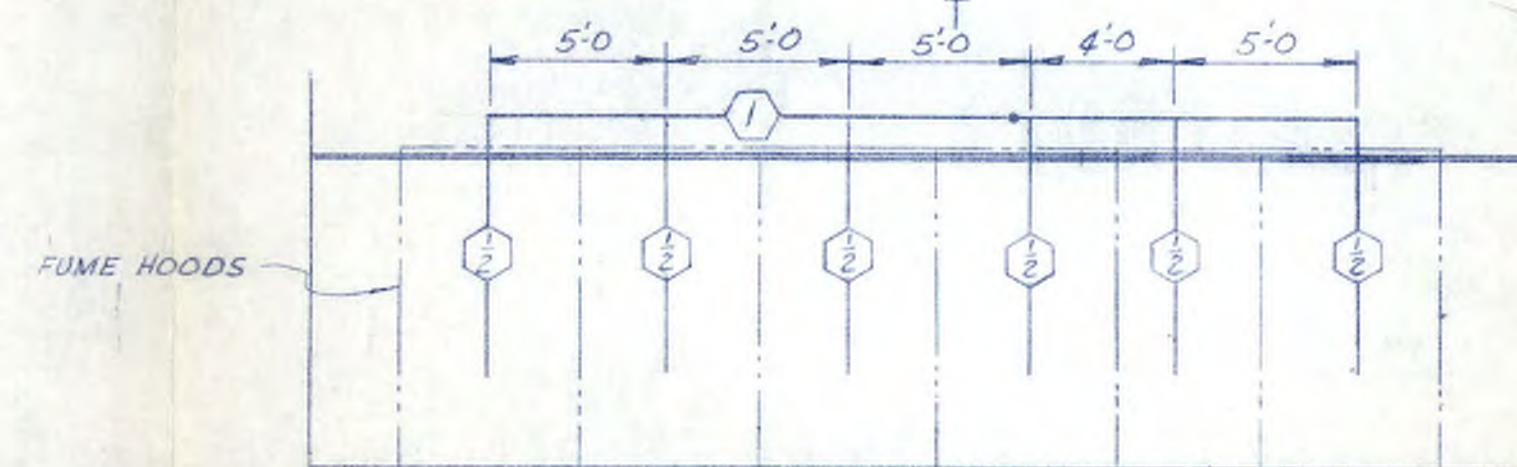
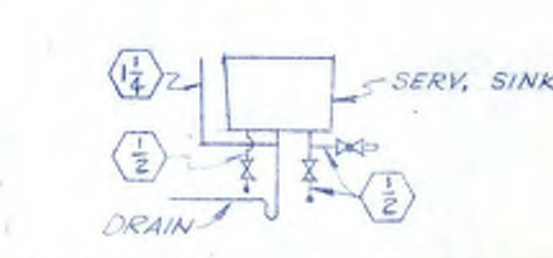
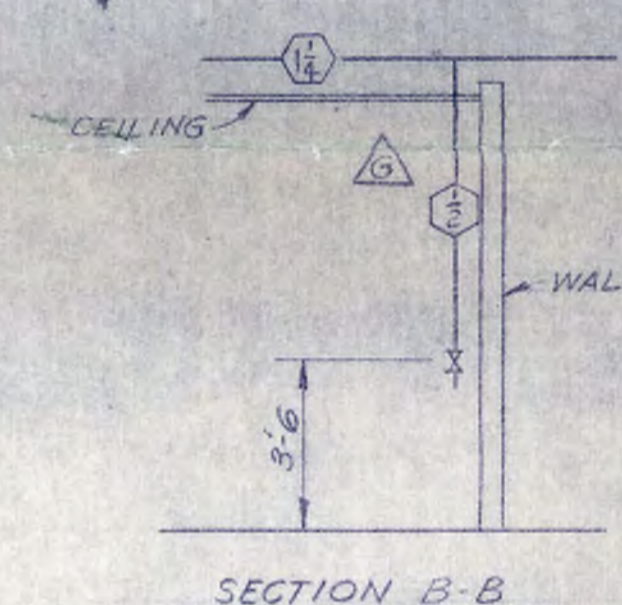
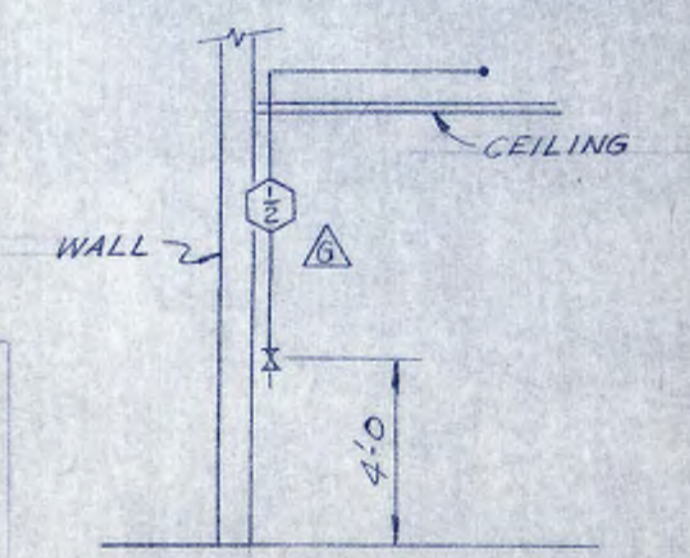








- LEGEND**
- GATE VALVE
  - CHECK VALVE
  - SINK
  - DRINKING FOUNTAIN
  - LAVATORY
  - PIPE DIAMETER - INCHES
  - FROST PROOF HOSE BIBB
  - PIPE RISER
  - GOLD WATER PIPING
  - HOT WATER PIPING
  - URINAL
  - WATER CLOSET
  - SHOWER
  - WATER HEATER
  - HOSE VALVE



LL-5-A-56  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

REVISION	DESCRIPTION	DATE
G	ADDED 3/4\"/>	
F	ADDED PIPING TO FUME HOODS IN CHEM LAB	3-12-82
E	ADDED HOSE VALVES AT SINKS	3-11-82
D	CHGD. PIPING TO EMER. SHOWER IN CHEM LAB	12-15-81
C	RELATED DRINK FOUNTAINS IN WORK ROOMS	7-8-81
B	REV. SERV. ENTER.	6-18-81
A	REA DWG. NO. (WAS P-3)	6-7-81

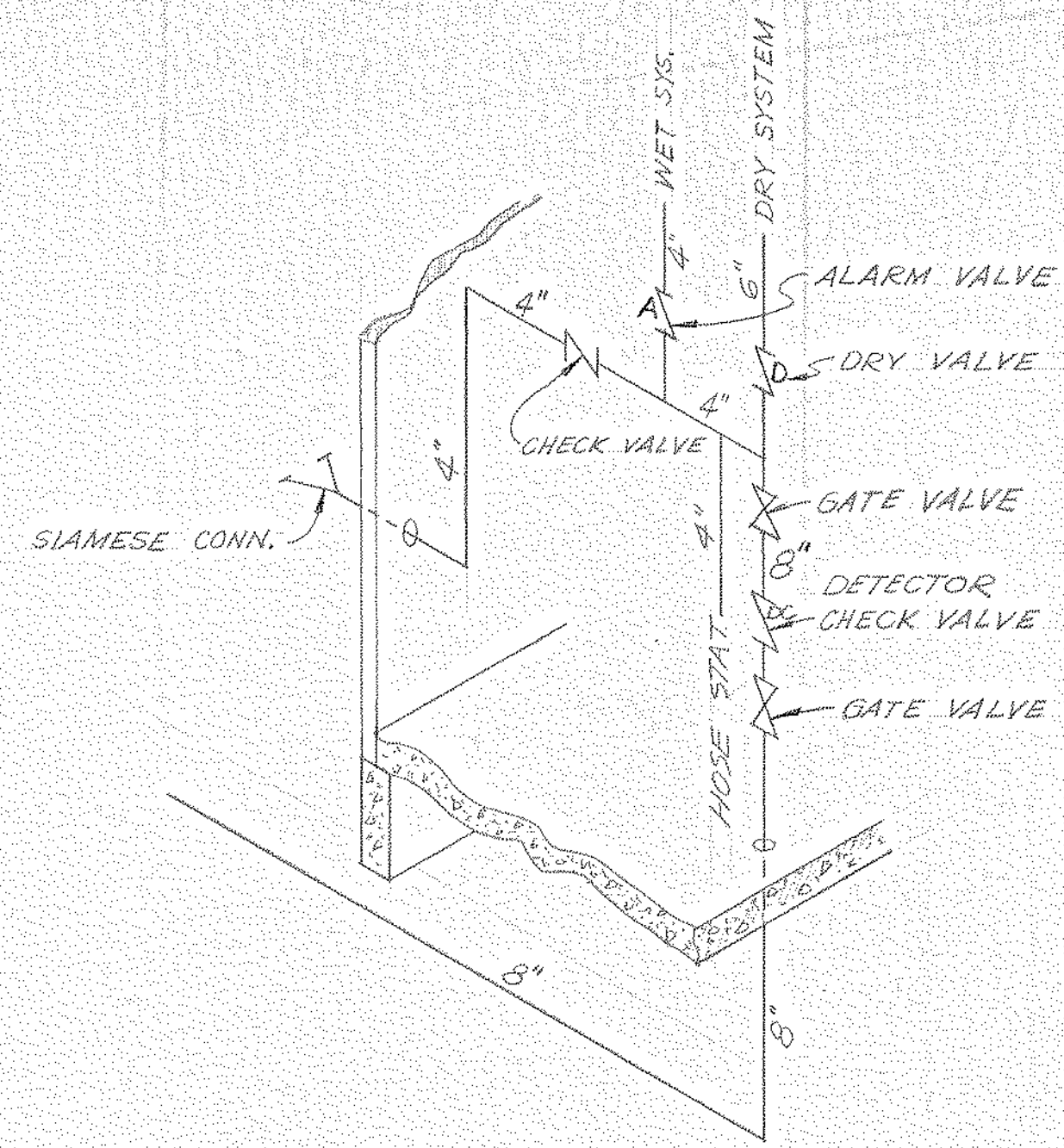
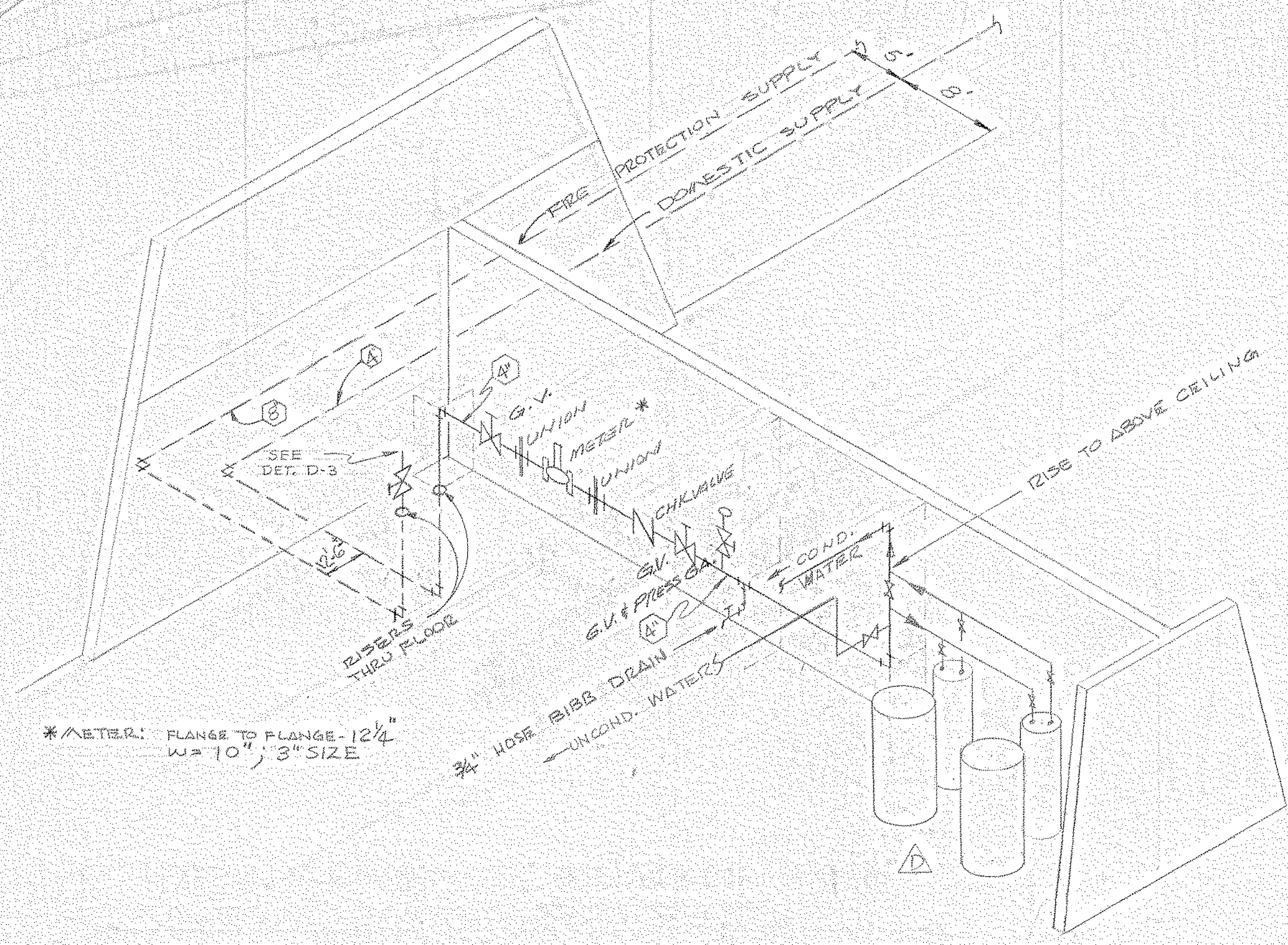
OTHERS	E.D. Goss	R.D. Goss	J.P. Goss	R.P. Goss	R.S. Goss	J.S. Goss	J.C. Goss
PLANT	6-18-81	7-8-81	7-21-81	8-17-81	3-5-82	1-10-82	
FOREMAN	JIM	JIM	JIM	JIM	JIM	JIM	
VENDOR	6-18-81	7-8-81	12-15-81	3-11-82	3-12-82	1-10-82	

**DOMESTIC WATER PIPING**  
 (Sink locations)  
 NEW RESEARCH CENTER

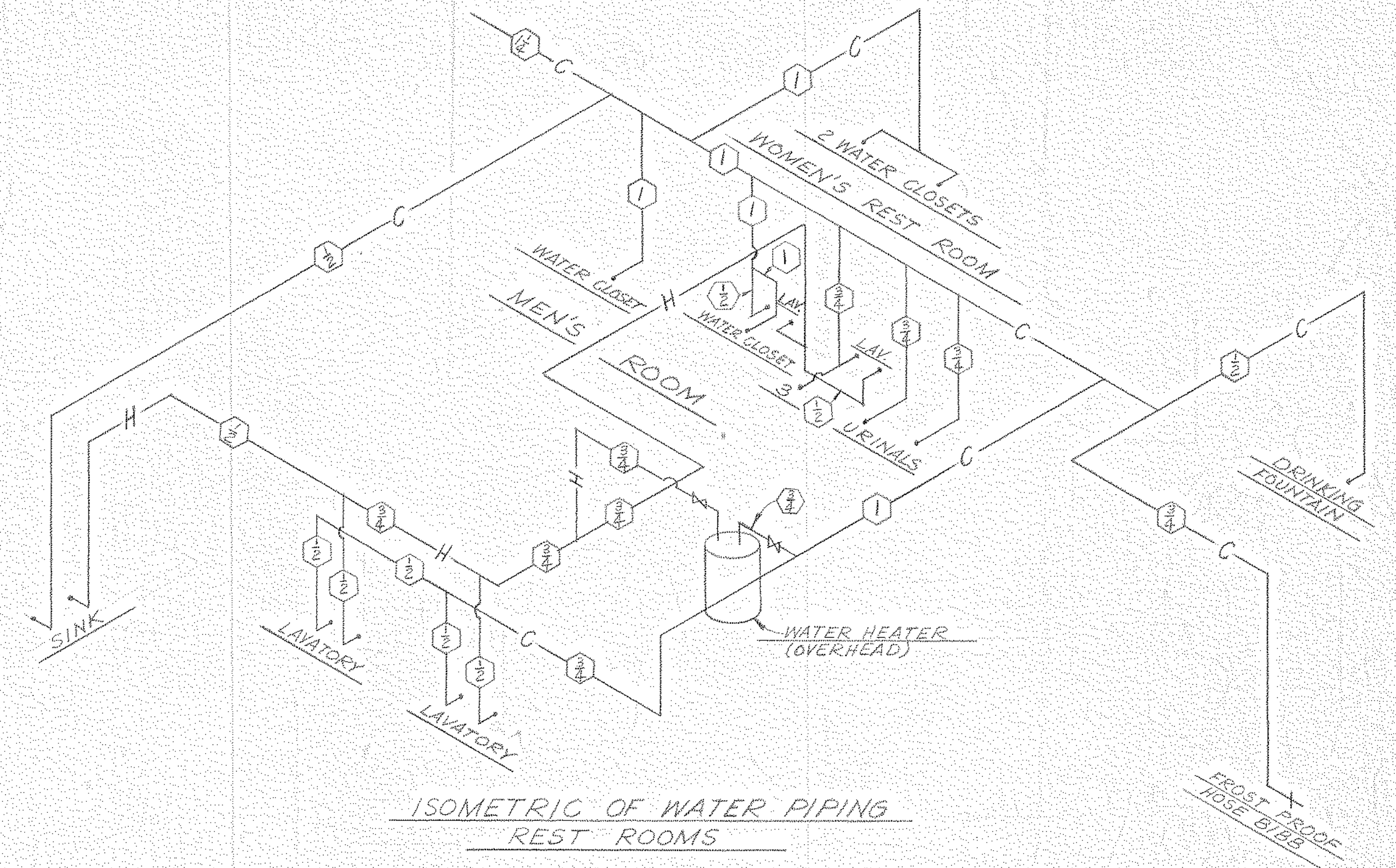
DESIGNED BY	55-110	55-110-P-7
CHECKED	5-6-81	
SCALE	3/8" = 1'-0"	

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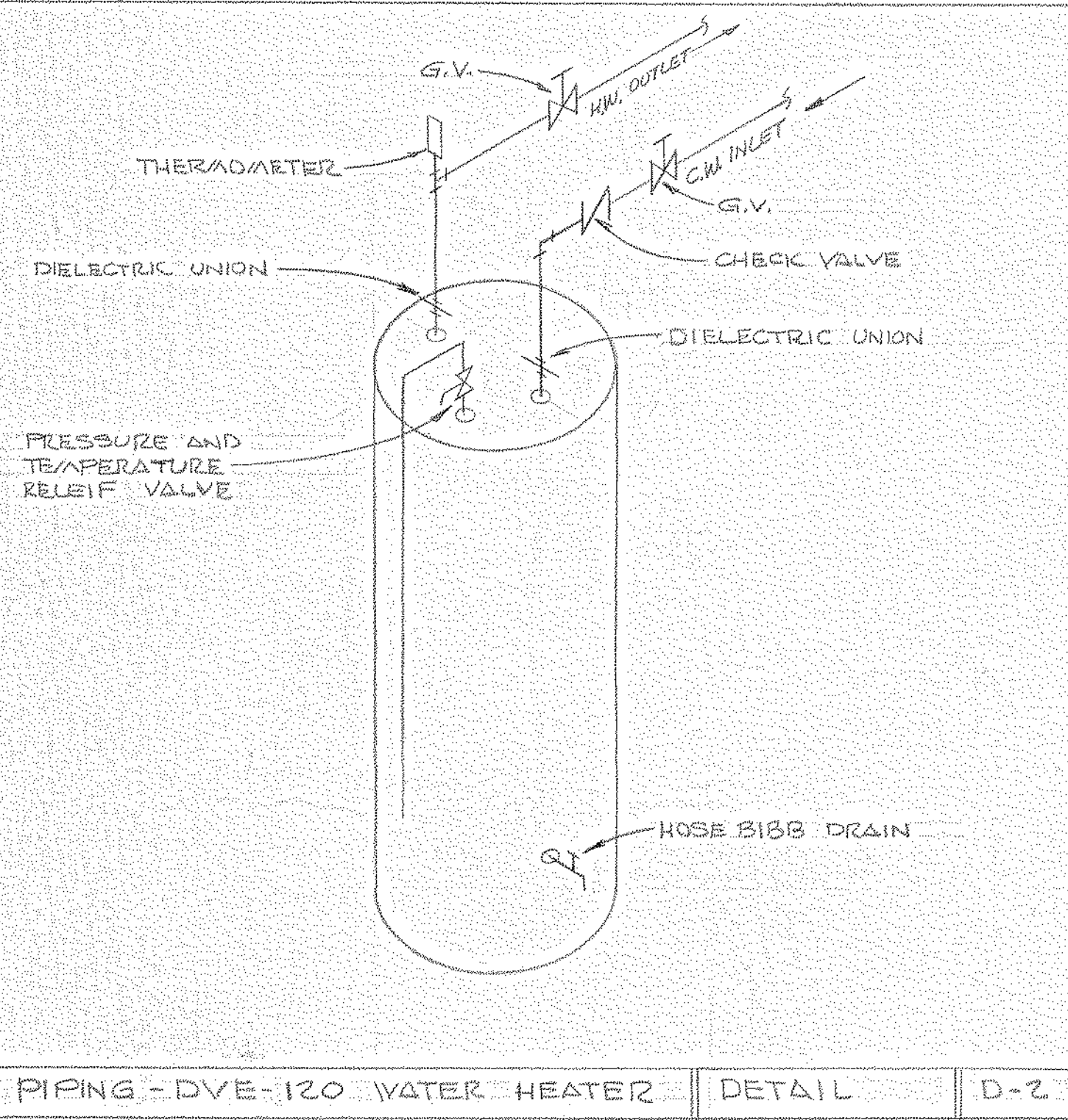


DETAIL D-3 FIRE PROTECTION RISER

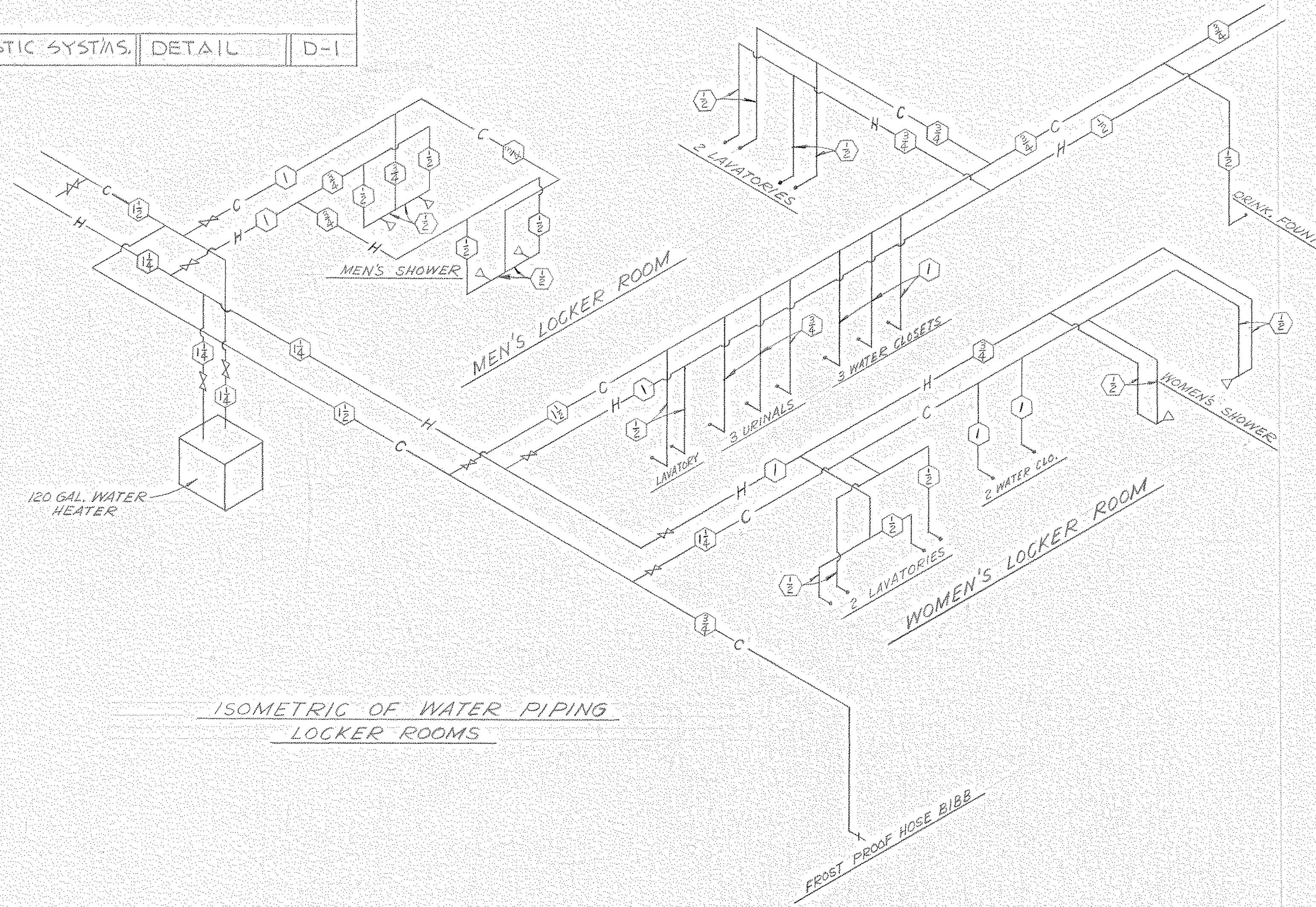


ISOMETRIC OF WATER PIPING REST ROOMS

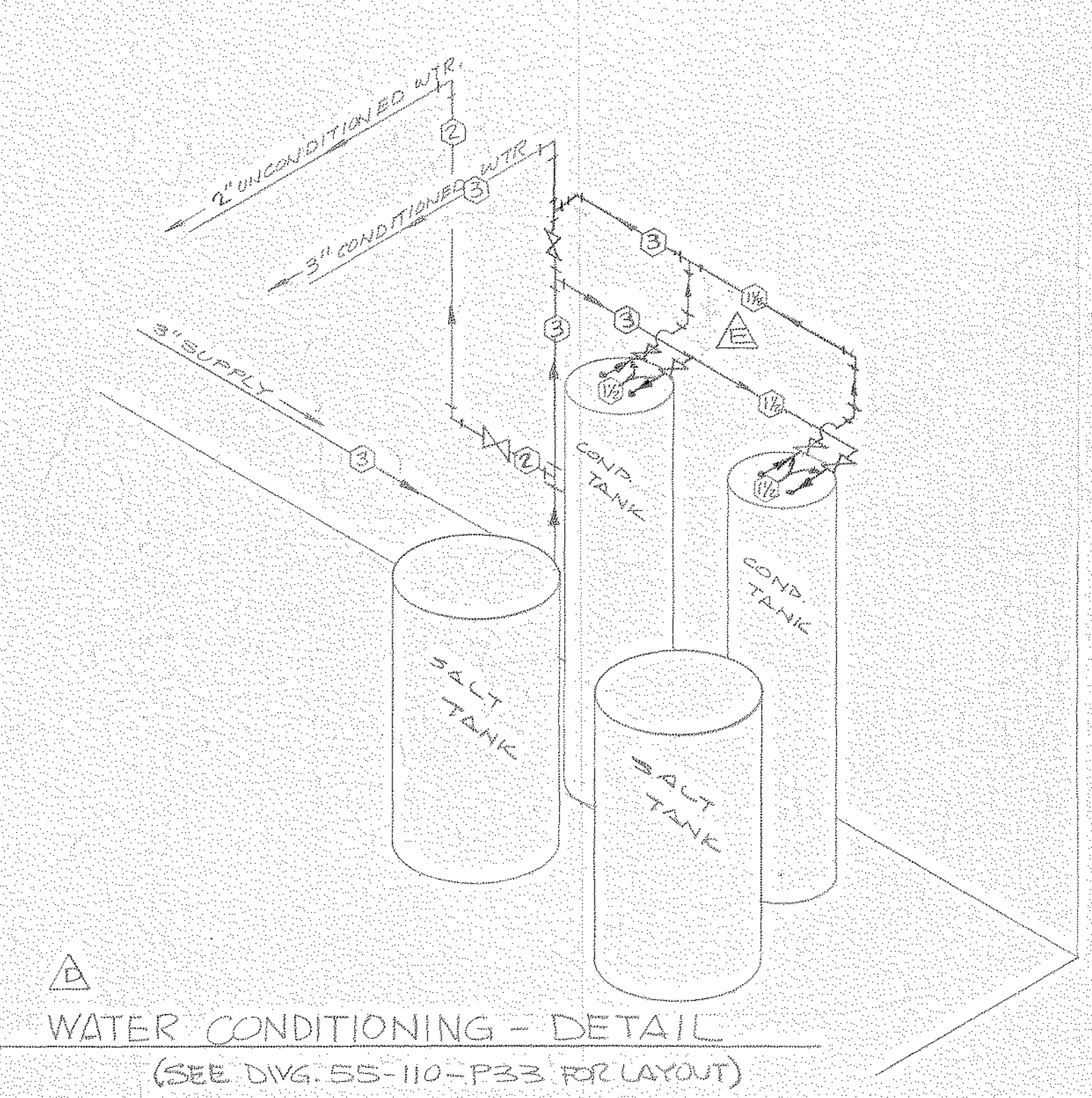
PIPING/FITTING DETAIL-WATER SUPPLY TO FIRE PROT. & DOMESTIC SYSTEMS. DETAIL D-1



PIPING - DVE-120 WATER HEATER DETAIL D-2



ISOMETRIC OF WATER PIPING LOCKER ROOMS



WATER CONDITIONING - DETAIL (SEE DVG. 55-110-P33 FOR LAYOUT)

LL-5-A-57  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

GENERAL DETAIL SHEET  
 PLUMBING  
 NEW RESEARCH CENTER

OTHERS	DATE	DESCRIPTION	DATE
E	7-30-81	REV. PIPING AGREEMENT @ COND. TANKS	7-30-81
D	6-14-81	ADD WATER COND. DTCS	6-14-81
C	6-11-81	REVISED ENTRANCE PIPING	6-11-81
B	6-7-81	REV. DVG. NO. (WBS P-7)	6-7-81
A	6-3-81	GENERAL REV.	6-3-81

PLANT	DATE	DESCRIPTION	DATE
FOREMAN	6-15-81	6-15-81	
VENDOR			

REVISION	DESCRIPTION	DATE
E	REV. PIPING AGREEMENT @ COND. TANKS	7-30-81
D	ADD WATER COND. DTCS	6-14-81
C	REVISED ENTRANCE PIPING	6-11-81
B	REV. DVG. NO. (WBS P-7)	6-7-81
A	GENERAL REV.	6-3-81

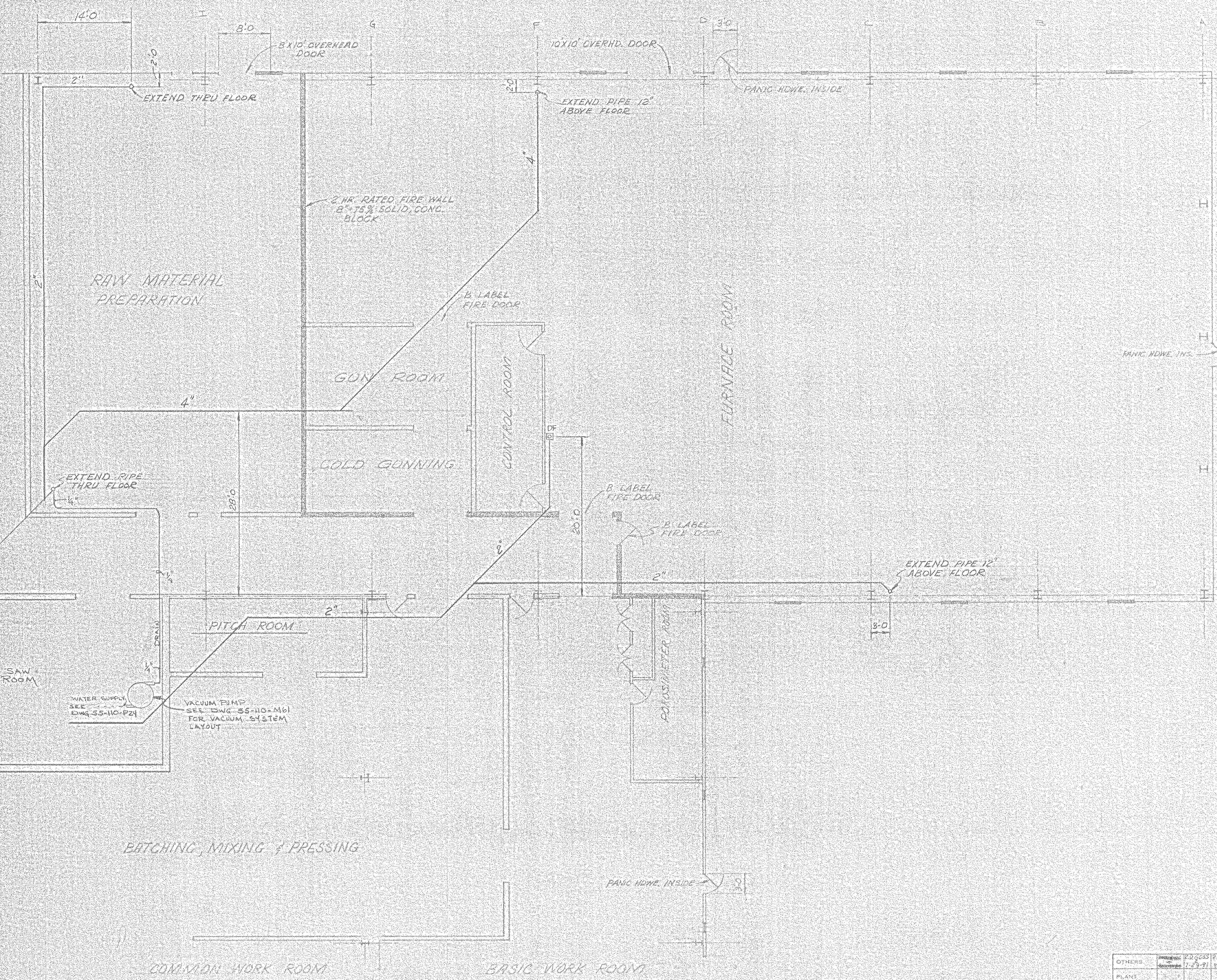
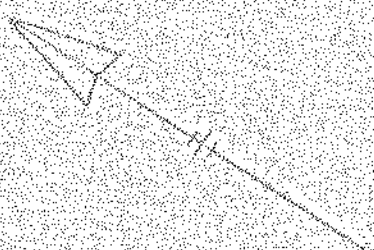
SCALE	DATE	NO.
SCALE AS NOTED	2-12-81	55-110-P-8

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 INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM,  
 WITHOUT PERMISSION IN WRITING FROM NORTH AMERICAN REFRACTORIES CO.

OTHERS	DESIGNED	DRAWN	CHECKED	IN CHARGE	DATE
	JUN 7-29-81	JUN 8-2-81	JUN 8-2-81	JUN 8-2-81	6-2-81

REVISION	DESCRIPTION	DATE
E	CARRIED OVER FROM PLUMBING PLAN	6-1-82
D	ADDED 2" PER 8" STUB PIPE	2-1-82
C	CHANGED 2" DIA LINE TO 4" DIA LINE IN RAW MATL. PREP ROOM	2-23-81
B	ADDED 2" DIA LINE IN COLD GUNNING ROOM	8-31-81
A	RELOCATED 4" LINE	7-31-81

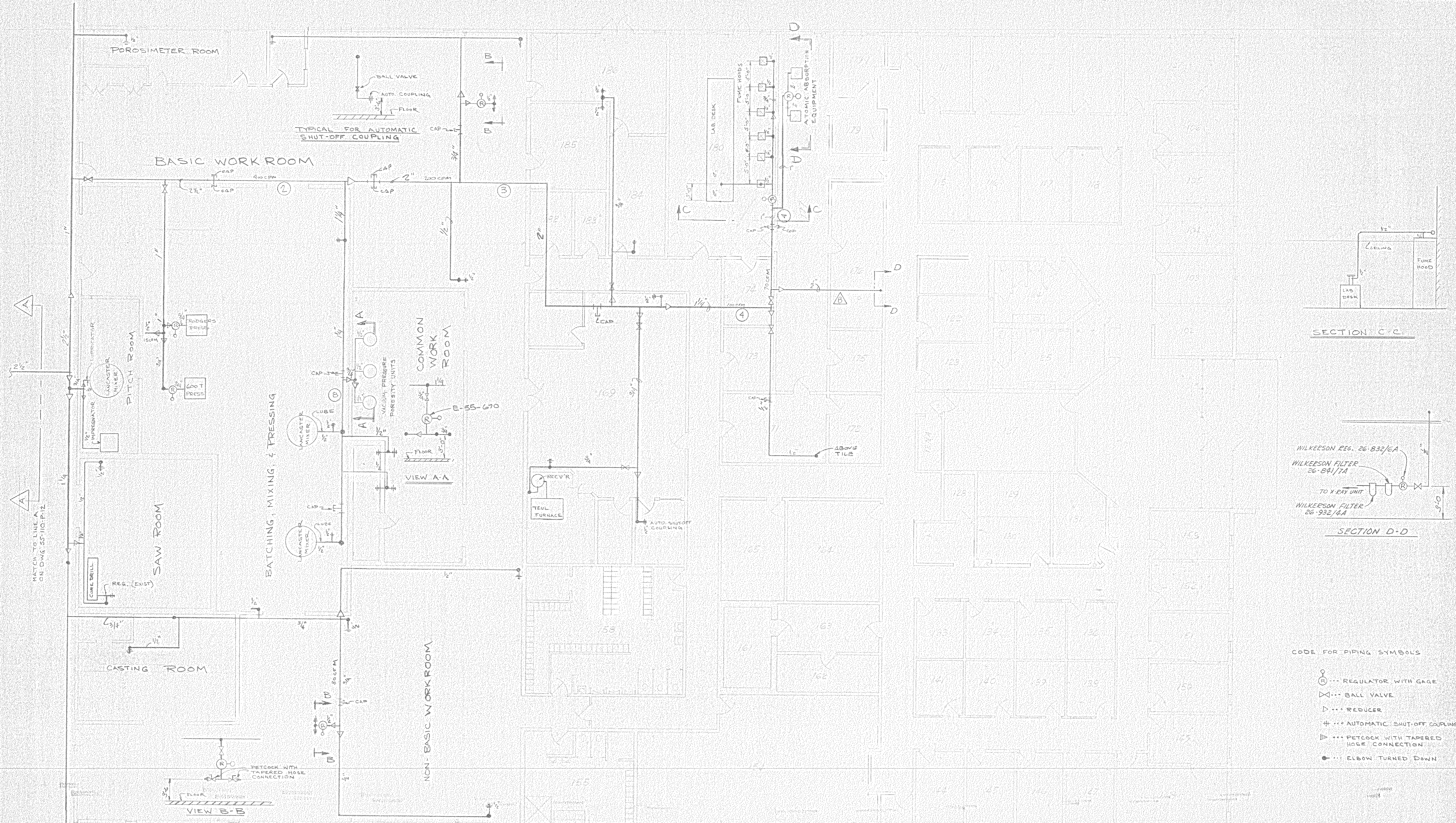
LL-5-A-59

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

**SANITARY DRAIN PIPING**  
**FURNACE ROOM**  
**NEW RESEARCH CENTER**

DRAWN BY: D.E.H.	DATE: 5-5-80	SCALE: AS SHOWN
CHECKED BY: J.M.P.	DATE: 7-17-80	PROJECT: 44-107





TYPICAL FOR AUTOMATIC SHUT-OFF COUPLING

VIEW A-A

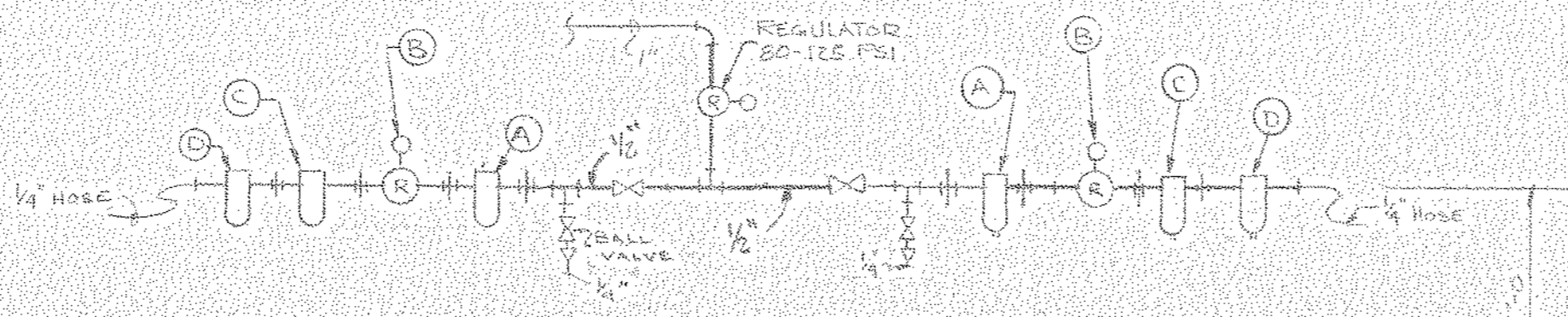
VIEW B-B

SECTION C-C

SECTION D-D

- CODE FOR PIPING SYMBOLS
- ... REGULATOR WITH GAGE
  - ◇... BALL VALVE
  - ◇... REDUCER
  - ⊕... AUTOMATIC SHUT-OFF COUPLING
  - ▷... PETCOCK WITH TAPERED HOSE CONNECTION
  - ... ELBOW TURNED DOWN

- Ⓐ OIL/WATER FILTER
- Ⓑ REGULATOR
- Ⓒ DESICCANT FILTER
- Ⓓ DIRT FILTER - PERKIN-ELMER \* 803-0229.



SECTION D-D

REVISED	DESCRIPTION	DATE
D	"As-Found" Rev.	7-30-82
C	"As-Built" INTERIOR WALLS	7-20-82
B	ADDED 3" LINETS ROOM 176	5-4-82
A	CHANGE FROM TO ATOMIC ABSORPTION UNITS	2-19-82

44-5-A-60

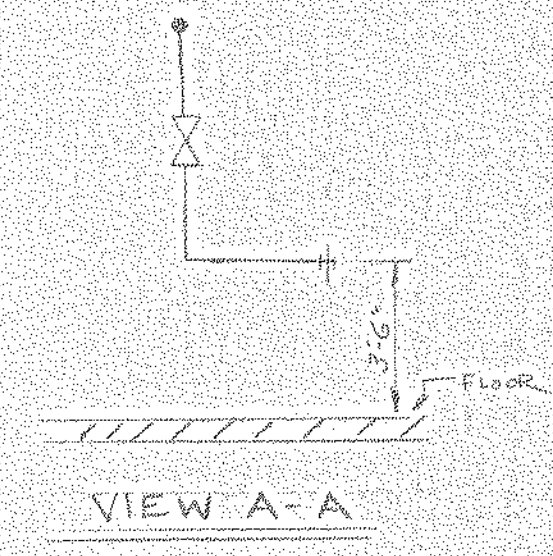
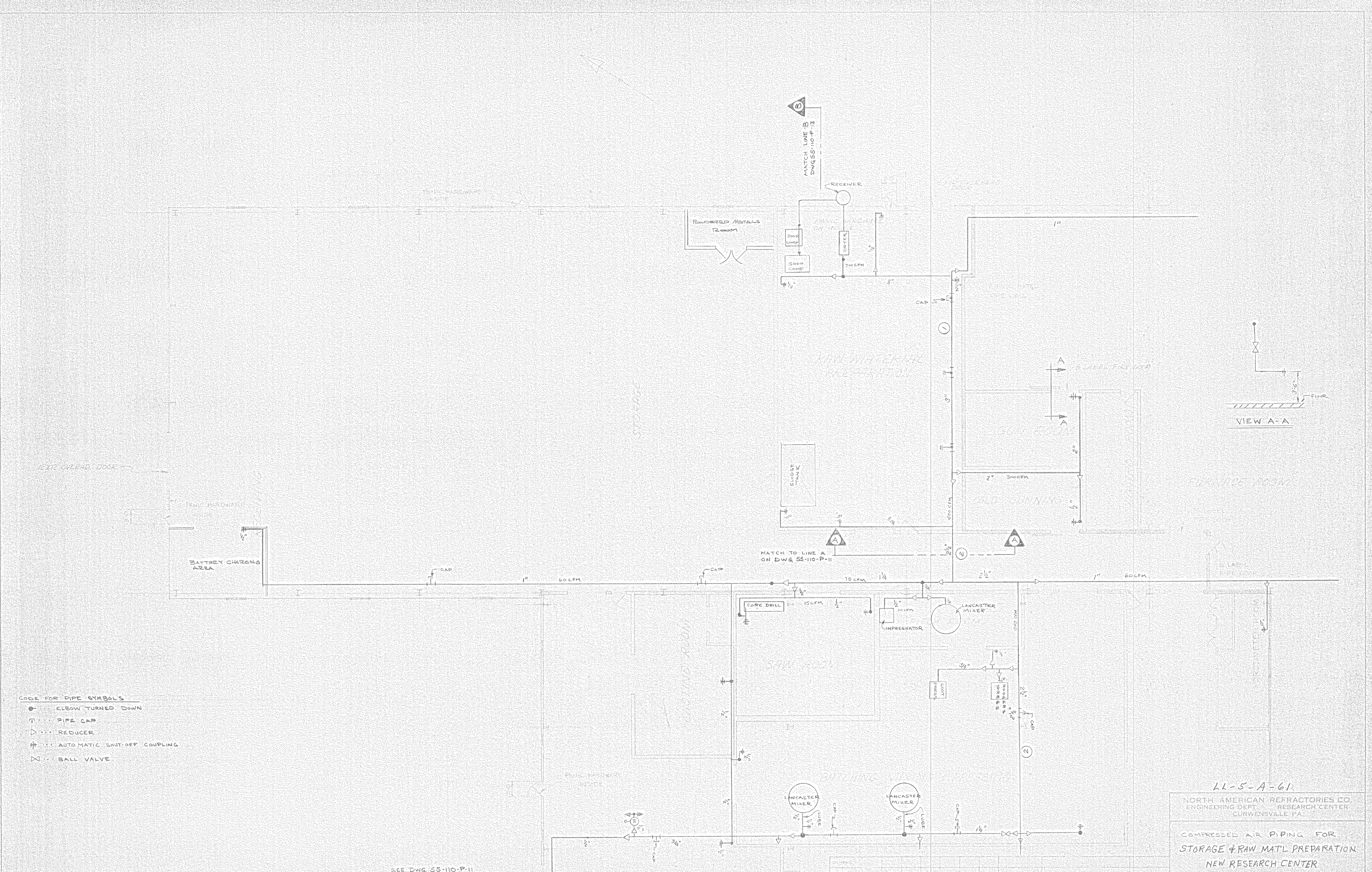
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

**FLOOR PLAN**  
COMPRESSED AIR  
PIPING SCHEMATIC BLDG. A  
NEW RESEARCH CENTER

PROJECT NO.	55-110	55-110-P11
DATE	5-10-82	

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- CODE FOR PIPE SYMBOLS
- ELSOW TURNED DOWN
  - T PIPE CAP
  - ▷ REDUCER
  - # AUTO Matic SHUT-OFF COUPLING
  - X BALL VALVE

SEE DWG 55-110-P-11 FOR PIPING BEYOND THIS POINT

21-5-A-61  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE PA.

COMPRESSED AIR PIPING FOR  
 STORAGE & RAW MATL PREPARATION  
 NEW RESEARCH CENTER

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NO.	REV.	DATE	DESCRIPTION	BY	CHKD.
1		3-10-82			

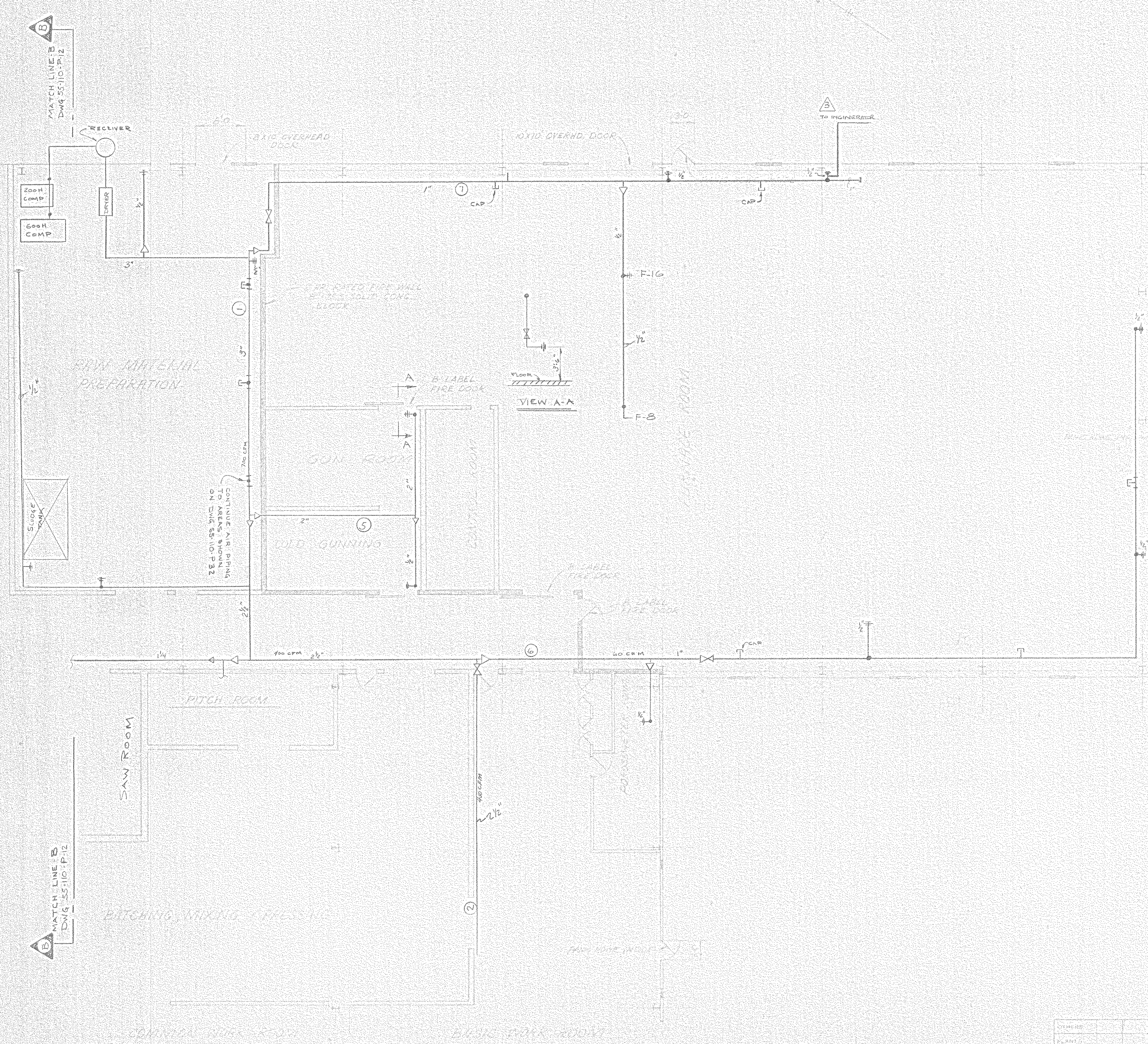
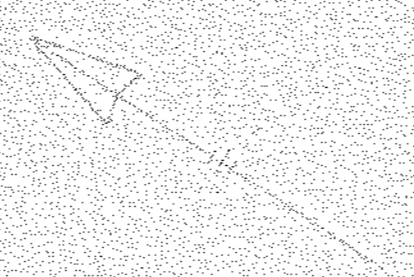
  

PROJECT	21-5-A-61	DATE	7-25-82
PLANT	RESEARCH CENTER	SCALE	AS SHOWN
POWER	5-11-82	DWG NO.	55-110-P-12
REVISION		DATE	

PRINTS

#0064 P/2 Comp. Air/Strgt Raw Mat'l 1981 NONE 460107





NOTE: FOR AIR PIPING BEYOND THIS POINT SEE DWG 55-110-P11

- CODE FOR PIPE SYMBOLS
- ⊙ ... ELBOW TURNED DOWN
  - ⊥ ... PIPE CAP
  - ▷ ... REDUCER
  - # ... AUTO Matic SHUTOFF COUPLING
  - ⊗ ... BALL VALVE

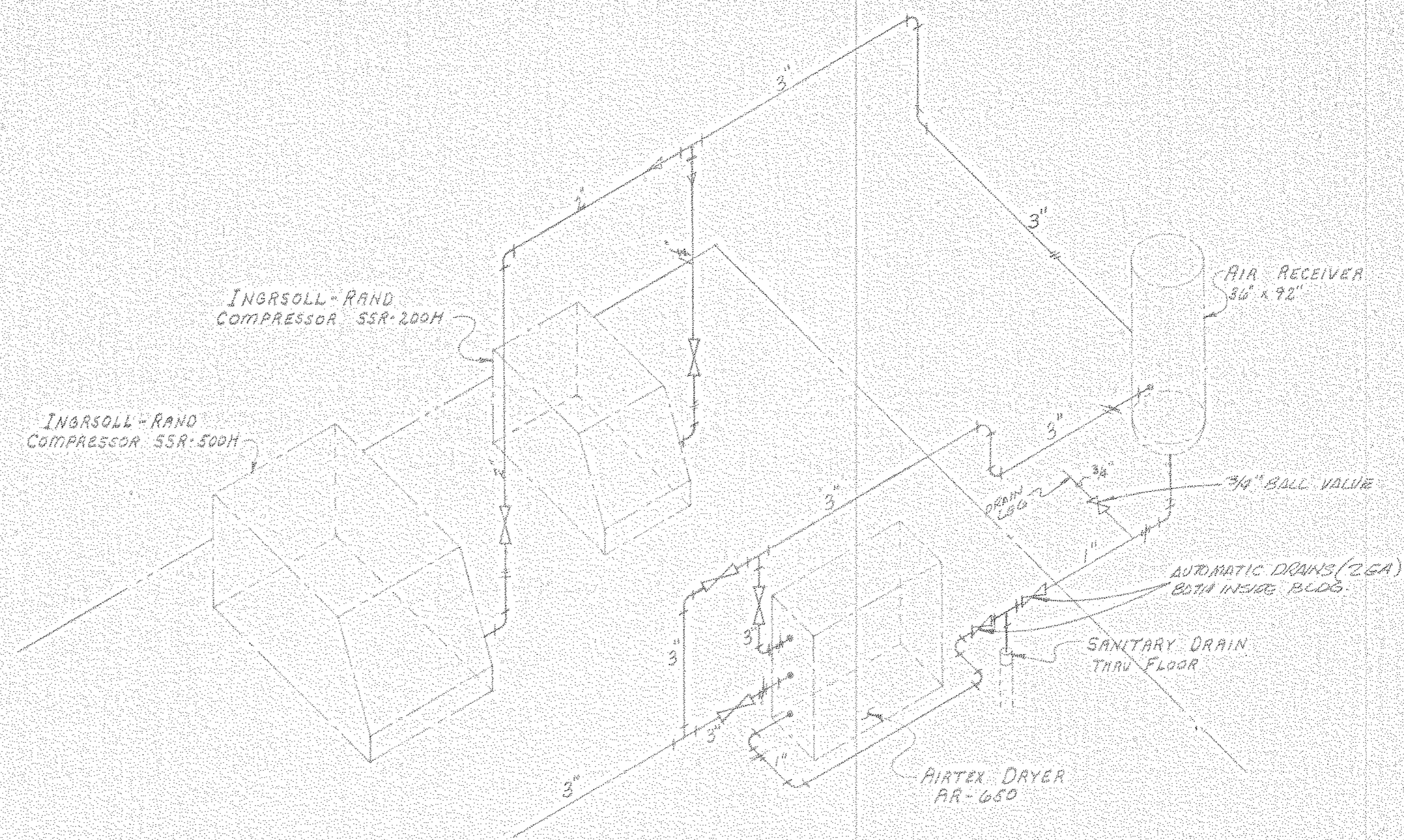
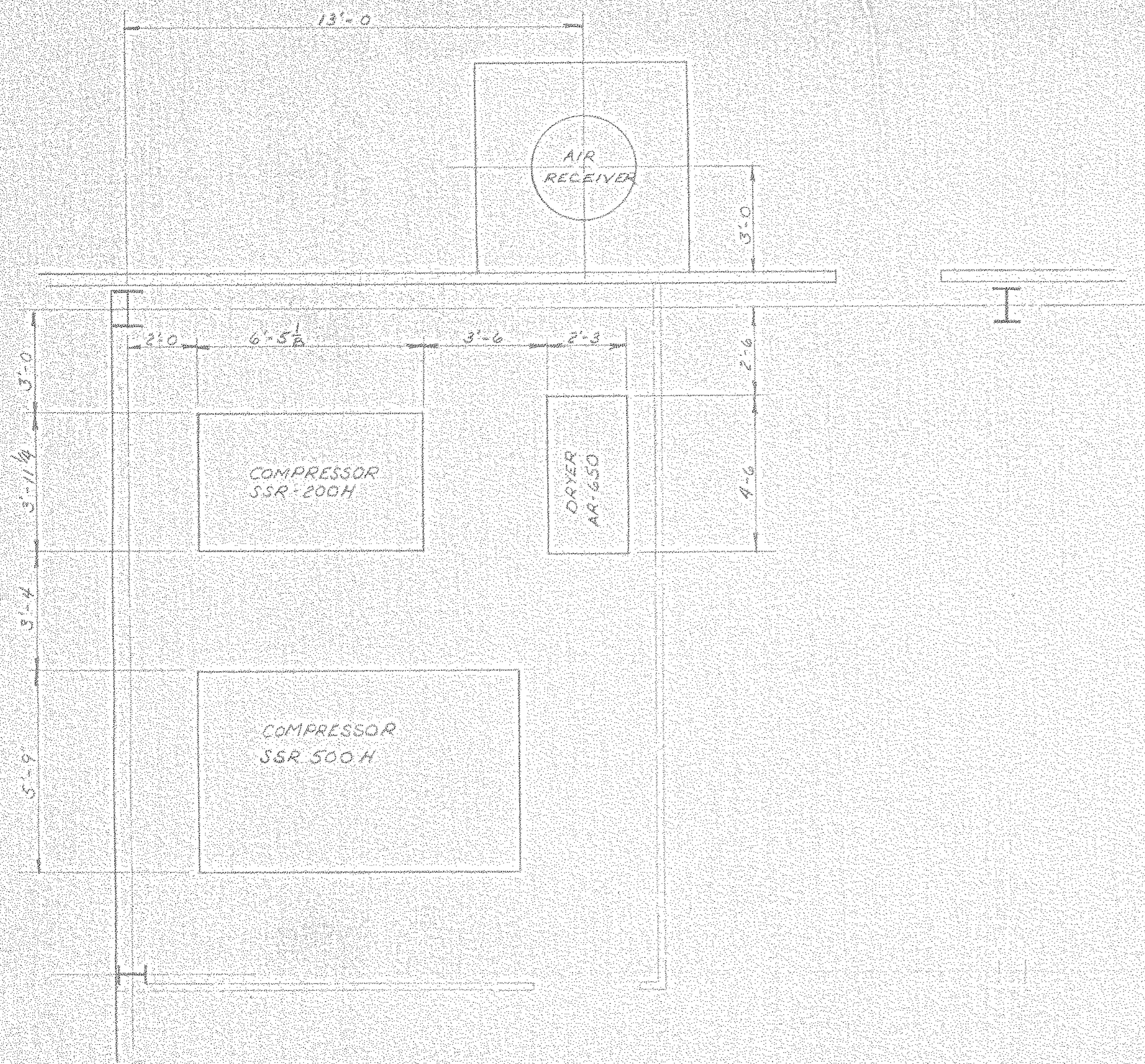
SEE DWG 55-110-P32 FOR COMPRESSED AIR PIPING LOCATIONS IN RAW MAT'L PREP ROOM.

11-5-A-62 CO ITEM 14  
 NORTH AMERICAN REFRACTORIES CO  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA  
 COMPRESSED AIR PIPING FOR  
 FURNACE ROOM  
 NEW RESEARCH CENTER

DATE	BY	REVISION
7-30-82		3 As-Built Revs
5-18-82		COMP. AIR LINES EXTENDED TO RAW MAT'L PREP RM.
3-12-82		ADD BALL VALVE
3-10-82		

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C.O. ITEM No. LL-5-A-63

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

COMPRESSOR ROOM  
 SCHEMATIC PIPING

NEW RESEARCH CENTER

OTHERS									
PLANT									
FOREMAN	3								
VENDOR	2-4-82								
PRINTS		REVISION	DESCRIPTION	DATE					

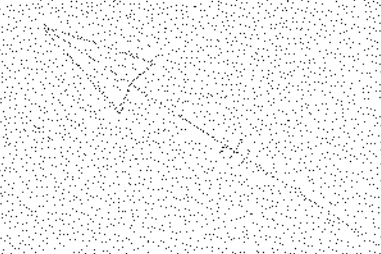
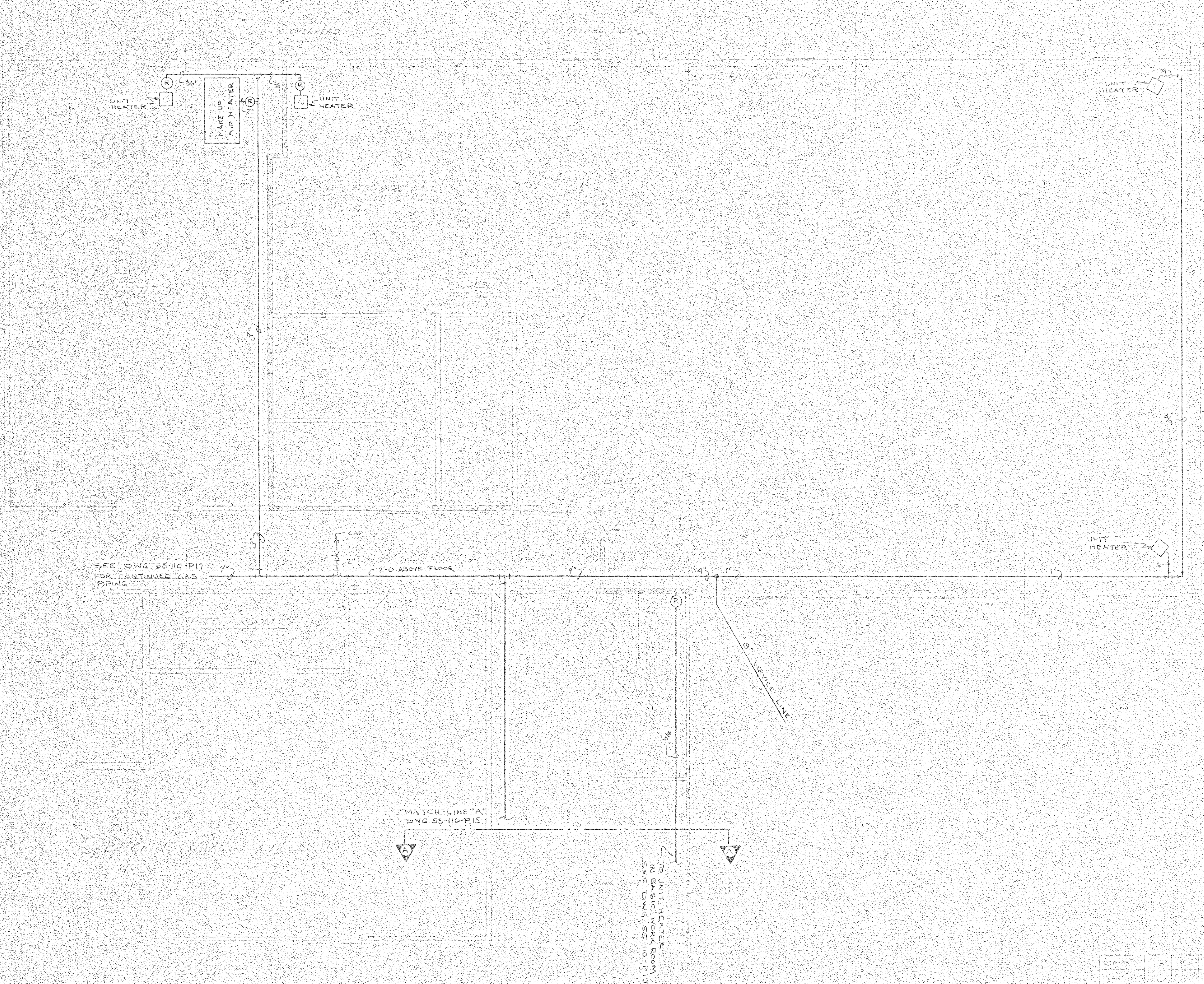
DRAWN BY	C.D. NO.	55-110
CHECKED	DATE	3-11-82
SCALE	1/4" = 1'-0"	DWG. NO.

#0064 - P14 Comp Air/Schem. Piping - 1981 - NONE - 480107









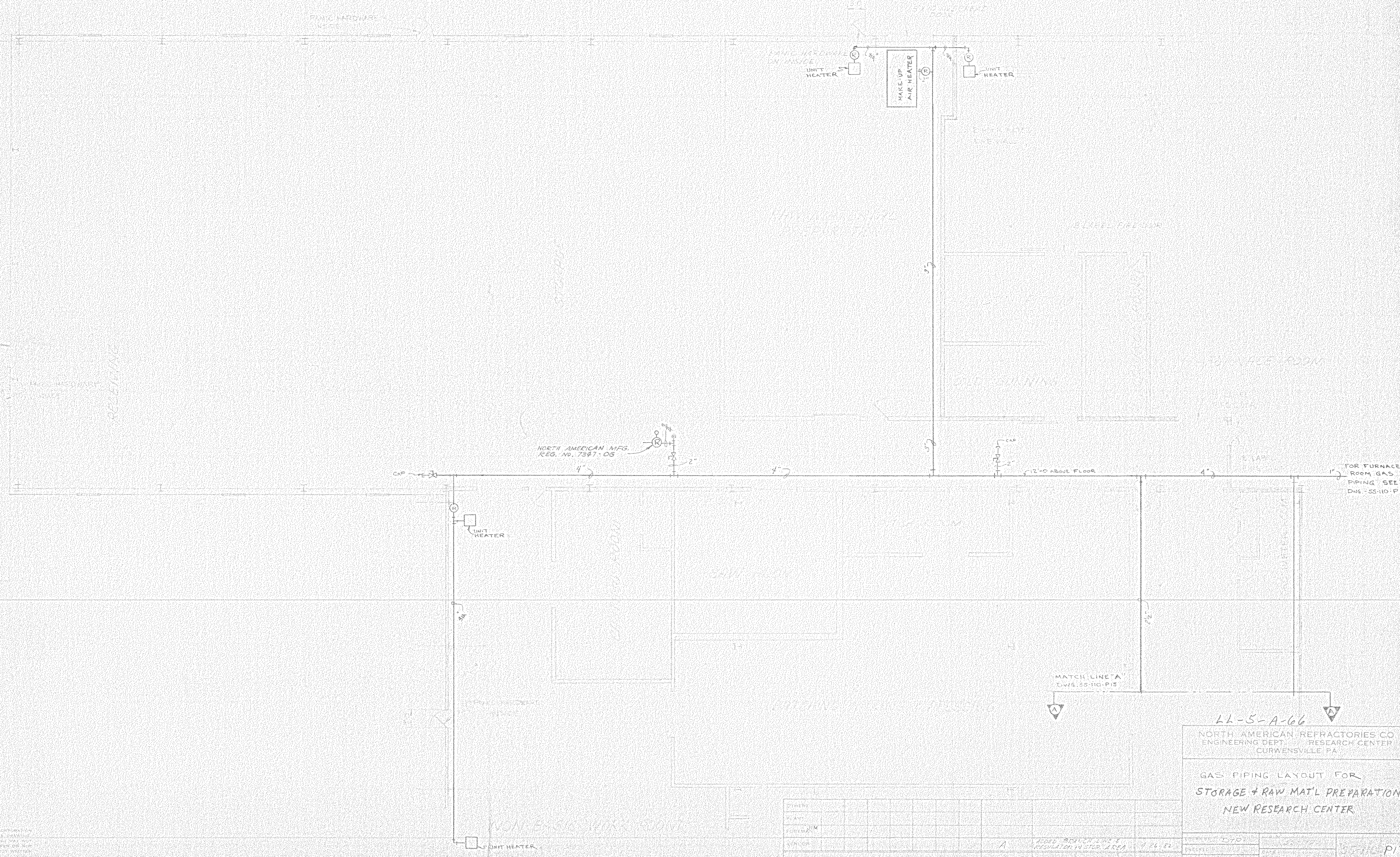
CODE  
 (R) — REGULATOR  
 (S) — SHUT-OFF VALVE

LL-5-A-65  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.  
 GAS PIPING LAYOUT FOR  
**FURNACE ROOM**  
 NEW RESEARCH CENTER

DATE	5-11-82	SCALE	AS SHOWN
BY		CHECKED	
APP'D		DATE	
PROJECT	P-16 Furnace Rm/Gas Pipe	NO.	0064
REV.		DATE	

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CODE:  
 (R) — REGULATOR  
 (X) — SHUT OFF VALVE

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DATE	BY	CHKD.	APP'D.

PRINTS: A  
 REDED BEYOND LINE 8  
 REGULATOR IN STOR. AREA  
 3-11-82  
 DWG. NO. 51.107

44-5-A-66  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.  
 GAS PIPING LAYOUT FOR  
 STORAGE + RAW MAT'L PREPARATION  
 NEW RESEARCH CENTER





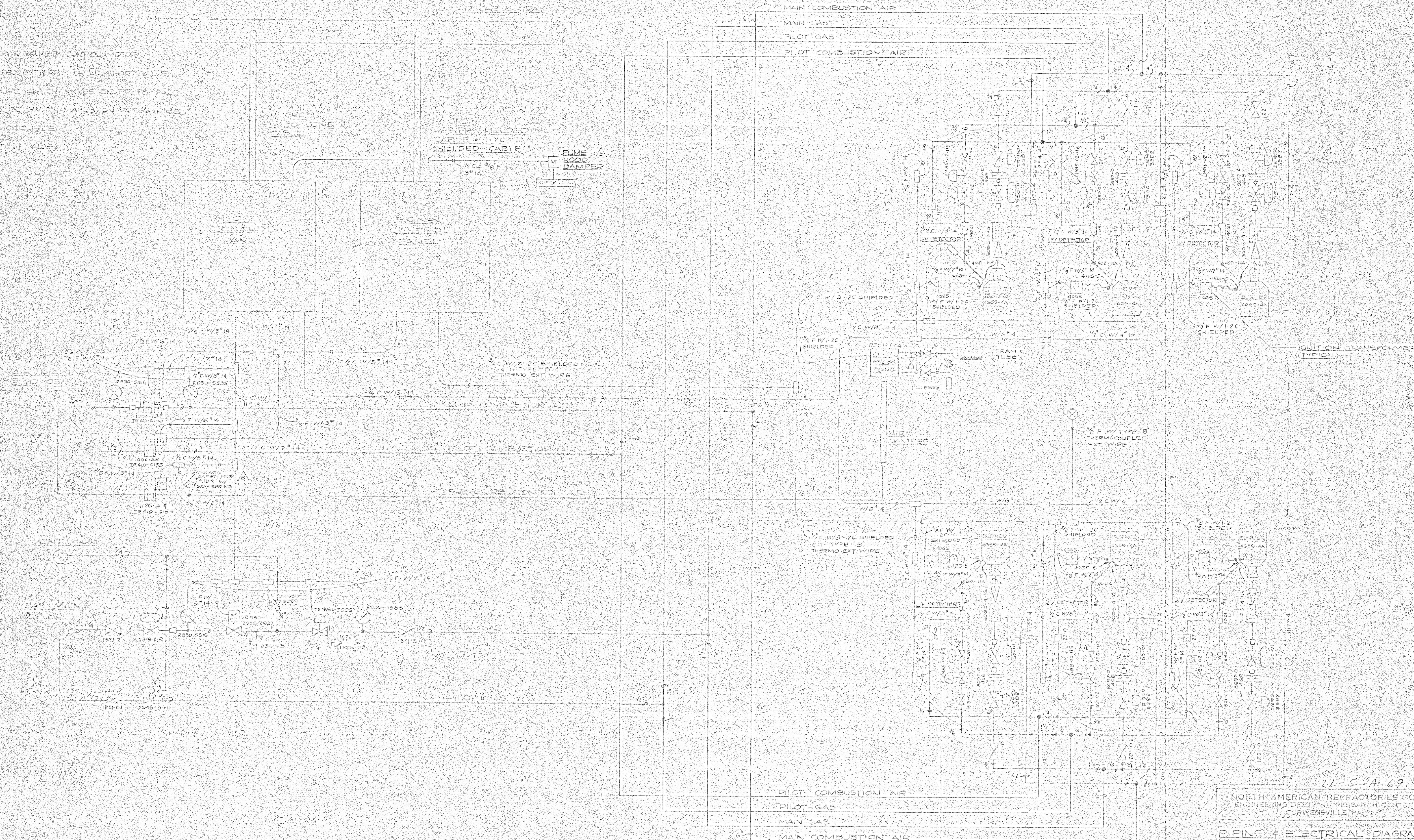






LEGEND

- MIXER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PYRO VALVE W/ CONTROL MOTOR
- WINGED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH MAKES ON PRESS. FALL
- PRESSURE SWITCH MAKES ON PRESS. RISE
- THERMOCOUPLE
- LEAK TEST VALVE



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OTHERS:	C. GARDNER	2/28/82	12/15/82	12/15/82	12/15/82	12/15/82	12/15/82	12/15/82	12/15/82
PLANT:	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4
FOREMAN:	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4
VENDOR:	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4
PRINTS:	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4	11177-4

LL-5-A-69

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENVILLE, PA.

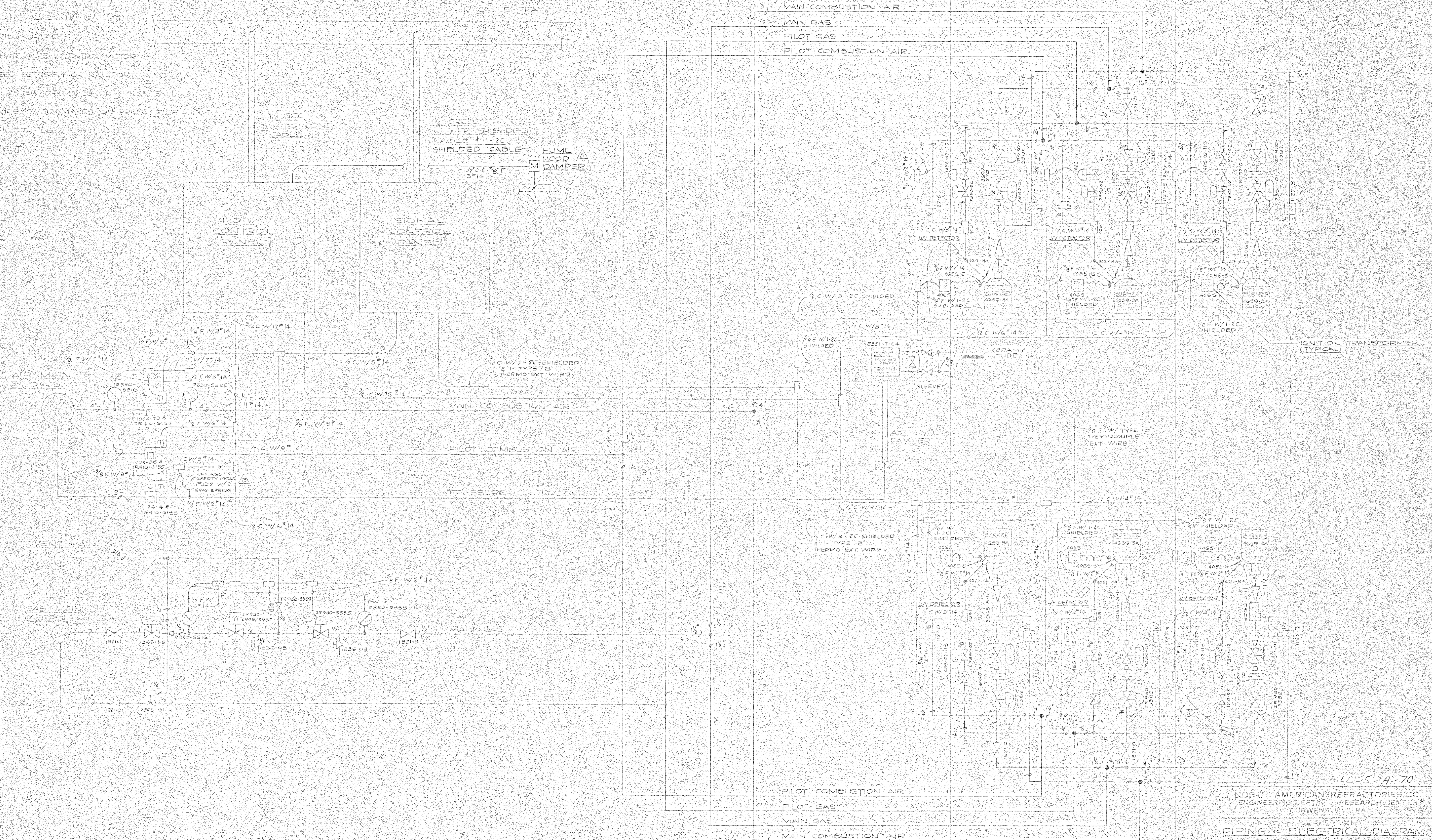
PIPING & ELECTRICAL DIAGRAM  
 FOR F-29, 30, 31 & 32  
 6-BURNER CATENARY ARCH  
 NEW RESEARCH CENTER

DATE:	5-11-82	55-110-P-20
BY:	EAL	55-110-P-20
CHECKED:	4-15-82	
SCALE:	NONE	
DATE:	3-18-82	



LEGEND

- [Symbol] MIXER
- [Symbol] BUTTERFLY VALVE
- [Symbol] REGULATOR
- [Symbol] SOLENOID VALVE
- [Symbol] METERING ORIFICE
- [Symbol] FLUID RING VALVE W/CONTROL MOTOR
- [Symbol] WIDENED BUTTERFLY OR ADJ. PORT VALVE
- [Symbol] PRESSURE SWITCH-MAKES ON PRESS. FALL
- [Symbol] PRESSURE SWITCH-MAKES ON PRESS. RISE
- [Symbol] THERMOCOUPLE
- [Symbol] LEAK TEST VALVE



LL-5-A-70

NORTH AMERICAN REFRATORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

PIPING & ELECTRICAL DIAGRAM  
FOR F-28 & 33  
LARGE REHEAT FURNACES

NEW RESEARCH CENTER			
PLANT	55-110	55-110-P-21	
DATE	5-11-82		
REVISION	4-19-82		
DATE	3-18-82		

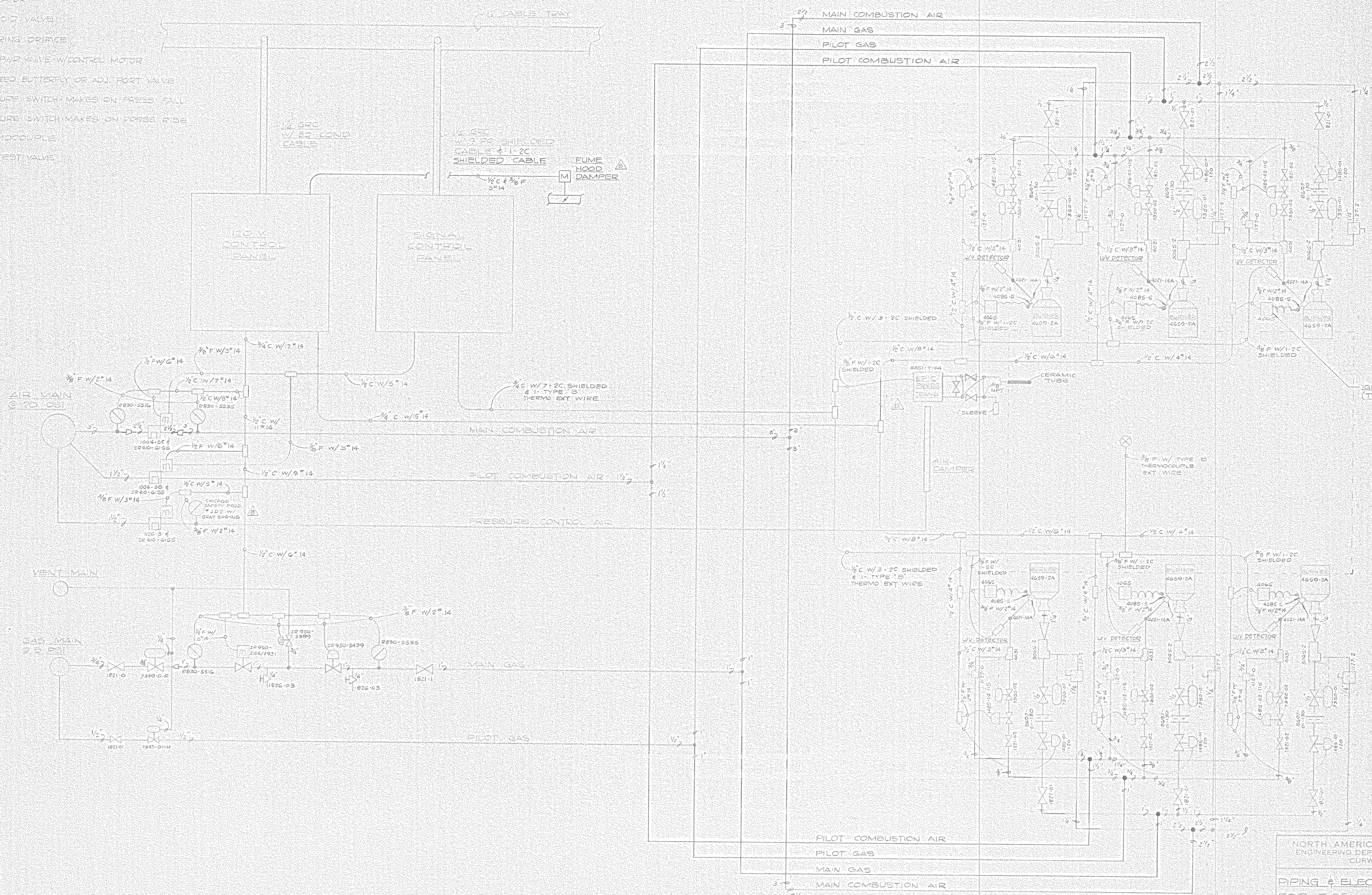
OTHERS	6-18-82	6-18-82	6-18-82	6-18-82	6-18-82	6-18-82	6-18-82	6-18-82	6-18-82
PLANT									
REVISION									

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LEGEND

- BURNER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PUMP VALVE W/CONTROL MOTOR
- MOTORIZED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH MAKES ON PRESS. FALL
- PRESSURE SWITCH MAKES ON PRESS. RISE
- THERMOCOUPLE
- LEAK TEST VALVE



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DATE	5-11-82	BY	EAJ
REVISED	4-19-82	BY	EAJ
APPROVED		BY	
REVISION		DESCRIPTION	

46-5-A-71

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

PIPING & ELECTRICAL DIAGRAM  
FOR F-35  
TRANSVERSE LOAD FURNACE

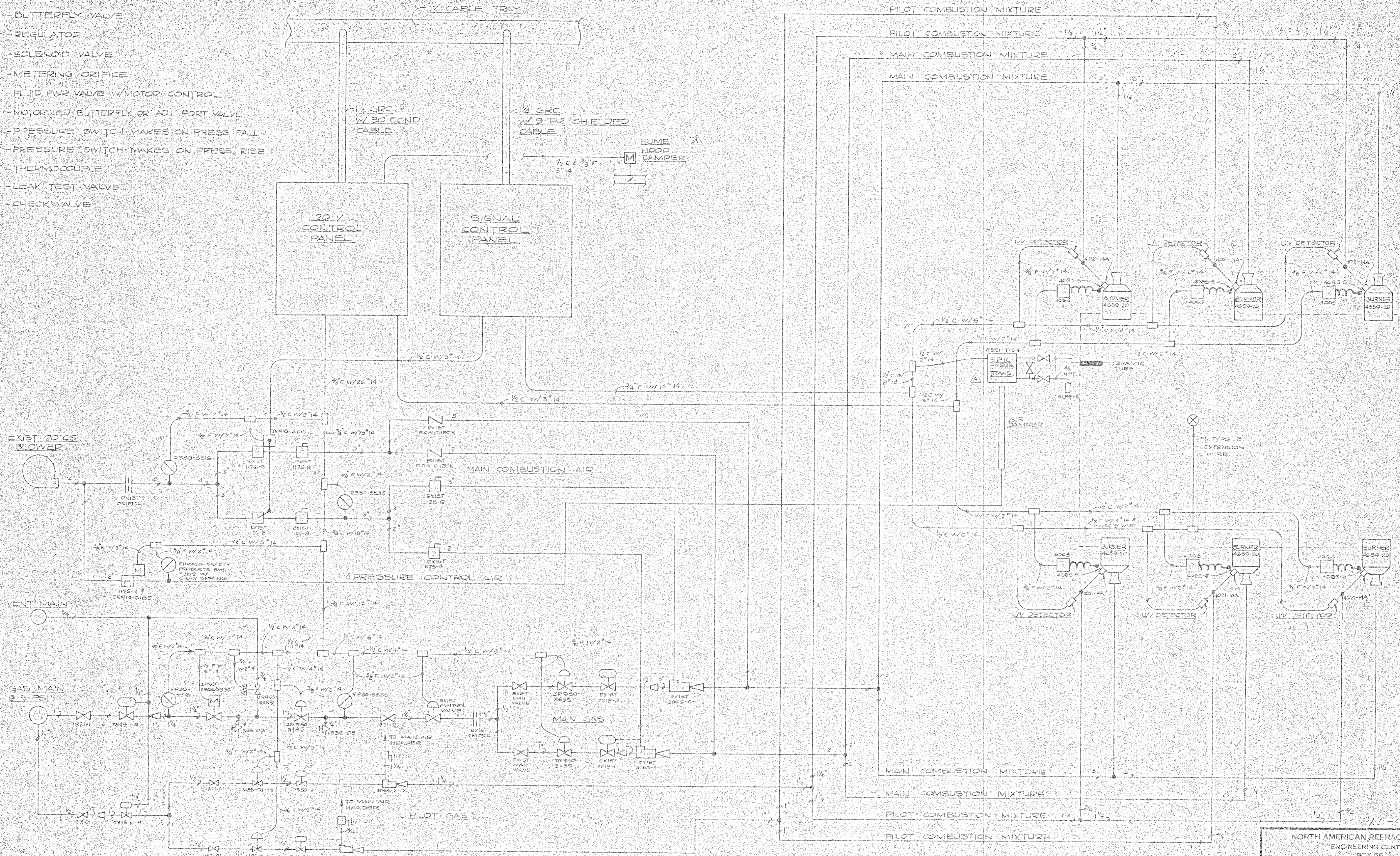
NEW RESEARCH CENTER

DATE	5-11-82
BY	EAJ
NO.	55-110
REV.	55-110-P-22
DATE	3-19-82
BY	NONE



LEGEND

- MIXER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PWR VALVE W/MOTOR CONTROL
- MOTORIZED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH - MAKES ON PRESS. FALL
- PRESSURE SWITCH - MAKES ON PRESS. RISE
- THERMOCOUPLE
- LEAK TEST VALVE
- CHECK VALVE



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OTHERS	DATE	DESCRIPTION	DATE	DESCRIPTION
PLANT				
FORMAN				
VENDOR				
PRINTS		REVISION	DATE	DESCRIPTION
		A	6-11-82	DELETED 120V LINE TO EPIC TRANS. ADDED FUME HOOD DAMPER
DRAWN BY: EAL		AR NO:	33-110	55-110-P-23
CHECKED:		DATE:	3-30-82	DWG. NO.
SCALE: NONE				

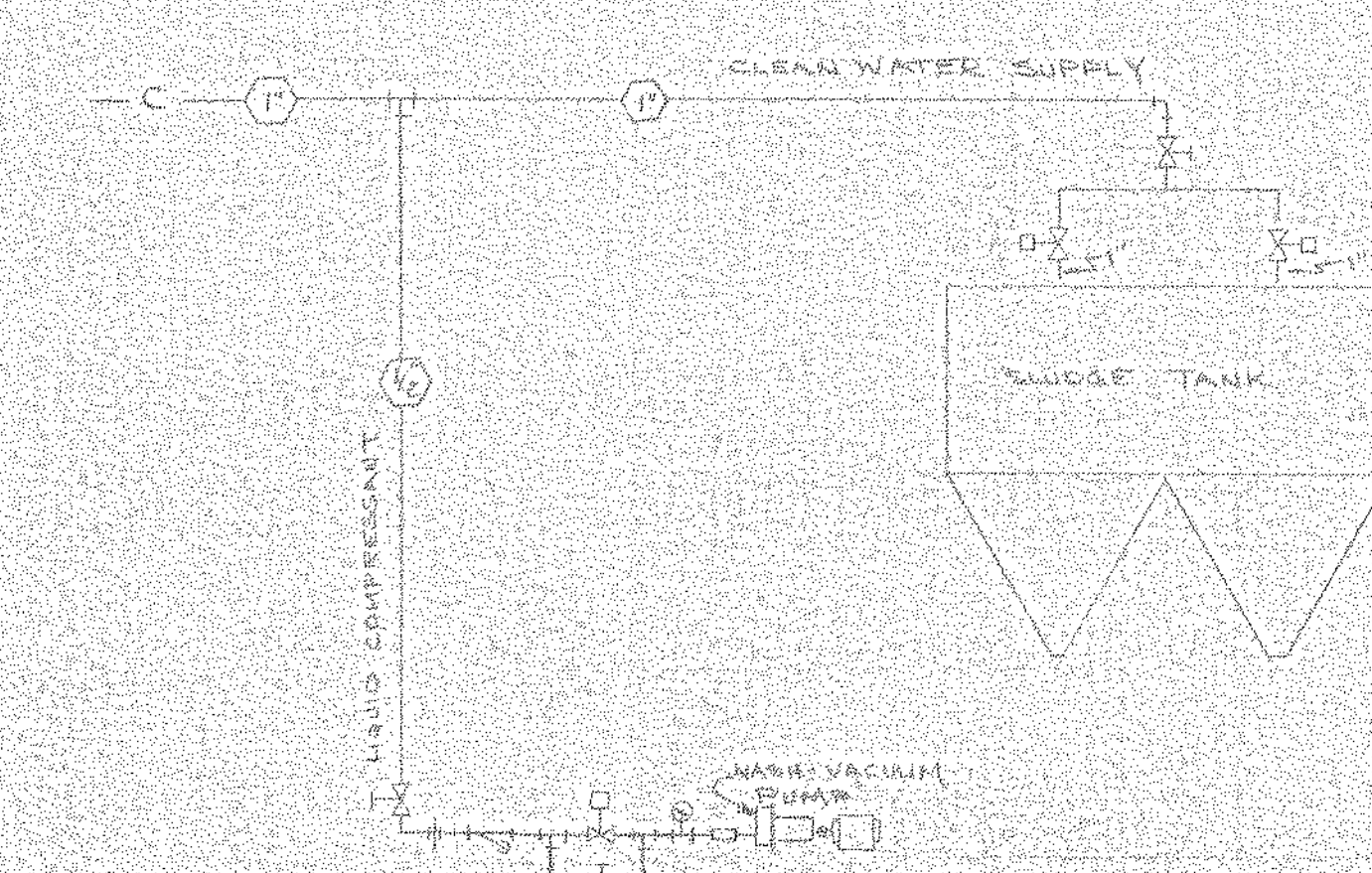
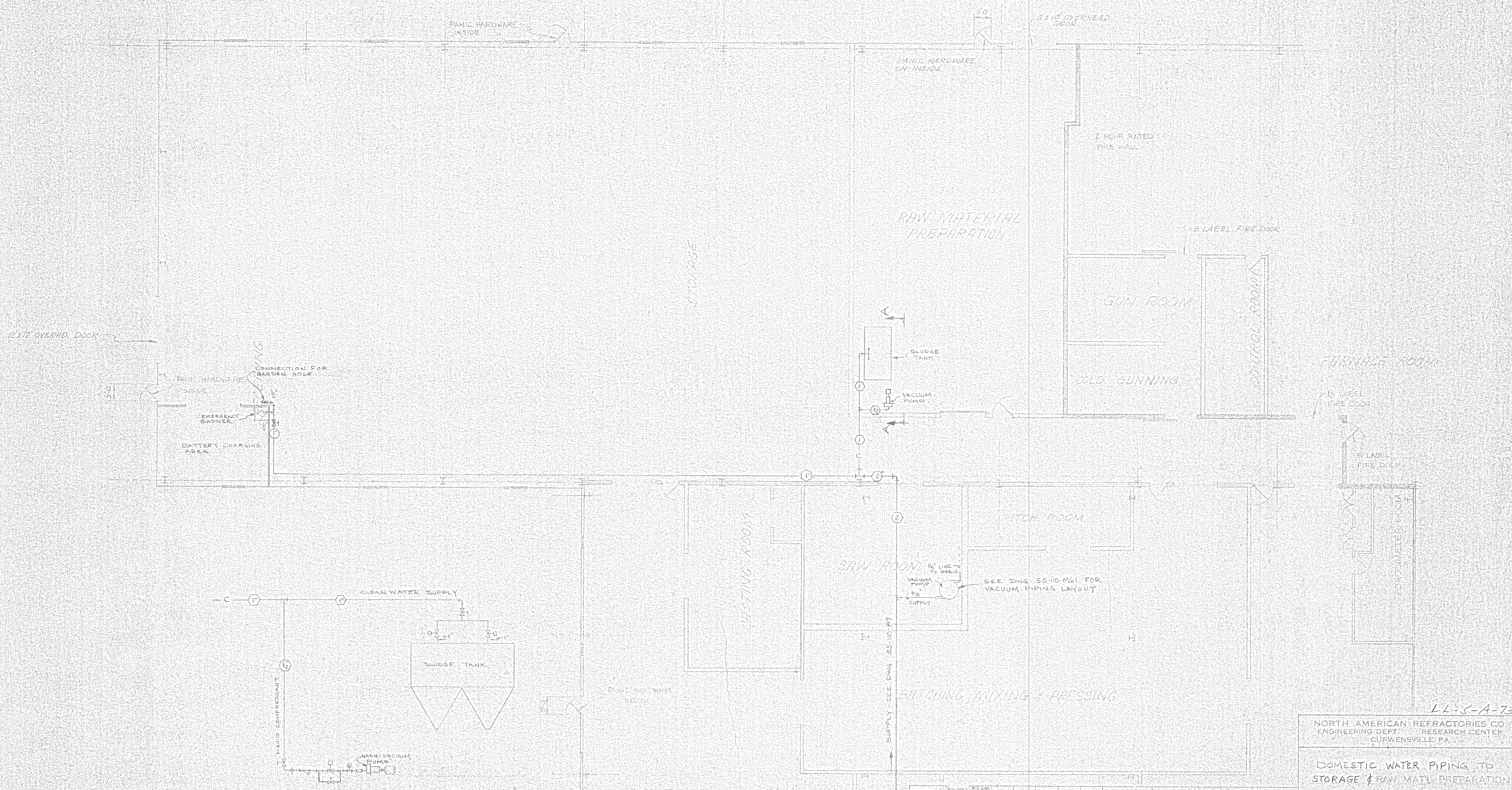
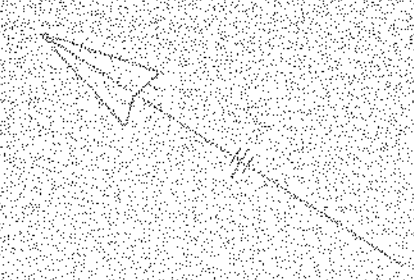
NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING CENTER  
BOX 56  
CURWENSVILLE, PA. 16833

PIPING & ELECTRICAL DIAGRAM  
FOR F-36  
CHECKER CYCLING FURNACE

NEW RESEARCH CENTER

#0064 - P-23 Piping & Elec. Diag - 1981 - NONE - 57107





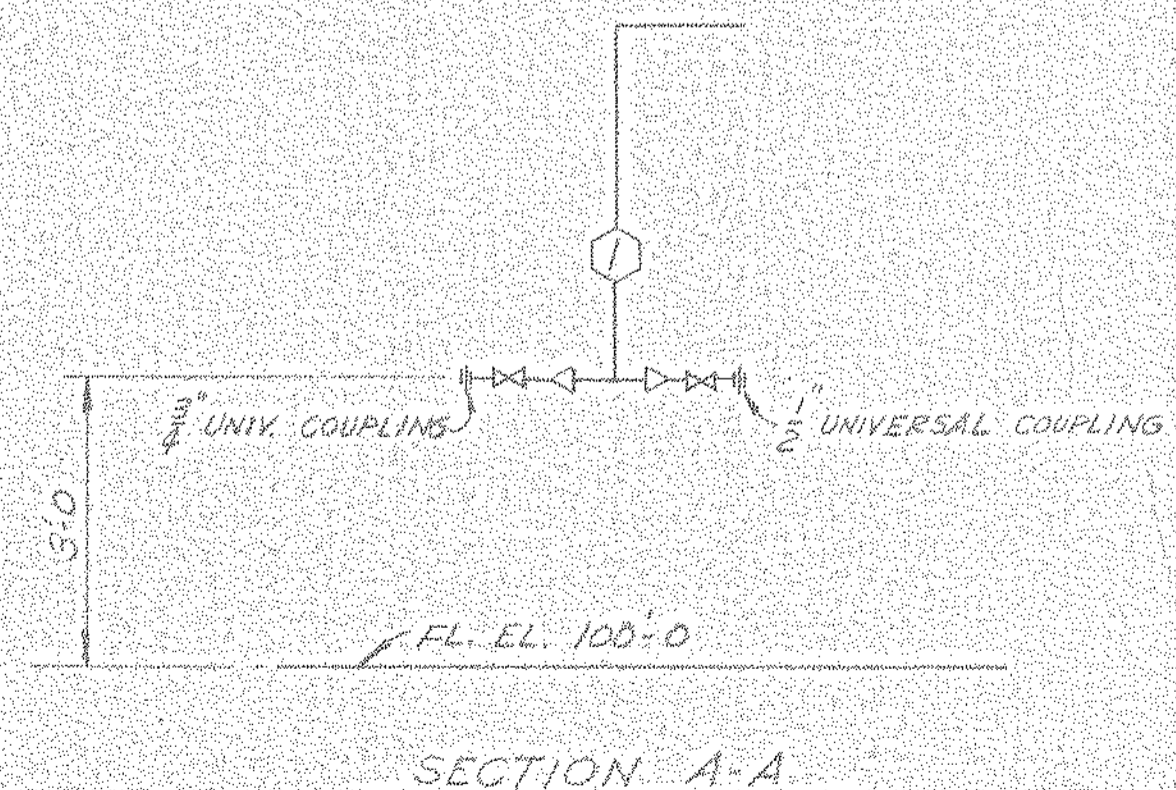
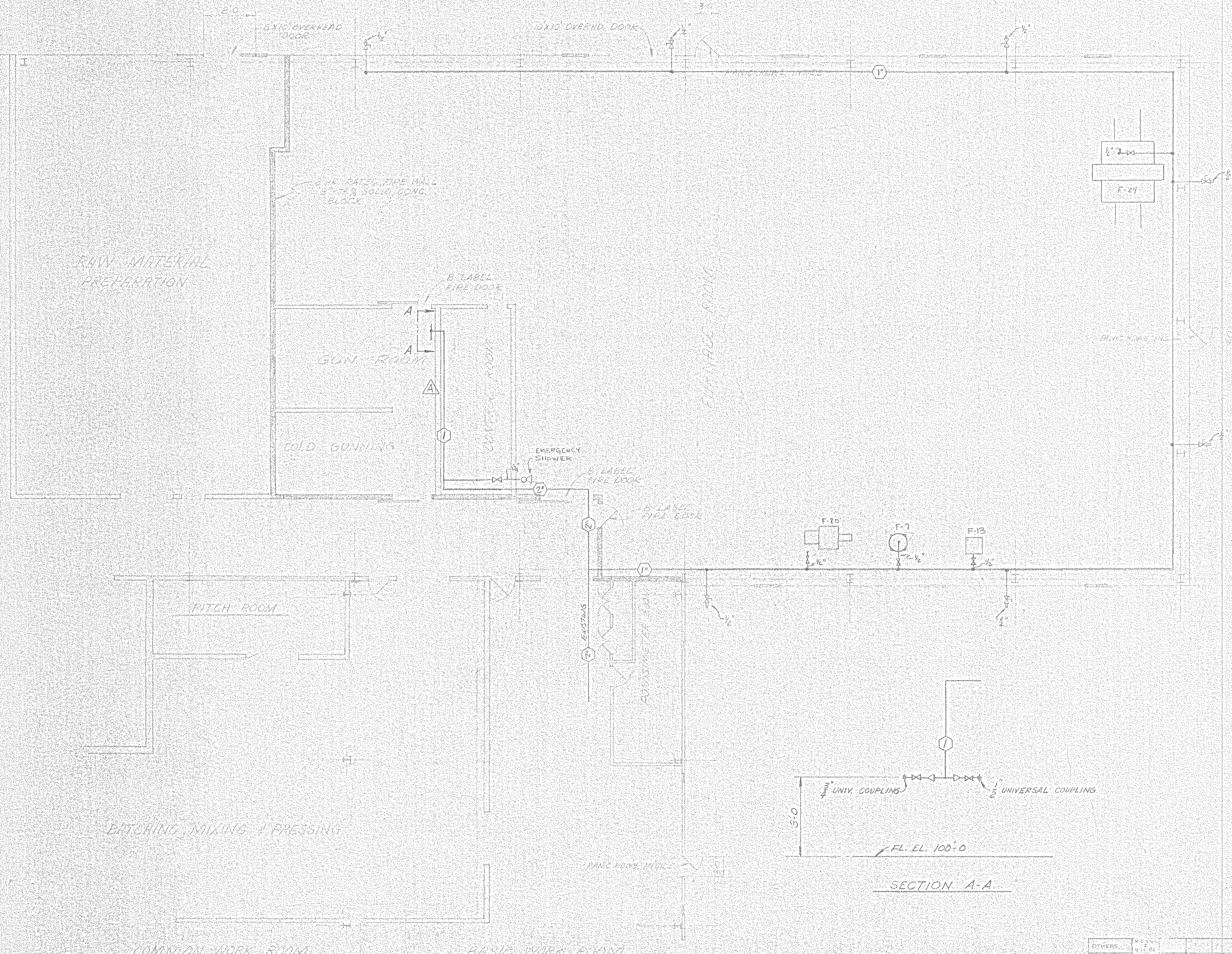
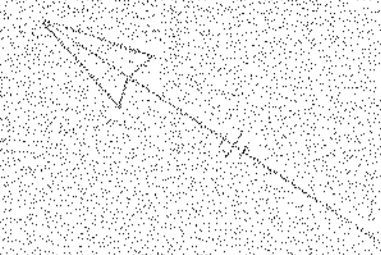
NOTE: STRAINER, SOLENOID VALVE, PRESSURE GAUGE & FLOW CONTROL VALVE FOR LIQUID COMPRESSANT LINE ARE SUPPLIED BY PUMP MANUFACTURER.

OTHERS	DATE	REVISION
PLANT	1-2-82	1
FORWARDER	2-11-81	1
REVISION	4-2-82	2

LL-5-A-73  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CLIFWENSVILLE, PA.  
 DOMESTIC WATER PIPING TO  
 STORAGE & RAW MATERIAL PREPARATION  
 NEW RESEARCH CENTER

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- LEGEND
- FROST PROOF HOSE BOAT
  - SHOT-OFF VALVE
  - EMERGENCY SHOWER

LL-5-A-74

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENVILLE, PA.

**FLOOR PLAN OF  
FURNACE ROOM  
NEW RESEARCH CENTER**

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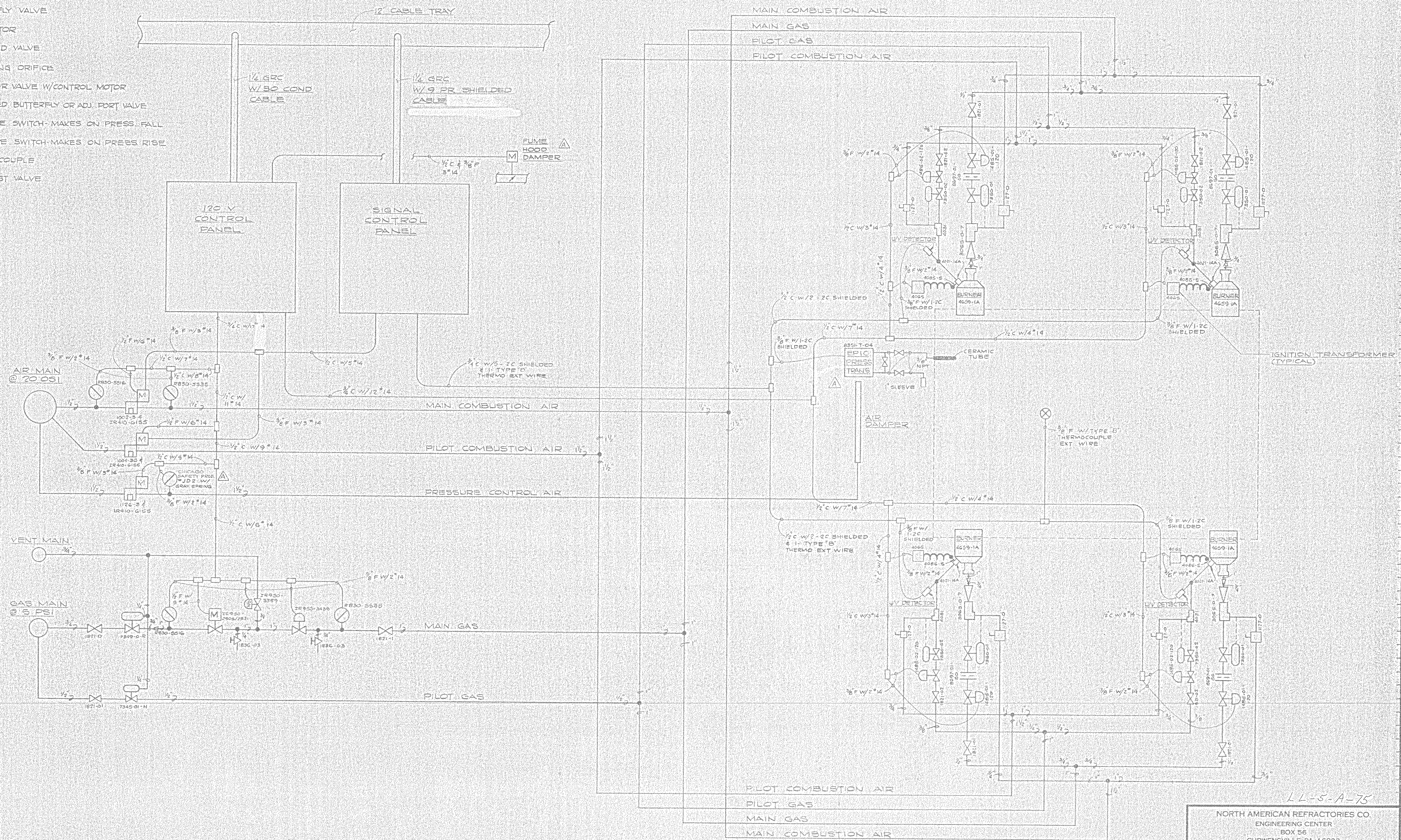
OTHERS	DATE	BY	REVISION	DATE	BY	REVISION
PLAN	7-30-82	B	ADD BUCK PANS	7-30-82		
FOREMAN	4-22-82	A	ADDED 1" LINE TO GUN ROOM	4-22-82		
VENTOR						
PRINTS						
#0064 - P25 Furn Km - 1981 - NONE						

25-110-P25  
59107



**LEGEND**

- MIXER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PWR VALVE W/CONTROL MOTOR
- MOTORIZED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH - MAKES ON PRESS. FALL
- PRESSURE SWITCH - MAKES ON PRESS. RISE
- THERMOCOUPLE
- LEAK TEST VALVE



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OTHERS	DATE	DESCRIPTION

LL-5-A-75

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING CENTER  
 BOX 56  
 CURWENSVILLE, PA. 16833

**PIPING & ELECTRICAL DIAGRAM  
 FOR F-12  
 SMALL REHEAT FURNACE  
 NEW RESEARCH CENTER**

DRAWN BY: EAL	AR NO.:	55-10
CHECKED:	DATE:	5-11-62
SCALE: NONE	DWG. NO.:	55-10-P-27

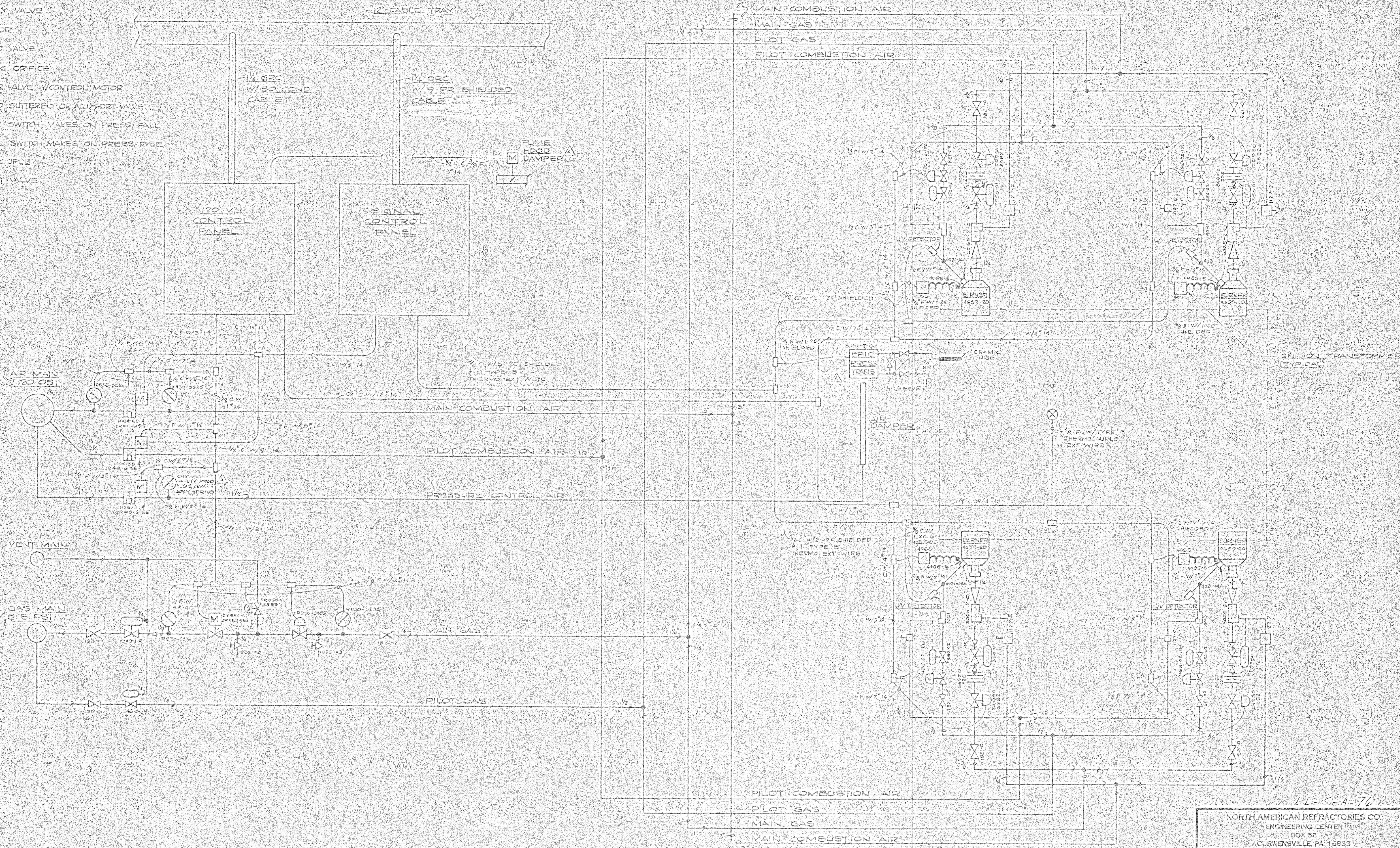
PRINTS      REVISION      DESCRIPTION      DATE

# 00611      P-27 Small Reheat Furn      1961      NONE      60-107



**LEGEND**

- MIXER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PWR VALVE W/CONTROL MOTOR
- MOTORIZED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH - MAKES ON PRESS FALL
- PRESSURE SWITCH - MAKES ON PRESS RISE
- THERMOCOUPLE
- LEAK TEST VALVE



LL-5-A-76

NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING CENTER  
 BOX 56  
 CURWENSVILLE, PA. 16833

PIPING & ELECTRICAL DIAGRAM  
 FOR F-34  
 SMALL REHEAT FURNACE  
 NEW RESEARCH CENTER

OTHERS	DATE	REVISION	DESCRIPTION	DATE
PLANT				
FORMAN				
VENDOR				
PRINTS				
REVISION				
DESCRIPTION				
DATE				

DRAWN BY: EAL  
 CHECKED: [Signature]  
 SCALE: NONE  
 AR NO: 55-110  
 DATE: 4-15-82  
 DWG NO: 55-110-P-28  
 OMC NO:

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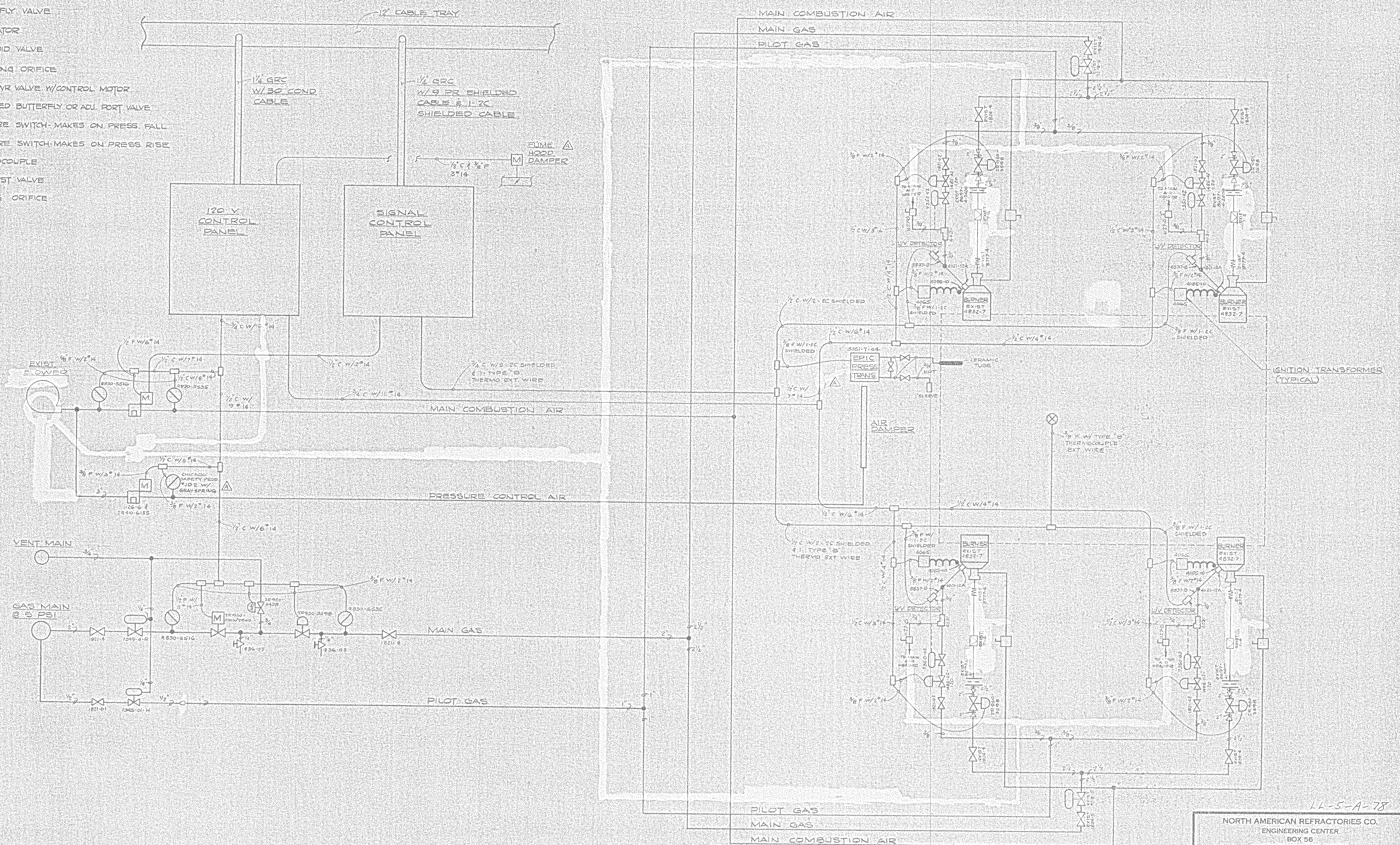






LEGEND

- MIXER
- BUTTERFLY VALVE
- REGULATOR
- SOLENOID VALVE
- METERING ORIFICE
- FLUID PWR VALVE W/CONTROL MOTOR
- MOTORIZED BUTTERFLY OR ADJ. PORT VALVE
- PRESSURE SWITCH - MAKES ON PRESS FALL
- PRESSURE SWITCH - MAKES ON PRESS RISE
- THERMOCOUPLE
- LEAK TEST VALVE
- LIMITING ORIFICE



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OTHERS	C. O'NEILL	D. W. HARRIS	J. S. HARRIS	J. S. HARRIS	J. S. HARRIS	J. S. HARRIS	J. S. HARRIS	J. S. HARRIS	J. S. HARRIS
PLANT	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82
FORMAN	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82	5-11-82
VENDOR									

PRINTS	REVISION	DESCRIPTION	DATE
	A	DELETED 120V LINE TO PIPE TO GAS CHAMBER UNIT SWITCH	5-11-82

DRAWN BY: EAL		AR NO.:
CHECKED: NONE		53-110
SCALE: NONE		DATE: 4-22-82
		DWG NO. 55-110-P-30

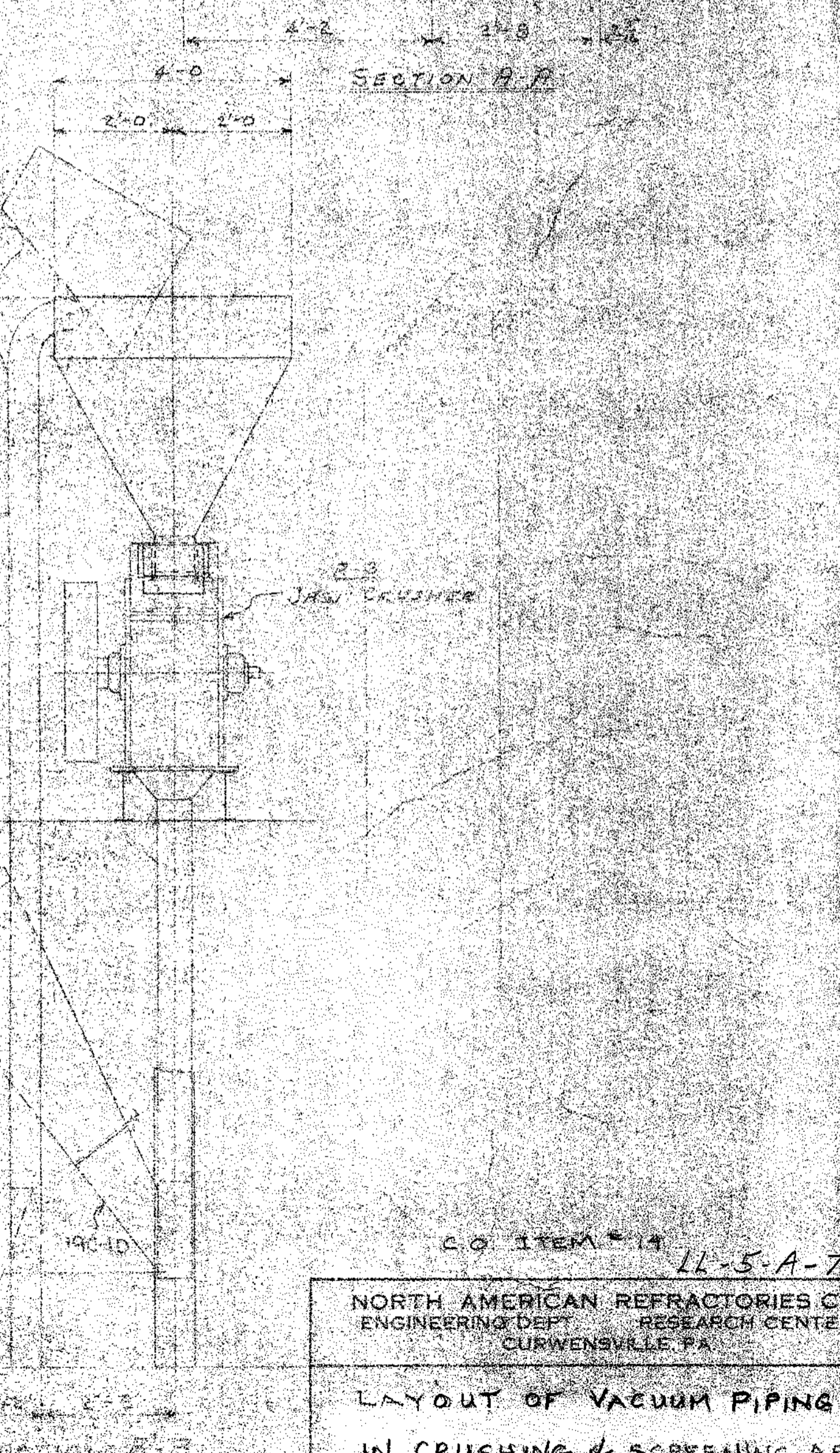
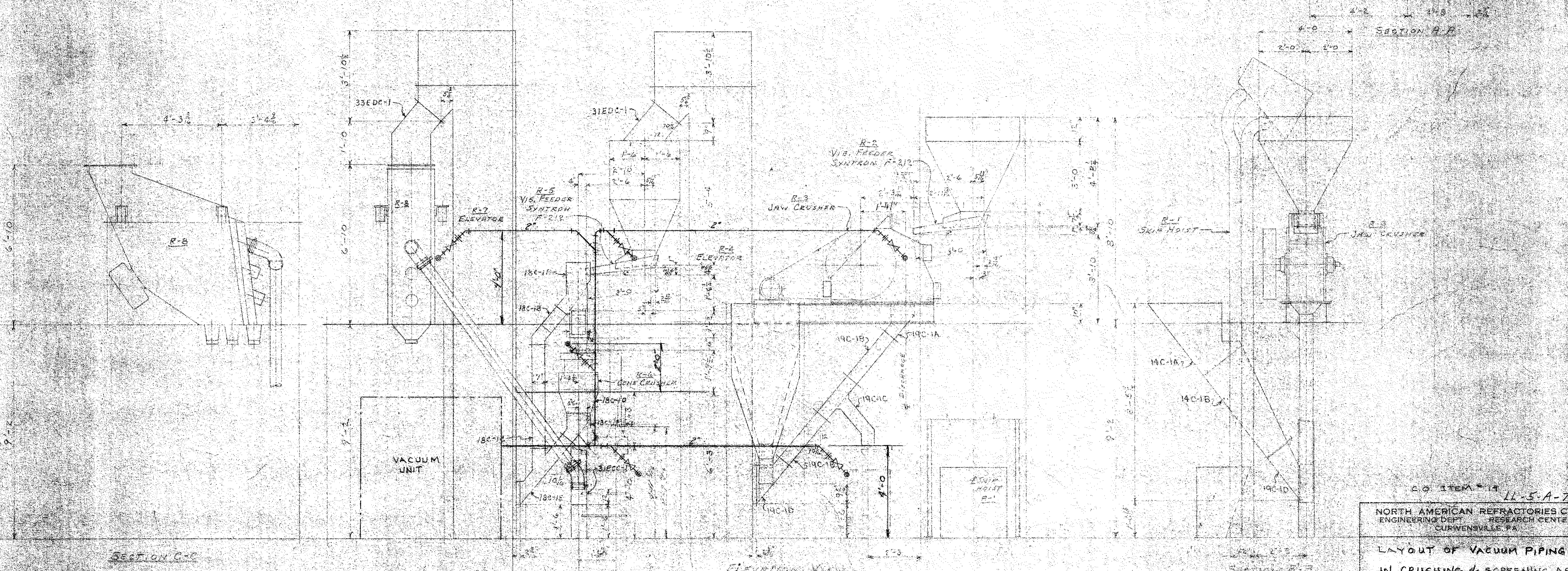
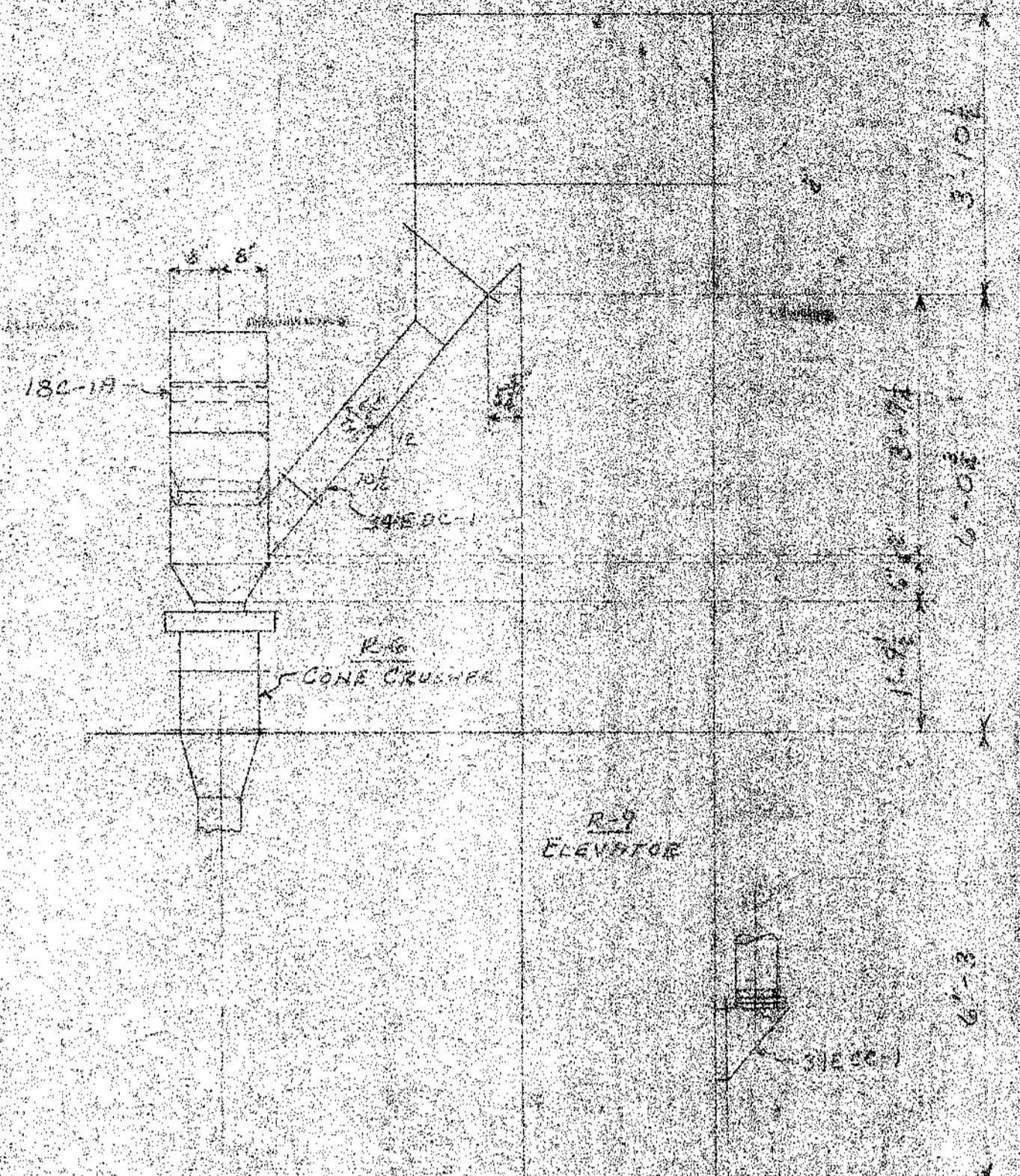
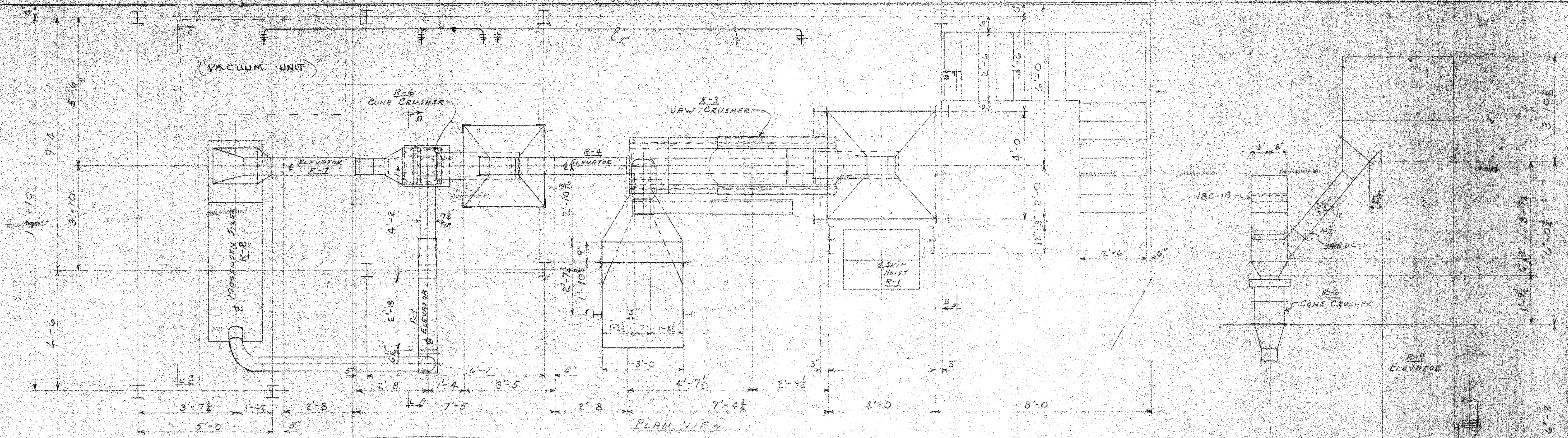
NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING CENTER  
 BOX 56  
 CURWENSVILLE, PA. 16833

PIPING & ELECTRICAL DIAGRAM  
 FOR F-37  
 HOT GUNNING FURNACE

44-5-A-78

# 0064 P-30 Piping & Elec Diag 1981 NON 63/107





C.O. ITEM # 19 LL-5-A-79  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENVILLE, PA.

**LAYOUT OF VACUUM PIPING  
 IN CRUSHING & SCREENING AREA**

NEW RESEARCH CENTER

DESIGNED BY	DATE	5-18-52	55-110-P 31
CHECKED BY	DATE	5-18-52	
APPROVED BY	DATE	5-18-52	

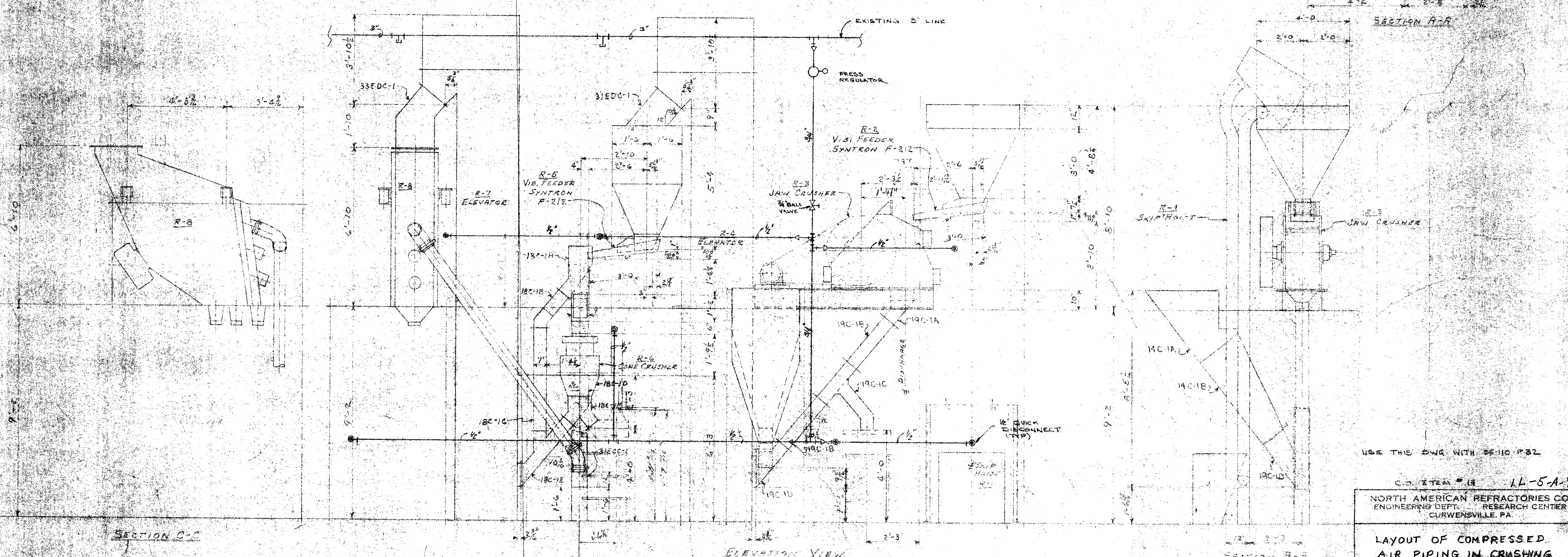
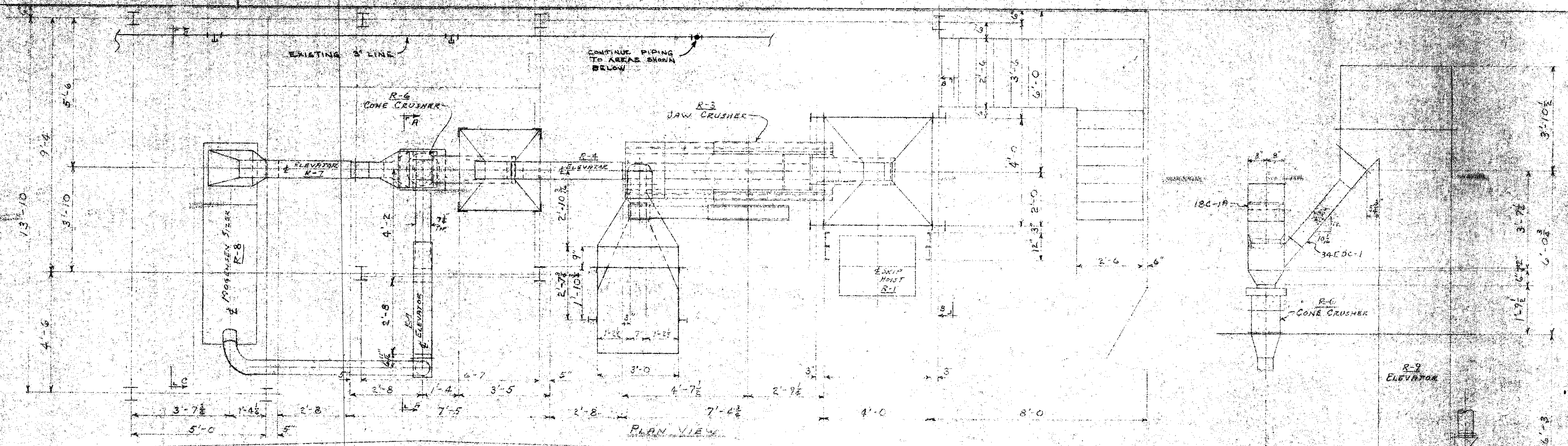
OTHERS	ISSUED	DATE	BY
PLANT	285	5-18-52	
FOREMAN	285	5-18-52	
VENDOR			

PRINTS

#0064 P31 Vacuum Piping 1981 NONE 68107

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USE THIS DWG WITH 55-110 P-22

C.O. ITEM # 14 14-5-A-80  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

LAYOUT OF COMPRESSED AIR PIPING IN CRUSHING AND SCREENING AREA

OTHERS	DATE	REVISION	DESCRIPTION	DATE

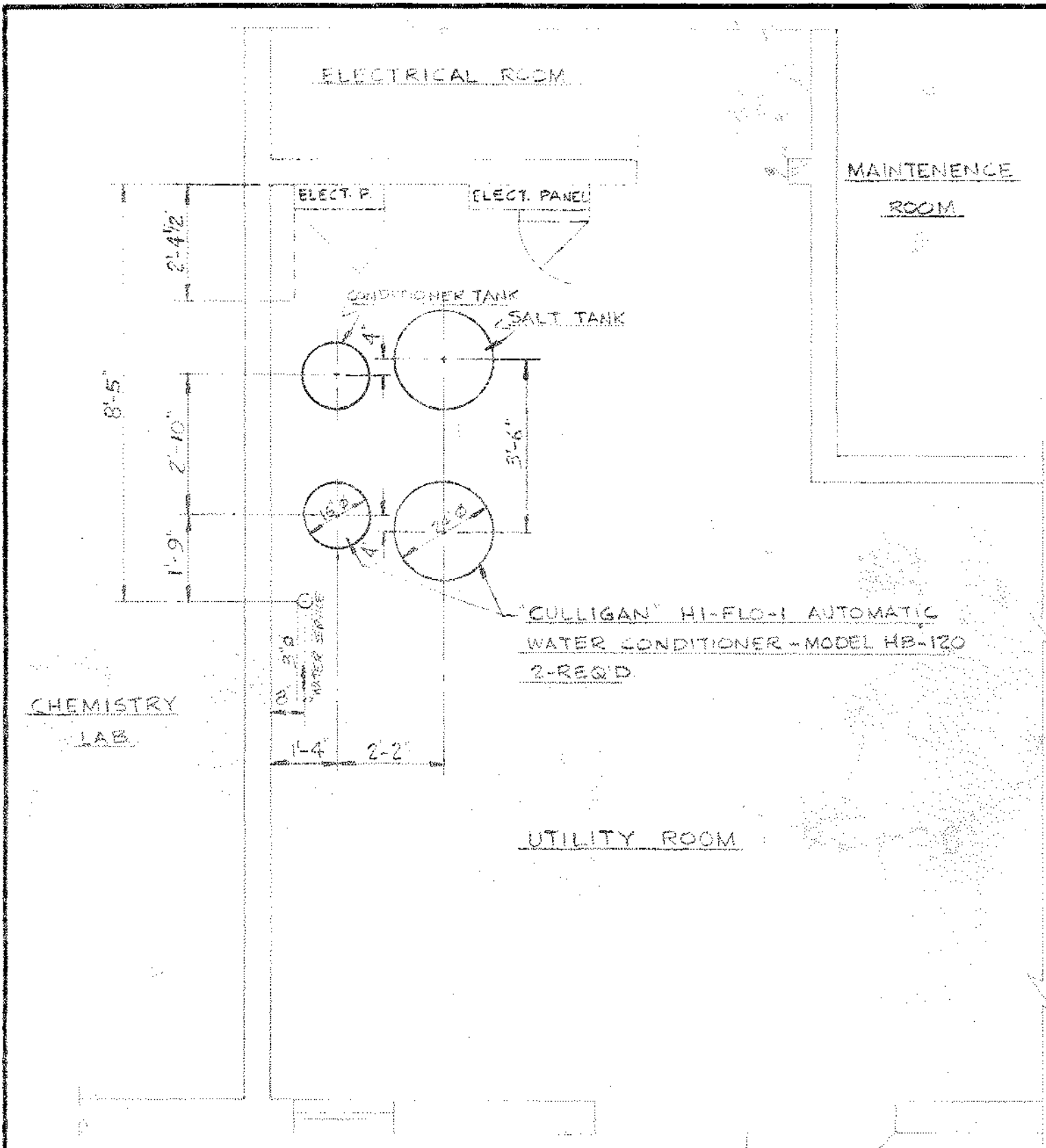
PRINTS

NEW RESEARCH CENTER	DATE	55-110-P-22
DRAWN BY	DATE	
CHECKED	DATE	
SCALE		

#0064 P-25 Compressed Air Piping 1952

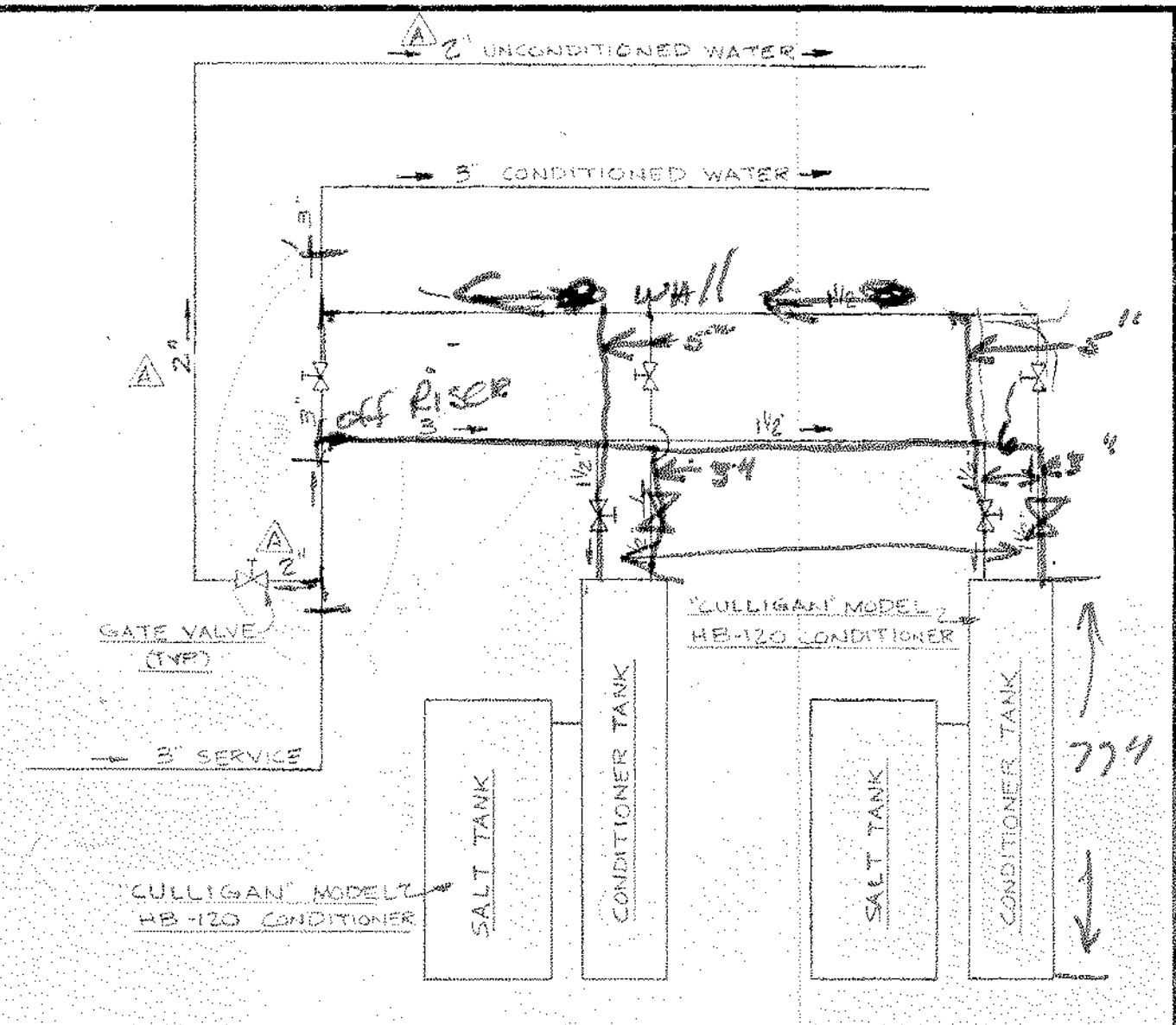
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 DESIGN FROM NORTH AMERICAN REFRACTORIES CO.





PLAN VIEW  
3/8" = 1'-0"

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WATER CONDITIONING SYSTEM PIPING SCHEMATIC  
NO SCALE

AS BUILT PLAN FROM TOM STARK 6/24/82

LL-5-A-81

**NORTH AMERICAN REFRACTORIES CO.**  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

LAYOUT - WATER CONDITIONING  
SYSTEM IN UTILITY ROOM

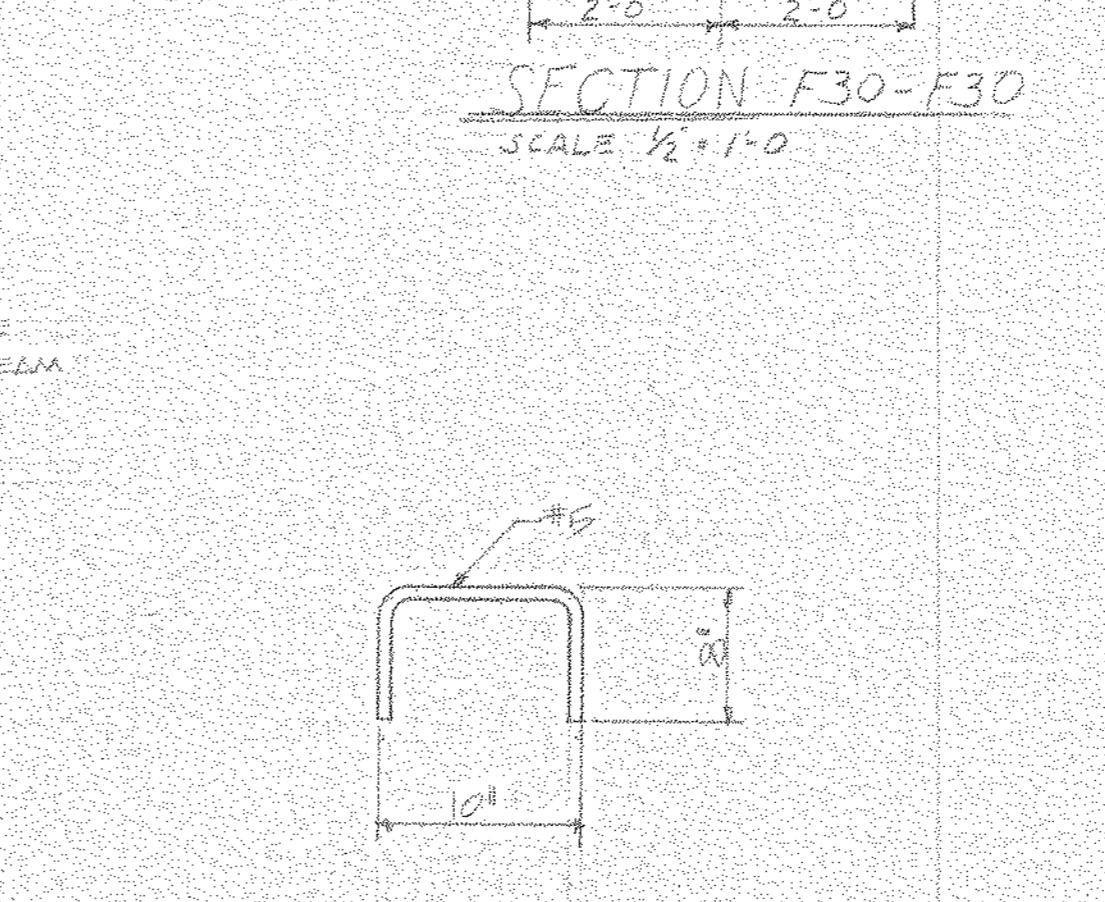
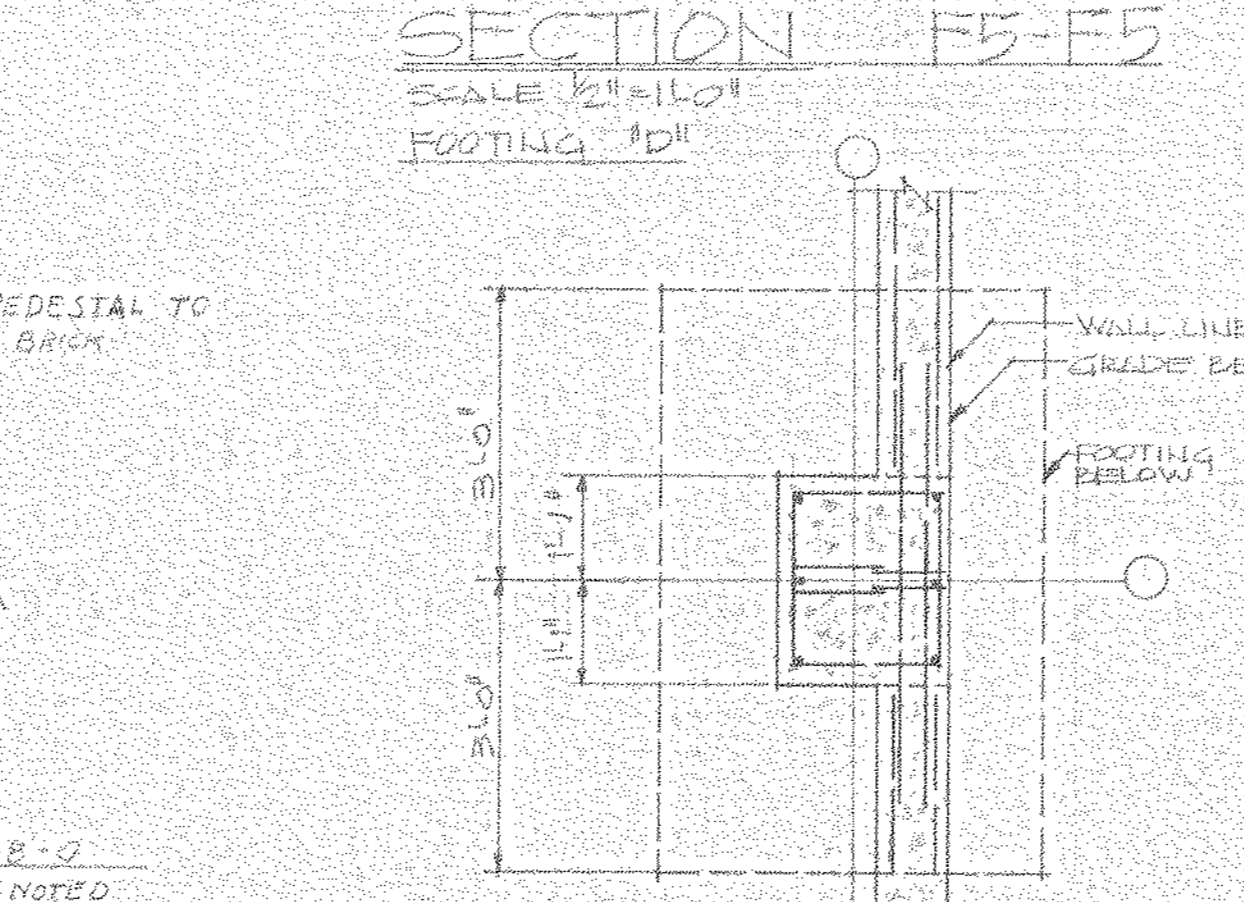
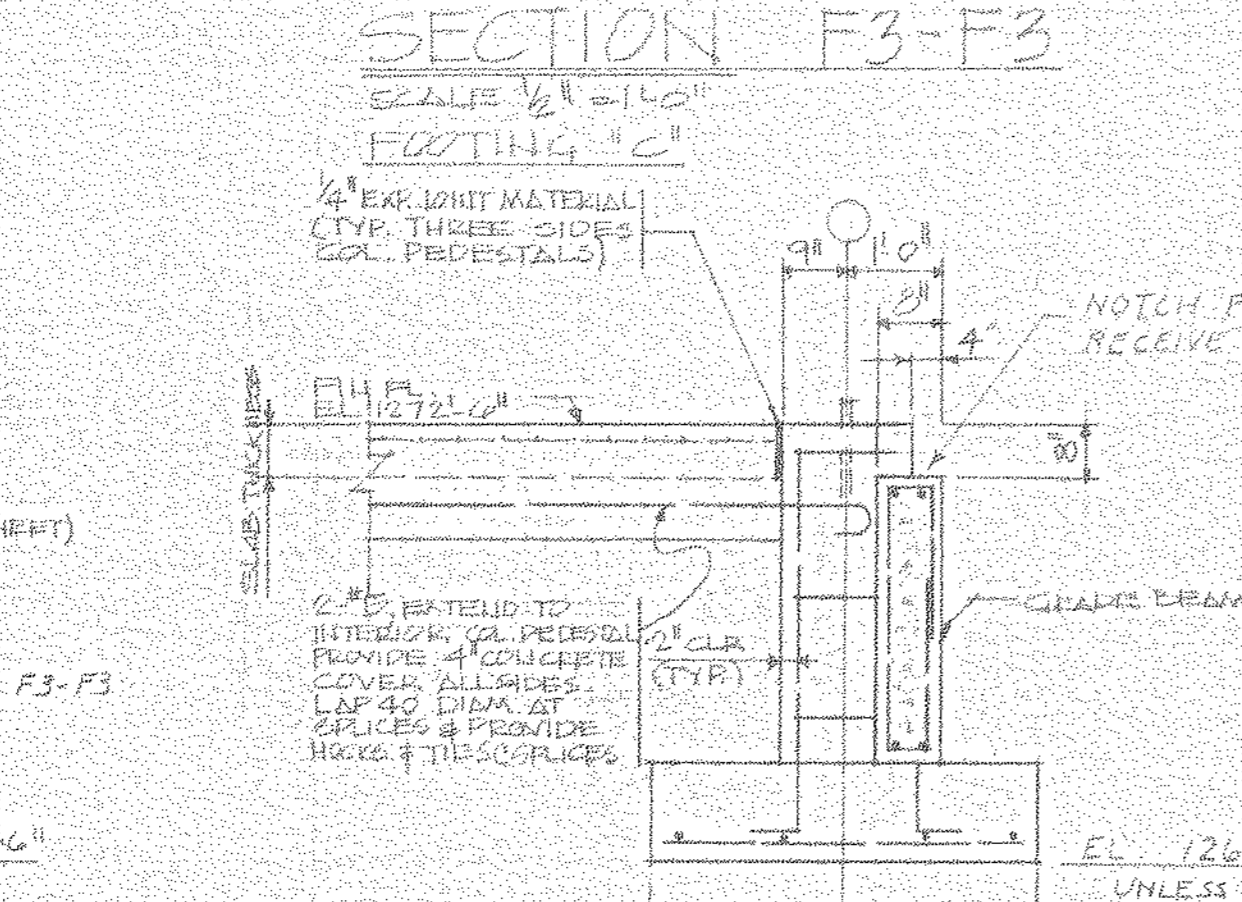
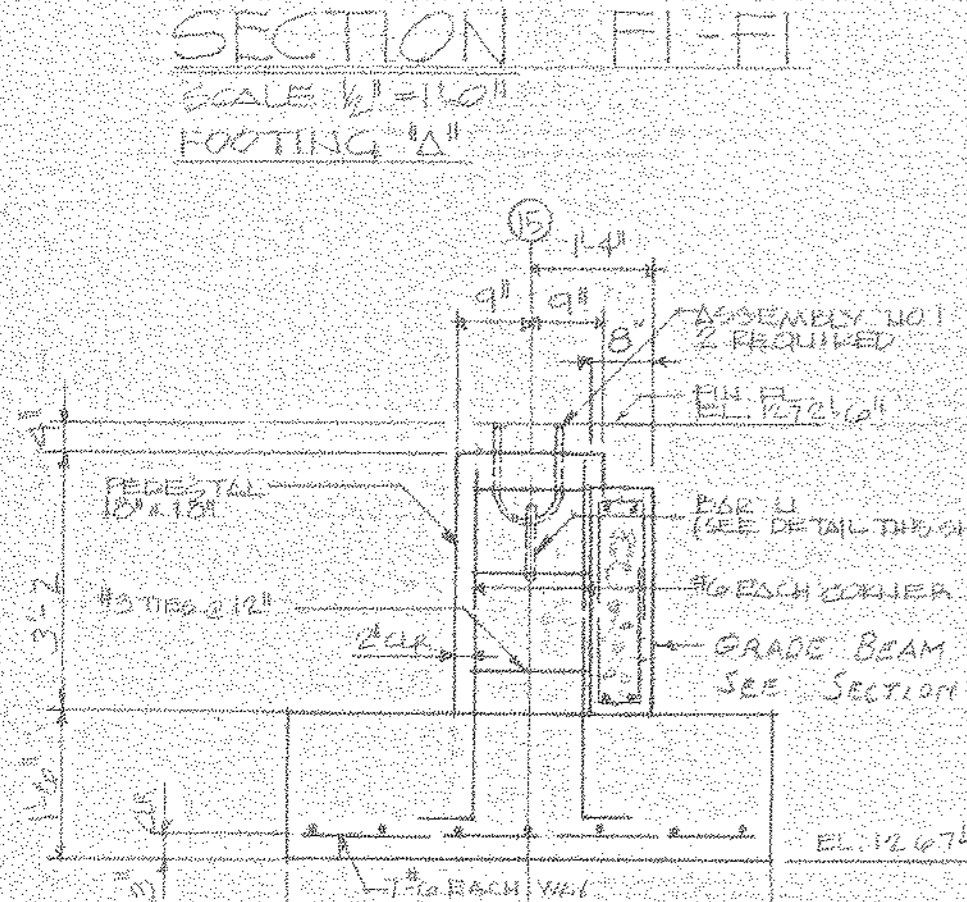
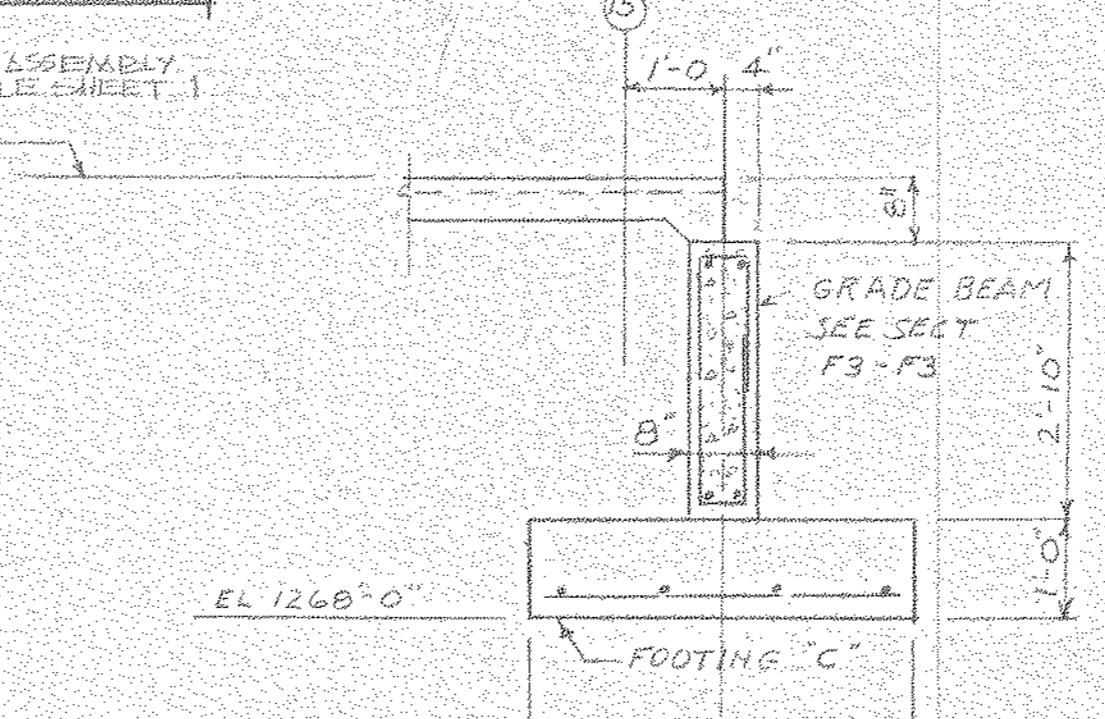
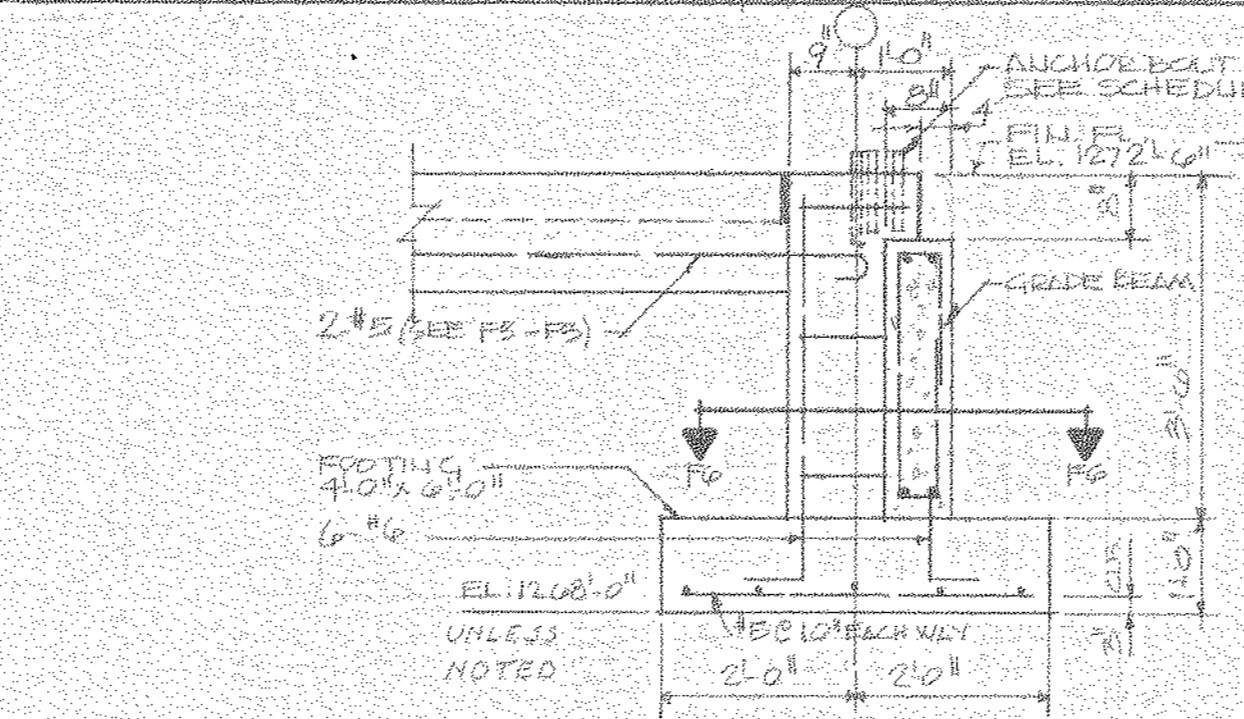
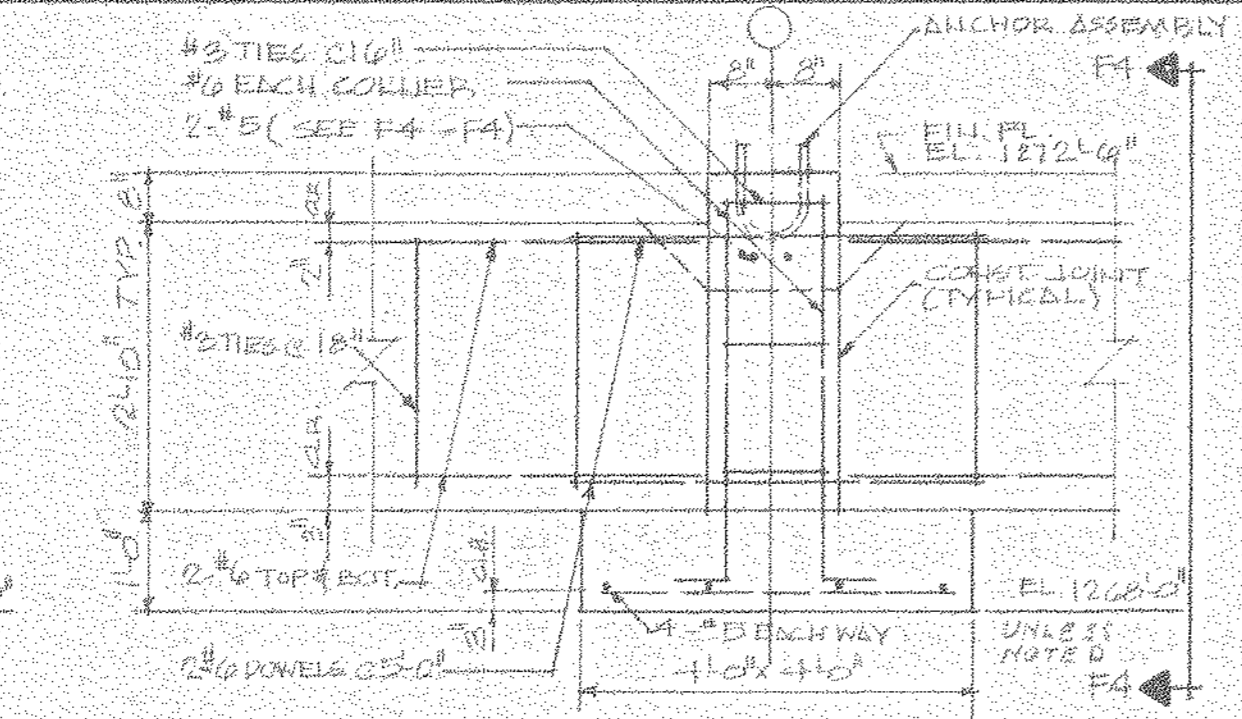
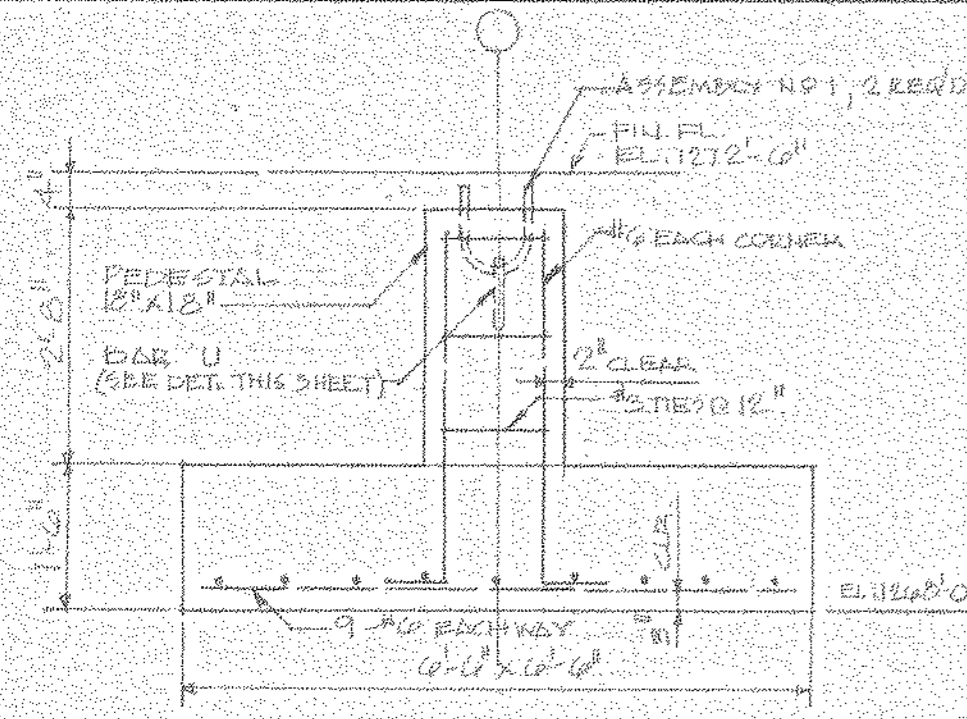
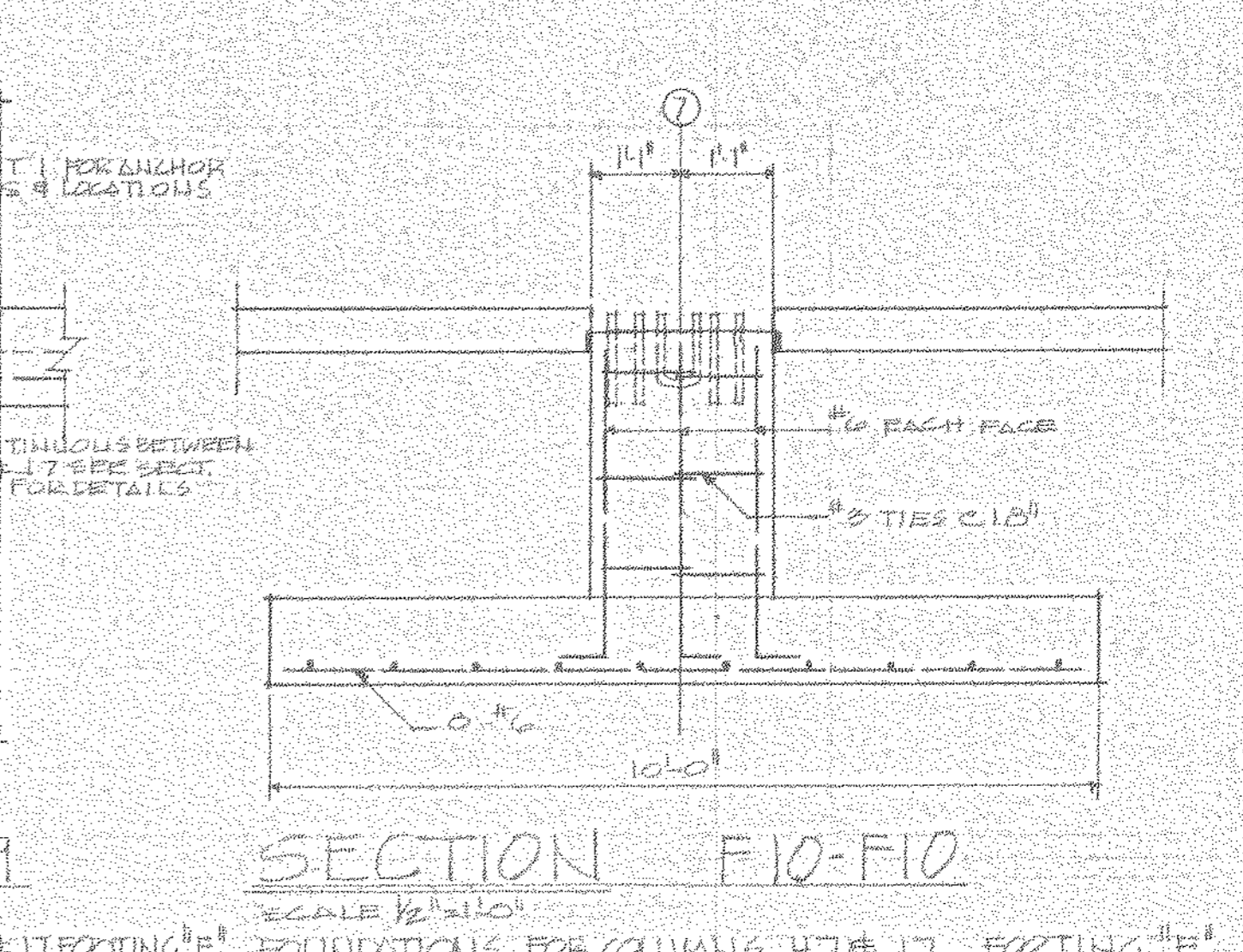
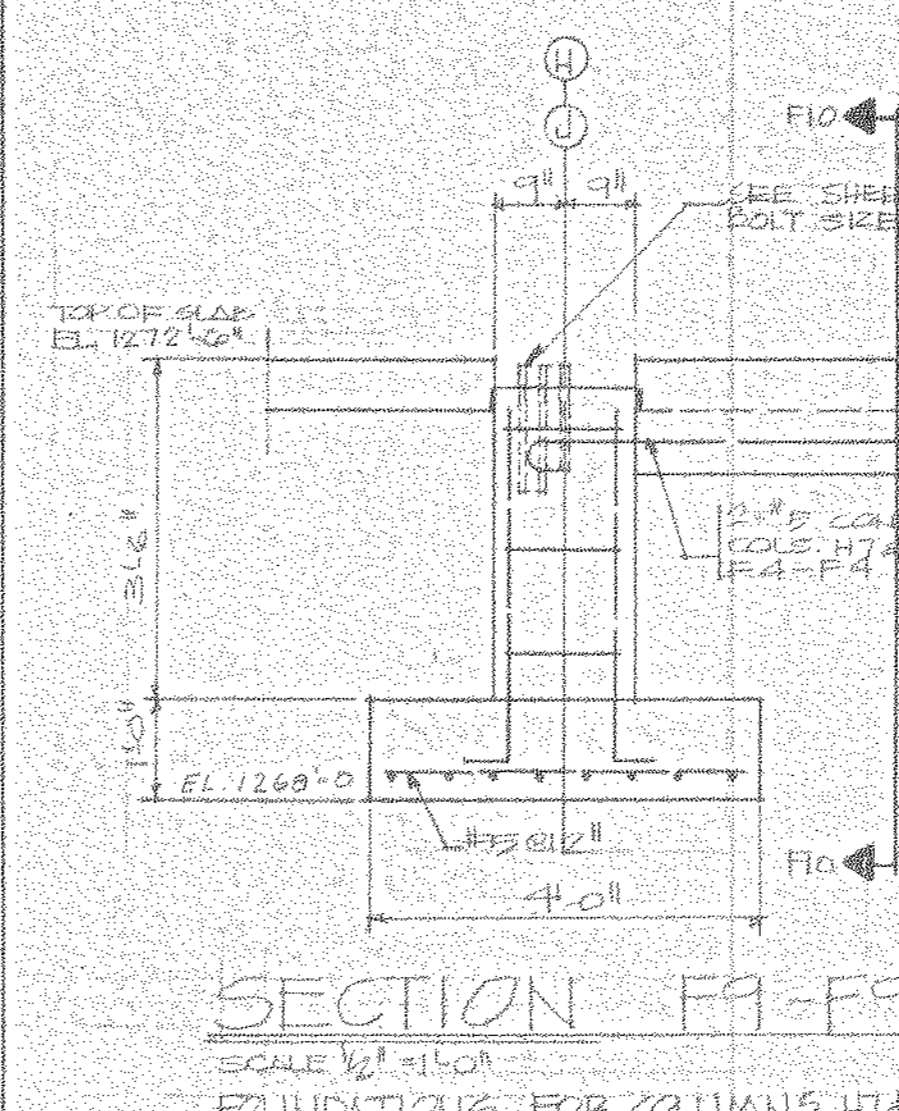
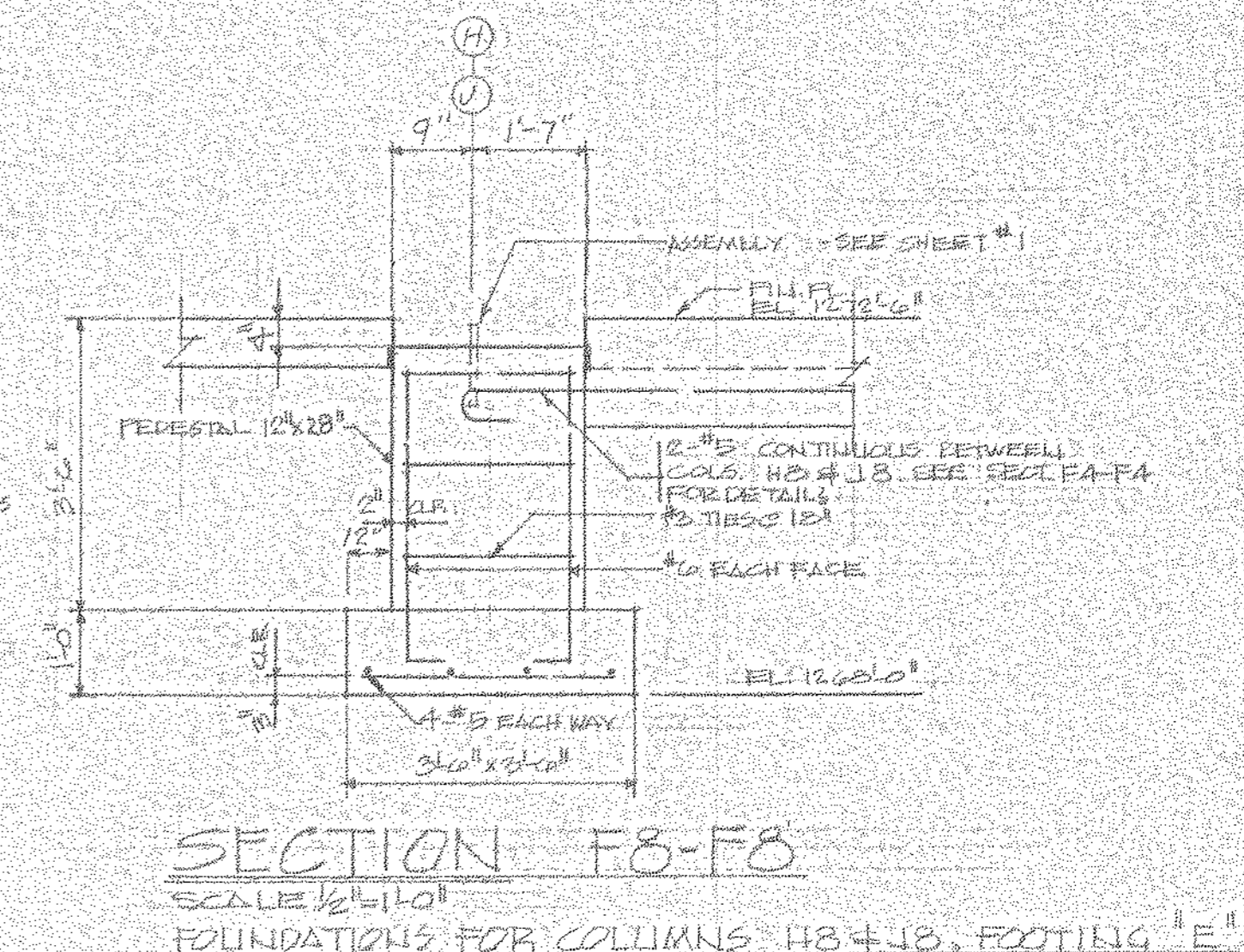
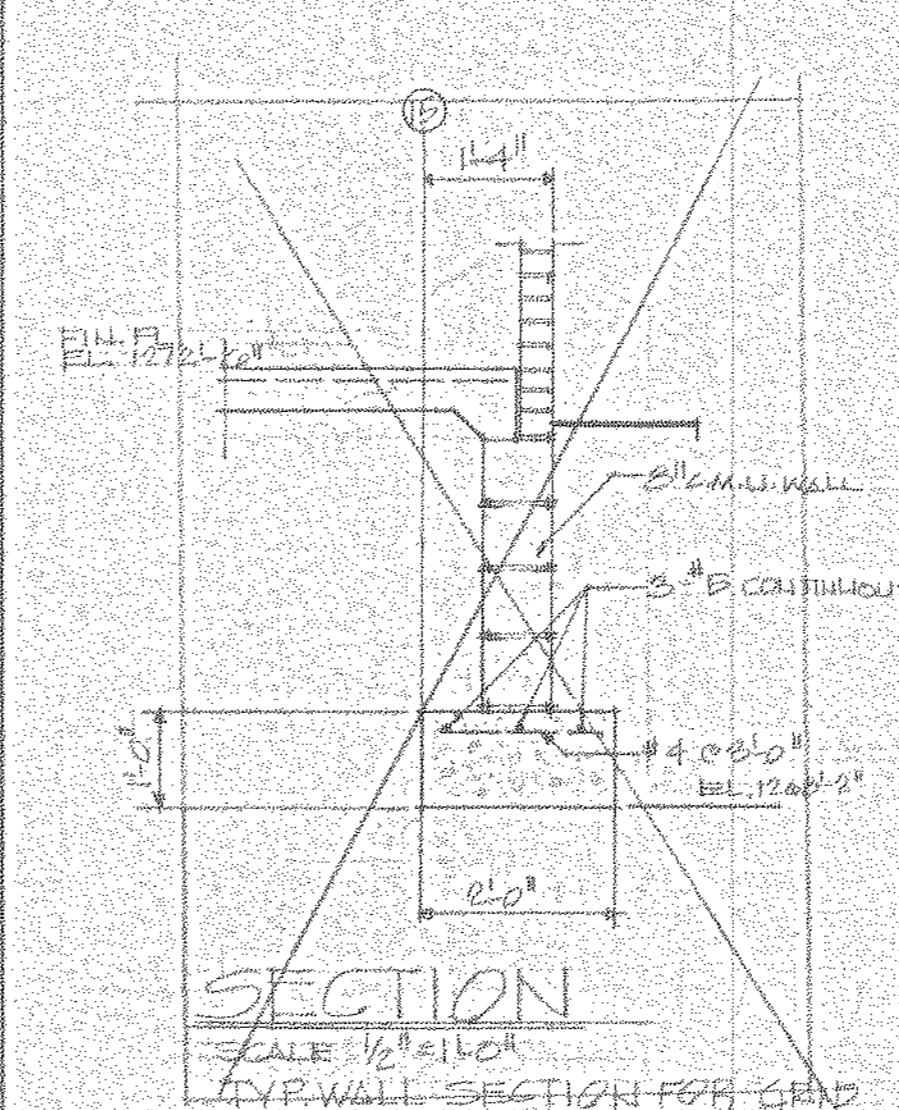
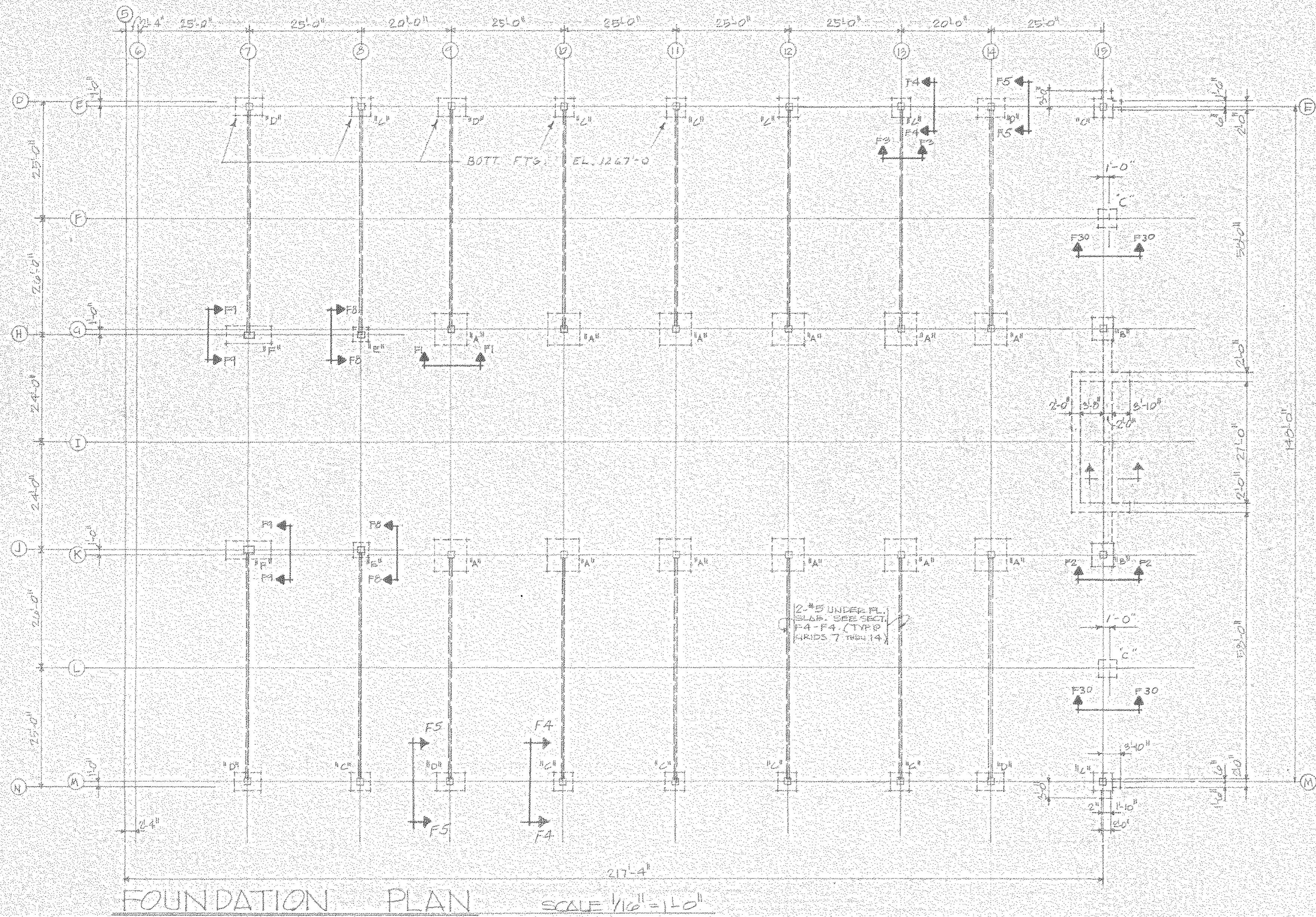
NEW RESEARCH CENTER

DRAWN BY	E.C.	C. O. NO.	55-110
CHECKED		DATE	6-4-82
SCALE	3/8" = 1'-0"	55-110-P33	
			DWG. NO.

REVISION	DESCRIPTION	DATE
A	REV. UNCOND. WATER LINE WAS 3" & NOW 2"	6-14-82

BRUNING 40-22 33449





GENERAL NOTES

- ALL CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 3000 P.S.I. (C-1-3000) AT AN AGE OF 28 DAYS AS DEFINED BY THE AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-77).
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A618, GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

L1-5-A-35

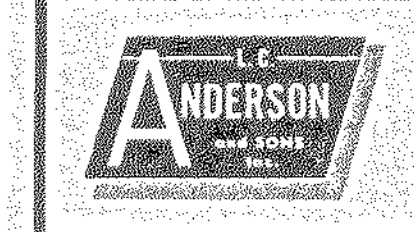
REC'D. 9-2-81

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FOUNDATION PLAN BUILDINGS 'A' & 'D'

NEW RESEARCH CENTER BUILDING FOR NORTH AMERICAN REFRIGERATORS STATE COLLEGE, PENNSYLVANIA

L.C. ANDERSON & SONS, INC. HUNTINGDON, PENNSA. 16652 CONTRACTORS



general: electrical, plumbing, heating

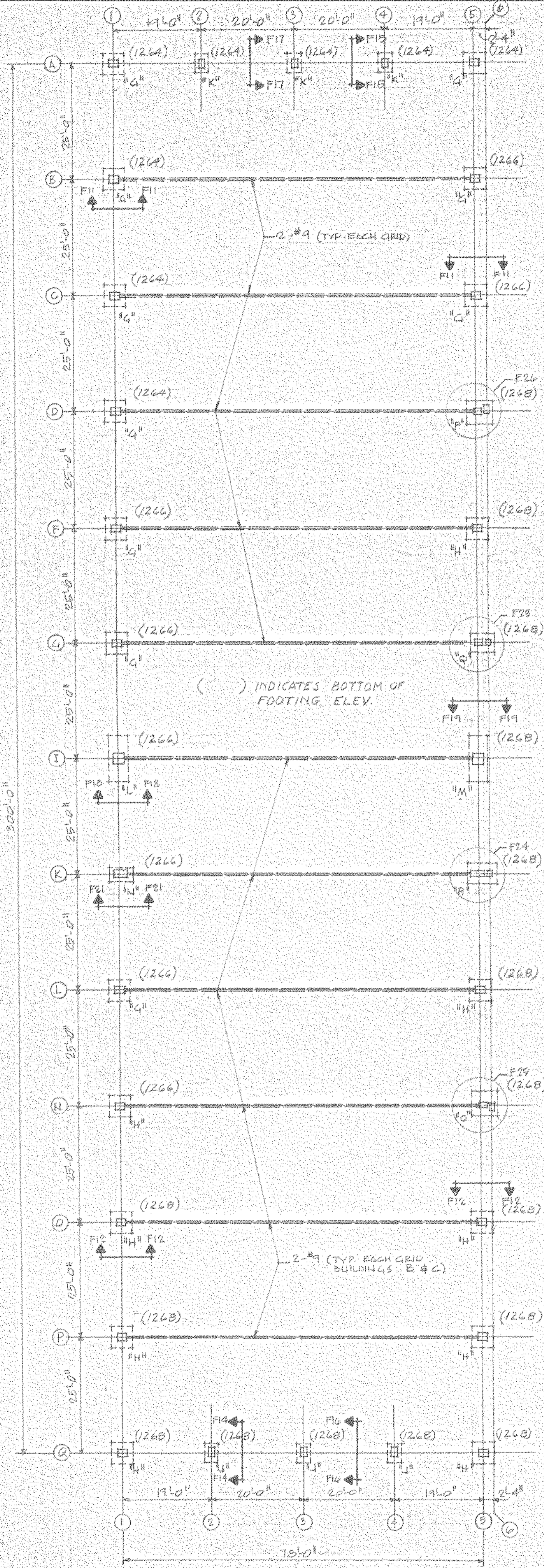
drawn by: L.S.D.

file date: 2-9-81

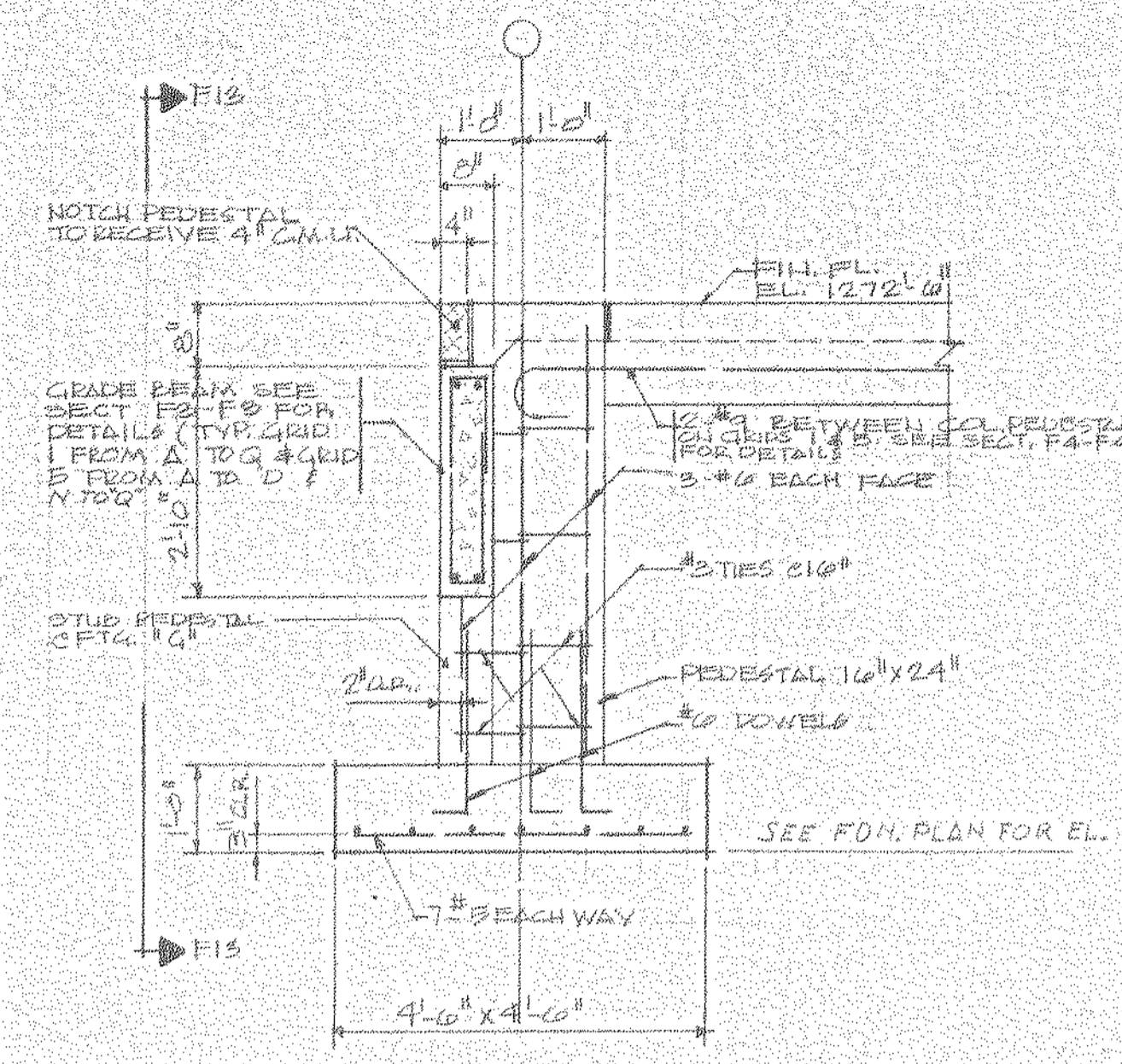
sheet: of:

f1 f2



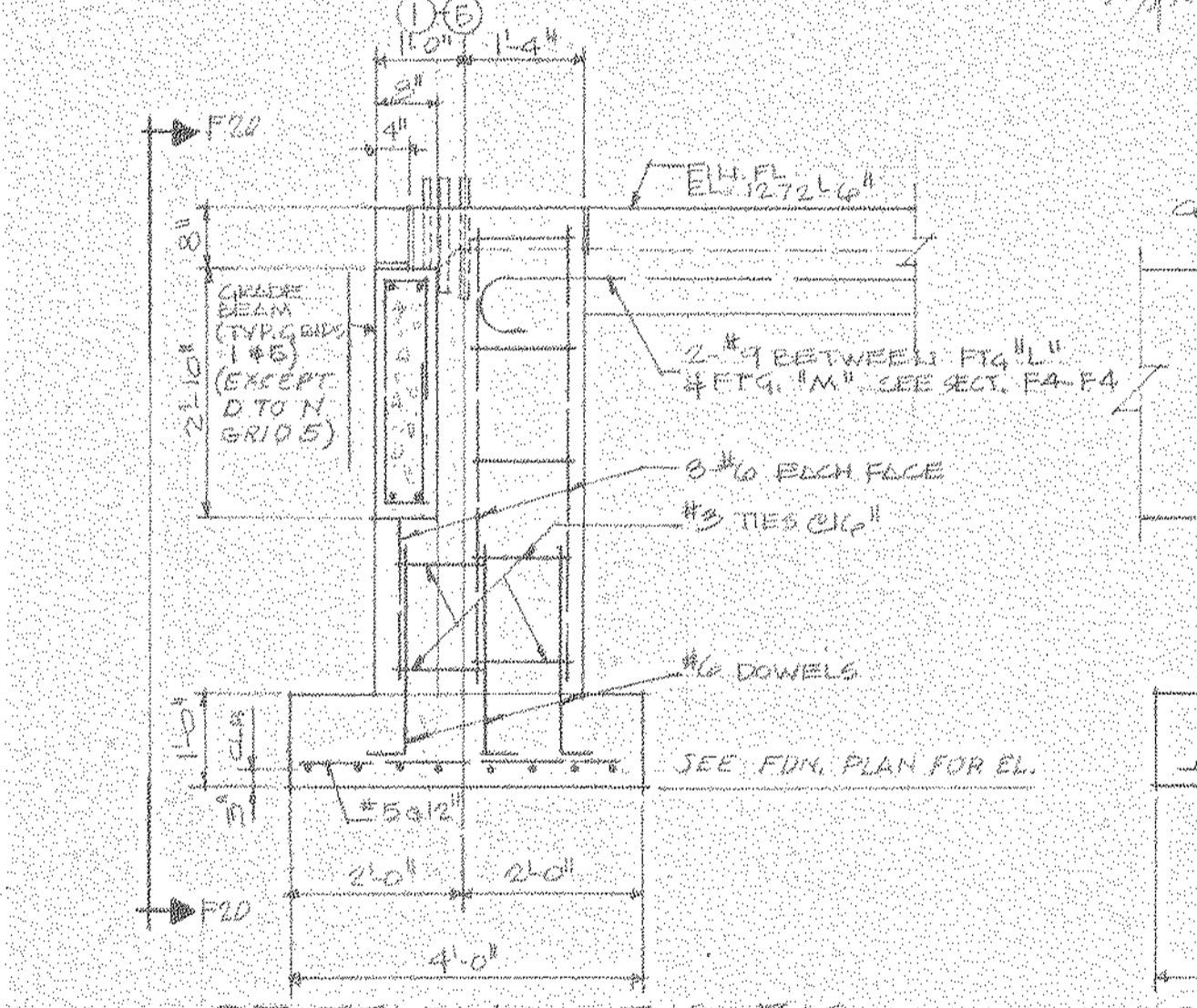


FOUNDATION PLAN SCALE 1/4" = 1'-0"



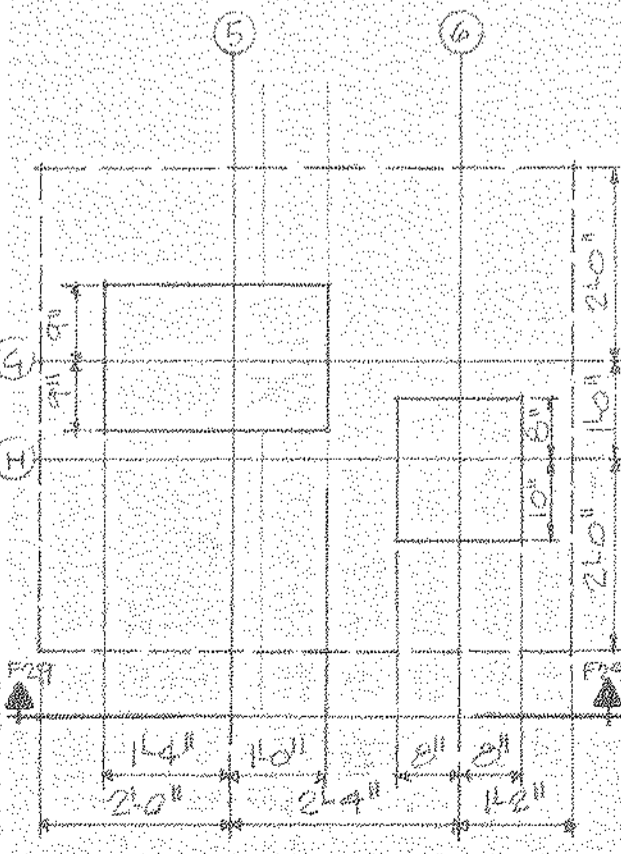
SECTION F11-F11 SCALE 1/2" = 1'-0" FOOTING "A"

SECTION F12-F12 SCALE 1/2" = 1'-0" FOOTING "H"

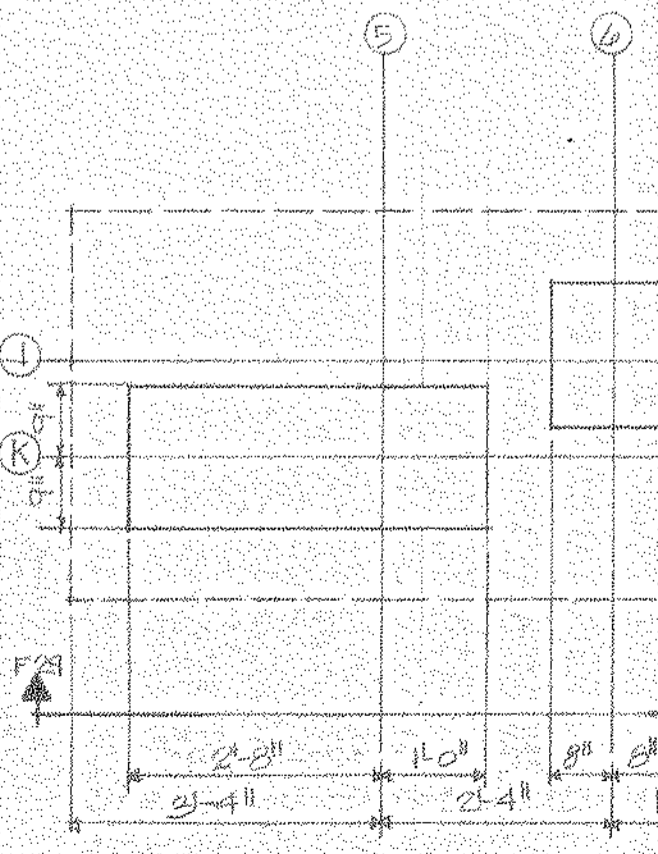


SECTION F18-F18 SCALE 1/2" = 1'-0" FOOTING "L"

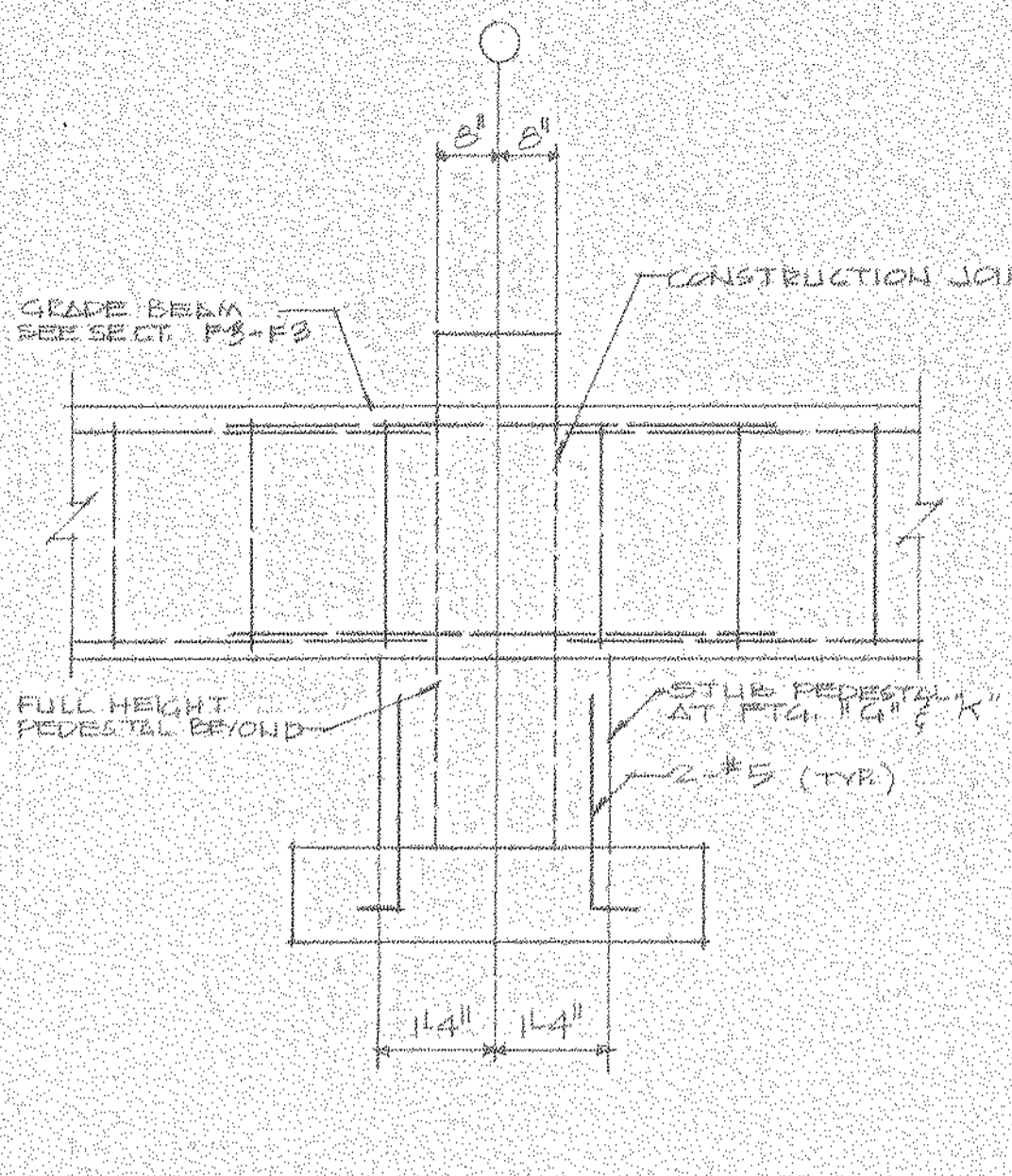
SECTION F19-F19 SCALE 1/2" = 1'-0" FOOTING "M"



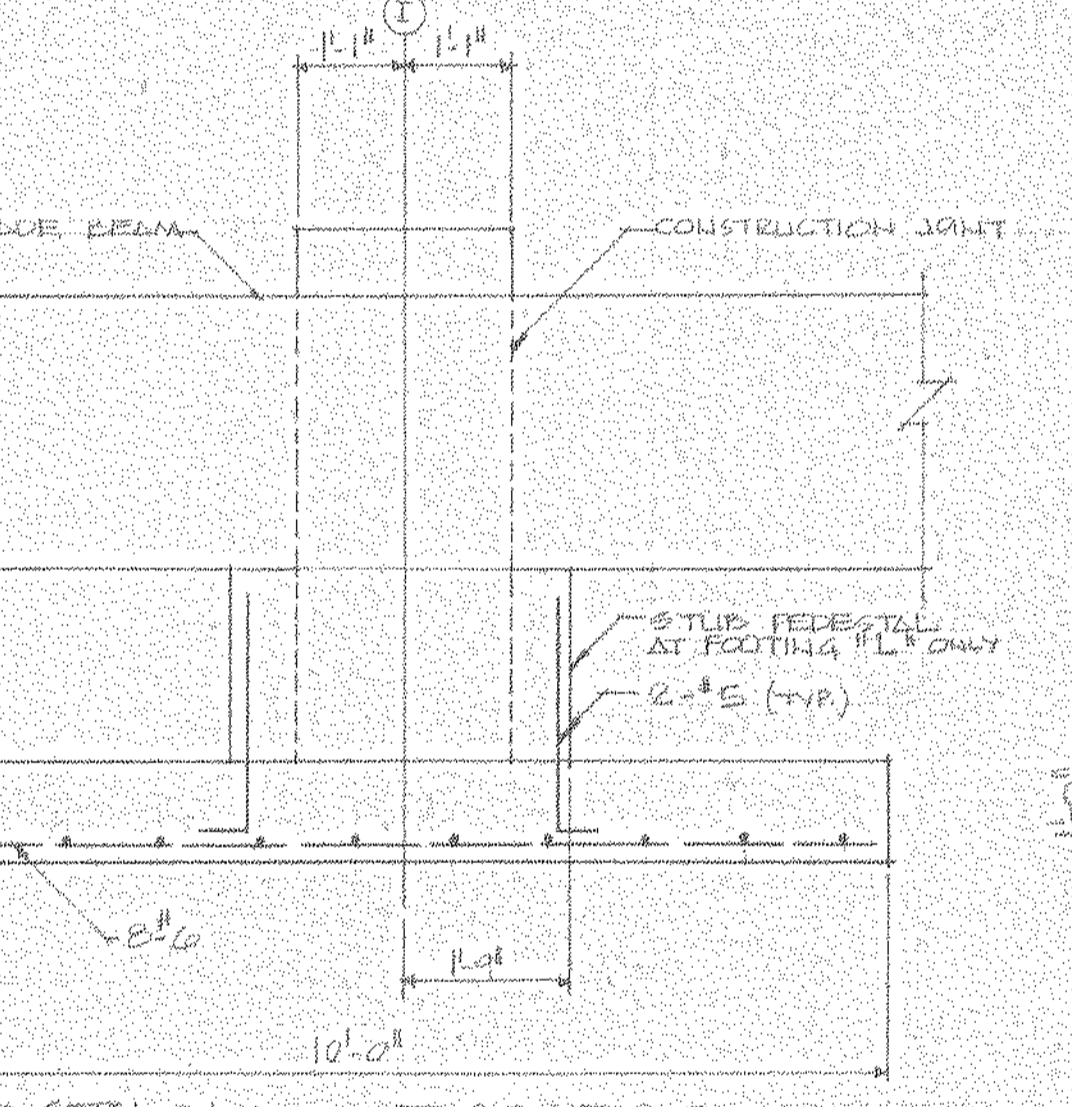
DETAIL F23 SCALE 1/2" = 1'-0" FOOTING "Q"



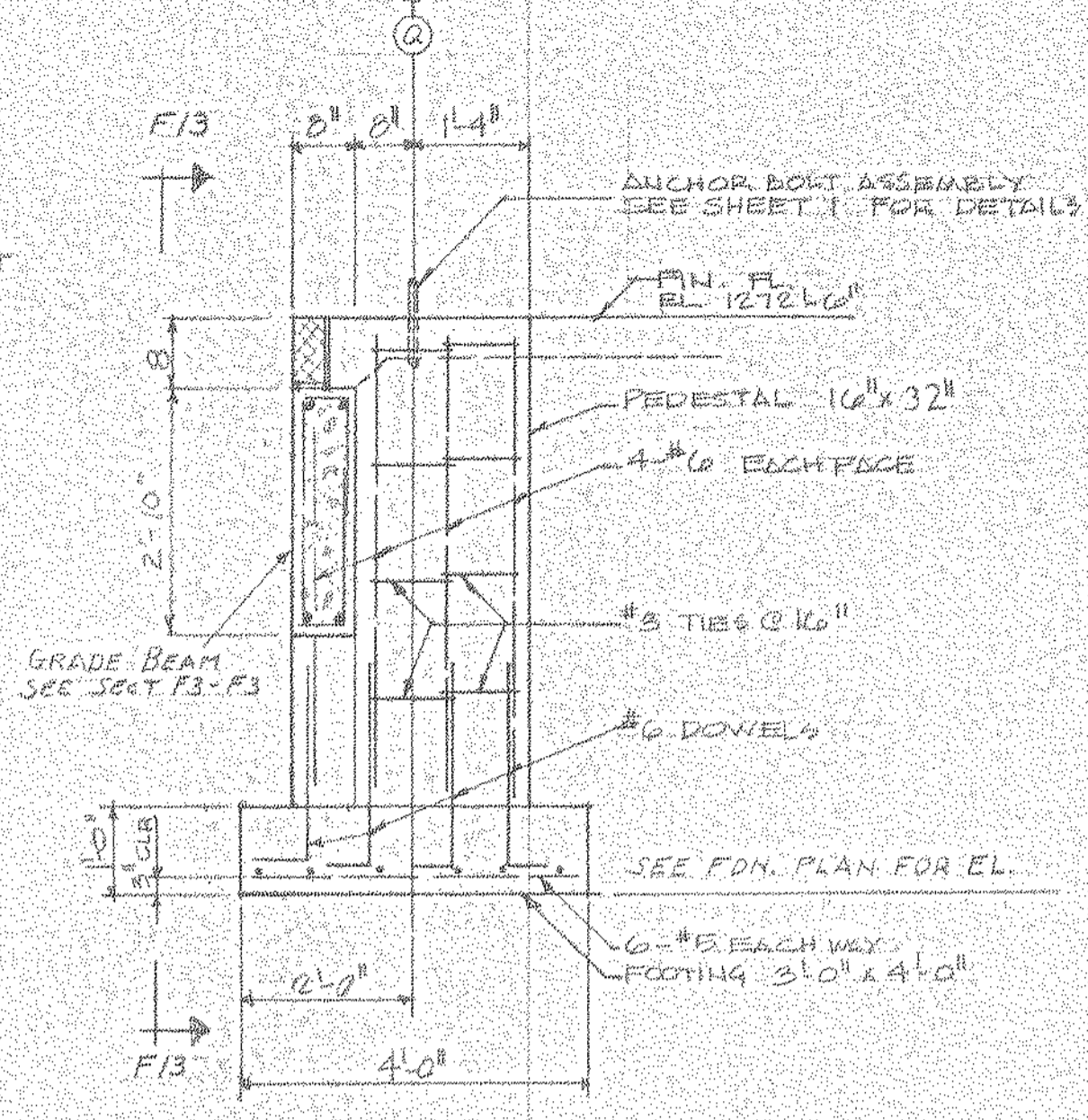
DETAIL F24 SCALE 1/2" = 1'-0" FOOTING "R"



SECTION F13-F13 SCALE 1/2" = 1'-0"

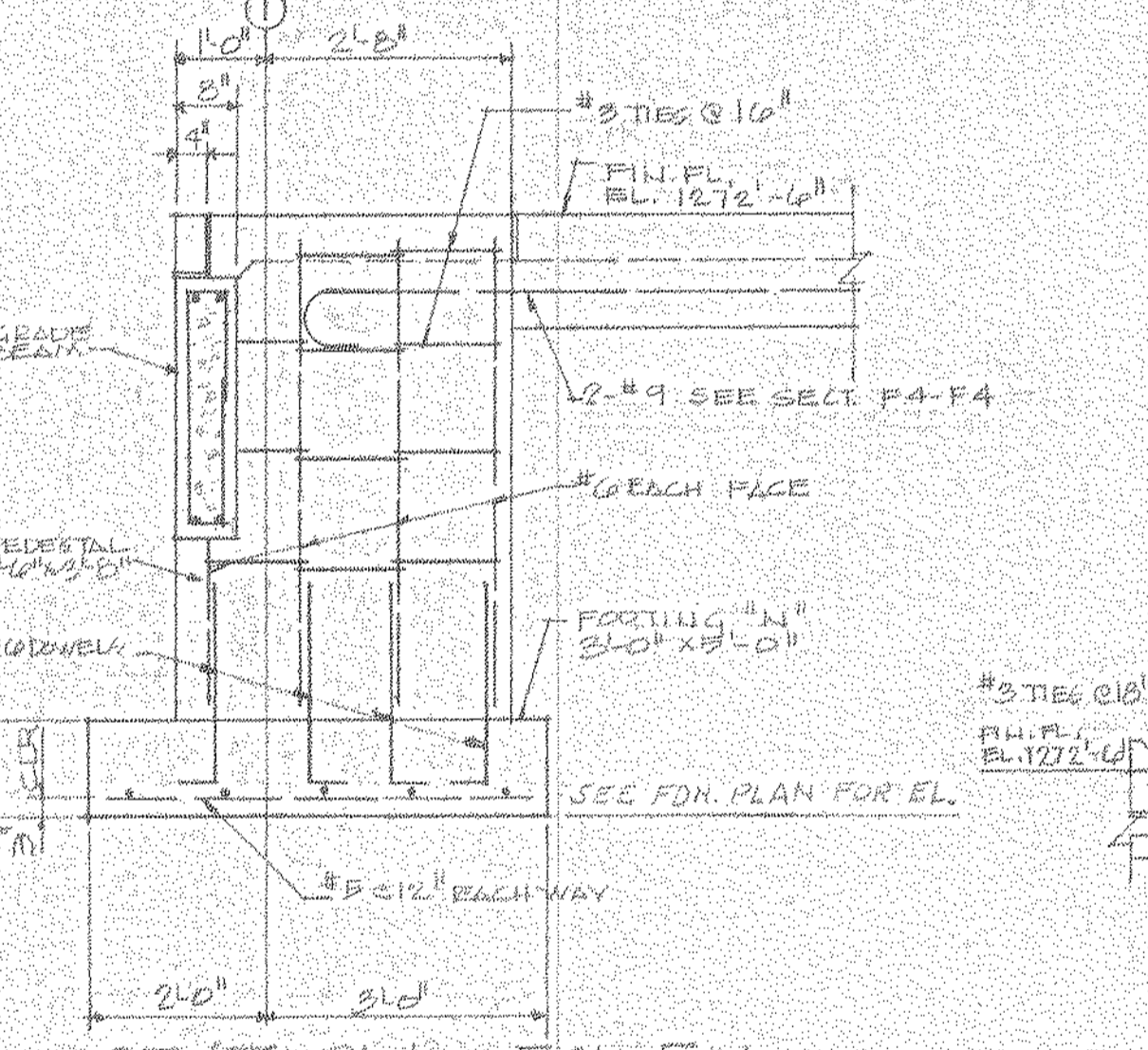


SECTION F20-F20 SCALE 1/2" = 1'-0" FOOTING "L" & "M"

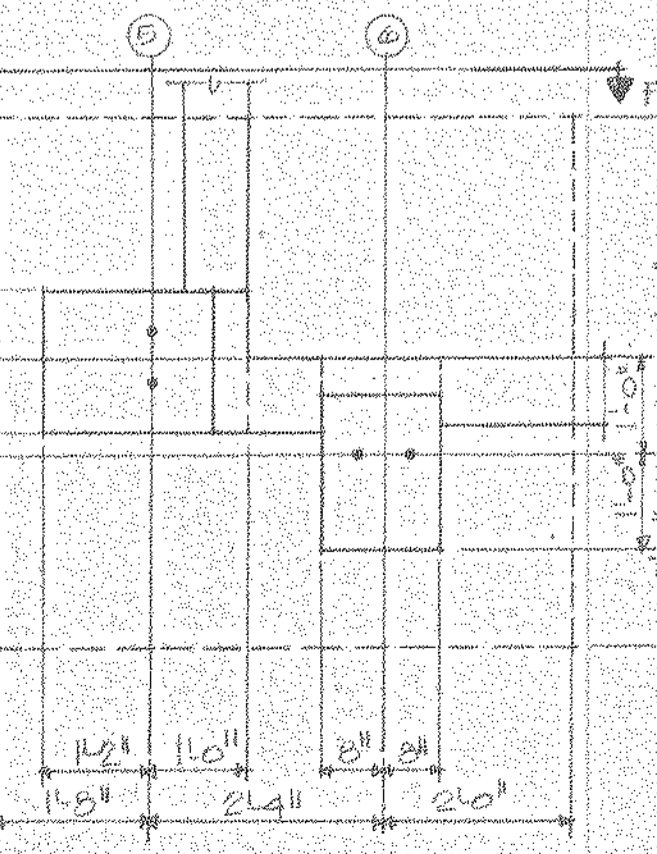


SECTION F14-F14 SCALE 1/2" = 1'-0" FOOTING "J"

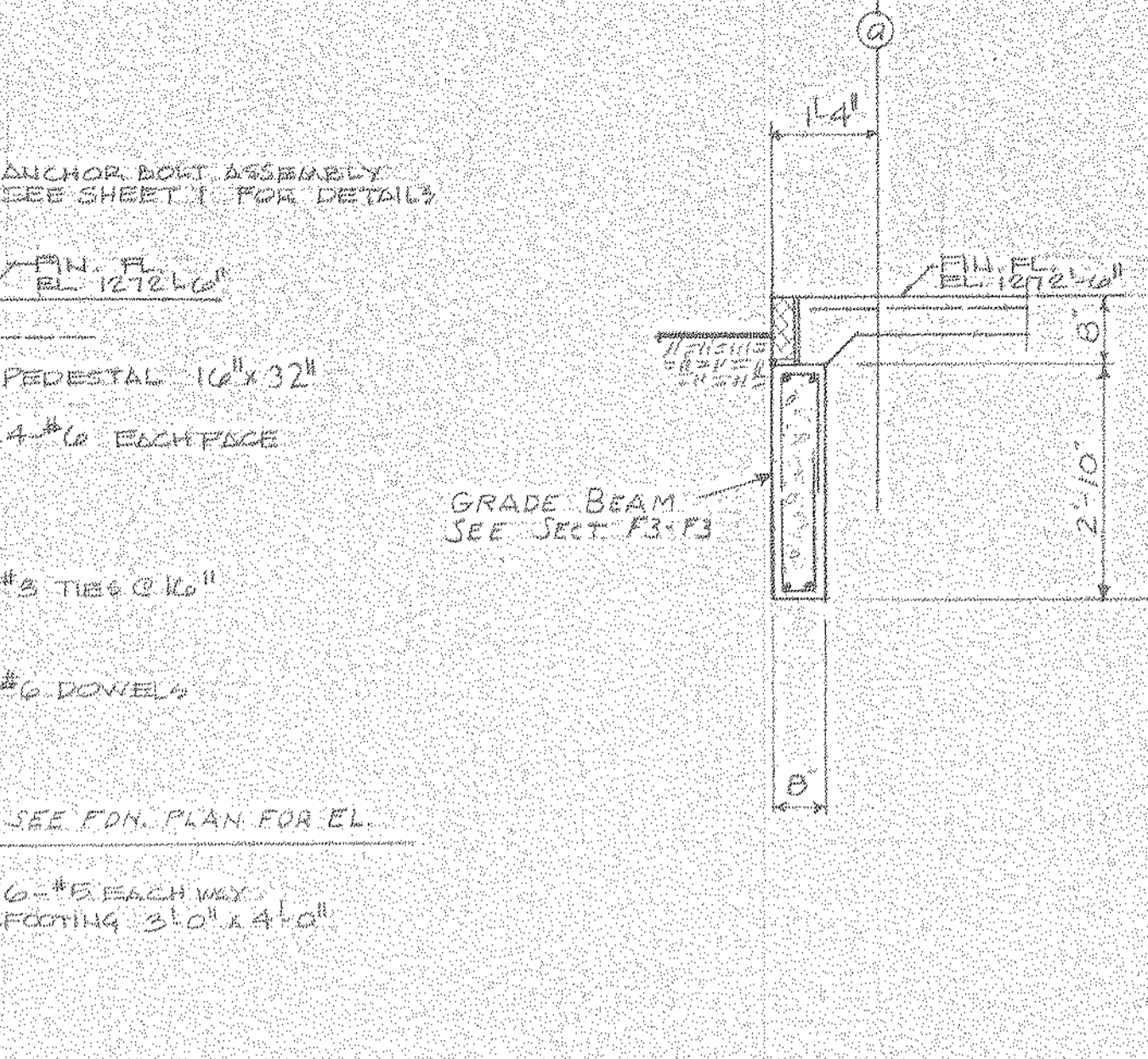
SECTION F15-F15 SCALE 1/2" = 1'-0" FOOTING "K"



SECTION F21-F21 SCALE 1/2" = 1'-0" FOOTING "N"

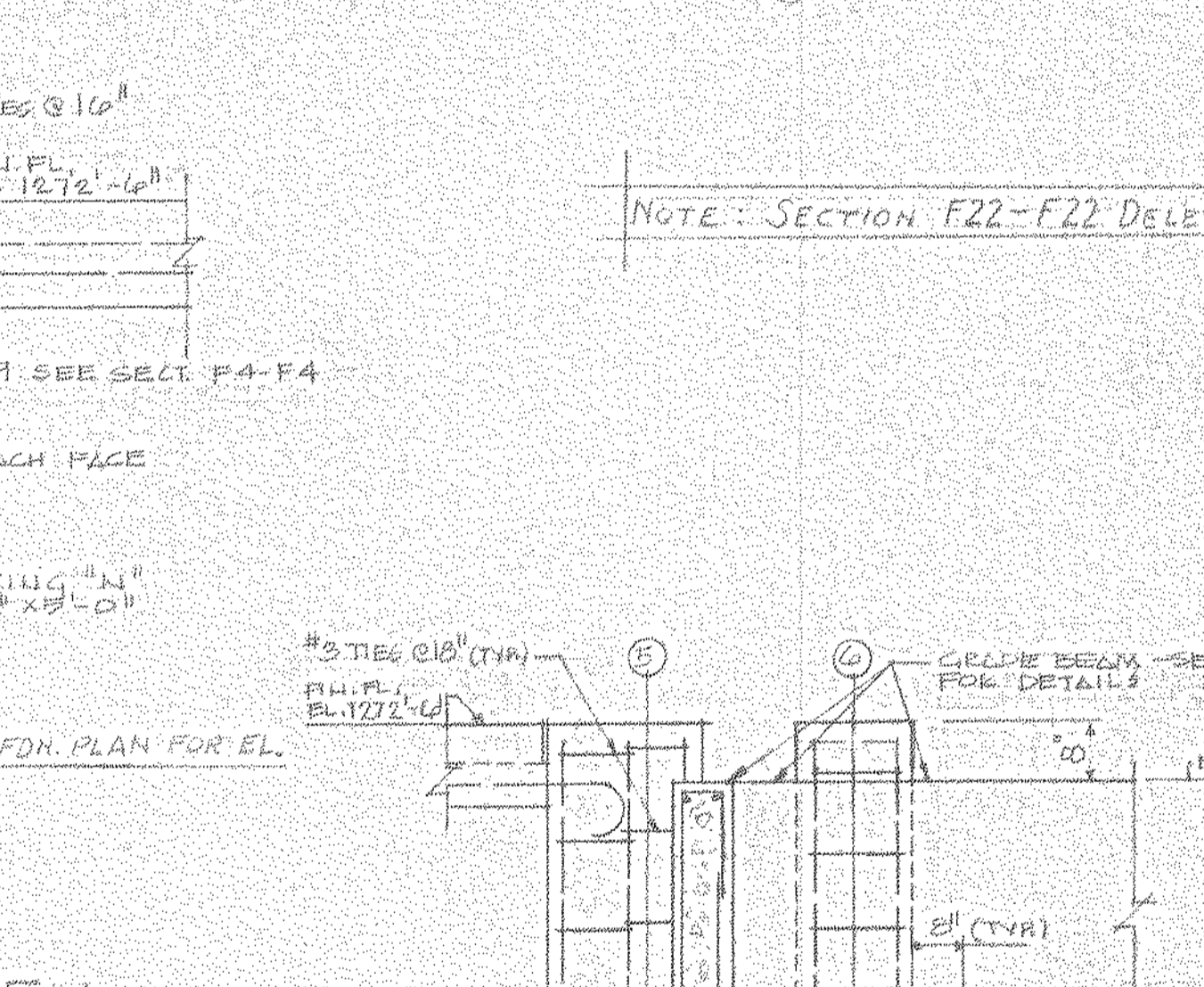


DETAIL F25 SCALE 1/2" = 1'-0" FOOTING "O"



SECTION F16-F16 SCALE 1/2" = 1'-0" GRID "C"

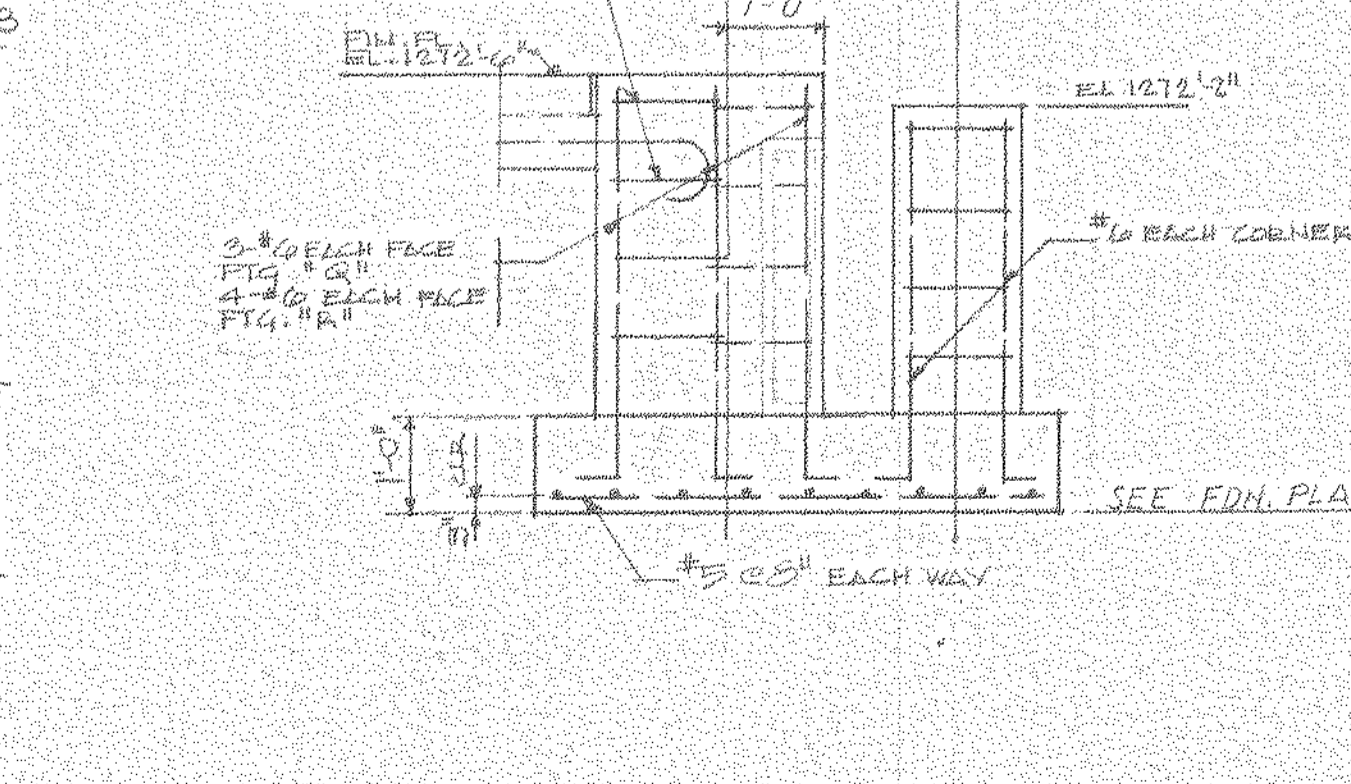
SECTION F17-F17 SCALE 1/2" = 1'-0" GRID "A"



SECTION F22-F22 DELETED

SECTION F27-F27 FOOTING "O"

SECTION F28-F28 FOOTING "P" OPPOSED



SECTION F29-F29 SCALE 1/2" = 1'-0" FOOTINGS "Q" & "B"

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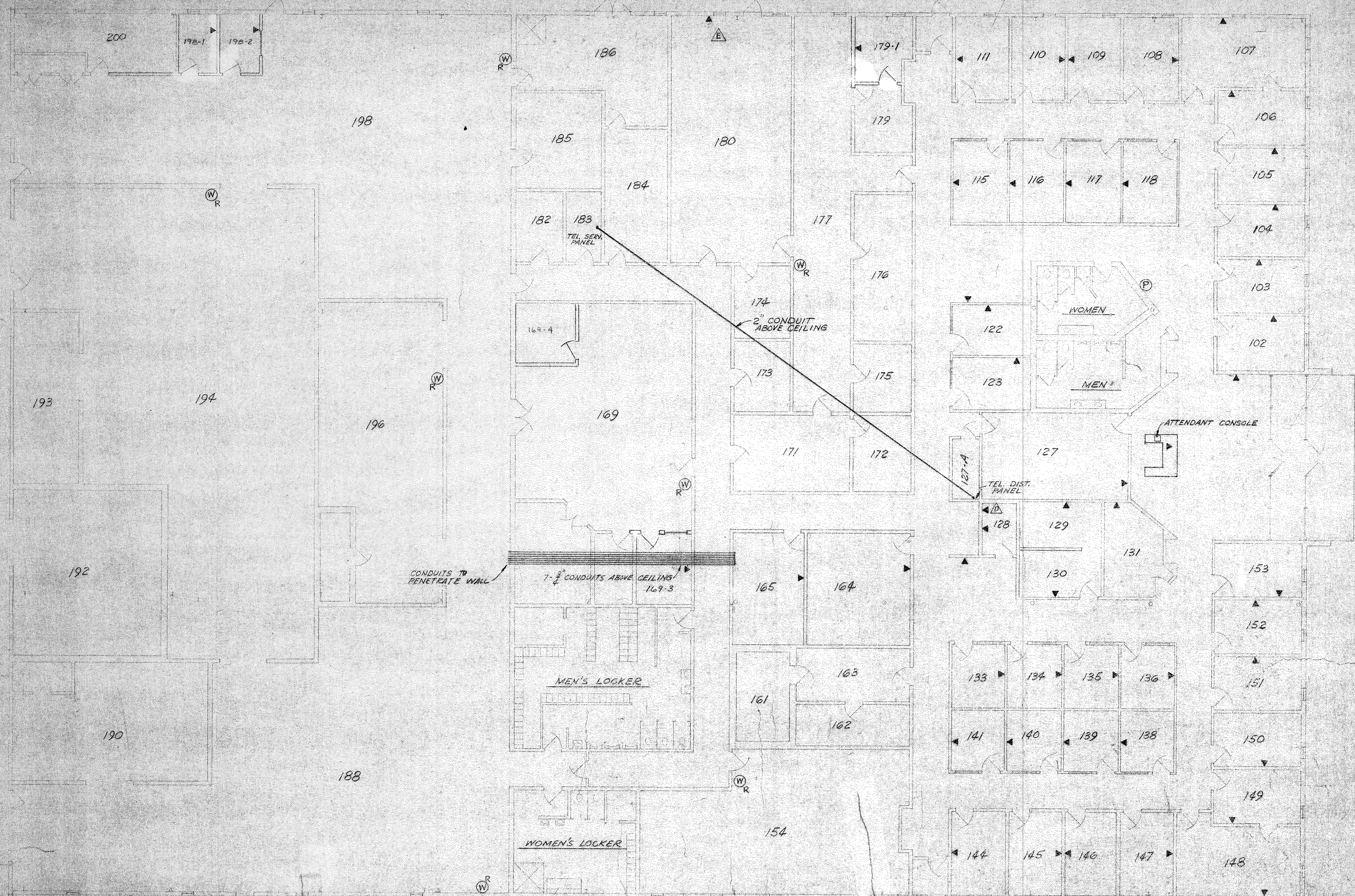
FOUNDATION PLAN BUILDINGS "B" & "C"

NEW RESEARCH CENTER BUILDING FOR: NORTH AMERICAN REFRACTORIES CO. STATE COLLEGE PENNSYLVANIA

**L.C. ANDERSON & SONS, INC.**  
HUNTINGDON, PENNA. 16852  
**CONTRACTORS**  
general - electrical - plumbing - heating

drawn by: L.S.P.  
file date: 2-9-81  
sheet: f2 of: f2





- ▶ DESK PHONE
- ◀ DESK PHONE RESTRICTED TO INTEROFFICE & INCOMING COMMUNICATION
- Ⓜ WALL PHONE RESTRICTED TO INTEROFFICE & INCOMING COMMUNICATION
- Ⓟ COIN OPERATED WALL PHONE

OTHERS	TEL. ROOM	PLANT	COIN. ROOM	WASH-ROOM	E	D	B	A
					ADDED PHONE OUTLET IN ROOM 128	ADDED PHONE OUTLET IN ROOM 128	ADDED 2" CONDUIT	ADDED 2" CONDUIT TO ROOM 127
					8-4-82	4-27-82	2-1-82	1-27-82

LL-5-A-120

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

FLOOR PLAN - OFFICES  
& WORK ROOMS  
TELEPHONE LOCATIONS  
NEW RESEARCH CENTER

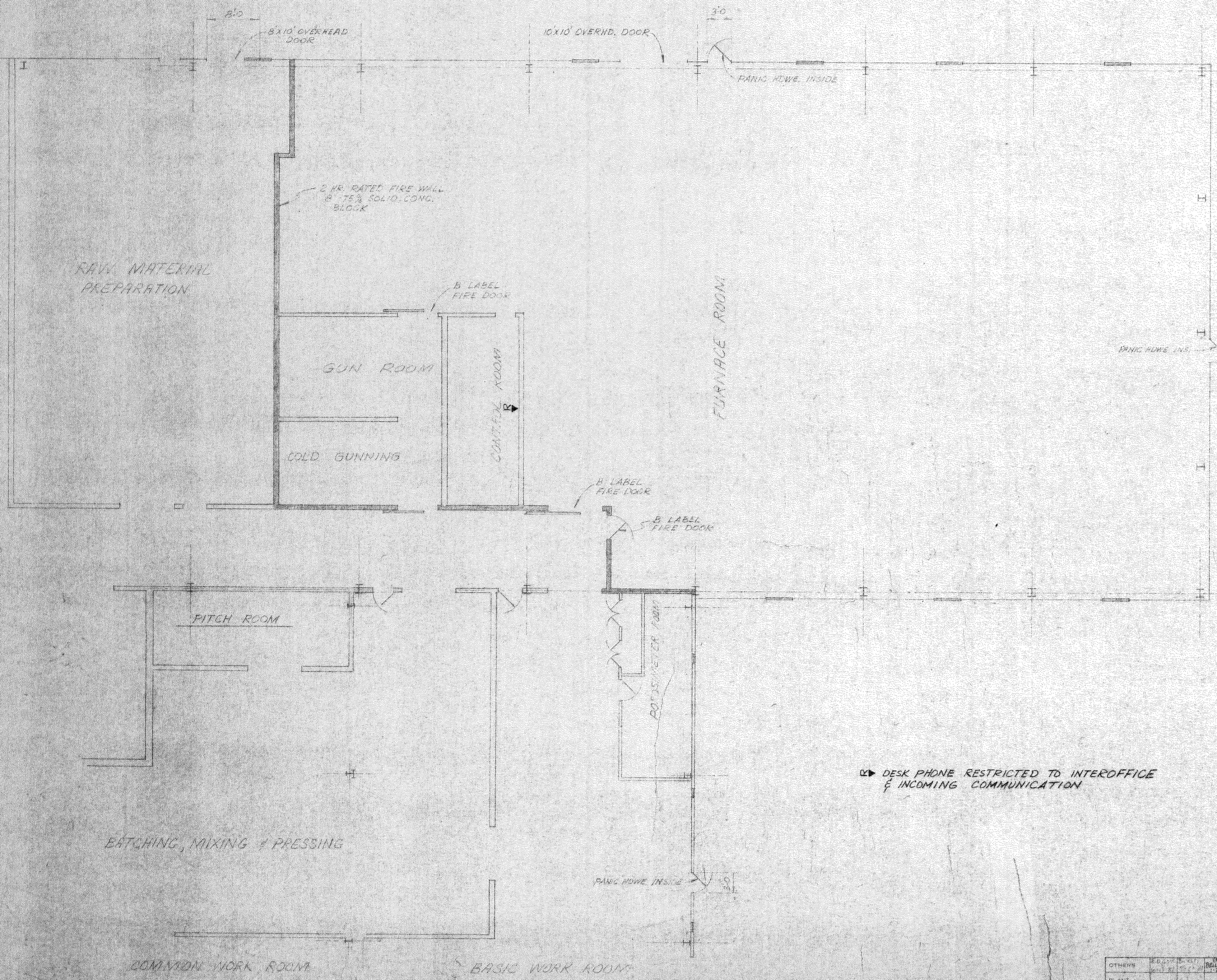
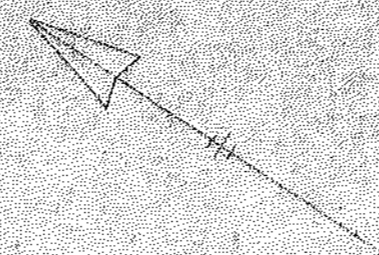
55-110 55-110-T-1

12-10-81

#0064 — T-1 Locations — 1981 — NONE — 105 & 107

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DESK PHONE RESTRICTED TO INTEROFFICE & INCOMING COMMUNICATION

LL-5-A-121

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

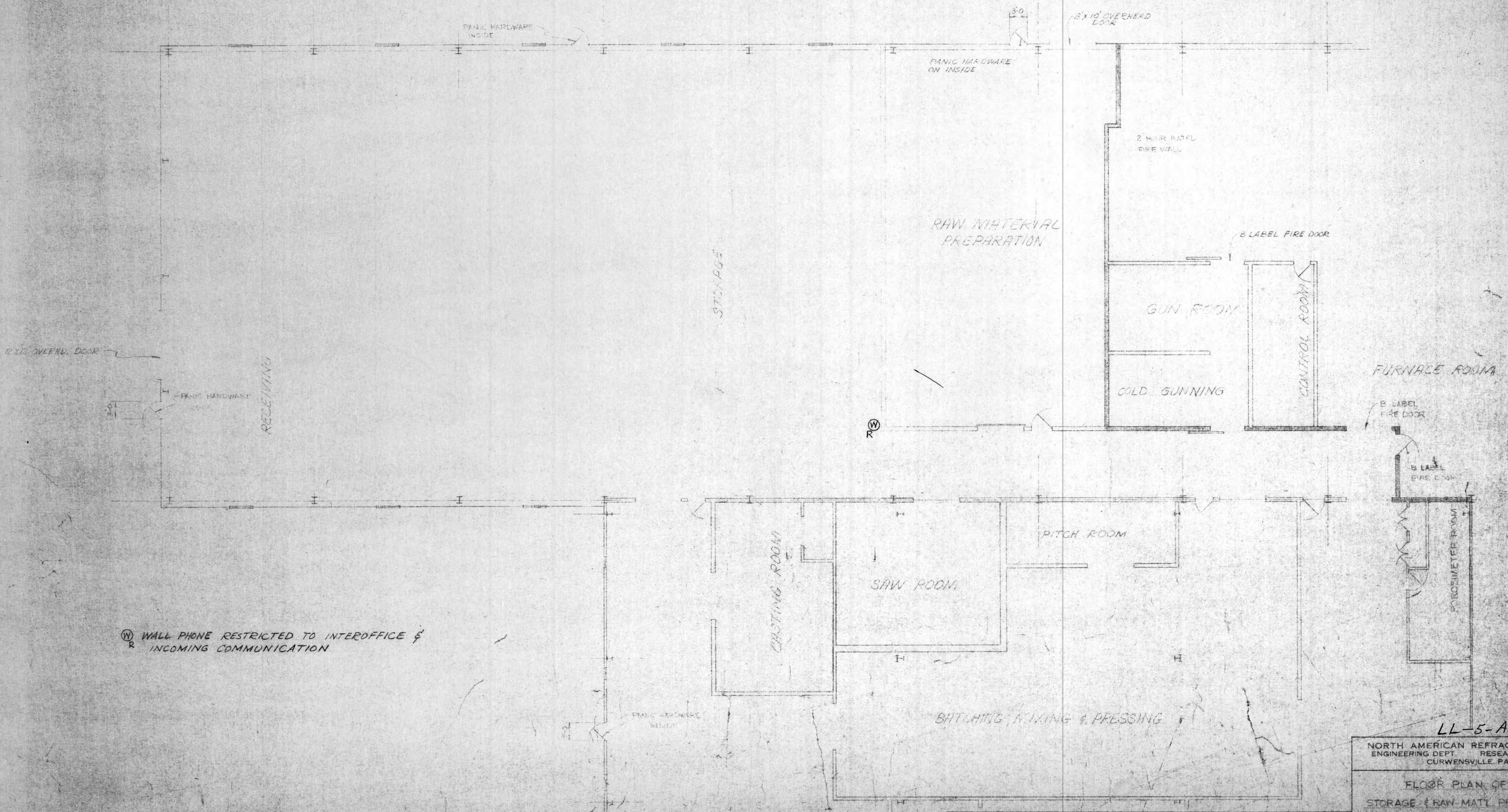
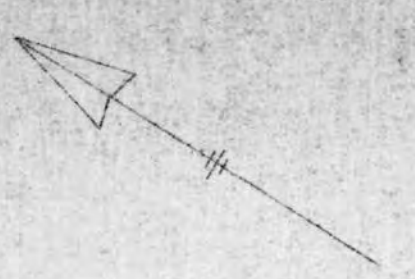
FLOOR PLAN OF  
FURNACE ROOM  
NEW RESEARCH CENTER

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OTHERS	REVISION	DATE	DESCRIPTION
PLANT			
FOREMAN			
VENDOR			

#0064 - F2 Furn Rm/Fl Pn 1981 NONE 1060 107





Ⓜ<sub>R</sub> WALL PHONE RESTRICTED TO INTEROFFICE & INCOMING COMMUNICATION

LL-5-A-122  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.  
 FLOOR PLAN OF  
 STORAGE & RAW-MATL. PREPARATION  
 NEW RESEARCH CENTER

OTHERS	PLANT	FORMAN	VENDOR	DATE	REVISION	DESIGN	DATE

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**NOTES:**  
 WORK WITH DWGS  
 55-110-E-2 & E-3  
 FOR LEGEND SEE DRAWING  
 NO. 55-110-E-4

11-5-A-84  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

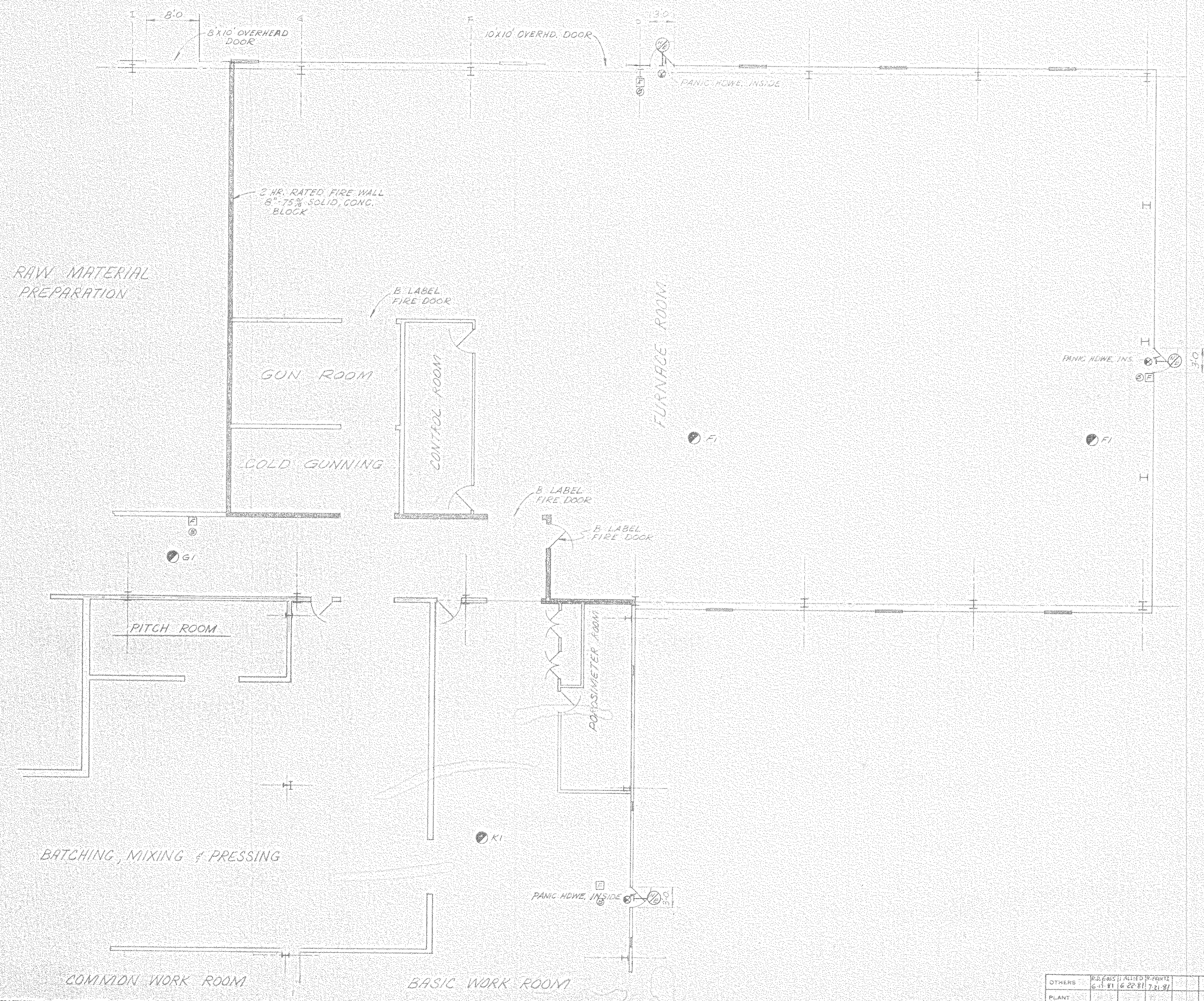
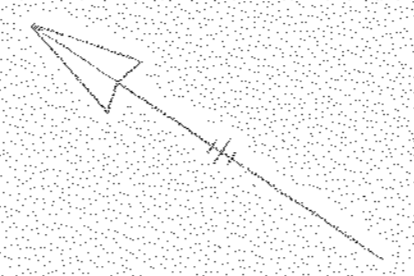
**EMERGENCY LIGHTING & ALARMS  
 OFFICES & WORK ROOMS  
 NEW RESEARCH CENTER**

OTHERS	DESIGNED	ALTERED	FRANCE	DATE	BY	REVISION	DATE	BY
				9-21-82	C	NO. 55-110-E-1	9-21-82	
				6-21-81	B	DWG. NO. 55-110-E-1	6-21-81	
				4-16-81	A	REBORN	4-16-81	

#0064 E-1 Emerg. Light/ALARMS 1981 NONE 690107

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NOTE: WORK WITH DWGS  
55-110-E-1 & E-3,  
SEE DWG 55-110-E-4  
FOR LEGEND.

▲ INTERIOR WALL LOCATIONS HAVE  
NOT BEEN "AS-BUILT" ON THIS  
DWG.

LL-5-A-85

NORTH AMERICAN REFRACTORIES CO.  
ENGINEERING DEPT. RESEARCH CENTER  
CURWENSVILLE, PA.

Emergency Lighting + ALARMS  
Furnace Rm

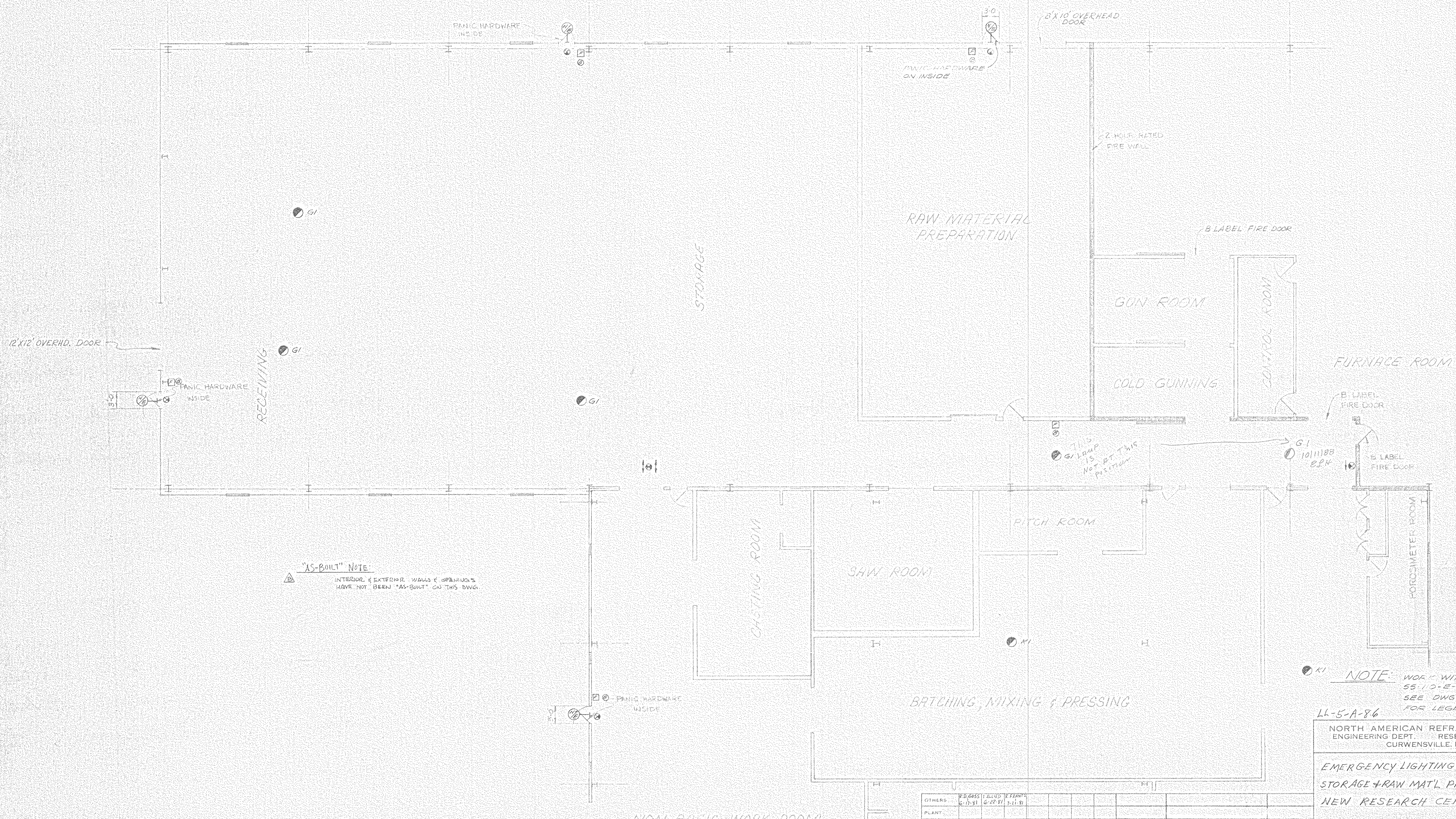
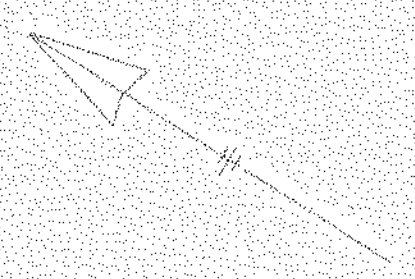
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OTHERS	6-11-81	6-22-81	7-21-81						
PLANT									
FOREMAN	1-31M								
VENDOR	3-2-81								
					B	ADD NOTES	7-23-81		
					A				

PRINTS REVISION DESCRIPTION DATE  
#0064 E-2 E.Lght. + ALARMS/Furn Rm 1981 NONE 706707

DWG NO. 55-110-E-2





**"AS-BUILT" NOTE:**  
 INTERIOR & EXTERIOR WALLS & SPRINKLERS  
 HAVE NOT BEEN "AS-BUILT" ON THIS DWG.

THIS G/LAMP IS NOT AT THIS POSITION

**NOTE:** WORK WITH DWGS.  
 55-10-E-1 & E-2.  
 SEE DWG 55-110-E-4  
 FOR LEGEND

LL-5-A-86  
 NORTH AMERICAN REFRACTORIES CO.  
 ENGINEERING DEPT. RESEARCH CENTER  
 CURWENSVILLE, PA.

EMERGENCY LIGHTING + ALARM  
 STORAGE + RAW MAT'L PREPARATION  
 NEW RESEARCH CENTER

OTHERS	6-10-81	6-22-81	7-21-81																	
PLANT																				
FOREMAN	JIM																			
VEHICL																				
PRINTS		REVISION	DESCRIPTION	DATE	CHECKED	DATE	SCALE	C.D. NO.	DATE	DWG NO.										
#0064			E-4 E. Light + Alarm/Strg + Prep Rms	1981						55-110-E-										
																				710107

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