

INGERSOLL MACHINE TOOLS, INC.  
 VERTICAL SPINDLE S02  
 ALUMINUM INGOT SCALPING MACHINE  
 DESIGNED AND BUILT FOR  
 MA'ADEN ROLLING MILL PROJECT  
 RAS AZ ZAWR, SAUDI ARABIA

AXIS DEFINITIONS

X-AXIS TABLE  
 Y-AXIS SPINDLE VERTICAL SLIDE

FIELD DRAWINGS UPDATED	-
DRAWINGS GIVEN FOR INSTALLATION	-
SHOP DRAWINGS UPDATED FOR SHIPMENT	-
DRAWINGS GIVEN TO SHOP FLOOR	-
DRAWINGS GIVEN TO PANEL BUILDER	-
DESCRIPTION	DATE
ENGINEERING MASTER DRAWINGS UPDATE LOG	

YELLOW = DEVICE HAS BEEN WIRED  
 GREEN = DEVICE HAS BEEN CHECKED OUT  
 ORANGE = CIRCUIT HAS BEEN MODIFIED BY THE SHOP FLOOR

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LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
1	N00084-E2-651				

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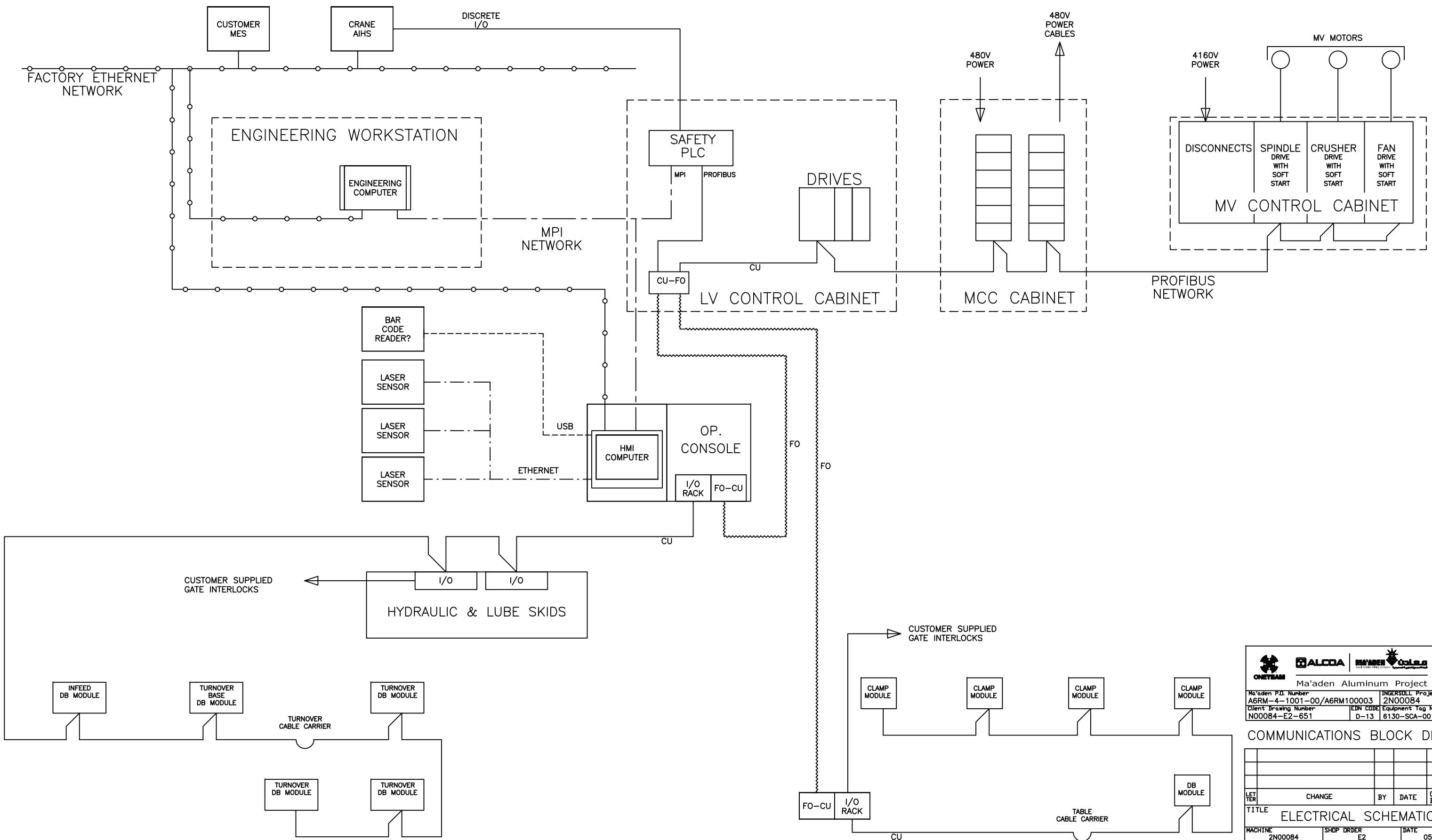
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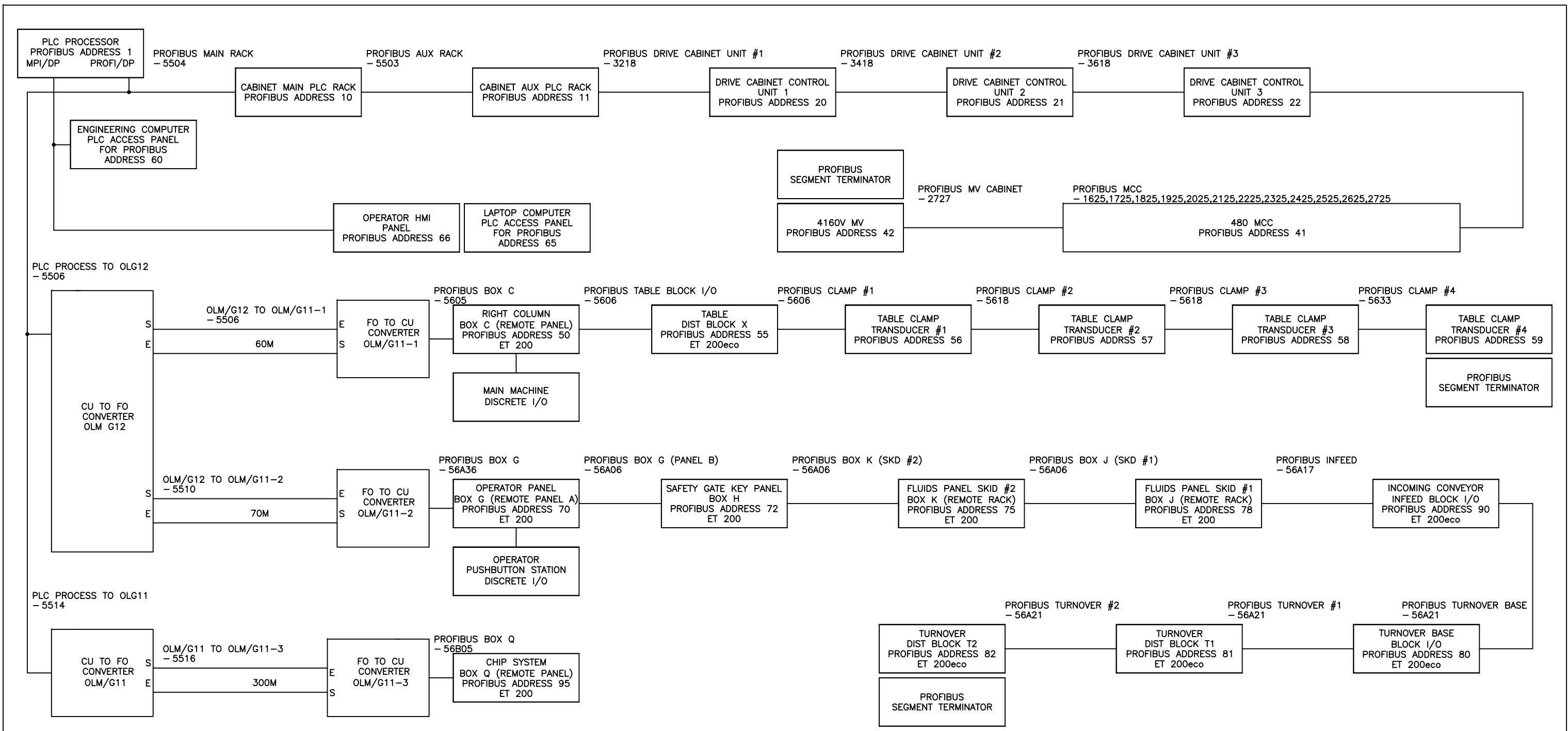
LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	E2	DATE	05/07/11	
DRAWN BY	CHECKED BY	WAYNE LANGDON	DESIGNED BY	WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
2	N00084-E2-651				





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ALCOA Ma'aden			
ONE TEAM			
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	Ingersoll Project Number 2N00084		
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001	
COMMUNICATIONS BLOCK DIAGRAM			
ELECTRICAL SCHEMATICS			
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INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
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## PROFIBUS OVERVIEW



## PROFIBUS OVERVIEW

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<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
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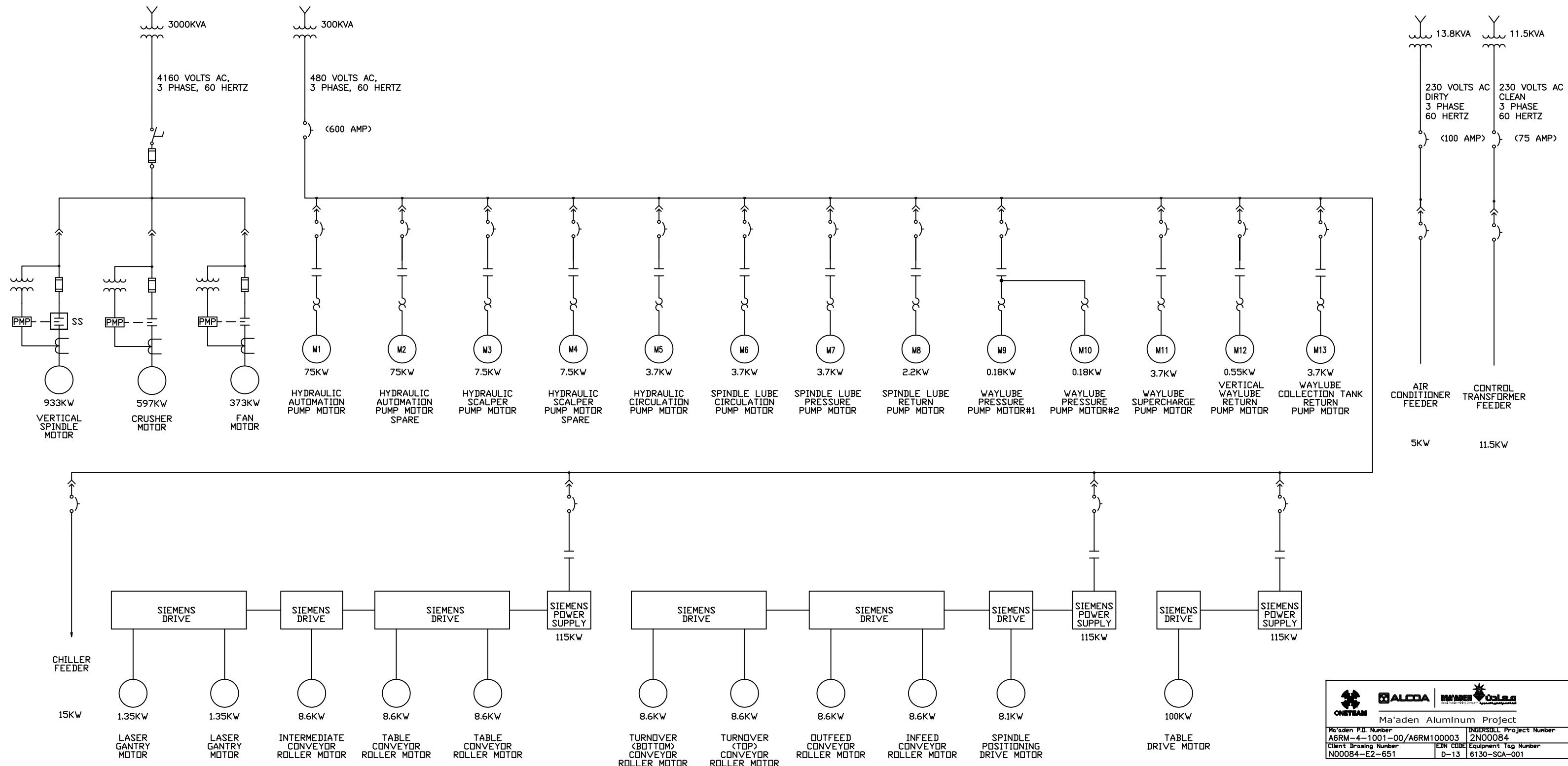
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## MEDIUM VOLTAGE

34.5KV  
PROVIDED BY CUSTOMER

## LOW VOLTAGE – MOTOR CONTROL CENTER (MCC)



Ma'aden Aluminum Project	INGERSOLL Project Number	2N00084
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	EDN CODE	E2

## MOTOR POWER BLOCK DIAGRAM

LETTER	CHANGE	BY	DATE	CHK BY
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## TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11

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ROCKFORD, ILLINOIS USA

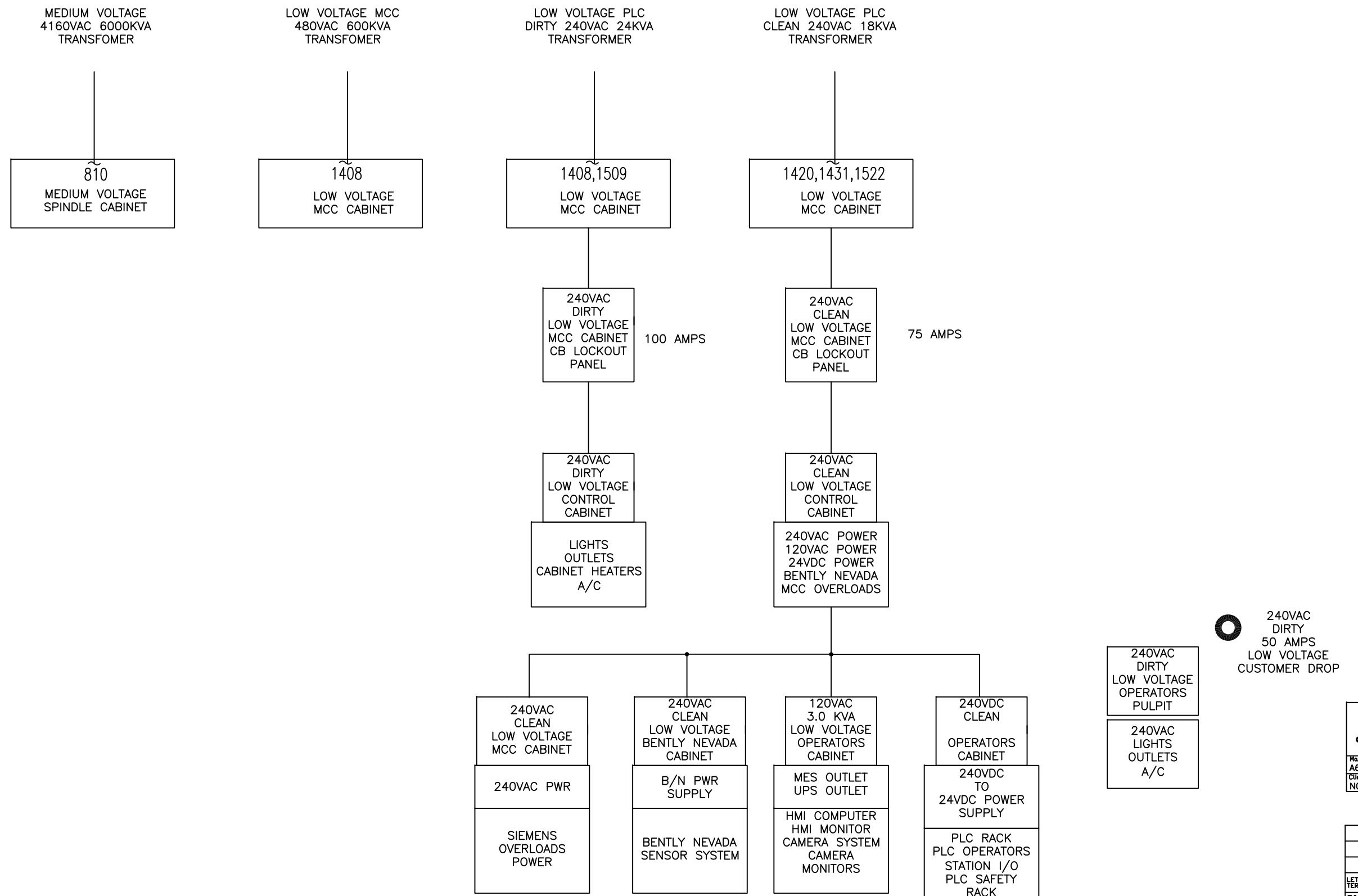
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34.5KV  
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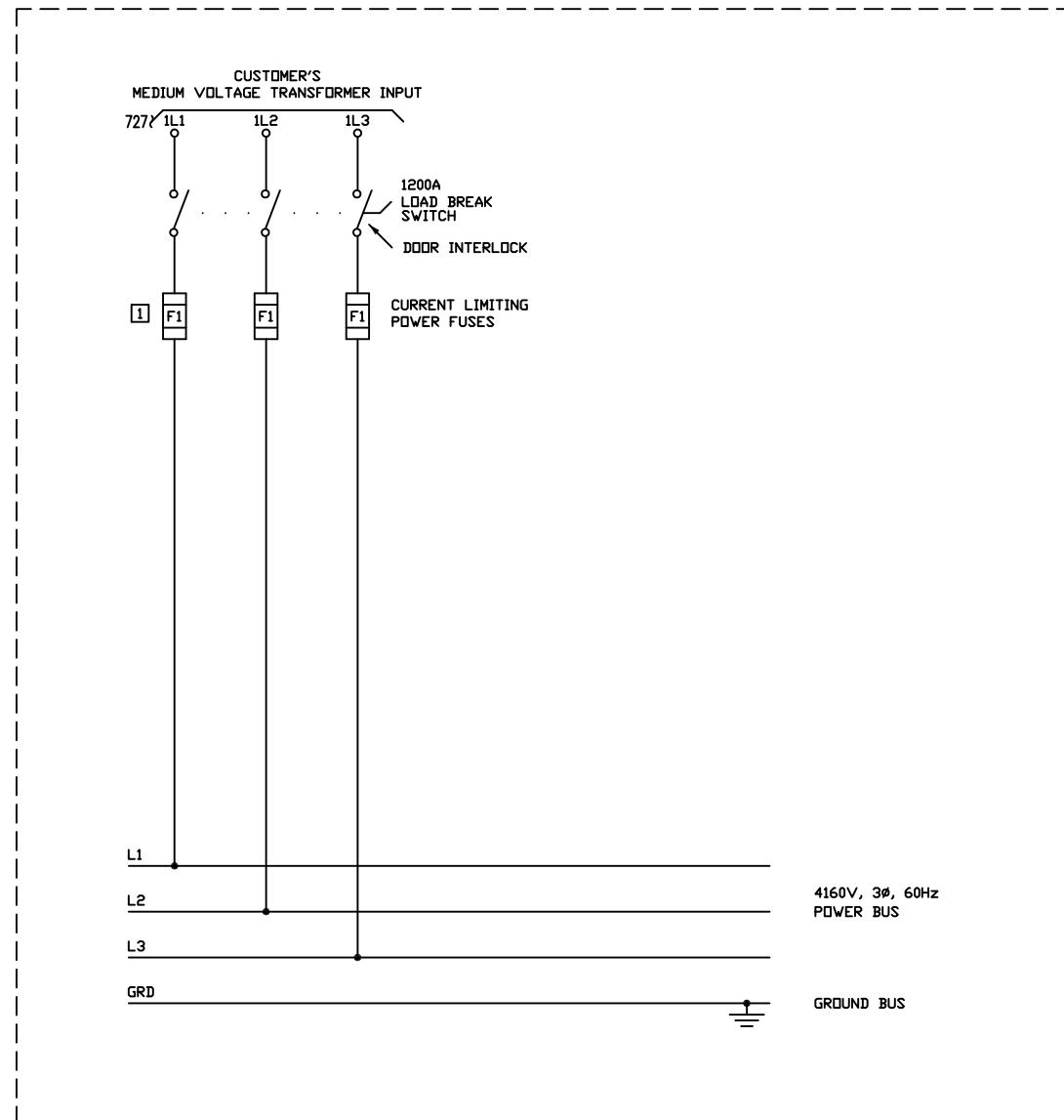


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POWER DISTRIBUTION OVERVIEW				
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TITLE ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	E2	DATE	05/07/11
DRAWN BY	CHECKED BY	WAYNE LANGDON	DESIGNED BY	WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
7	N00084-E2-651			

MEDIUM VOLTAGE CABINET - 1B



<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project	
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

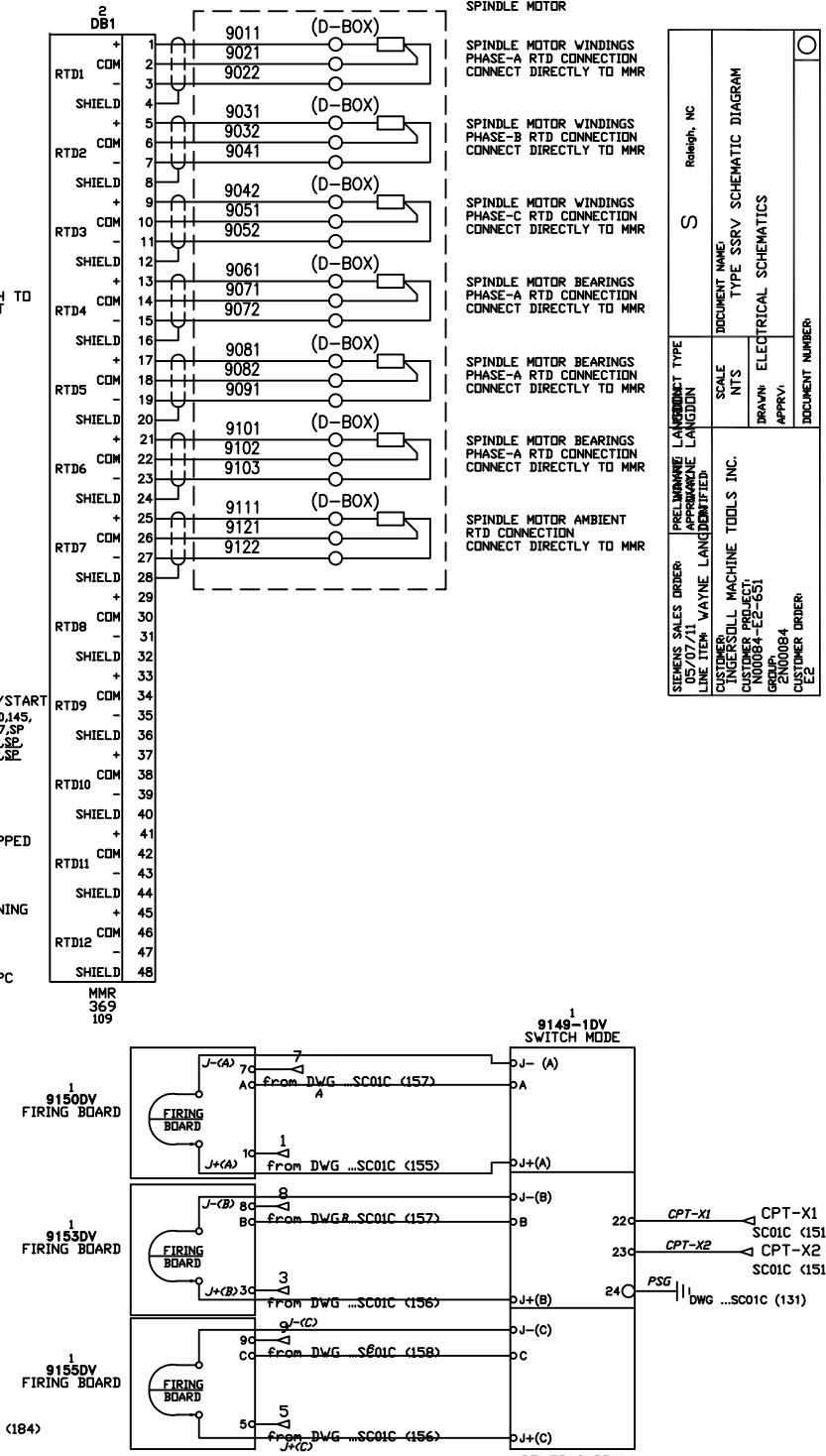
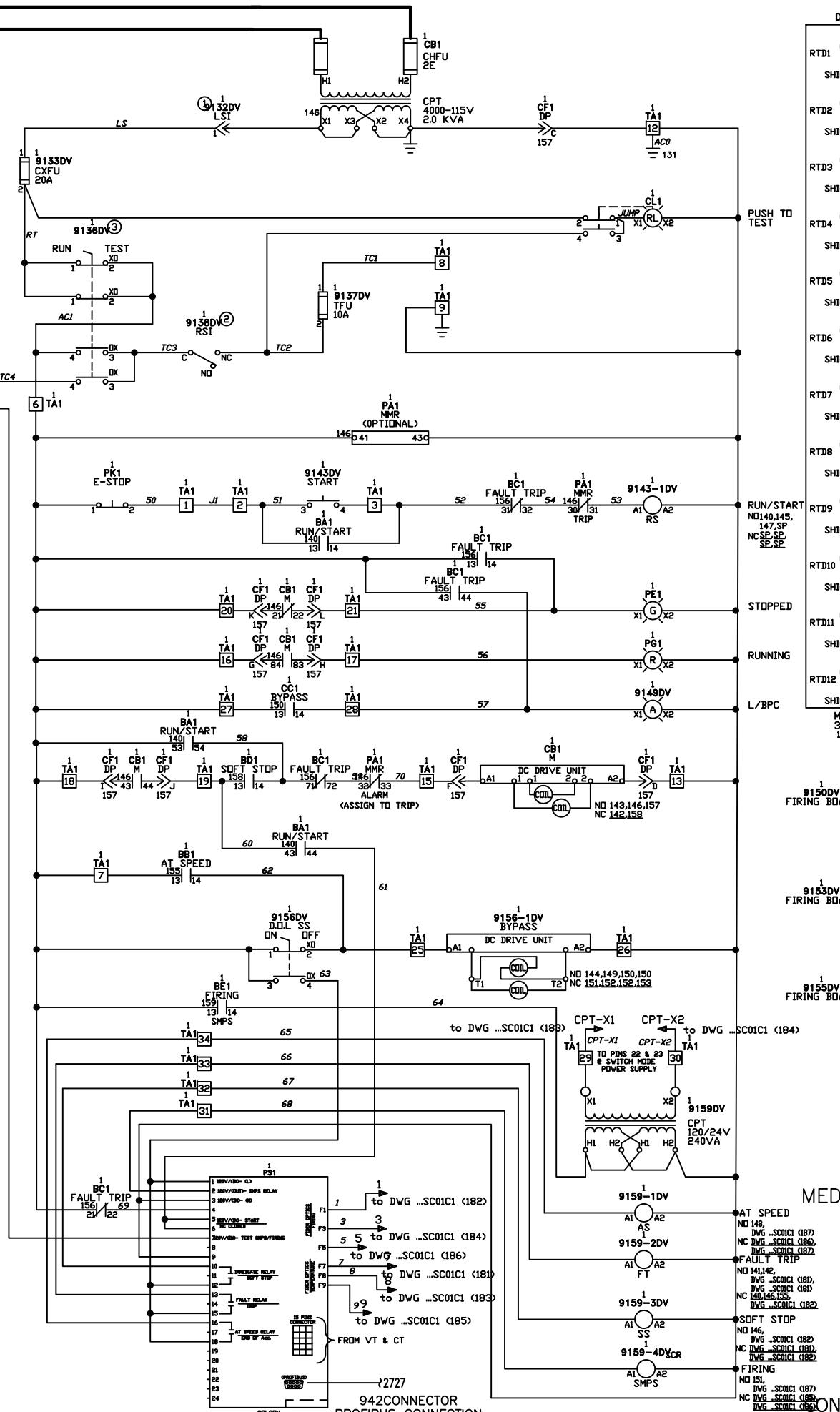
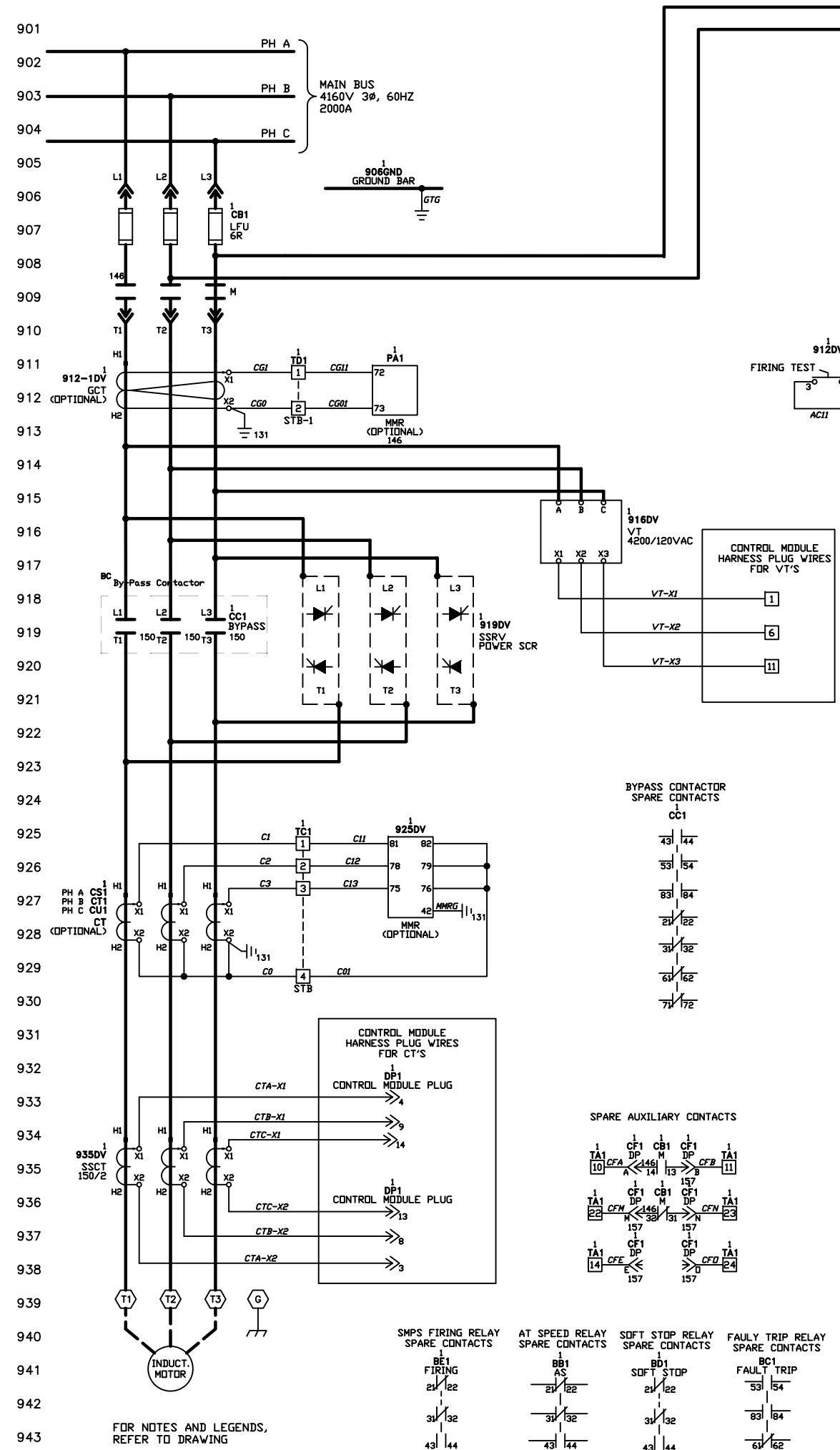
MEDIUM VOLTAGE 4160VAC (MAIN DROP)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
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MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
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<b>INGERSOLL MACHINE TOOLS, INC.</b> ROCKFORD, ILLINOIS USA					
SHEET NUMBER 8	DRAWING NUMBER N00084-E2-651				

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MEDIUM VOLTAGE 4160VAC (VERTICAL SPINDLE MOTOR)

MEDIUM VOLTAGE TRANSFORMERS (VERTICAL OR INDEE MOTOR)

EEB

SCMC1 (187)  
SCMC1 (190)

SC01C1 (187) SC01C1 (187)

**TRIP** \_\_\_\_\_

SC01C1 (180) Page 1

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SCD1C1 (182) TITLE B1 M/F

STOP

ELECTRICAL COMMERCIALS

MACHINE 3N00084 SHOP ORDER F3 DATE 12/07/10  
SC01C1 (182)  
SC01C1 (180)

**ZNUUUC84** EZ 12/07/10  
**DRAWN BY** **CHECKED BY** **TESTIGNED BY**

DRAWN BY JEFF THURSTON CHECKED BY JEFF THURSTON DESIGNED BY JEFF THURSTON

SC01C1 (187)

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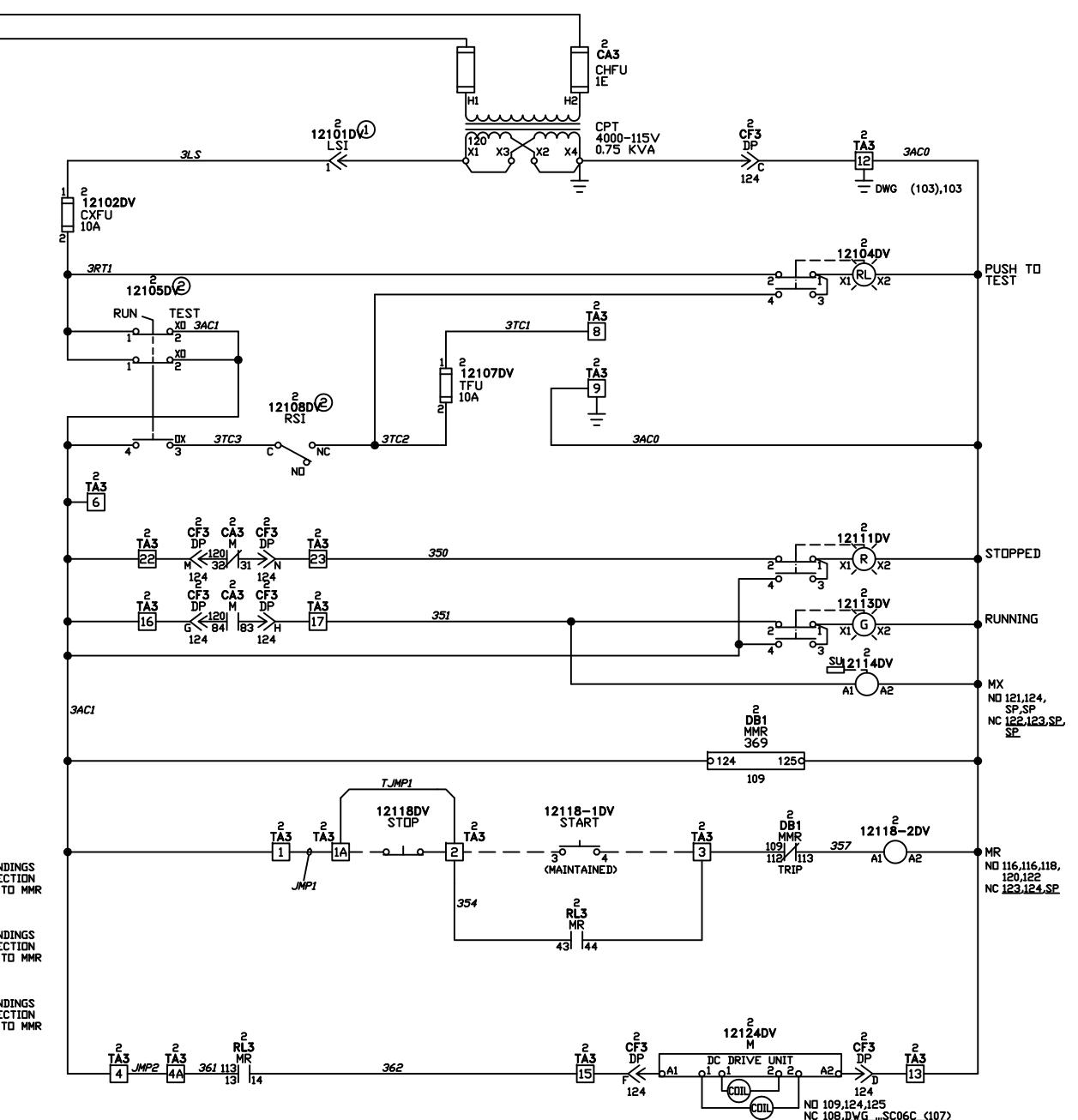
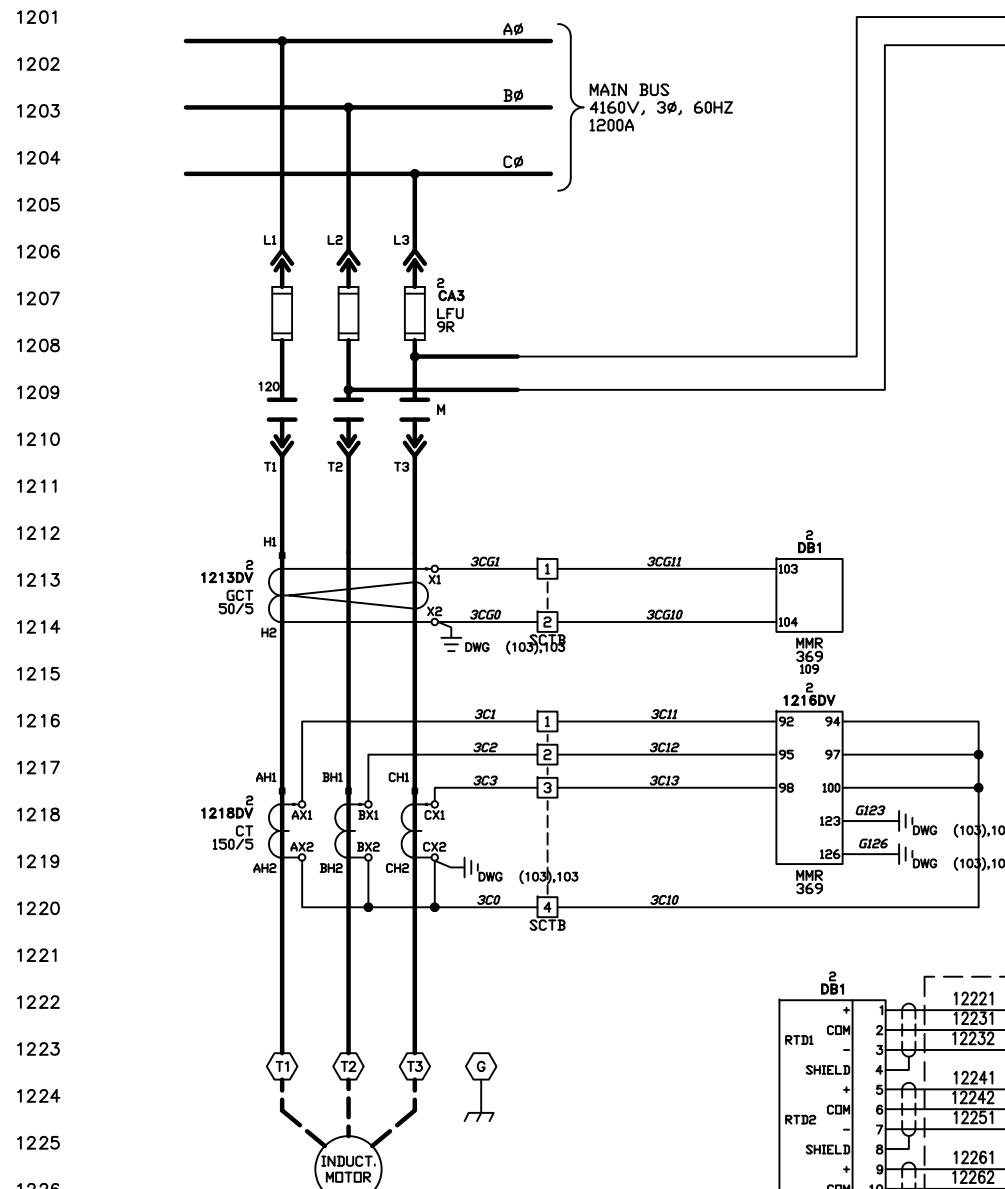
		Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001		
MEDIUM VOLTAGE 4160VAC (VERTICAL SPINDLE MOTOR)				
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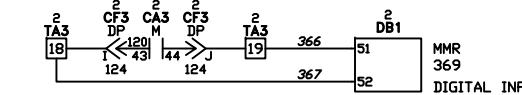
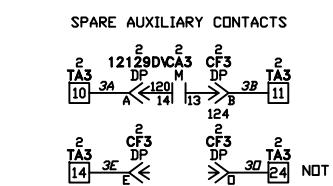
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		Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001		
MEDIUM VOLTAGE 4160VAC (VERTICAL SPINDLE MOTOR)				
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CRUSHER MOTOR AMBIENT RTD CONNECTION CONNECT DIRECTLY TO MMR



### MEDIUM VOLTAGE 4160VAC (CRUSHER MOTOR)

		Ma'aden Aluminum Project
No'maden P.D. Number A6RM-4-1001-00/A6RMXXXXXX	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE	Equipment Tag Number PROVIDED BY Ma'aden

LETTER CHANGE BY DATE CHK BY M/F

TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084 SHOP ORDER E2 DATE 12/07/10

DRAWN BY JEFF THURSTON CHECKED BY JEFF THURSTON DESIGNED BY JEFF THURSTON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER DRAWING NUMBER

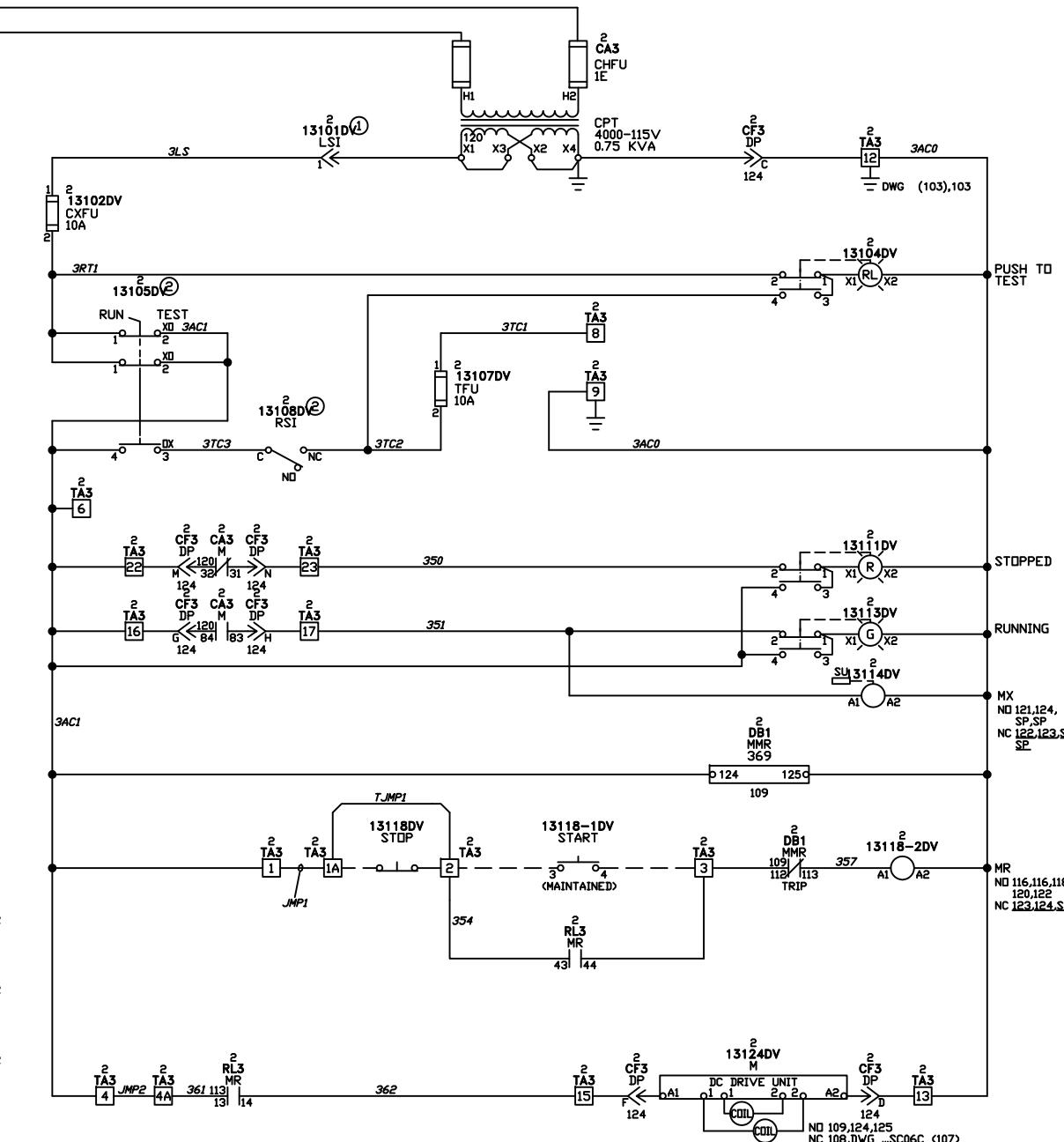
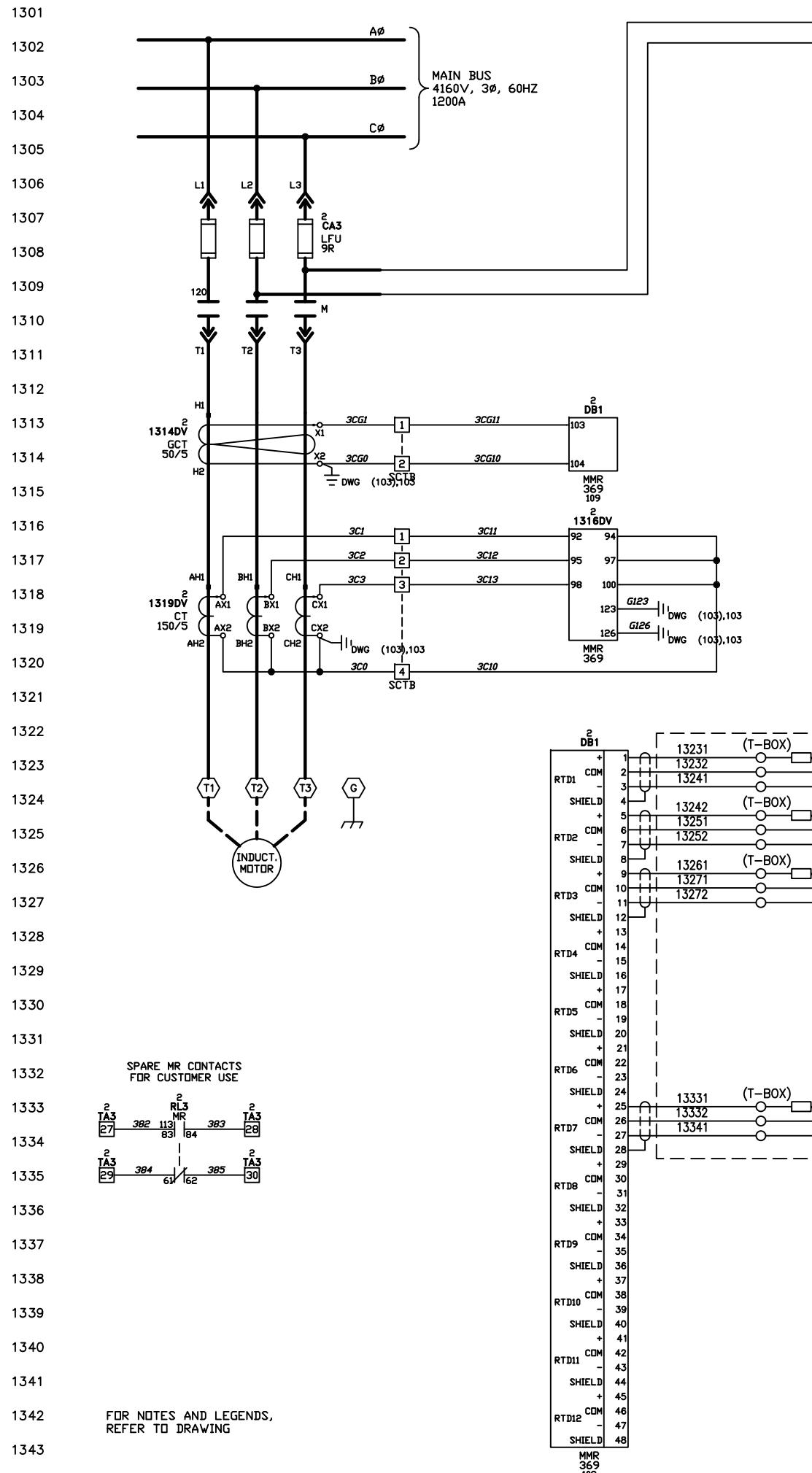
12 N00084-E2-651

FOR NOTES AND LEGENDS,  
REFER TO DRAWING

MMR 369 109

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ALCOA		Ma'aden
ONTEAM	Ma'aden	Aluminum Project
Ma'aden P.D. Number A6RM-4-1001-00/A6RMXXXXXX	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE E2-651	Equipment Tag Number PROVIDED BY Ma'aden

### MEDIUM VOLTAGE 4160VAC (FAN MOTOR)

LETTER	CHANGE	BY	DATE	CHK BY
TITLE ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	DATE		
2N00084	E2	12/07/10		
DRAWN BY JEFF THURSTON	CHECKED BY JEFF THURSTON	DESIGNED BY JEFF THURSTON		
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
13	N00084-E2-651			

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1401

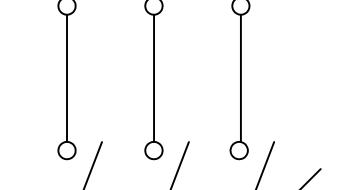
## MCC CABINET

## SECTION 1

## POSITION 1.1

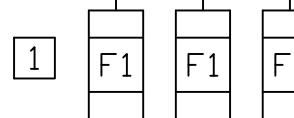
CUSTOMER'S  
480VAC VOLTAGE TRANSFORMER

727Y 1L1 1L2 1L3



600AMPS  
LOAD BREAK SWITCH

DOOR INTERLOCK



CURRENT LIMITING  
POWER FUSES

480L2

480L1

CUSTOMER SUPPLY  
#2 GRN GROUND

480VAC MAIN GROUND  
1411DIST

#2 GRN TO PANEL GROUND

1402

1403

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## POSITION 1.1

## MCC CABINET

## SECTION 3

## POSITION 3.4

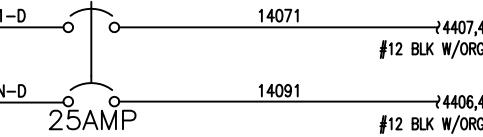
CUSTOMER SUPPLY  
#14 GRN GROUND

CUSTOMER'S  
LOW VOLTAGE DIRTY  
240VAC 1-PHASE 60HZ

1406DIST

711

1407CB



230LN-D

230L1-D

14091

25AMP

14071

14071

#12 BLK W/ORG

14091

#12 BLK W/ORG

25AMP

14071

#12 BLK W/ORG

14091

#12 BLK W/ORG

25AMP

14071

#12 BLK W/ORG

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25AMP

14071

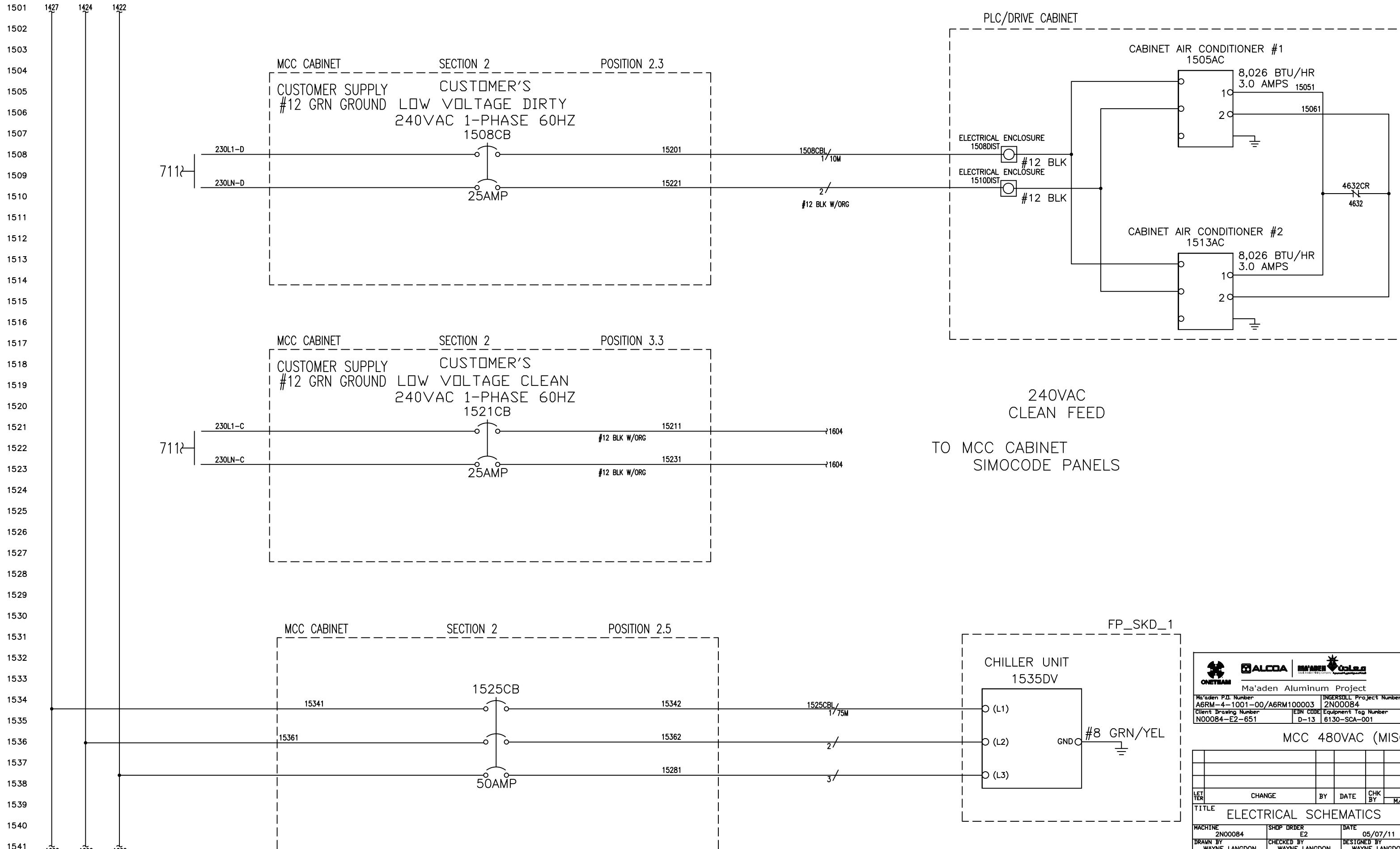
#12 BLK W/ORG

14091

#12 BLK W/ORG

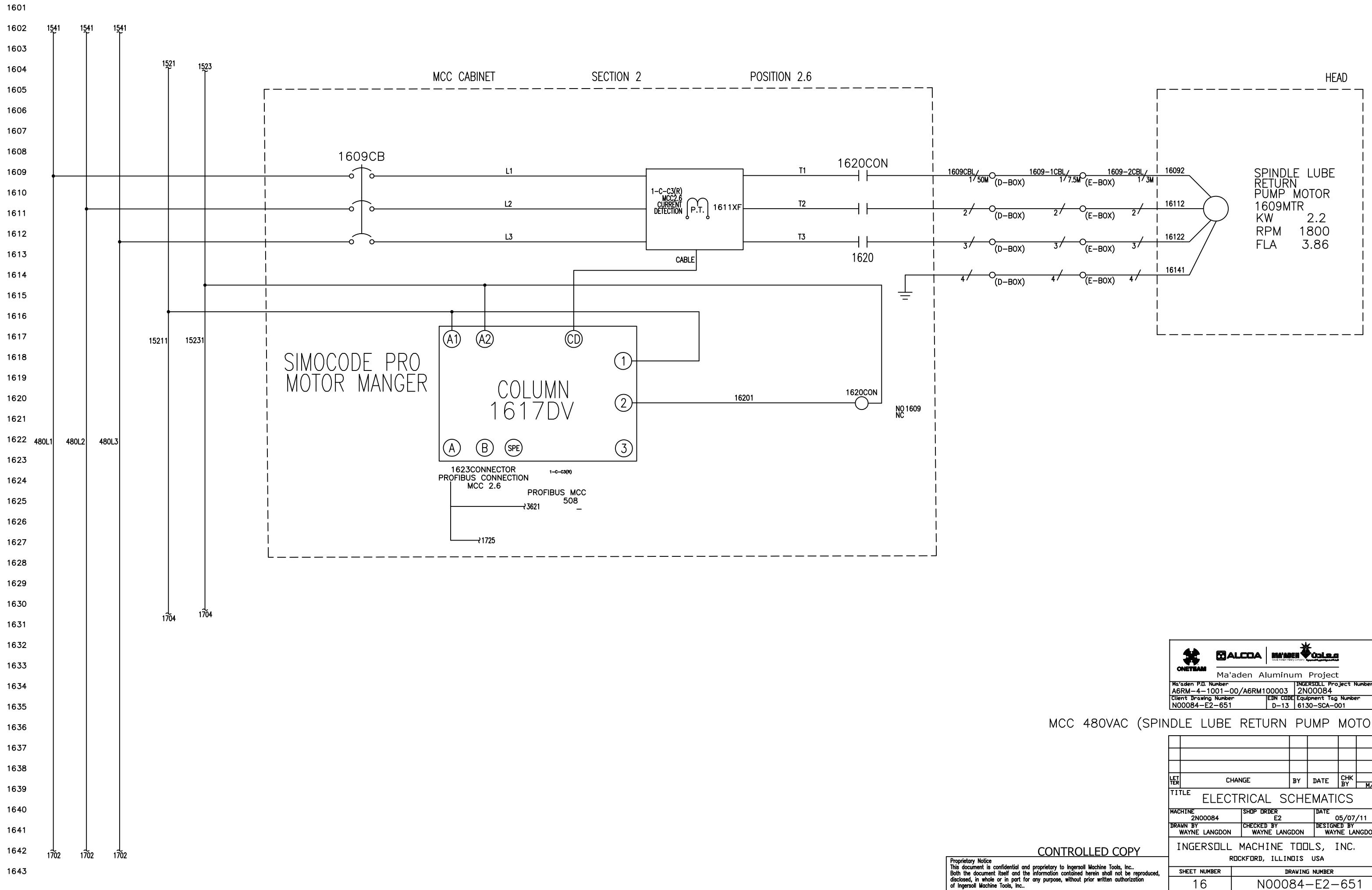
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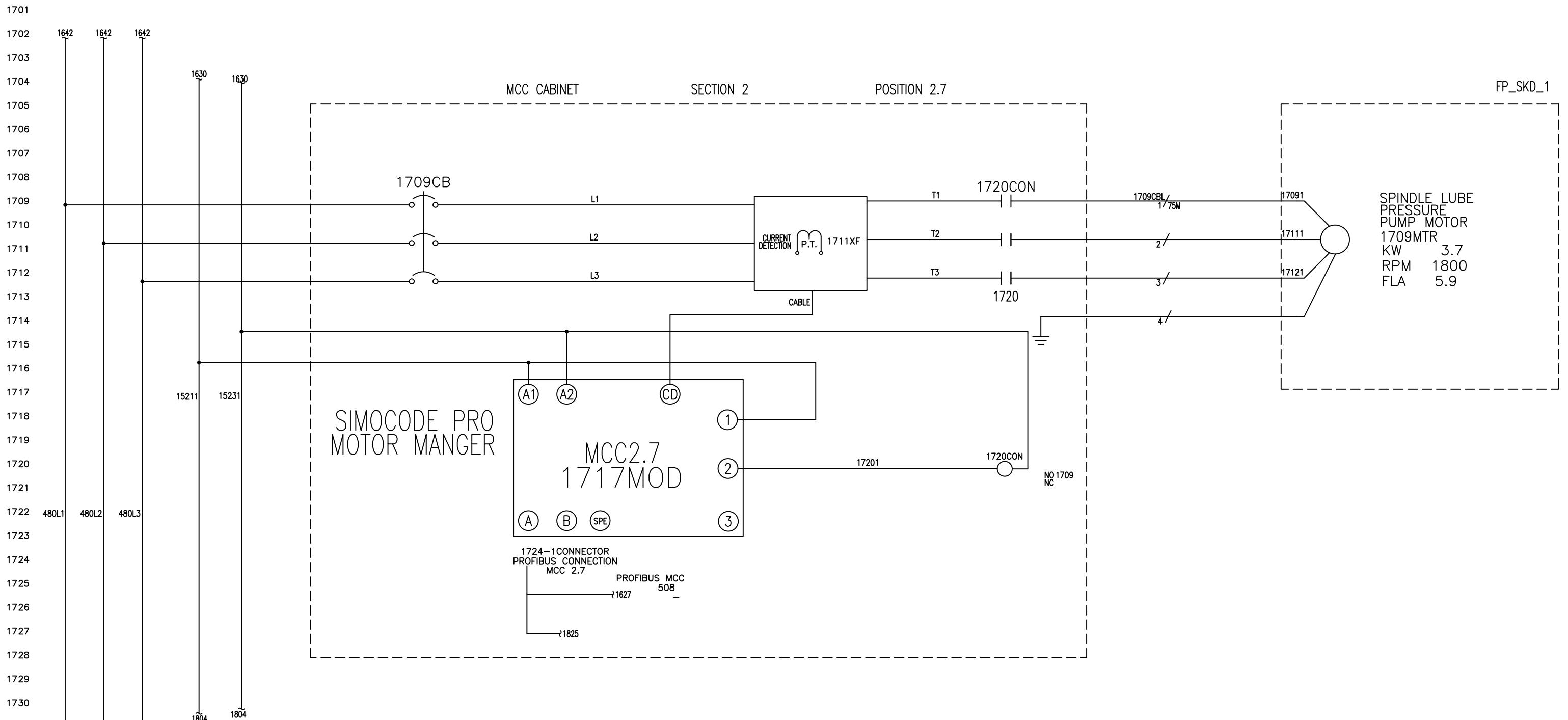
14071



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ONE TEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project	Ingersoll Project Number	2N00084
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	EDN CODE	Equipment Tag Number N00084-E2-651
Client Drawing Number D-13	DATE	05/07/11
LETTER	CHANGE BY DATE	CHK BY M/F
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
15	N00084-E2-651	





MCC 480VAC (SPINDLE LUBE PRESSURE PUMP MOTOR)

**Ma'aden Aluminum Project**

Ma'aden P.O. Number: A6RM-4-1001-00/A6RM100003  
INGERSOLL Project Number: 2N00084

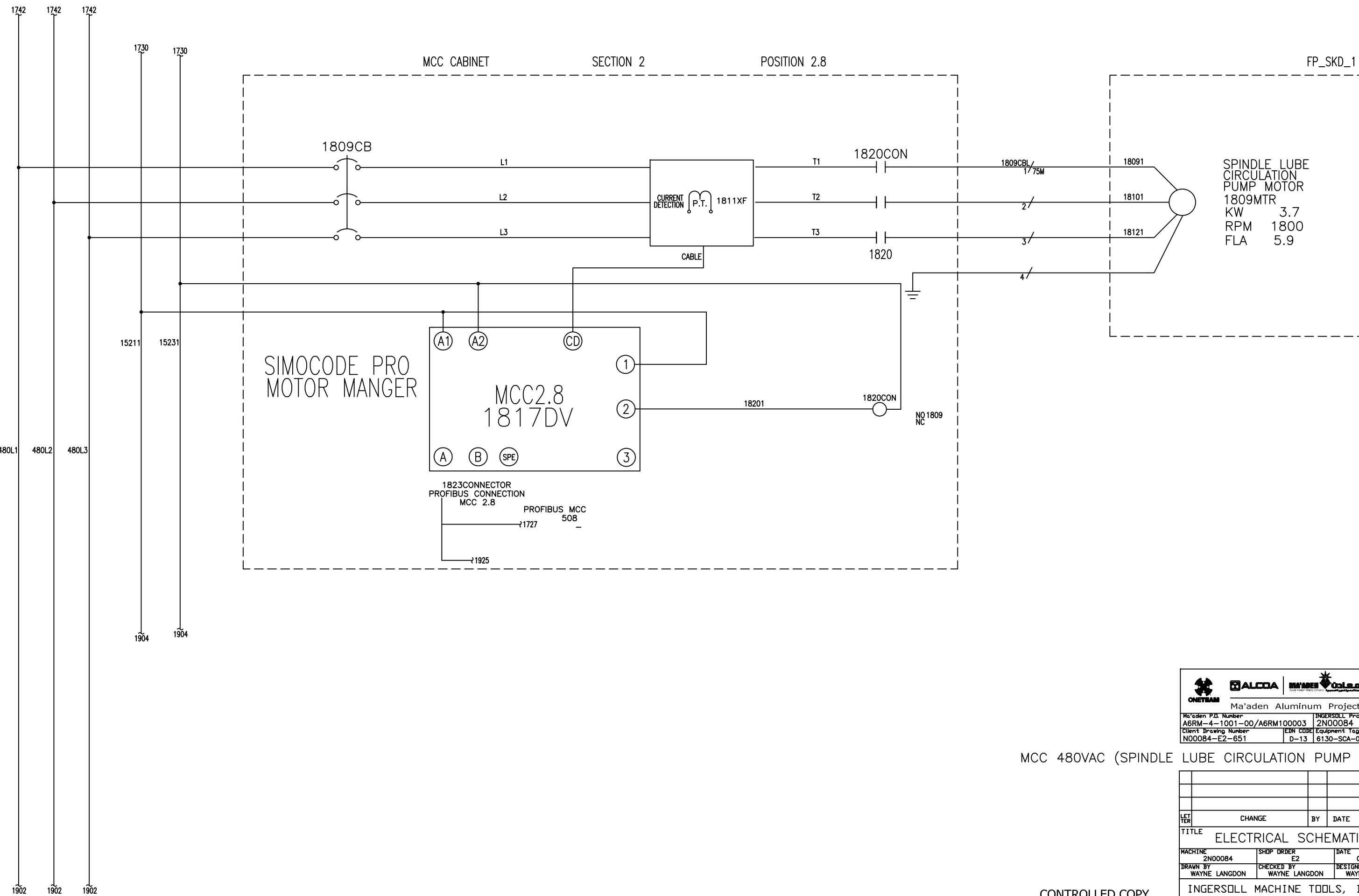
Client Drawing Number: 000024-52\_651  
Equipment Tag Number: D-13-6430-SCA-001

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SHEET NUMBER	DRAWING NUMBER
17	N00084-E2-651

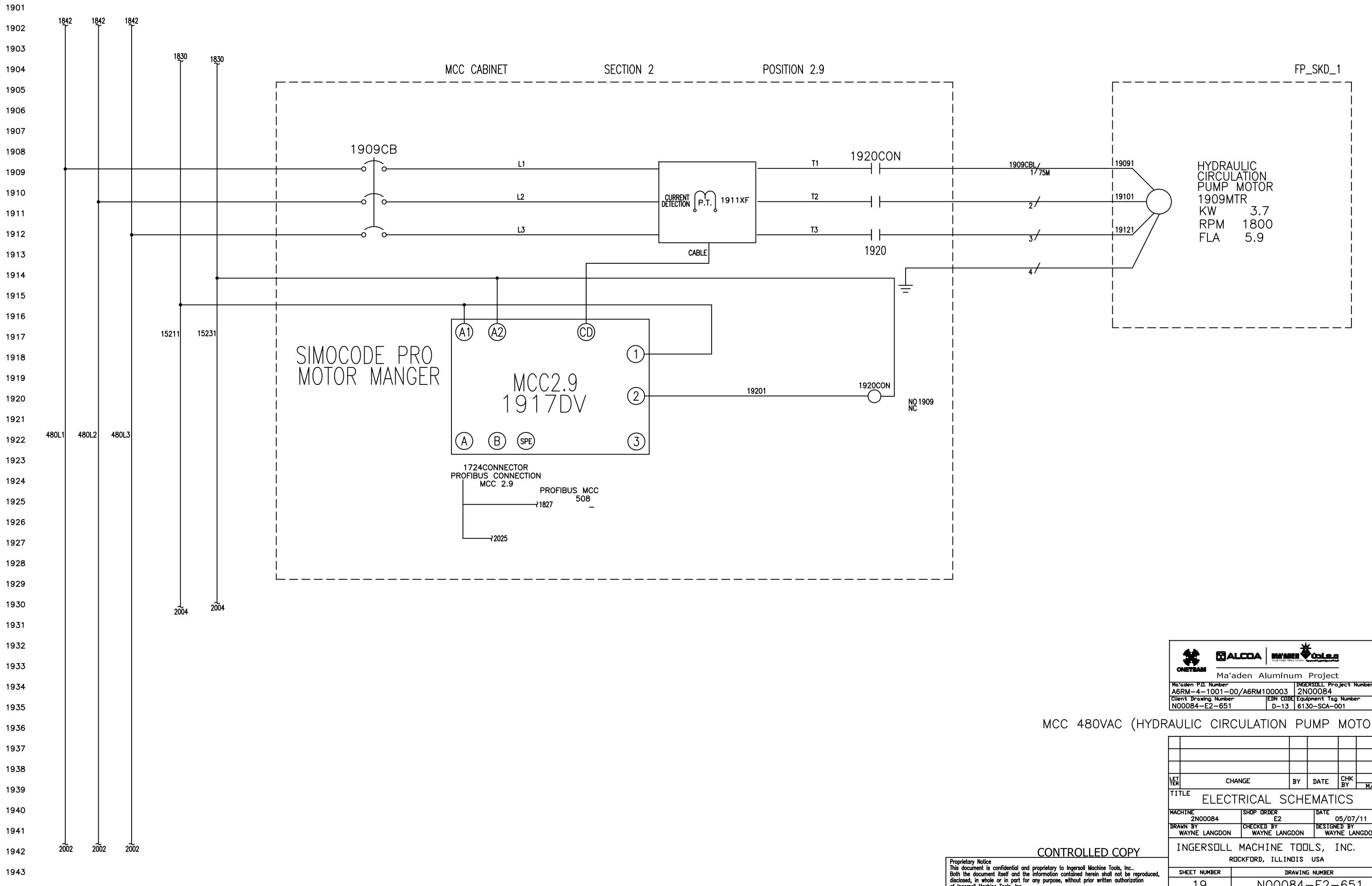


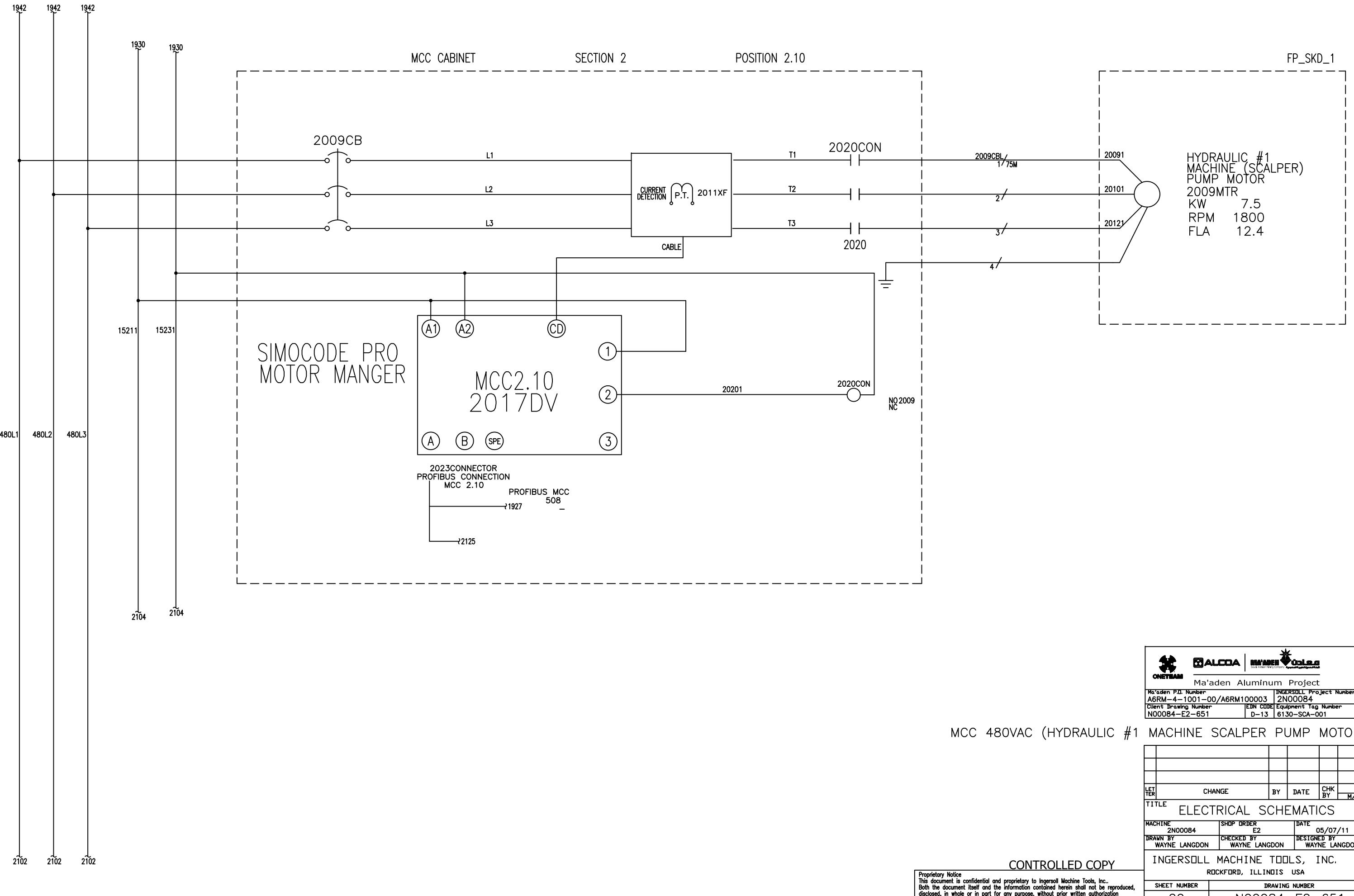
MCC 480VAC (SPINDLE LUBE CIRCULATION PUMP MOTOR)

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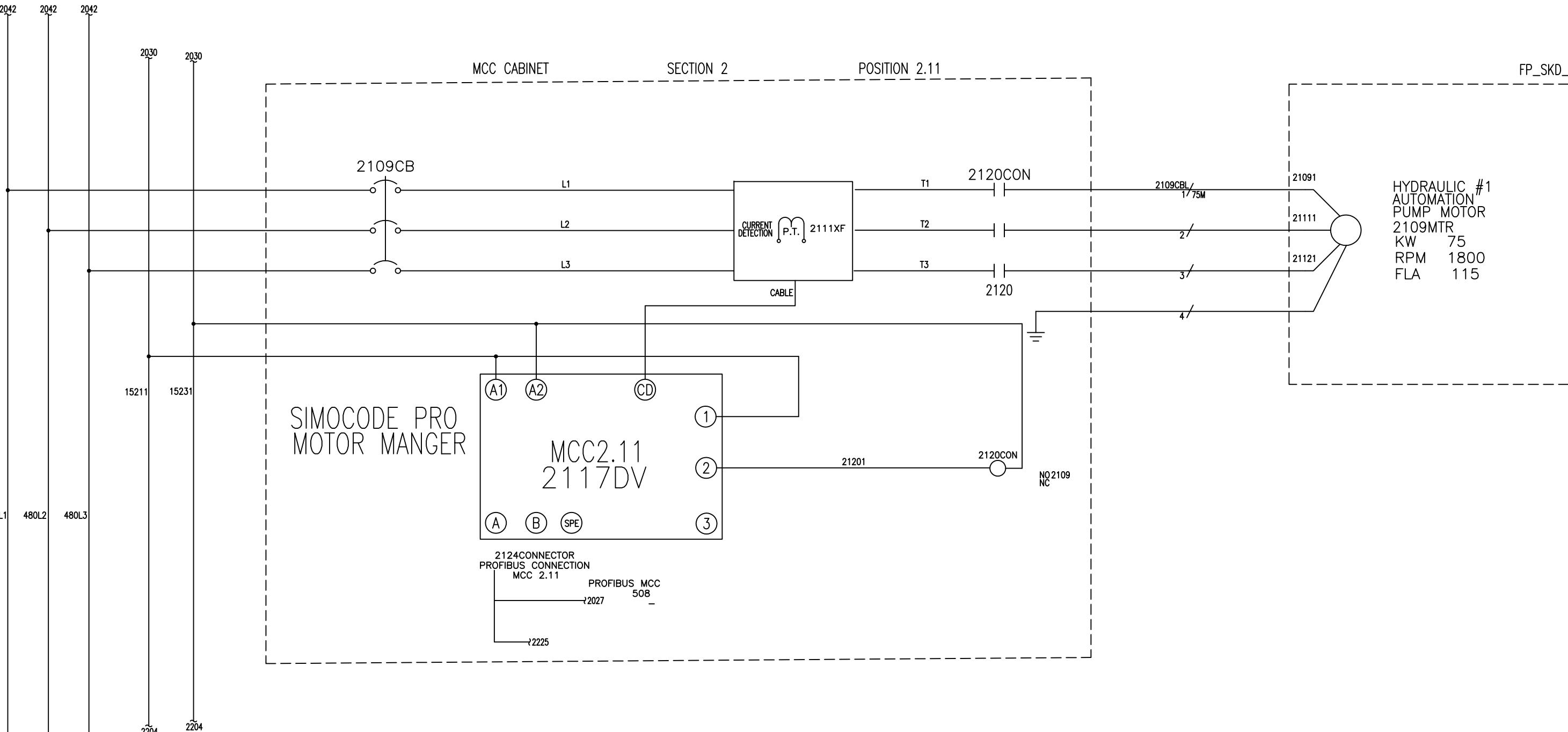
RECORDED, TELETYPE - USA





<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
<b>MCC 480VAC (HYDRAULIC #1 MACHINE SCALPER PUMP MOTOR)</b>		
LETTER	CHANGE	BY DATE
TITLE	ELECTRICAL SCHEMATICS	CHK BY M/F
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
20	N00084-E2-651	

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<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
<b>MCC 480VAC (HYDRAULIC #1 AUTOMATION PUMP MOTOR)</b>		
LET	CHANGE	BY DATE
TER		CHK BY
<b>TITLE</b> ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
<b>INGERSOLL MACHINE TOOLS, INC.</b> ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
21	N00084-E2-651	

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2N00084

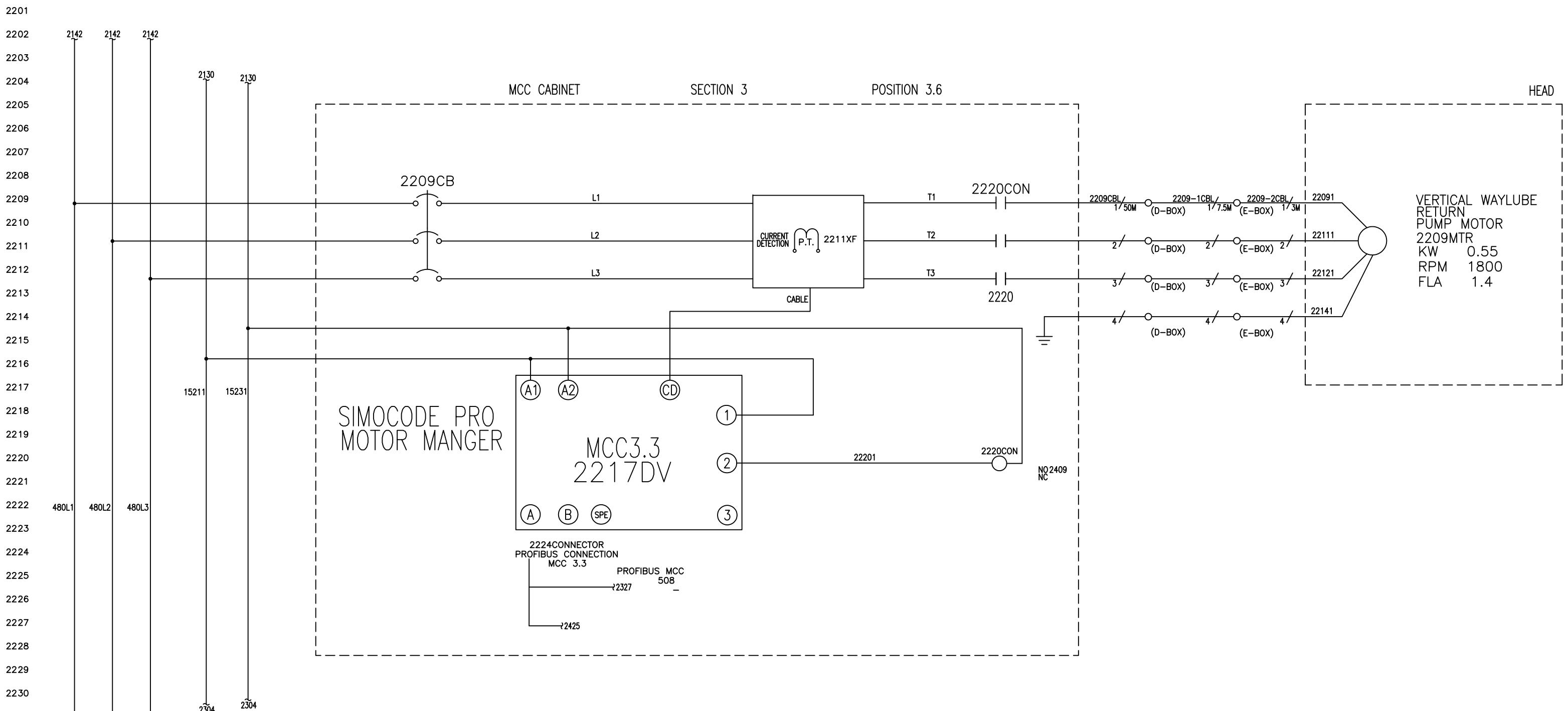
E2

05/07/11

WAYNE LANGDON

WAYNE LANGDON

WAYNE LANGDON



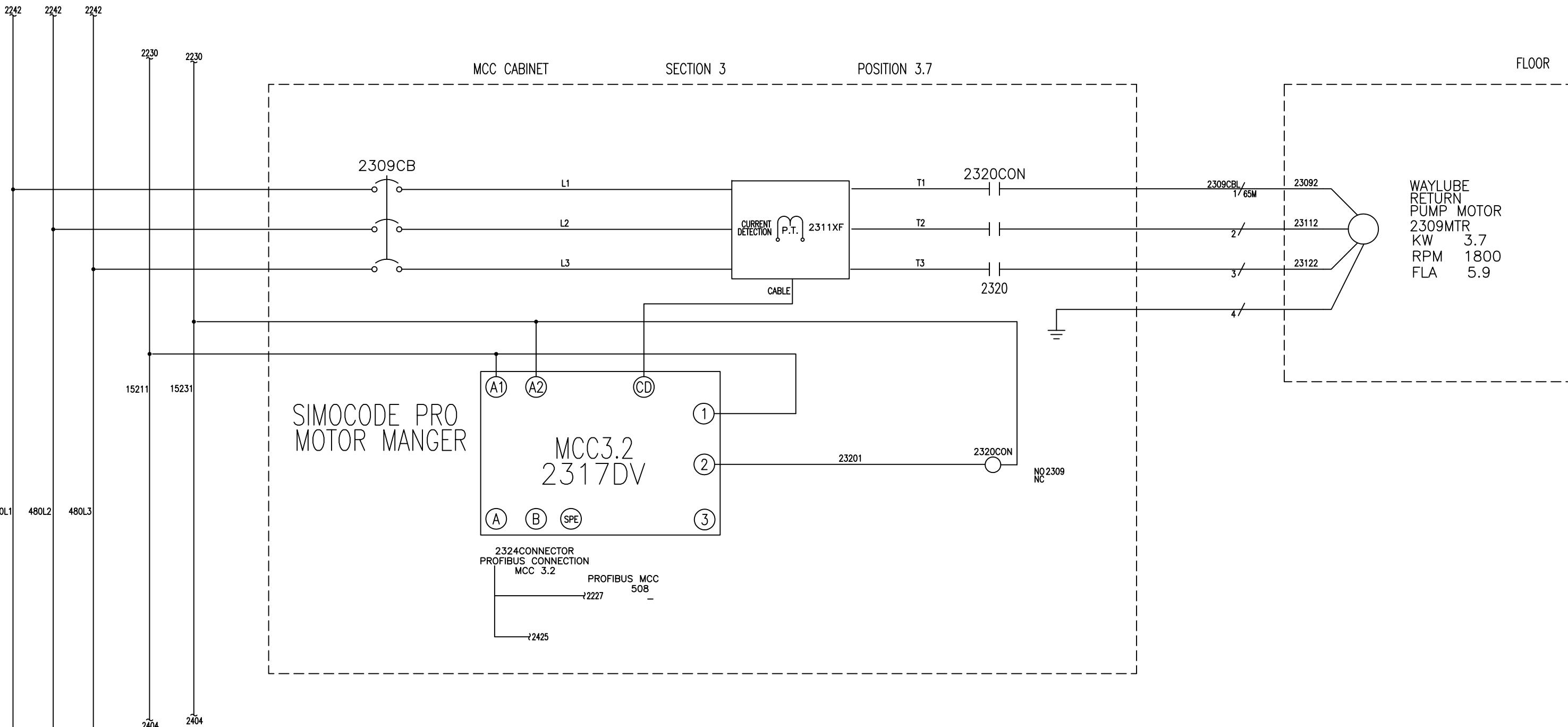
MCC 480VAC (VERTICAL WAYLUBE RETURN PUMP MOTOR)

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NUMBER	DRAWING NUMBER
22	N00084-E2-651



MCC 480VAC (WAYLUBE RETURN PUMP MOTOR)

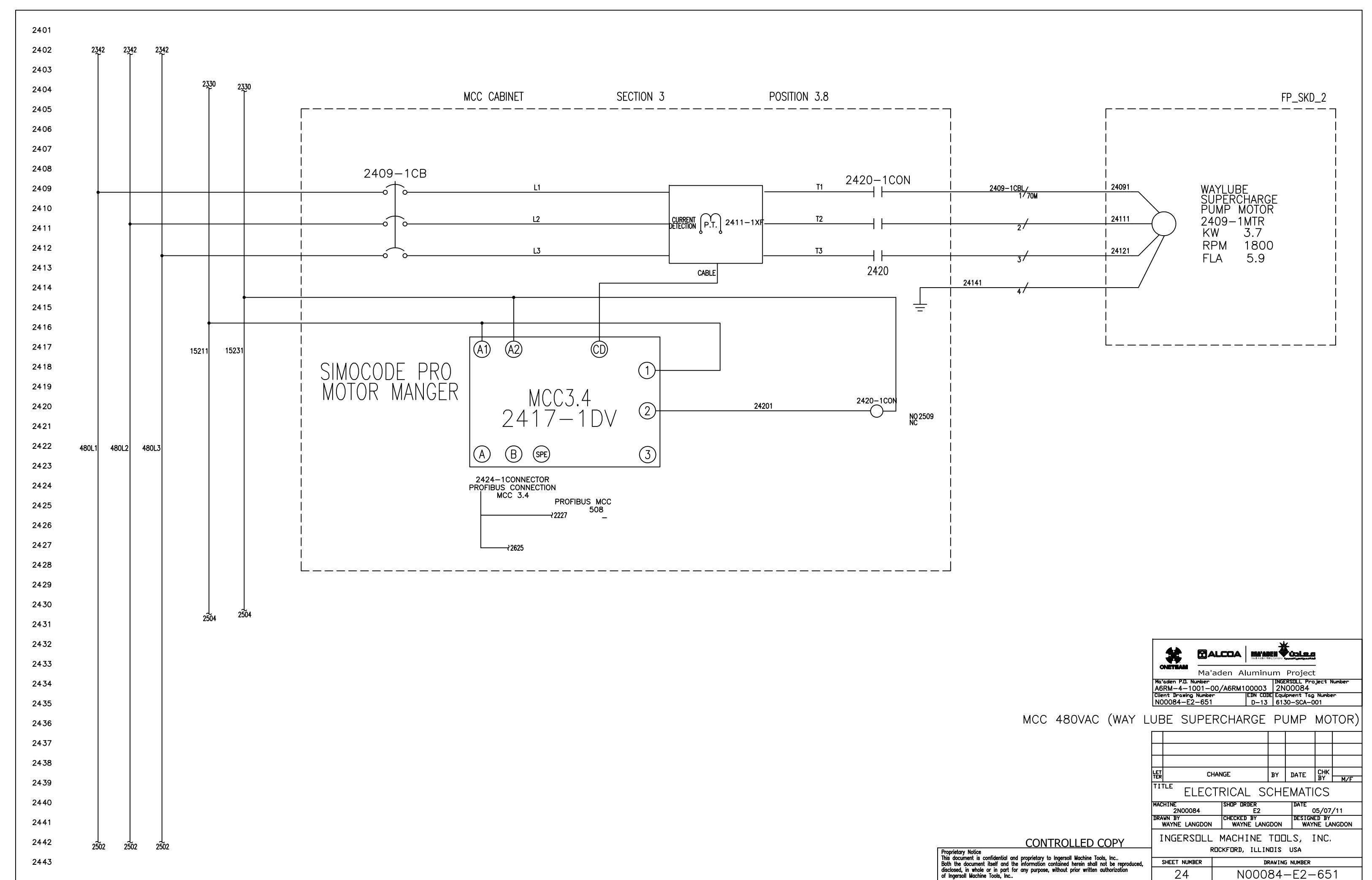
**Ma'aden Aluminum Project**

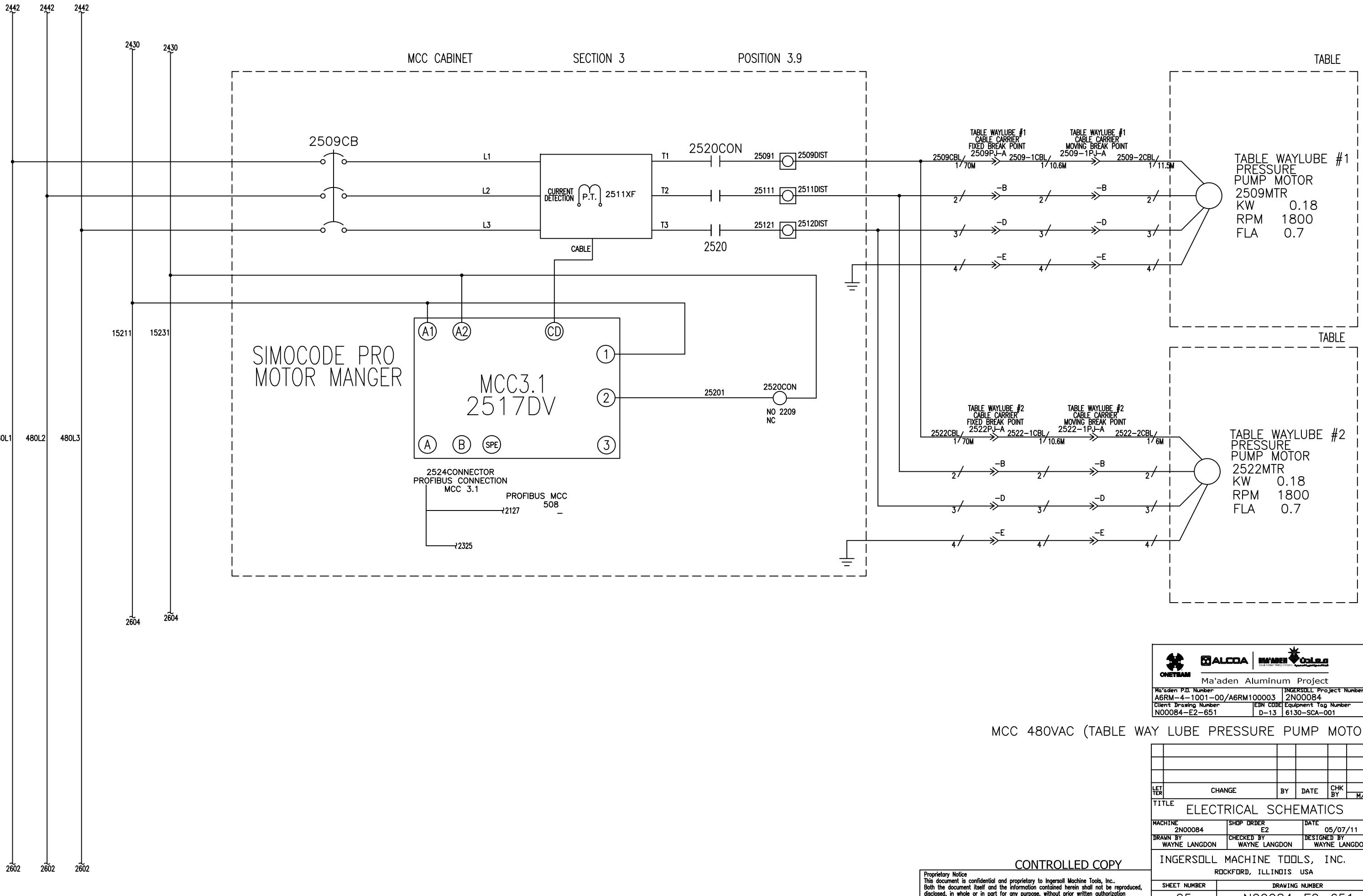
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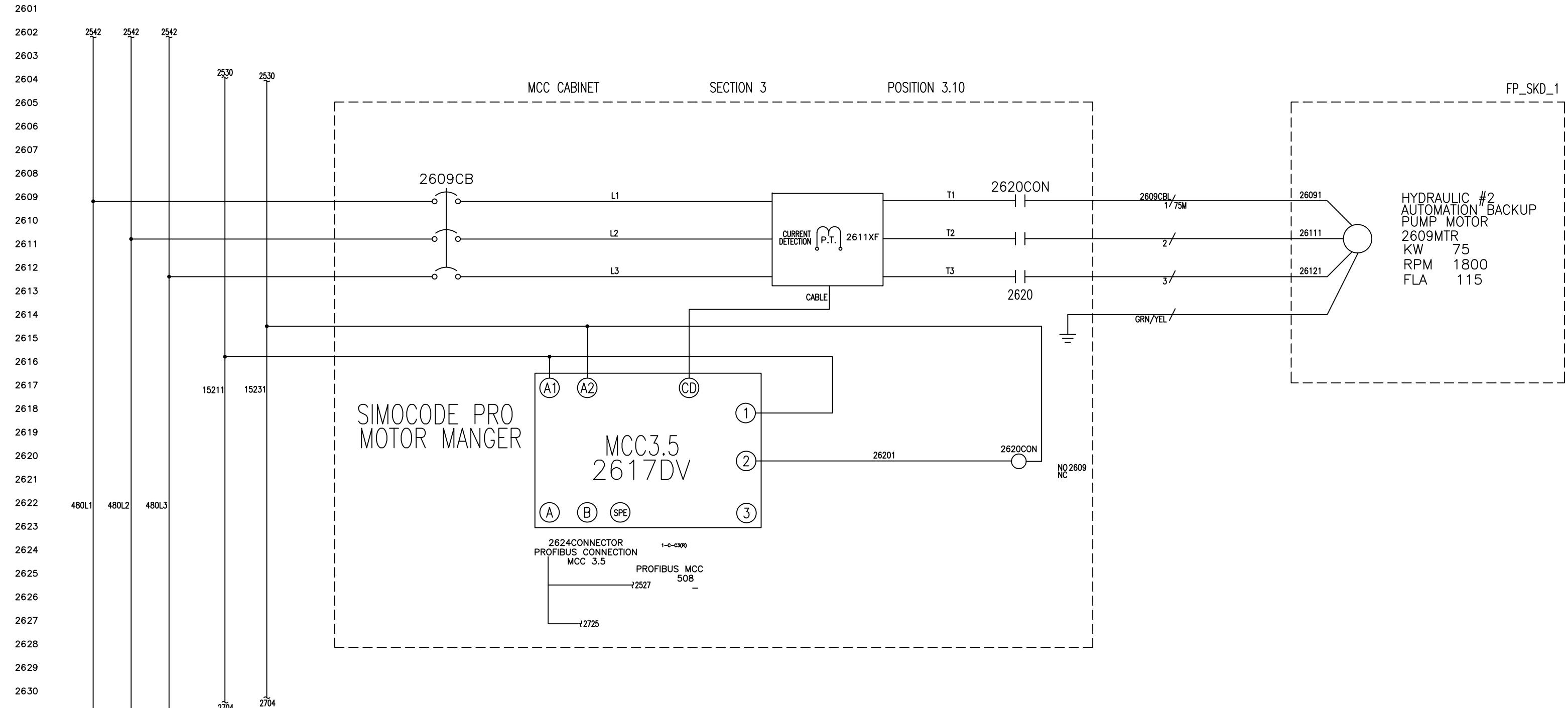
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NUMBER	DRAWING NUMBER
3	N00084-E2-651







ONTEAM		ALCOA	Ma'aden	
Aluminum Project		Ma'aden	Aluminum Company of America	
Ma'aden P.O. Number	A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number	2N00084	
Client Drawing Number	N00084-E2-651	EDN CODE	Equipment Tag Number	D-13 6130-SCA-001

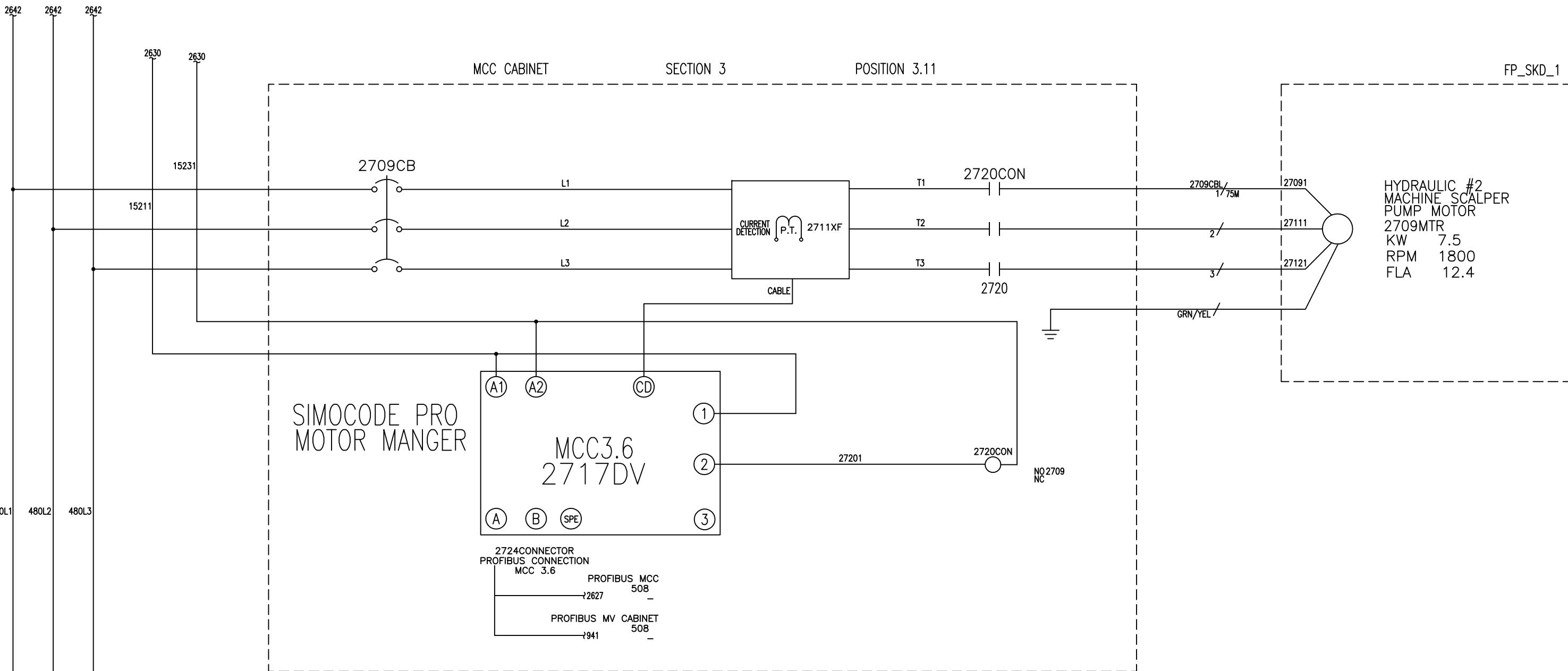
MCC 480VAC (HYDRAULIC #2 AUTOMATION BACKUP PUMP MOTOR)

LET	CHANGE	BY	DATE	CHK
M/F				
TITLE	ELECTRICAL SCHEMATICS			
MACHINE	SHOP ORDER	DATE		
2N00084	E2	05/07/11		
DRAWN BY	CHECKED BY	DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
26	N00084-E2-651			

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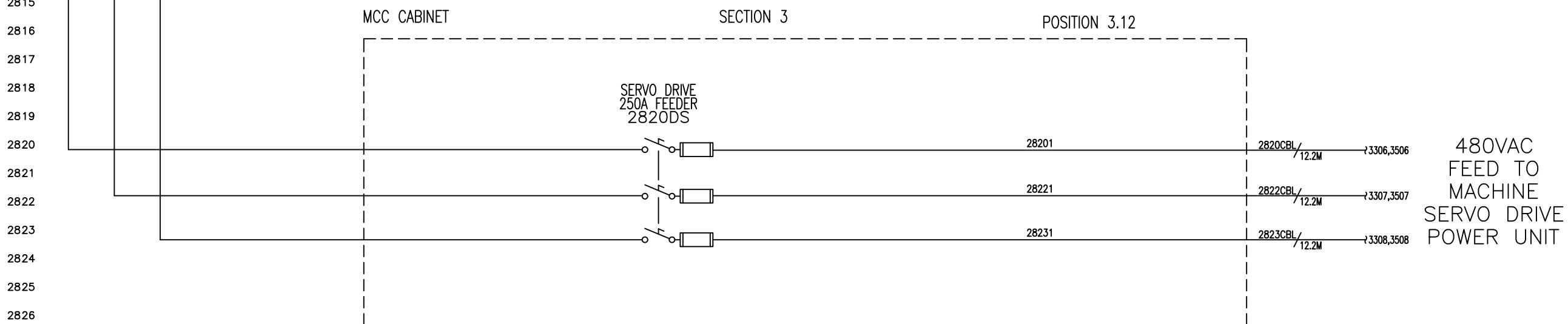
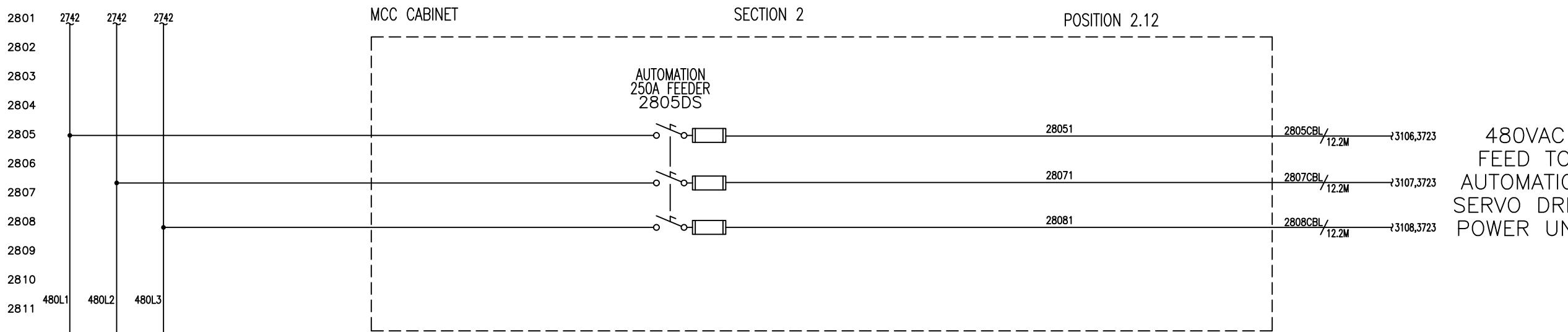
26 N00084-E2-651



2736 MCC 480VAC (HYDRAULIC #2 MACHINE SCALPER PUMP MOTOR)  
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<b>ONETEAM</b>	<b>ALCOA</b>	<b>Ma'aden</b>
Ma'aden Aluminum Project		
Ma'aden P.D. Number	INGERSOLL Project Number	
A6RM-4-1001-00/A6RM100003	2N00084	
Client Drawing Number	EDN CODE	Equipment Tag Number
N00084-E2-651	D-13	6130-SCA-001
LET	CHANGE	BY DATE
TER		CHK BY
<b>TITLE</b> ELECTRICAL SCHEMATICS		
MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11
DRAWN BY	CHECKED BY	DESIGNED BY
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
27	N00084-E2-651	

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MCC 480VAC (SERVO DRIVE FEED)

LET	CHANGE	BY	DATE
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			M/F
TITLE ELECTRICAL SCHEMATICS			

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

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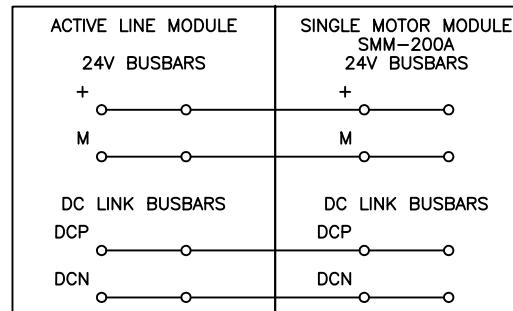
SHEET NUMBER 28	DRAWING NUMBER N00084-E2-651
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120KW (200AMP) ALM  
ACTIVE LINE MODULE #1  
3106-1MOD

SMM  
TABLE DRIVE  
3708MOD

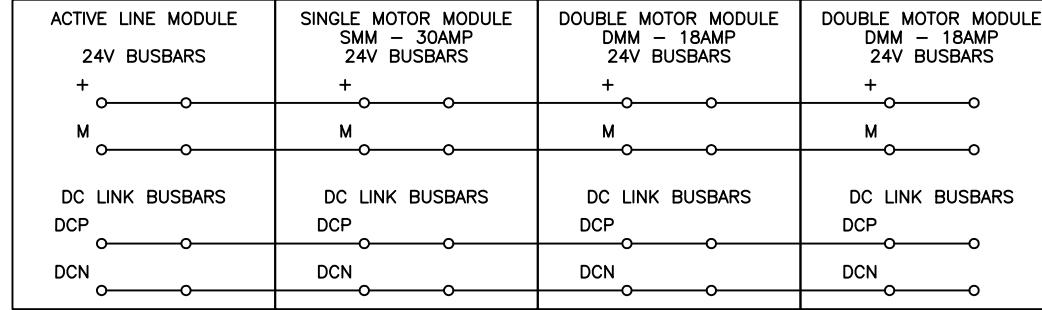


ACTIVE LINE MODULE #2  
55KW/92A ALM

SPINDLE POSITIONING DRIVE  
SMM  
3306-1MOD

INFEED & OUTFEED  
CONVEYOR ROLLER DRIVES  
DMM  
3808MOD

TURNOVER CONVEYOR  
ROLLER DRIVES  
DMM  
4008MOD

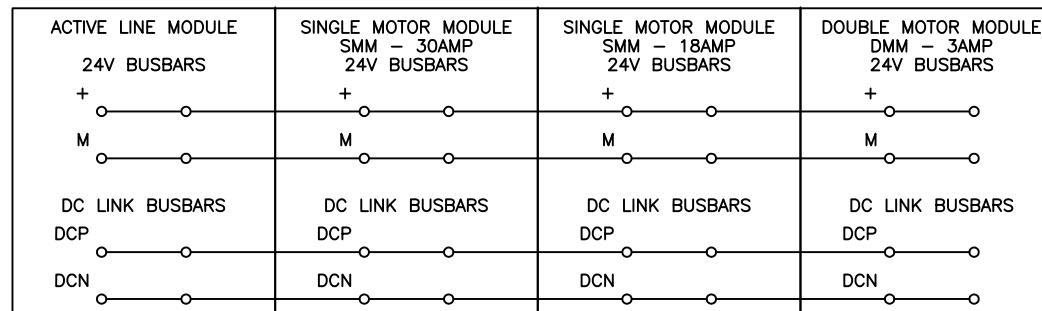


55KW/92A ALM  
ACTIVE LINE MODULE #3  
3506-1MOD

TABLE CONVEYOR  
ROLLER DRIVES  
30 AMP SMM  
4109MOD

INTERMEDIATE CONVEYOR  
ROLLER DRIVES  
18 AMP SMM  
41A09MOD

LASER GANTRY DRIVES  
DMM  
4208MOD

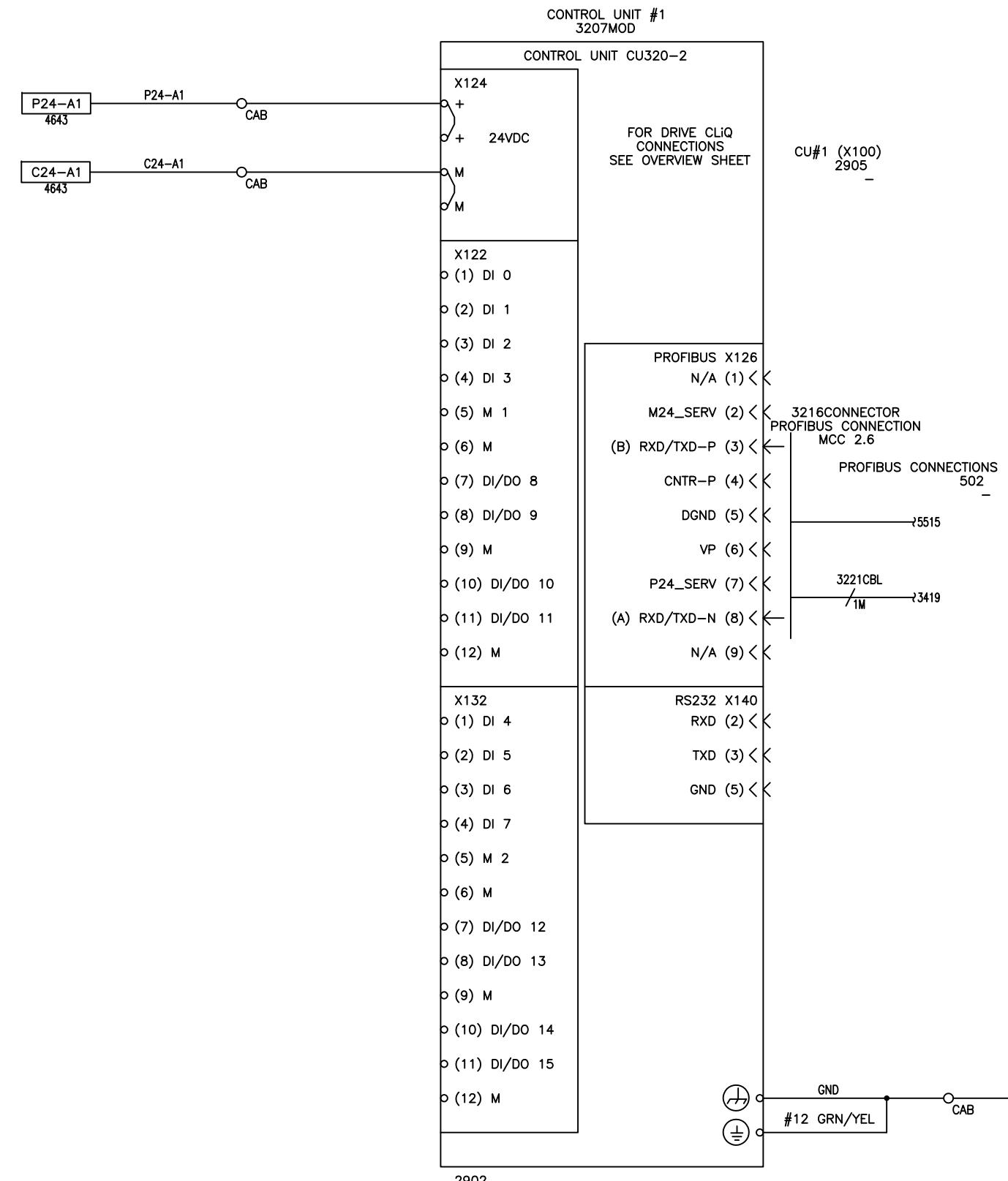


### DRIVE DC BUS CONNECTIONS

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE						
ELECTRICAL SCHEMATICS						
MACHINE	SHOP ORDER	E2		05/07/11		
DRAWN BY	CHECKED BY	WAYNE LANGDON	DESIGNED BY	WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
30	N00084-E2-651					



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ALCOA Ma'aden Aluminum Project

Ma'aden P.D. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM100003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

CONTROL UNIT #1

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084		SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON		DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
32	N00084-E2-651				

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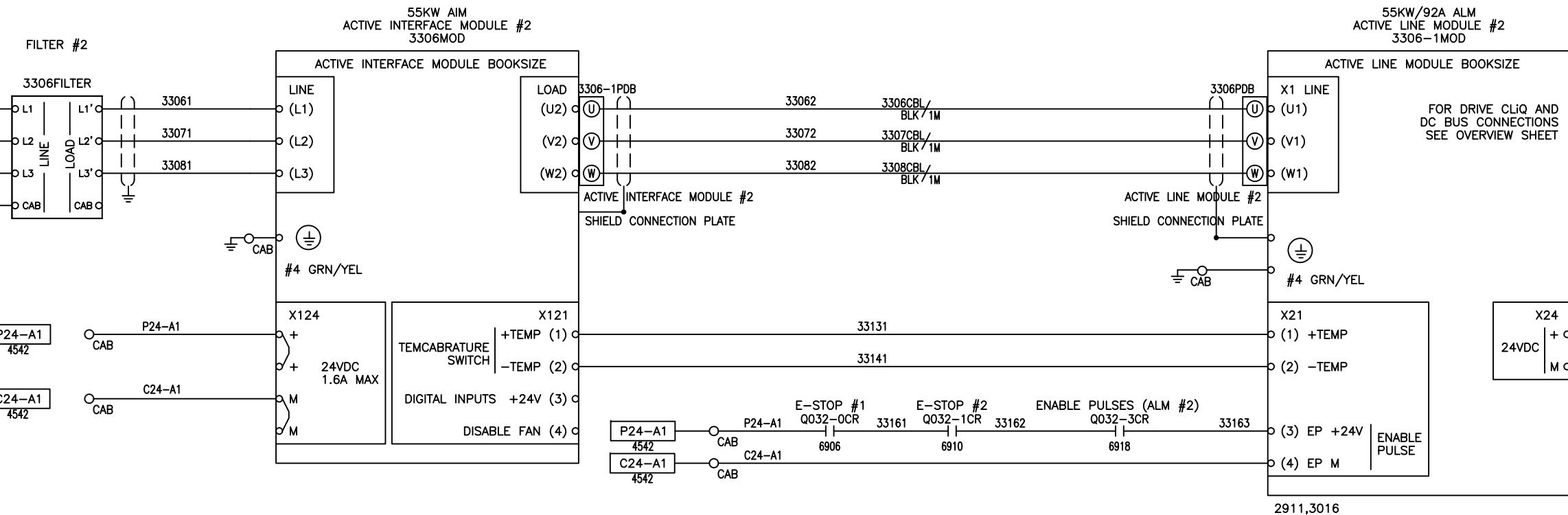
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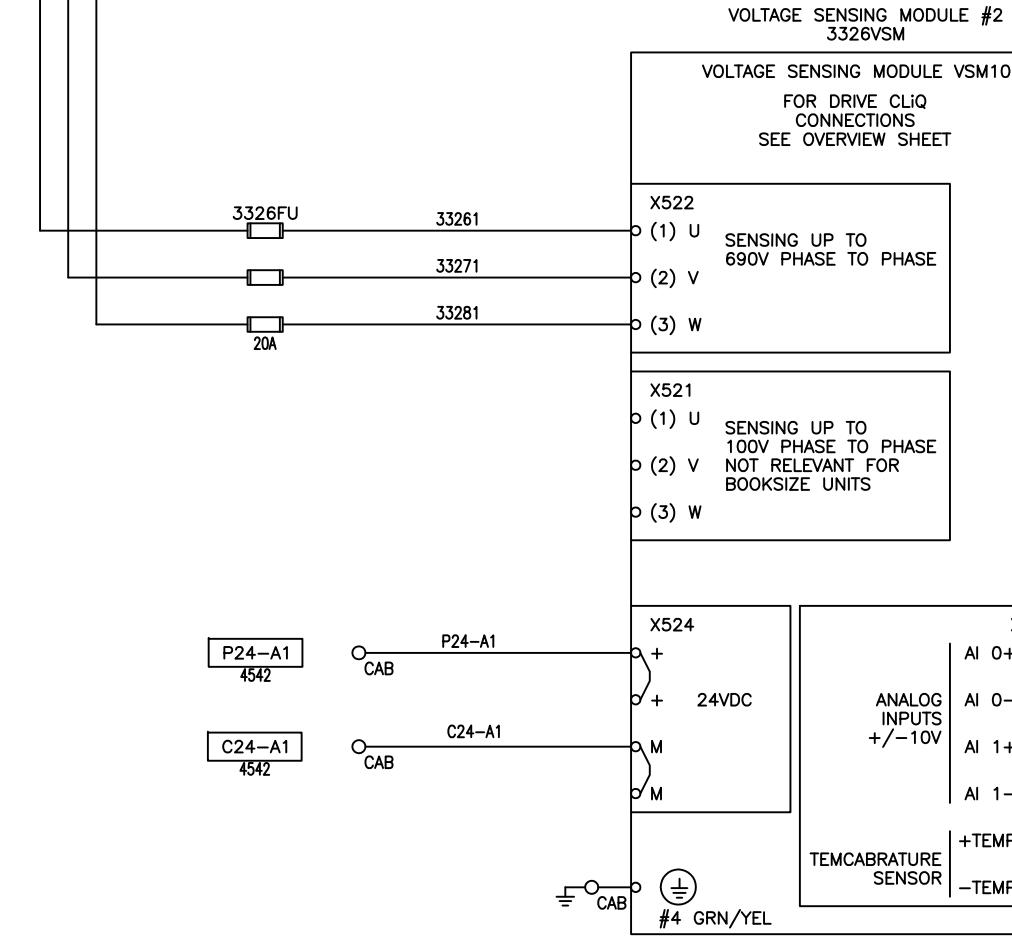
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#12AWG BLK



Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

CONTROLLED COPY

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE					
	ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY	CHECKED BY	DESIGNED BY			
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
33	N00084-E2-651				

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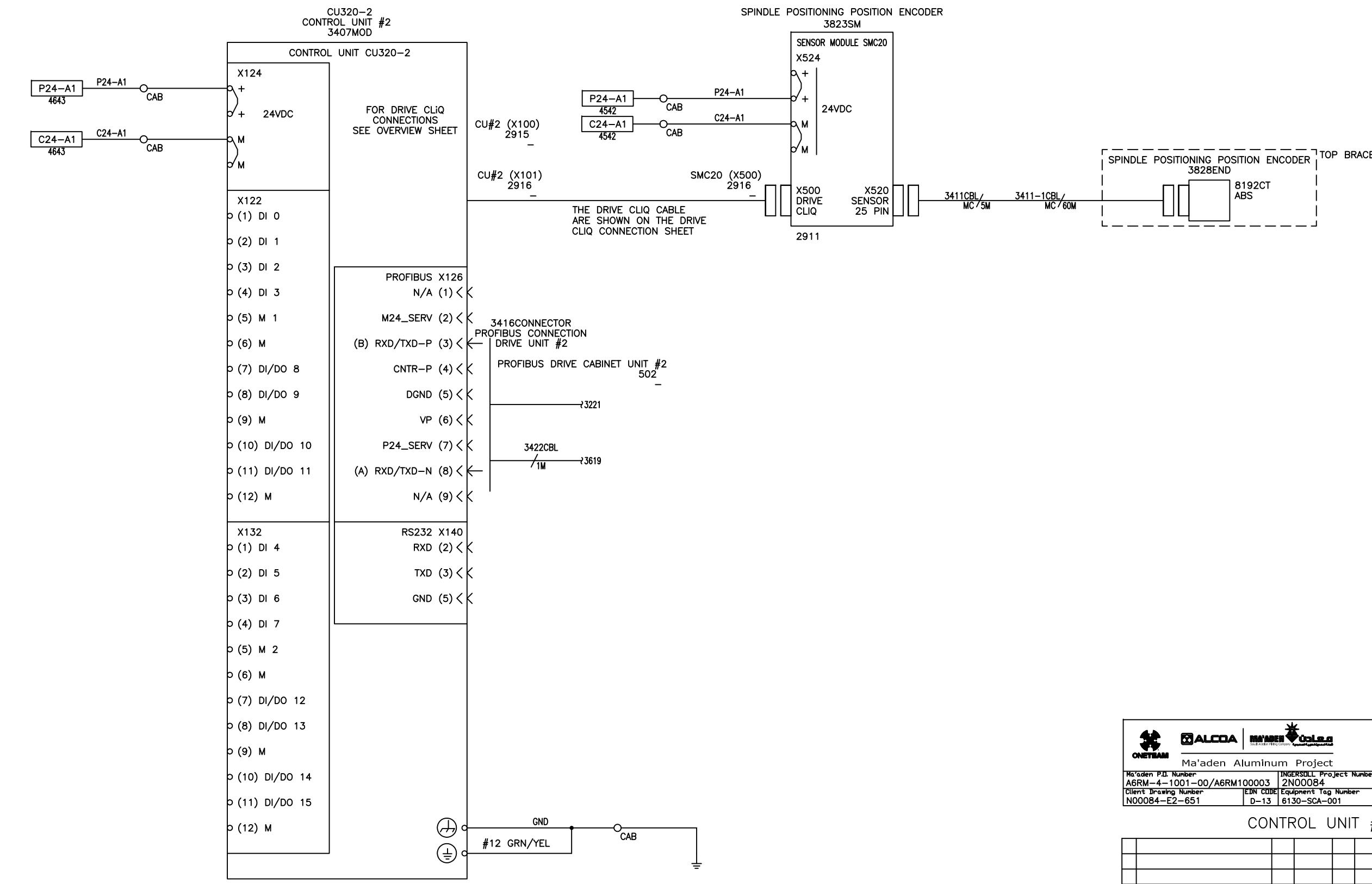
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## CONTROL UNIT #2

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
34	N00084-E2-651

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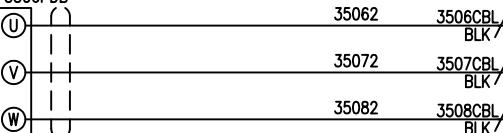
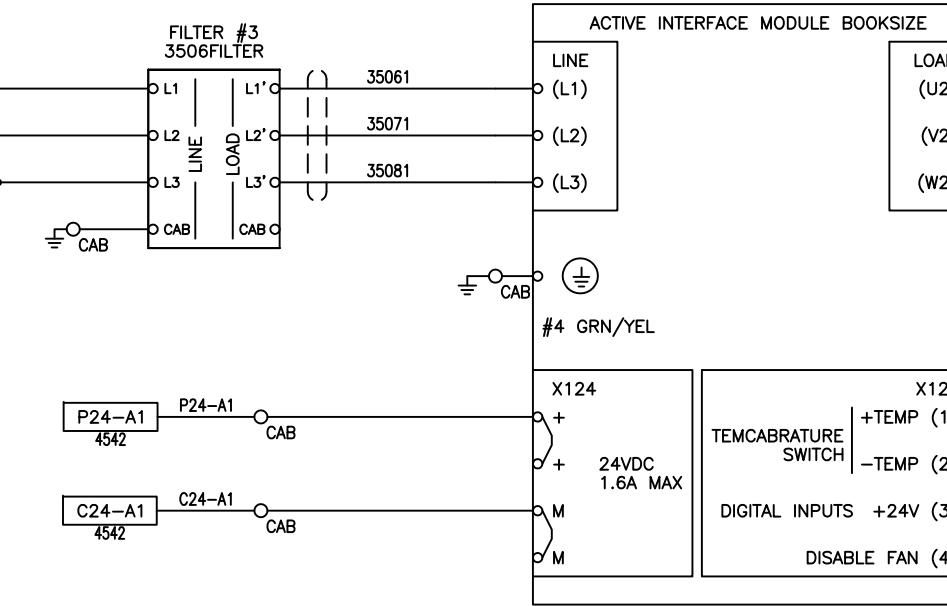
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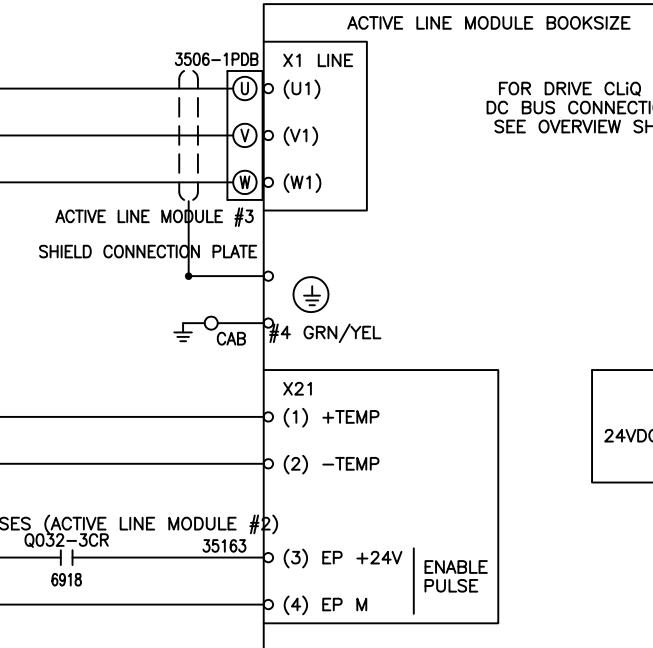
3543

55KW AIM  
ACTIVE INTERFACE MODULE #3  
3506MOD



ACTIVE INTERFACE MODULE #3  
SHIELD CONNECTION PLATE

55KW/92A ALM  
ACTIVE LINE MODULE #3  
3506-1MOD



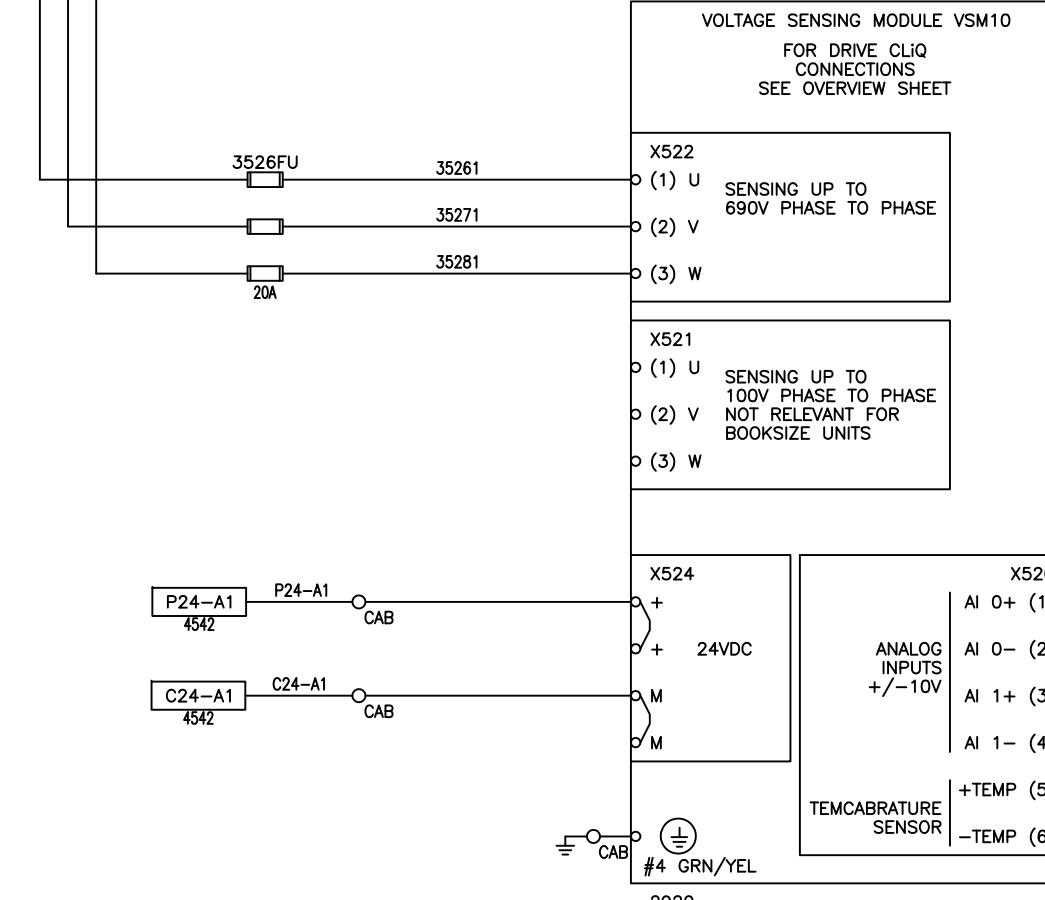
ALM#3 (X200) 2924  
ALM#3 (X201) 2925  
ALM#3 (X202) 2923  
DRIVE DC BUS CONNECTIONS 3043

2920,3027

#12AWG BLK

VOLTAGE SENSING MODULE #3  
3526VSM

VSM#3 (X500) 2924



<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Project Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	

Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
--	------------------	--------------------------------------

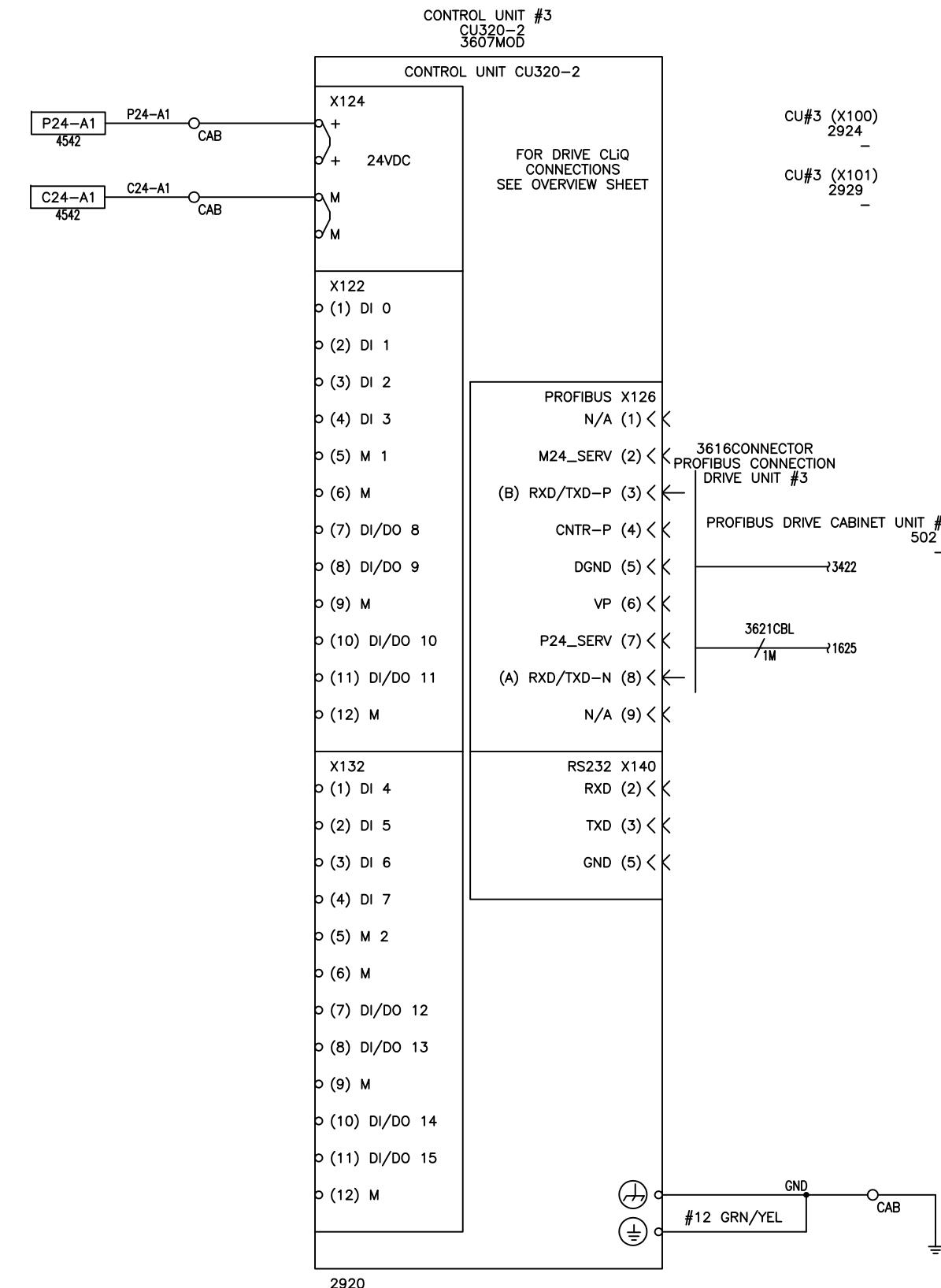
POWER SUPPLY #3

LETTER	CHANGE	BY	DATE	CHK BY
<b>TITLE</b>				
<b>ELECTRICAL SCHEMATICS</b>				
MACHINE	SHOP ORDER	DATE		
2N00084	E2	05/07/11		
DRAWN BY	CHECKED BY	DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
35	N00084-E2-651			

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CONTROLLED COPY  
SHEET NUMBER  
DRAWING NUMBER  
35 N00084-E2-651

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ALCOA Ma'aden Aluminum Project

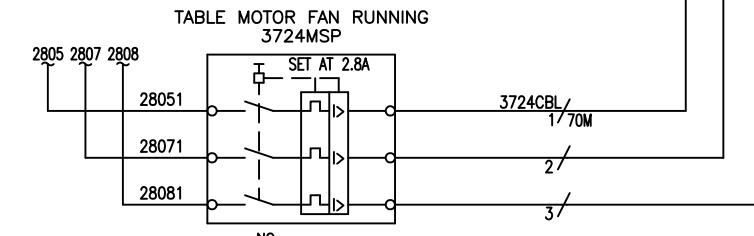
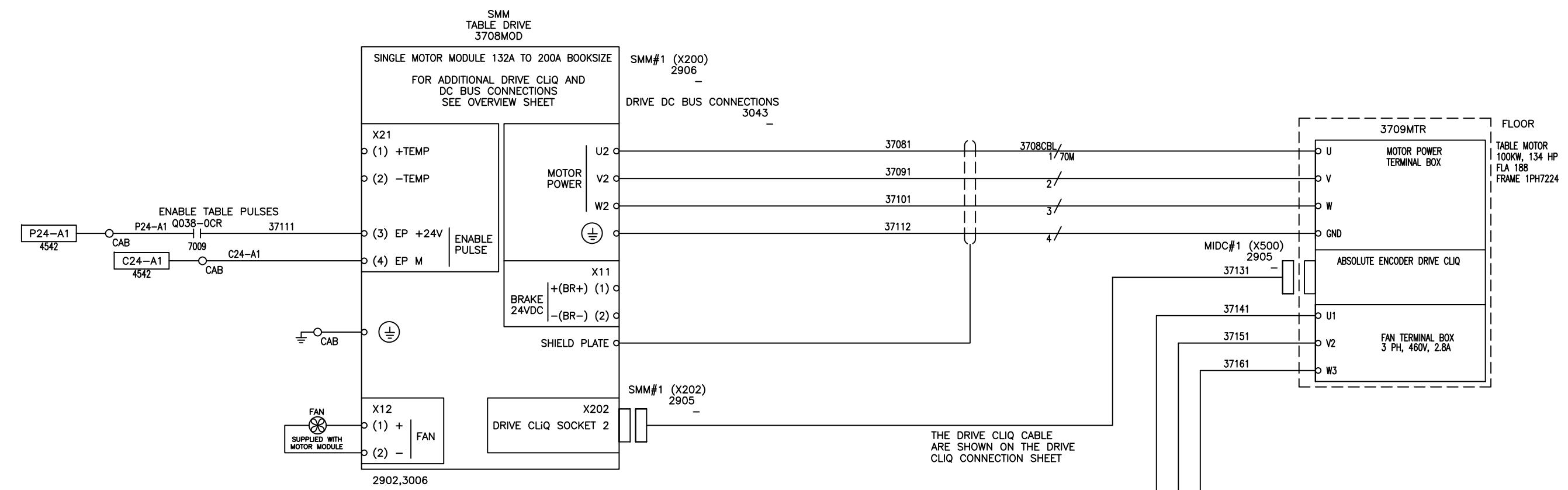
Ma'aden P.O. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM100003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

CONTROL UNIT #3

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY	CHECKED BY	DESIGNED BY			
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
36	N00084-E2-651				

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ONTEAM	INGERSOLL Project Number A6RM-4-1001-00/A6RM100003	ALCOA Ma'aden Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

### TABLE DRIVE

LET	TER	CHANGE	BY	DATE	CHK	M/F
<b>TITLE</b>						
ELECTRICAL SCHEMATICS						
MACHINE	SHOP ORDER	DATE				
2N00084	E2	05/07/11				
DRAWN BY	CHECKED BY	DESIGNED BY				
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
37	N00084-E2-651					

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SMM#2 (X200)  
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DRIVE DC BUS CONNECTIONS  
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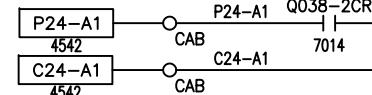
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ENABLE SPINDLE POSITIONING PULSES

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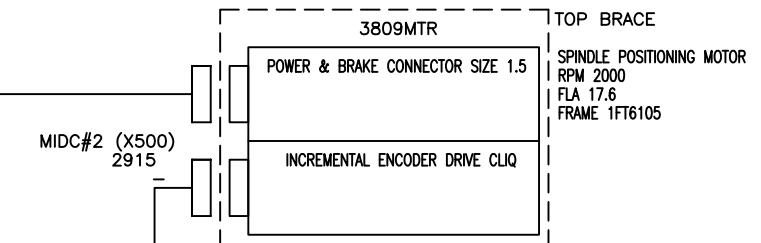
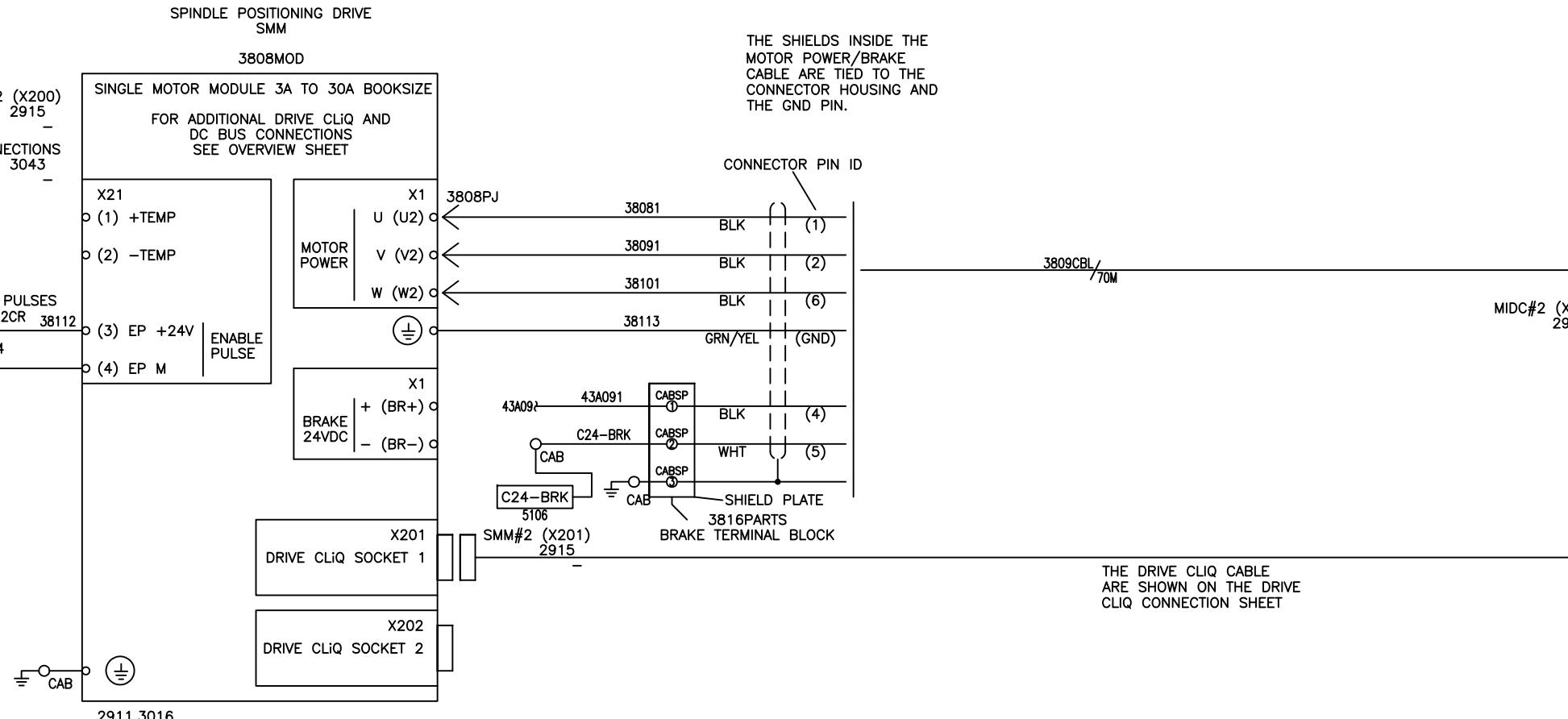
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ONETEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project	INGERSOLL Project Number	
A6RM-4-1001-00/A6RM10003	2N00084	

Client Drawing Number N00084-E2-651 EDN CODE D-13 Equipment Tag Number 6130-SCA-001

### SPINDLE POSITIONING DRIVE

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	E2	05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
<b>INGERSOLL MACHINE TOOLS, INC.</b> ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
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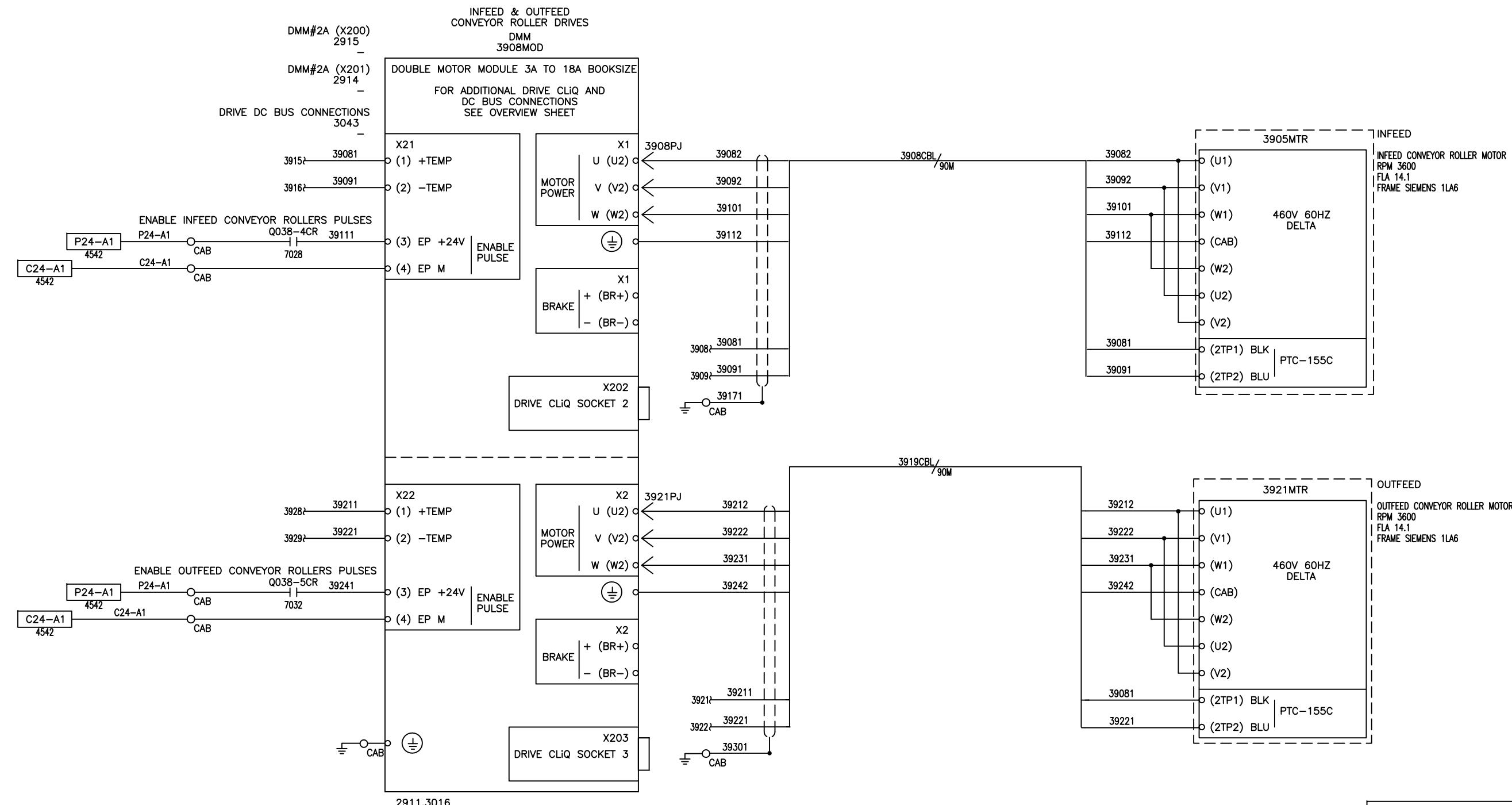
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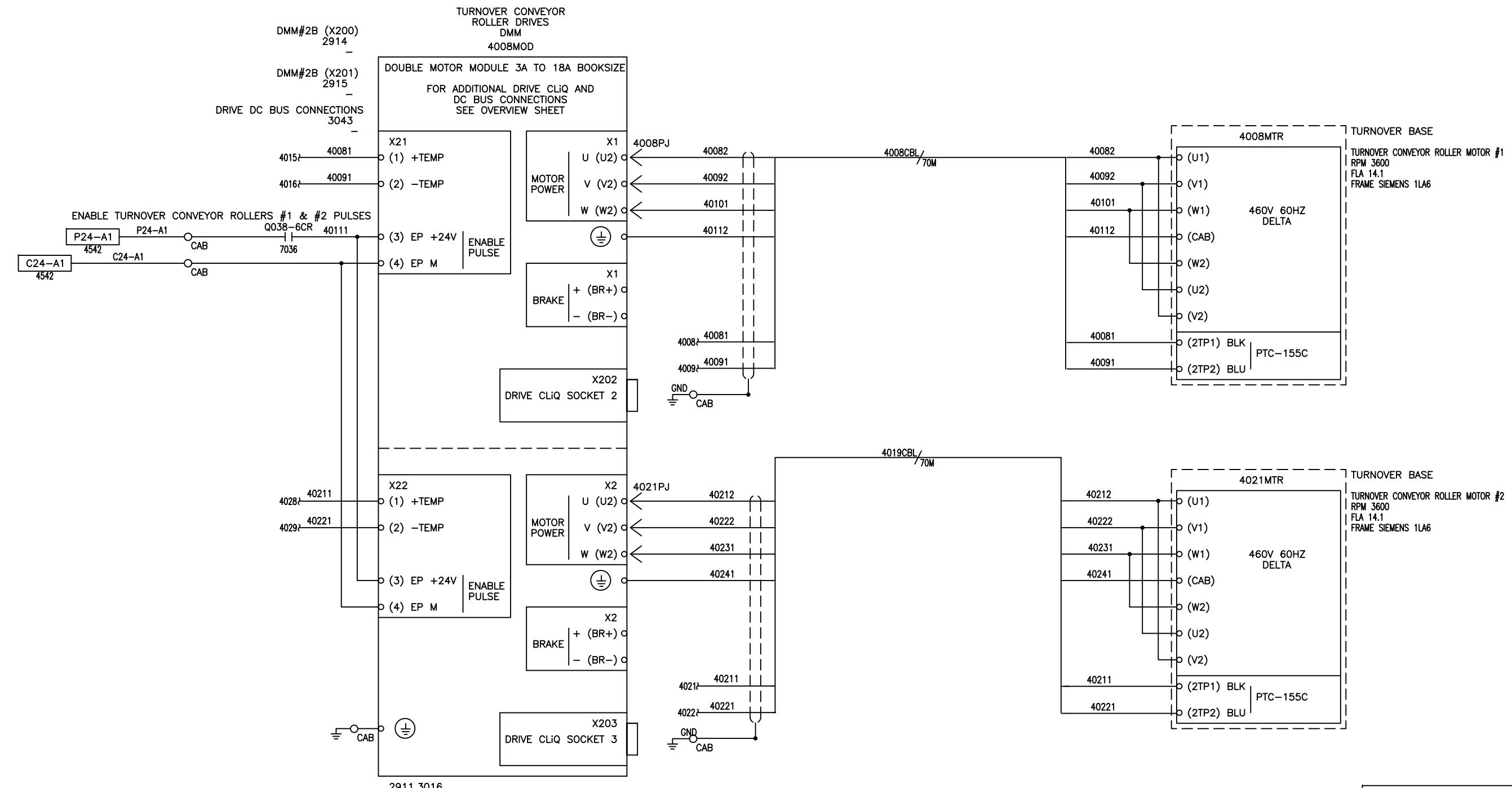
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE	Equipment Tag Number D-13 6130-SCA-001

### INFEED & OUTFEED CONVEYOR ROLLER DRIVES

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	E2	DATE	05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
39	N00084-E2-651				

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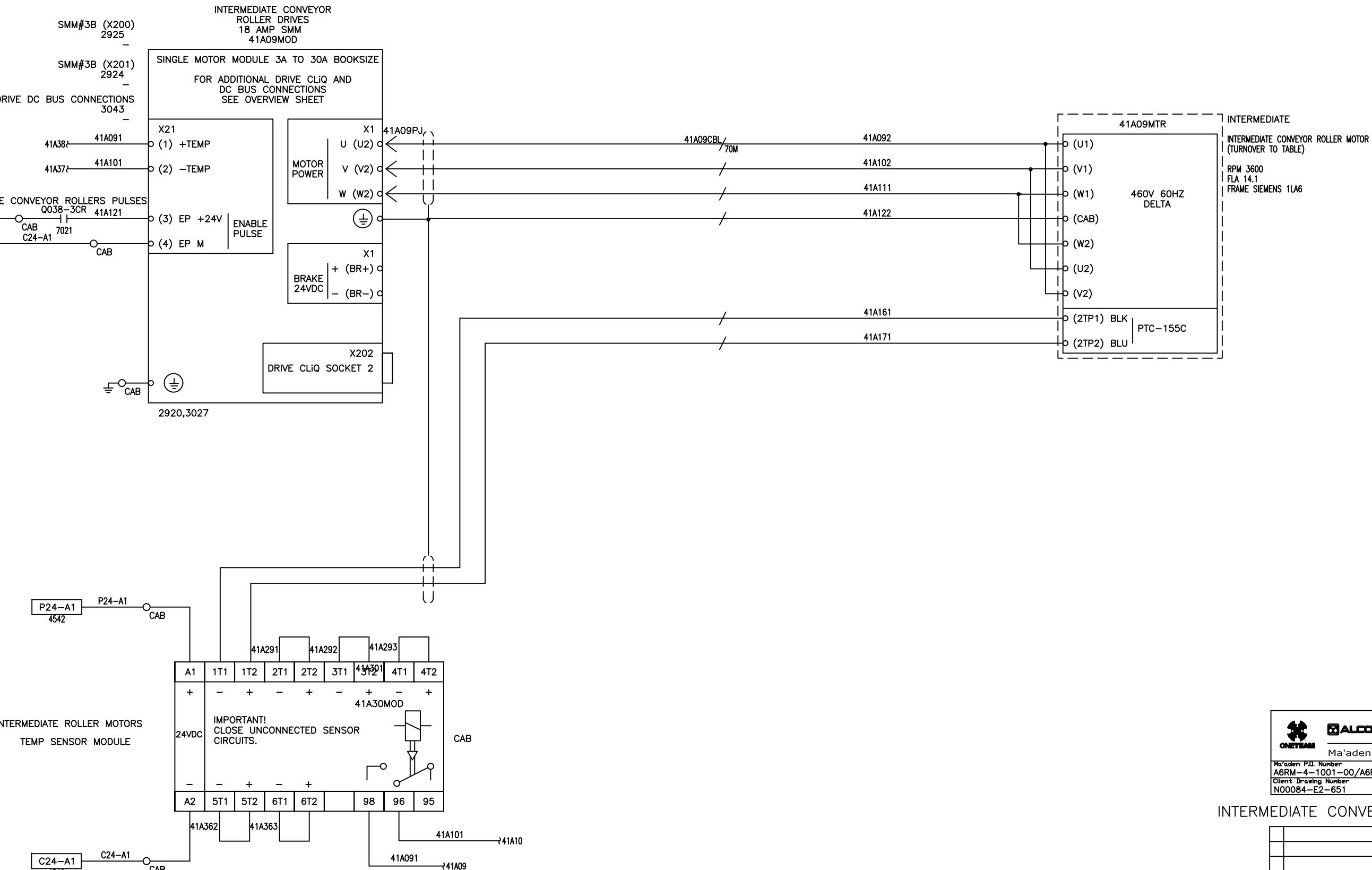


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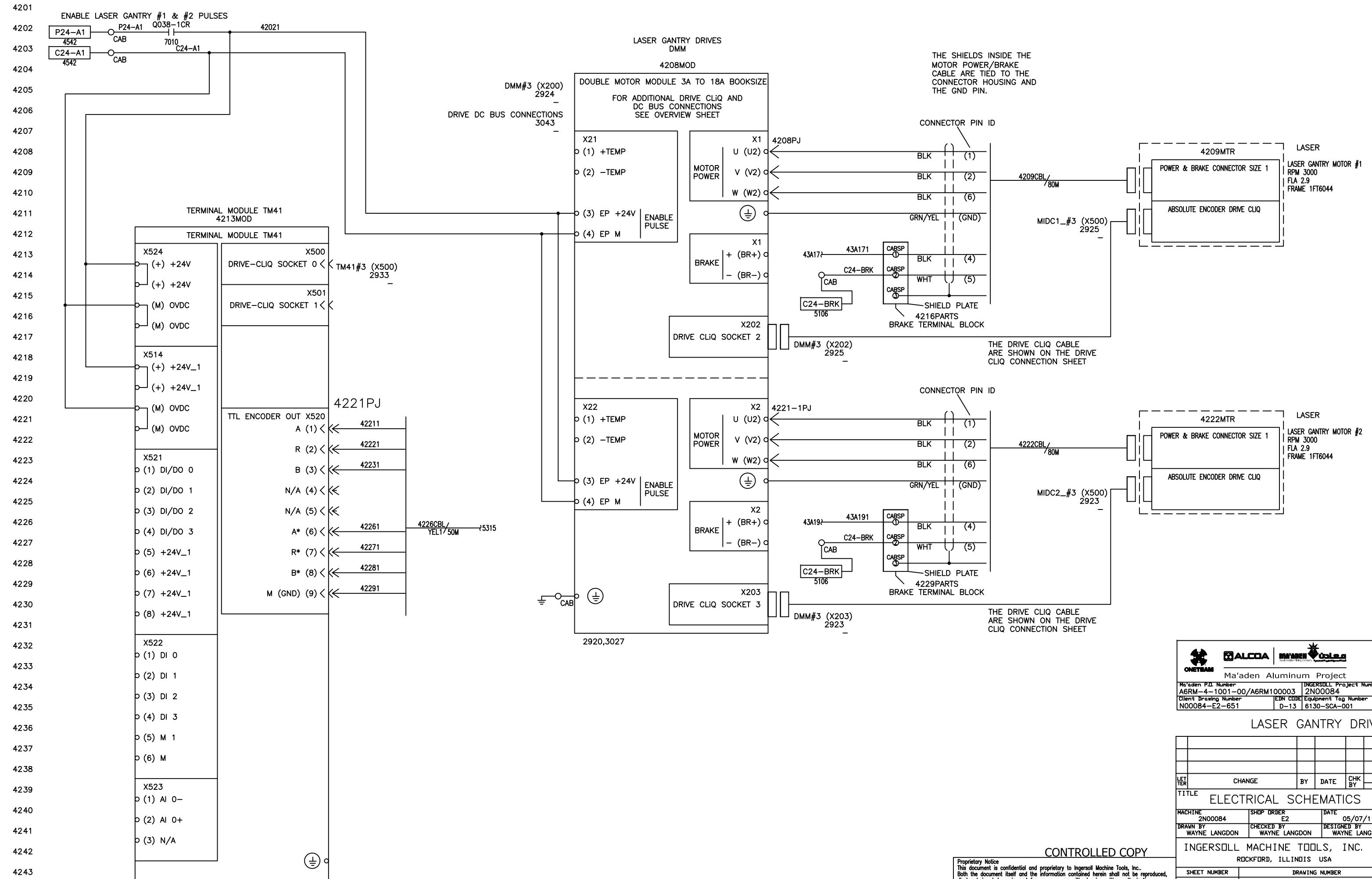
ONE TEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Ingersoll P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE	Equipment Tag Number D-13 6130-SCA-001
TURNOVER CONVEYOR ROLLER DRIVES		
LETTER	CHANGE	BY DATE
TER	WAYNE LANGDON	BY M/F
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
40	N00084-E2-651	

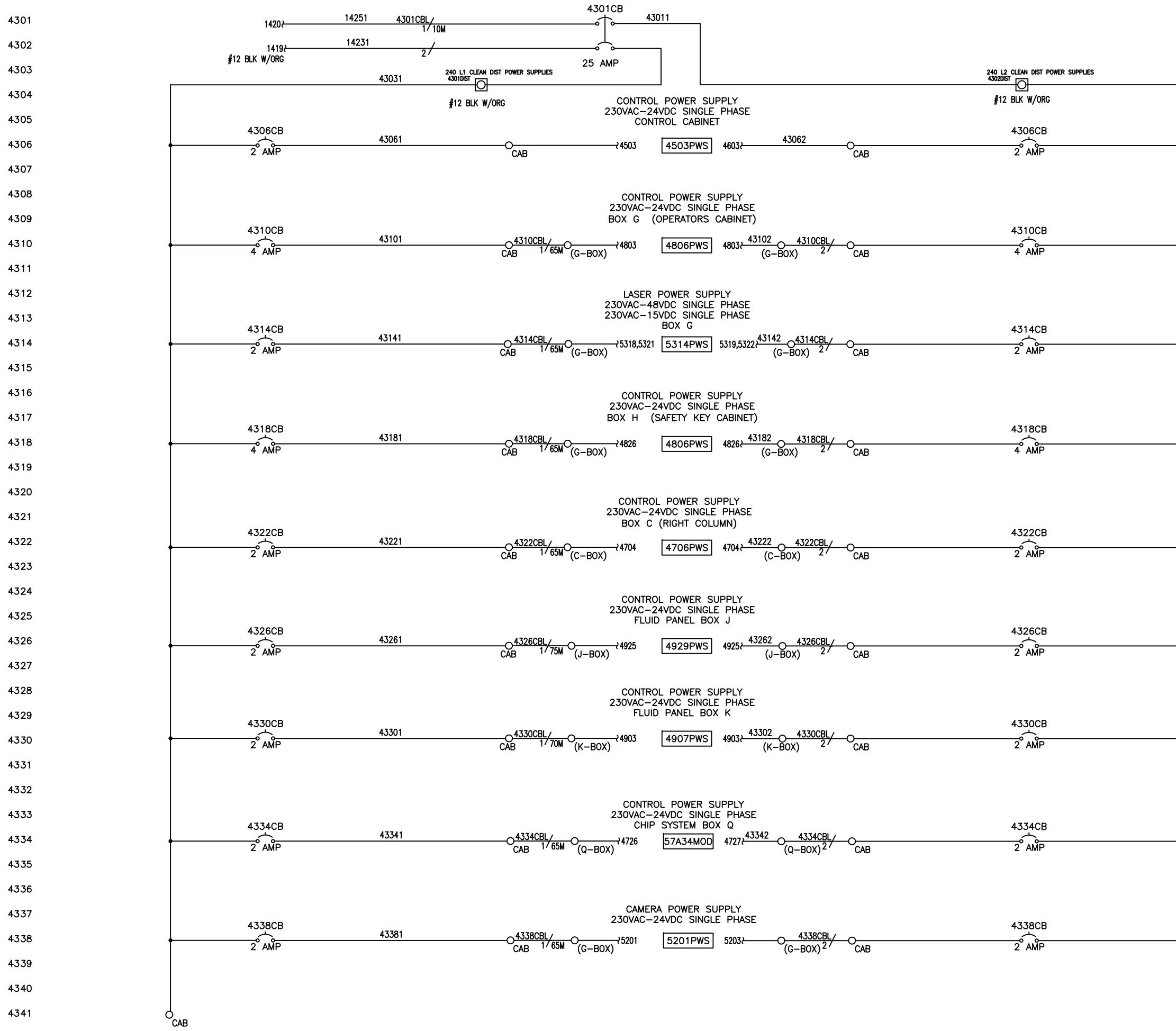


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Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001	
INTERMEDIATE CONVEYOR ROLLER DRIVES		
LETTER CHANGE BY DATE CHK BY M/F		
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER 41A	DRAWING NUMBER N00084-E2-651	





		Ma'aden Aluminum Project
Madden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

DISTRIBUTED 230VAC TO POWER SUPPLIES

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
43	N00084-E2-651				

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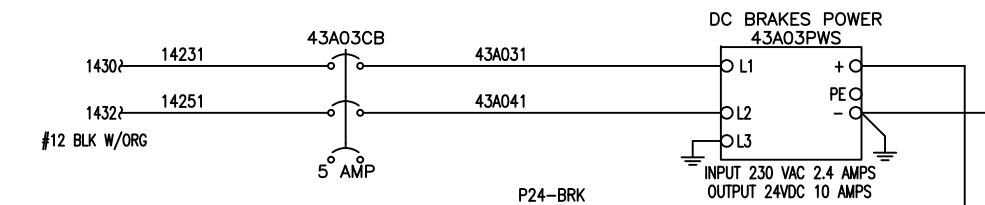
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## POWER SUPPLY SELECTOR SWITCH SETTINGS

SELECTOR SWITCH	FUNCTION	SET SWITCH TO
A	INDIVIDUAL OPERATION (OFF), PARALLEL OPERATION (ON)	OFF
B	SHORT CIRCUIT CONSTANT CURRENT MODE (OFF), SHORT CIRCUIT SHUTDOWN MODE (ON)	ON

#12 BLK W/ORG

43A03CB

43A031

DC BRAKES POWER

43A03PWS

L1

PEC+

PEC-

L2

L3

INPUT 230 VAC 2.4 AMPS

OUTPUT 24VDC 10 AMPS

P24-BRK

C24-BRK

#12 BLU

#12 WHT/BLU

MACHINE

RELEASE SPINDLE POSITIONING BRAKE

43A07CB

10 AMP

6 AMP

43A09CB

43A092

Q075-0CR

7727

43A091

3813

CAB

43A09QVR

(D-BOX)

5110-1CBL

(C-BOX)

15

(C-BOX)

13

(C-BOX)

13

5110CBL

5110-1CBL

(C-BOX)

5110CBL

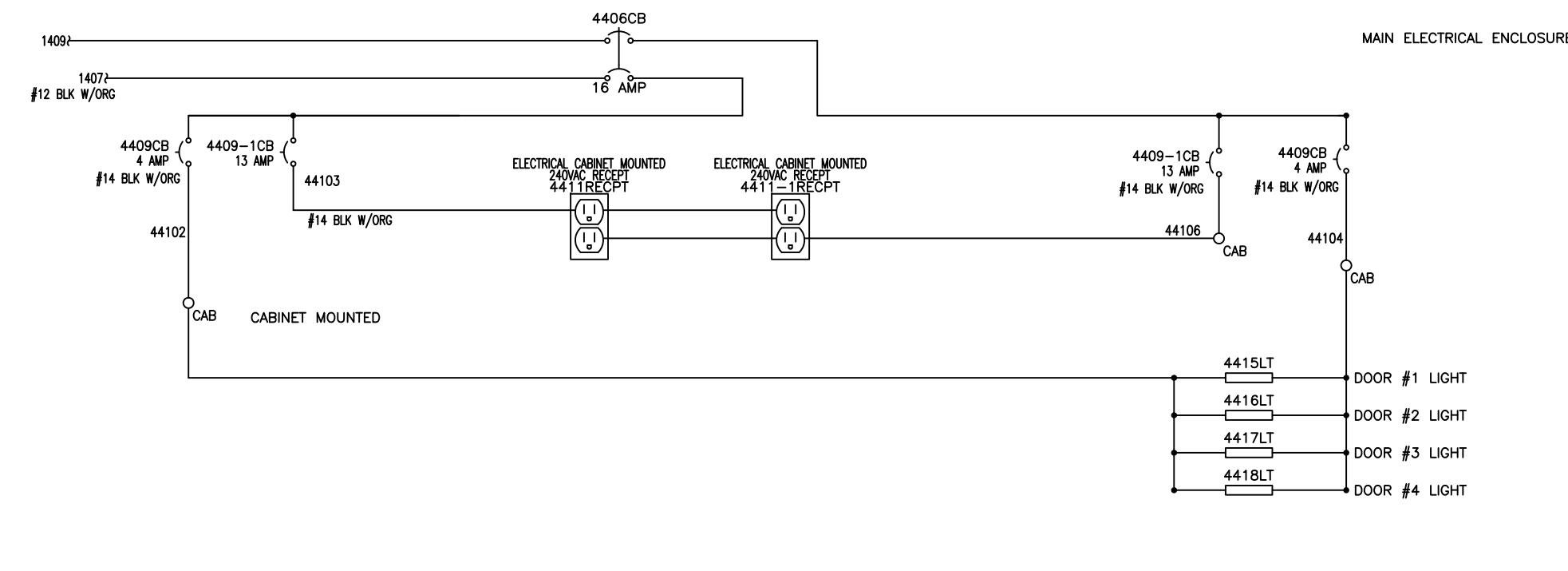
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4406 240VAC 60HZ  
4407 CUSTOMER DIRTY  
4408 SUPPLIED

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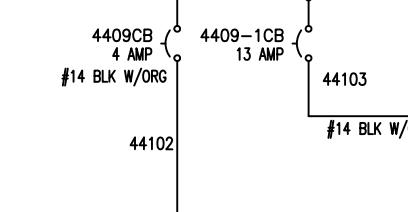
240VAC 60HZ  
CUSTOMER DIRTY  
SUPPLIED

#12 BLK W/ORG

4406CB

16 AMP

MAIN ELECTRICAL ENCLOSURE

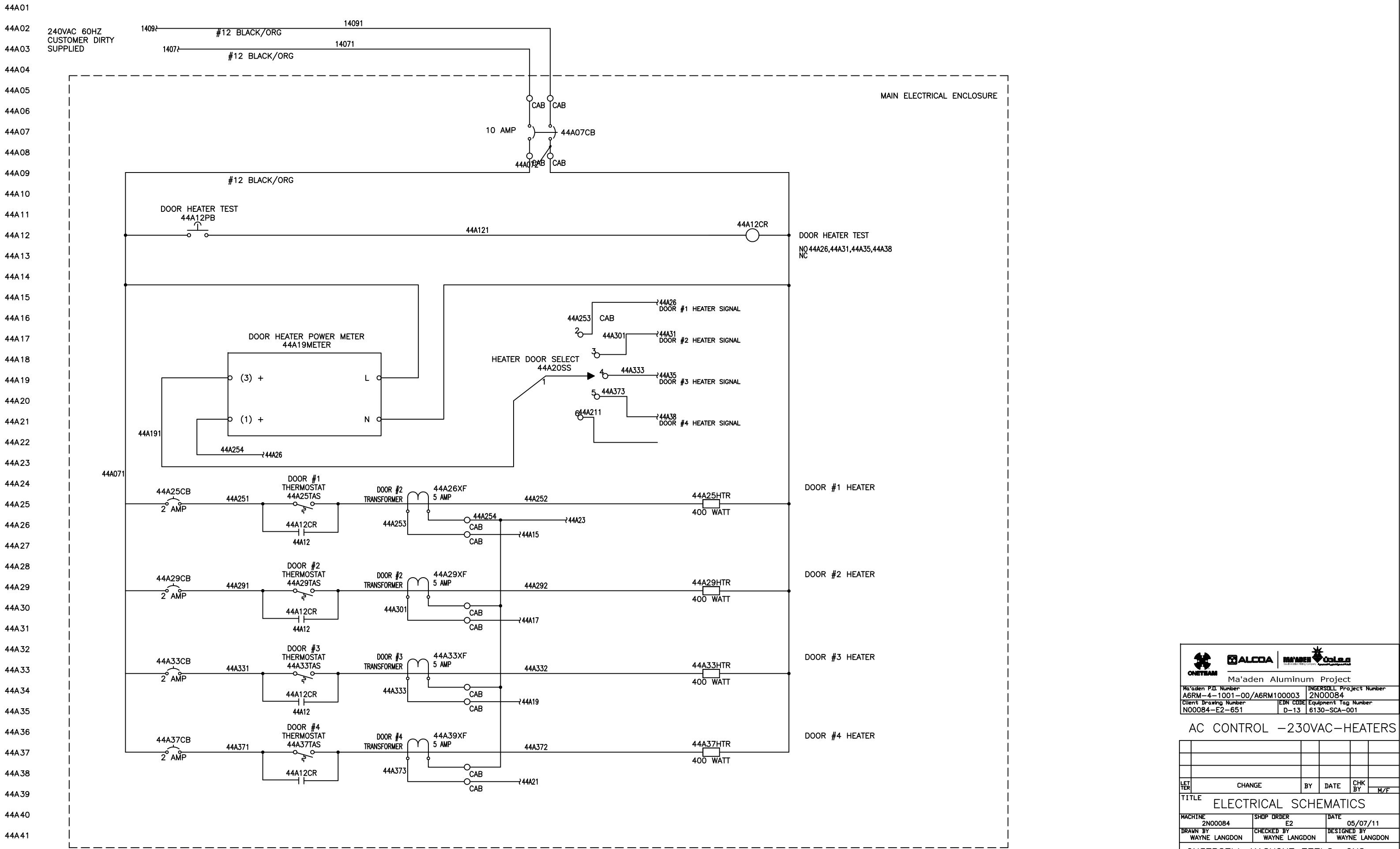


MAIN ELECTRICAL ENCLOSURE



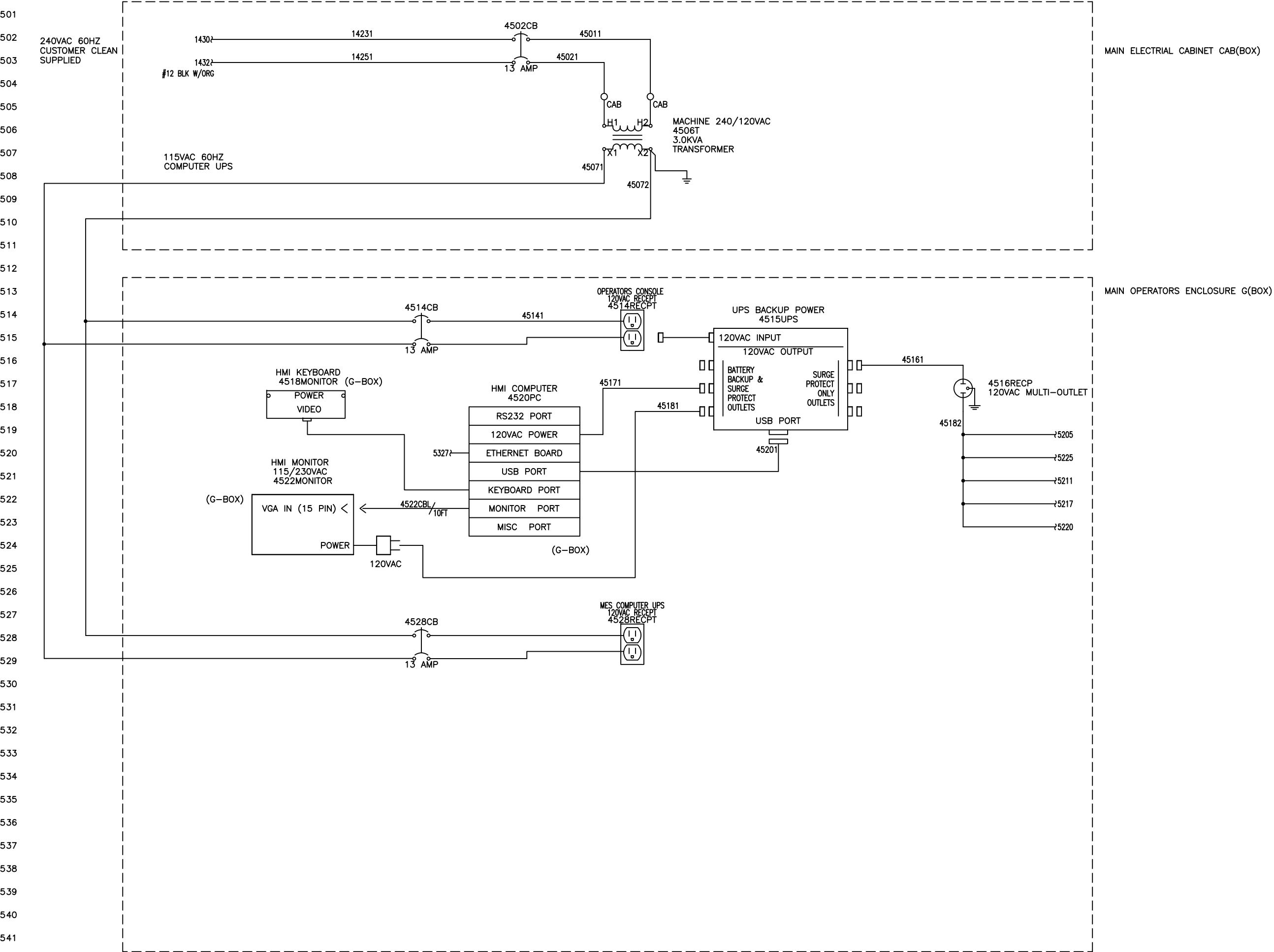
CUSTOMER SUPPLIED DIRTY 230VAC

LETTER	CHANGE	BY DATE	CHK BY
M/F			
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
44	N00084-E2-651		



Maaden Aluminum Project			
Maaden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084		
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001		
AC CONTROL -230VAC-HEATERS			
LETTER	CHANGE	BY DATE	CHK BY
M/F			
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
44A	N00084-E2-651		

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<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>		
Ma'aden Aluminum Project				
Ingersoll Project Number A6RM-4-1001-00/A6RM10003	Ingersoll Project Number 2N00084			
Client Drawing Number N00084-E2-651				
EDN CODE	Equipment Tag Number			
D-13	6130-SCA-001			
<b>AC CONTROL – 120VAC PULPIT</b>				
LETTER	CHANGE	BY DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	DATE		
2N00084	E2	05/07/11		
DRAWN BY	CHECKED BY	DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
45	N00084-E2-651			

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4501

4502 240VAC 60HZ  
CUSTOMER CLEAN  
SUPPLIED

4503 #12 BLK W/ORG

4504

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4507 115VAC 60HZ  
COMPUTER UPS

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4513 MAIN OPERATORS ENCLOSURE G(BOX)

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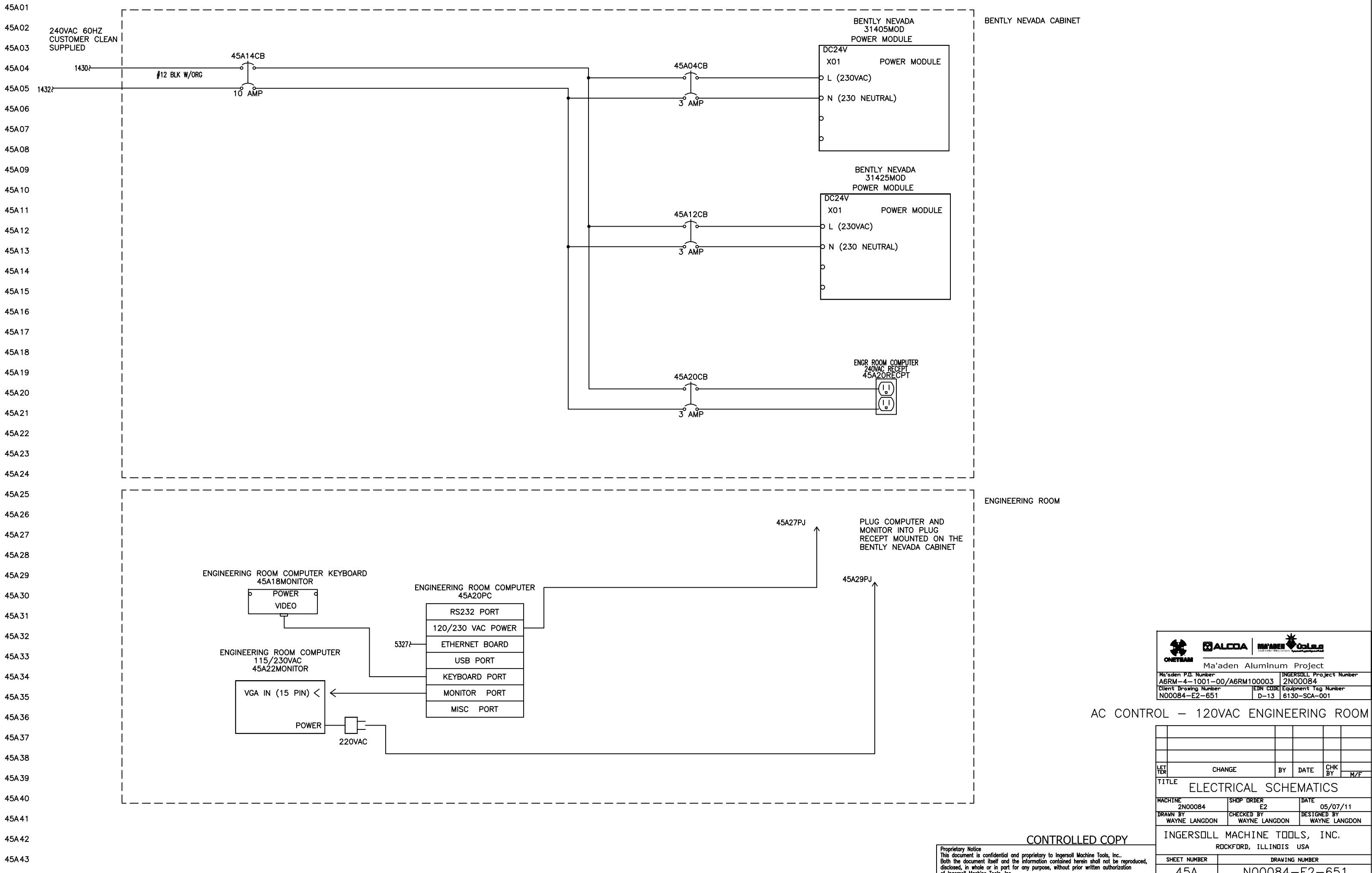
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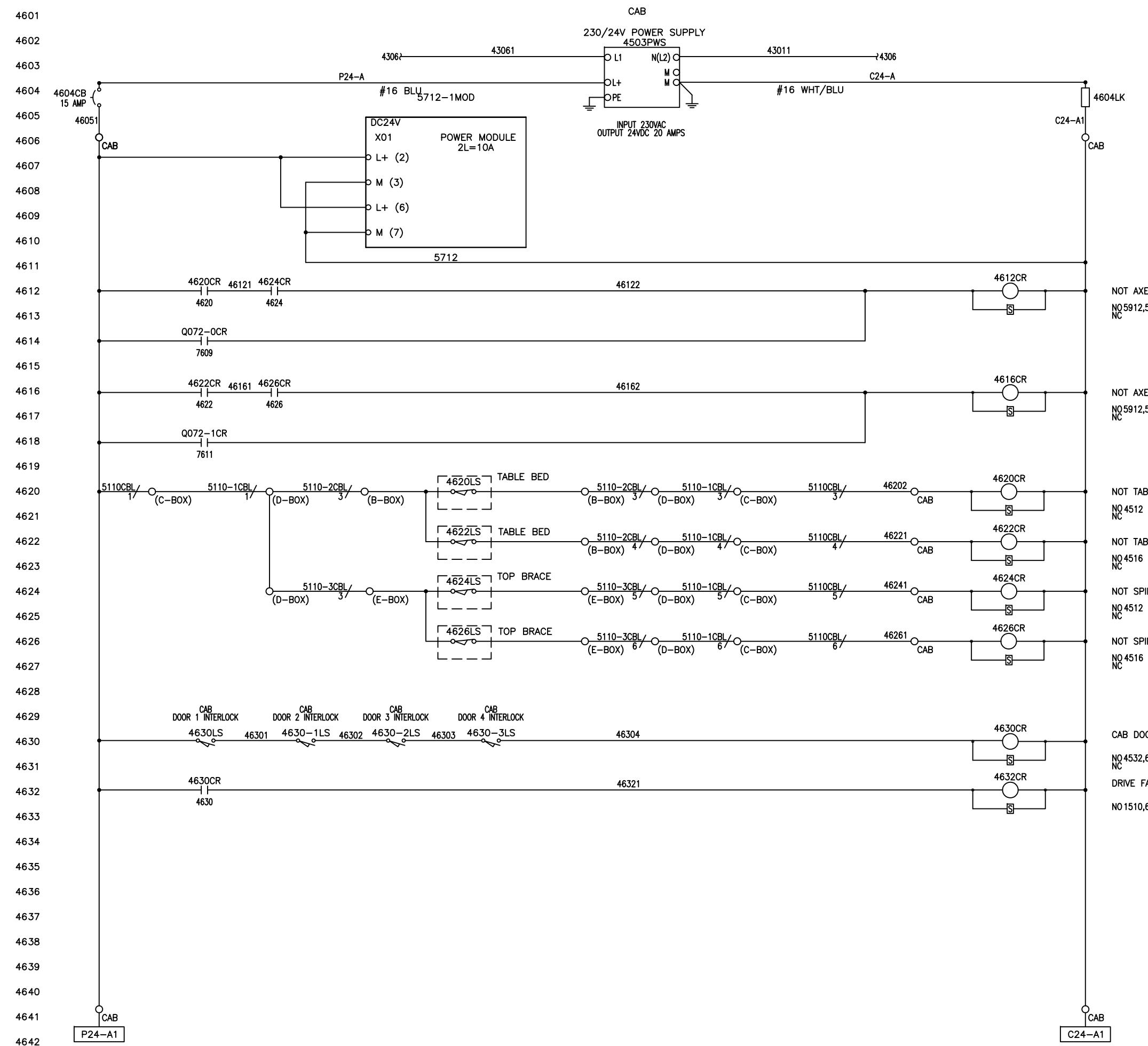
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SELECTOR SWITCH	FUNCTION	SET SWITCH TO
A	INDIVIDUAL OPERATION (OFF), PARALLEL OPERATION (ON)	OFF
B	SHORT CIRCUIT CONSTANT CURRENT MODE (OFF), SHORT CIRCUIT SHUTDOWN MODE (ON)	ON

## POWER SUPPLY SELECTOR SWITCH SETTINGS

DRIVE FAN DOOR INTERLOCK  
NO 1510-6508

## DC CONTROL – MAIN ELECTRICAL CABINET

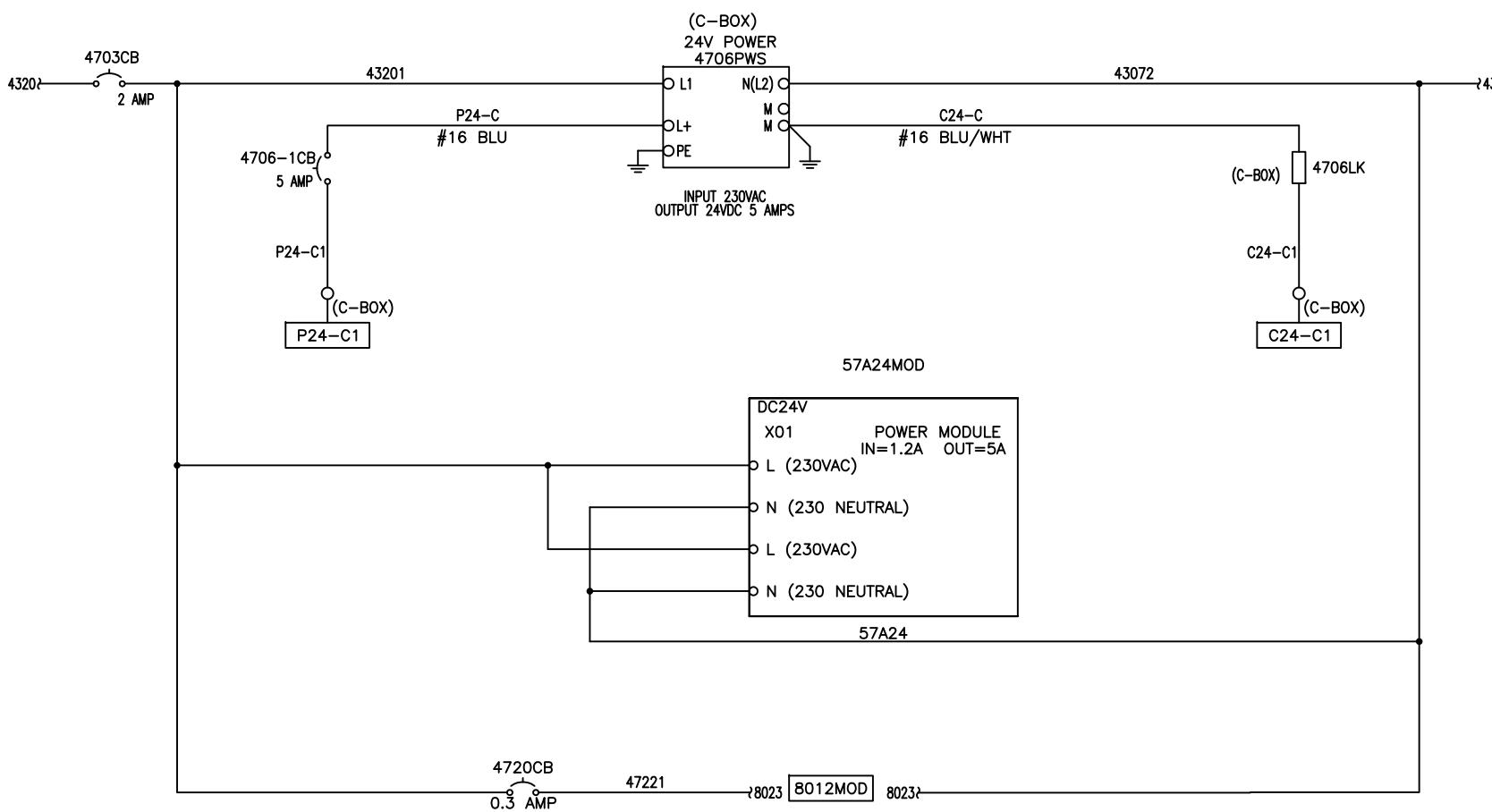
TITLE		CHANGE		BY	DATE	CHK BY	M/F
<b>ELECTRICAL SCHEMATICS</b>							
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON					
<b>INGERSOLL MACHINE TOOLS, INC.</b>							
ROCKFORD, ILLINOIS USA							
SHEET NUMBER 46	DRAWING NUMBER N00084-E2-651						

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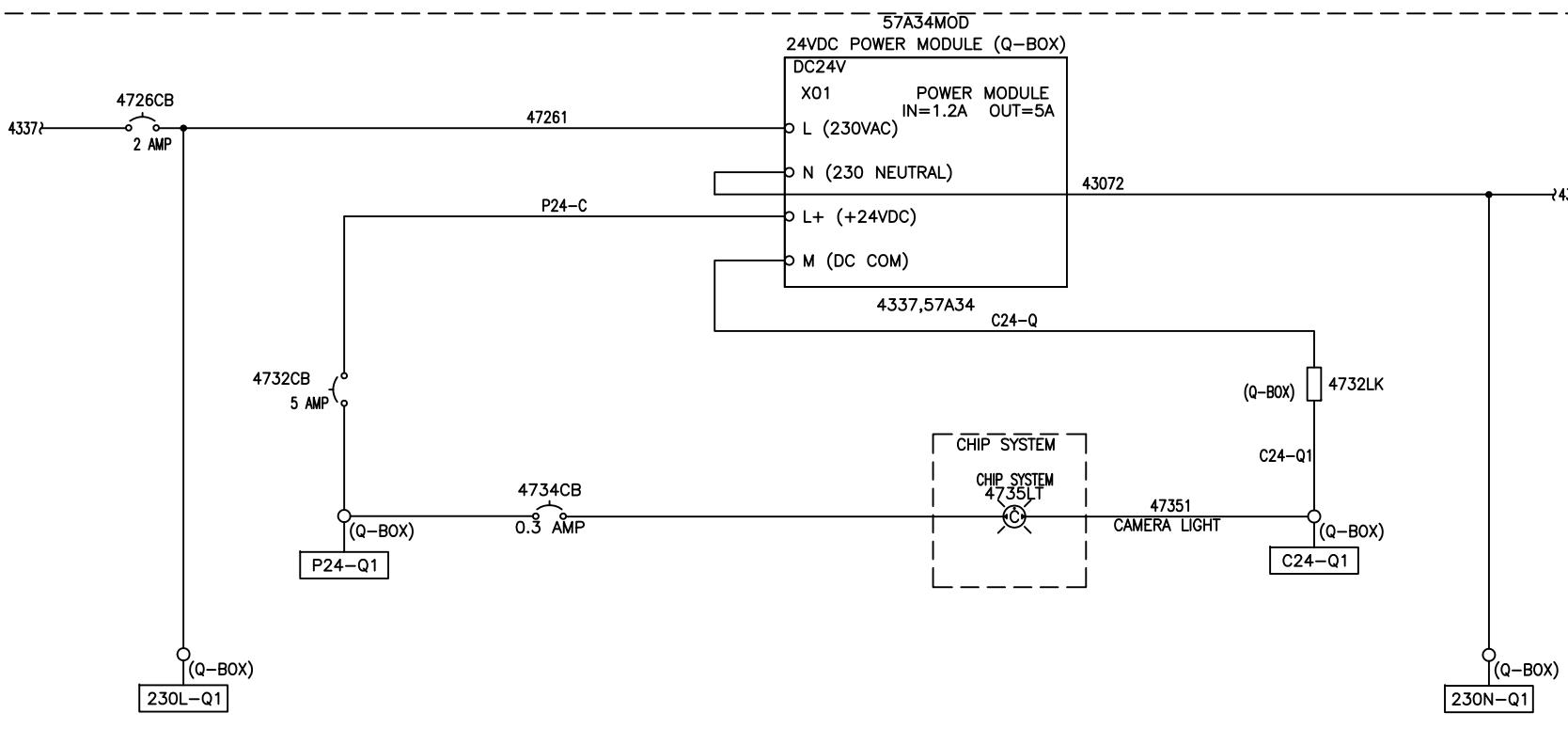
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DRAWING NUMBER  
N00084-E2-651

# C-BOX



# Q-BOX



Ma'aden Aluminum Project	INGERSOLL Project Number	2N00084
A6RM-4-1001-00/A6RM100003	EDN CODE	N00084-E2-651

DC CONTROL - C & Q (BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	E2	DATE	05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
47	N00084-E2-651				

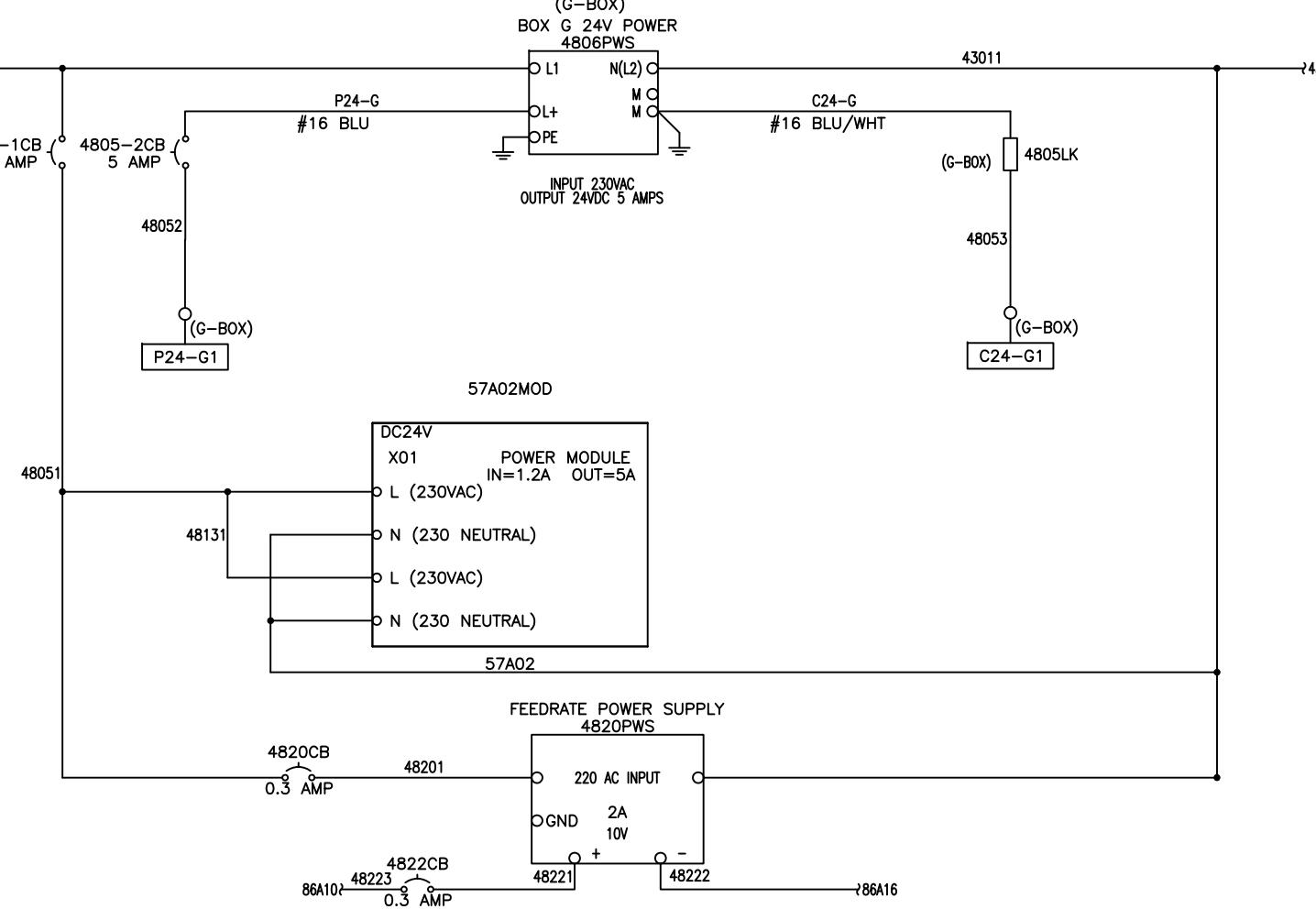
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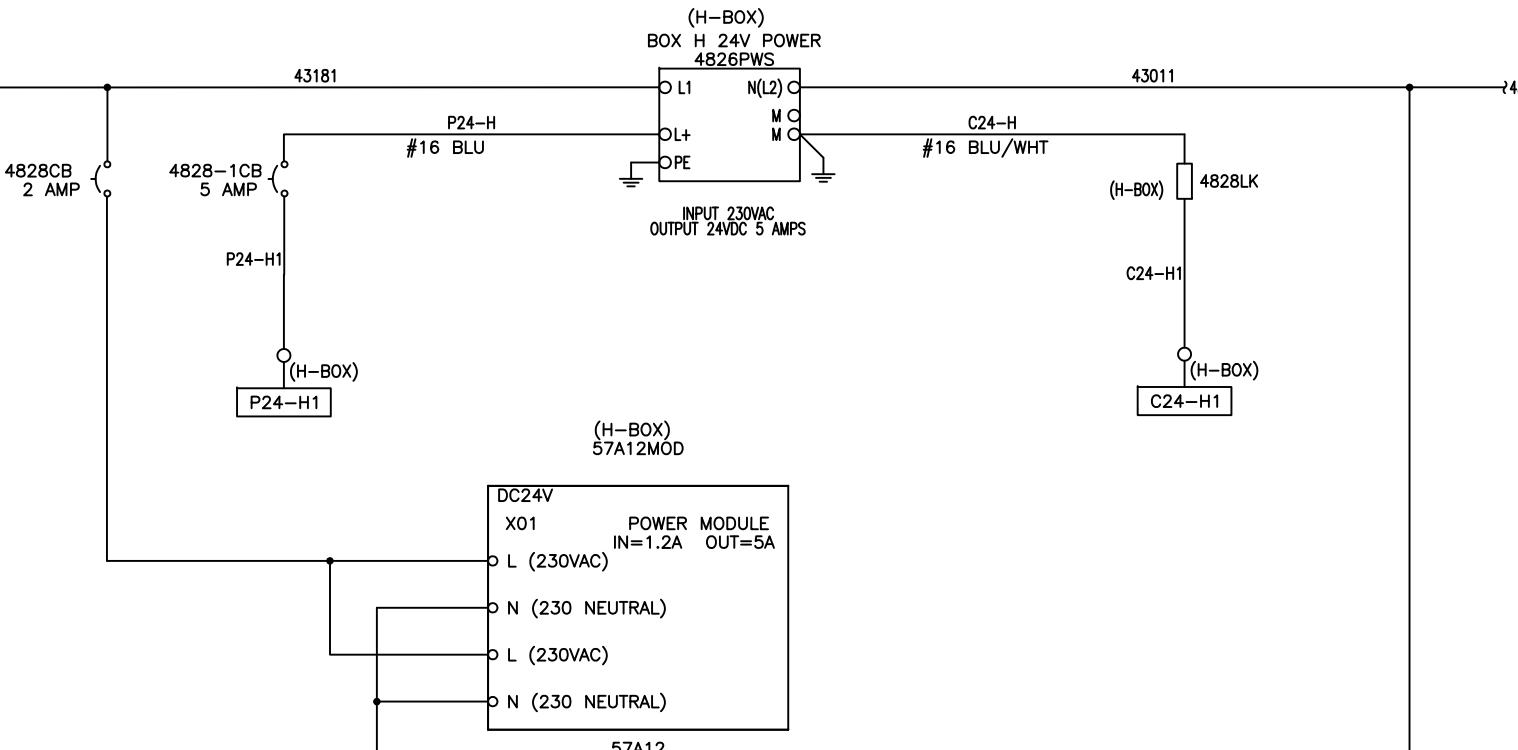
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47 N00084-E2-651

# G-BOX



# H-BOX



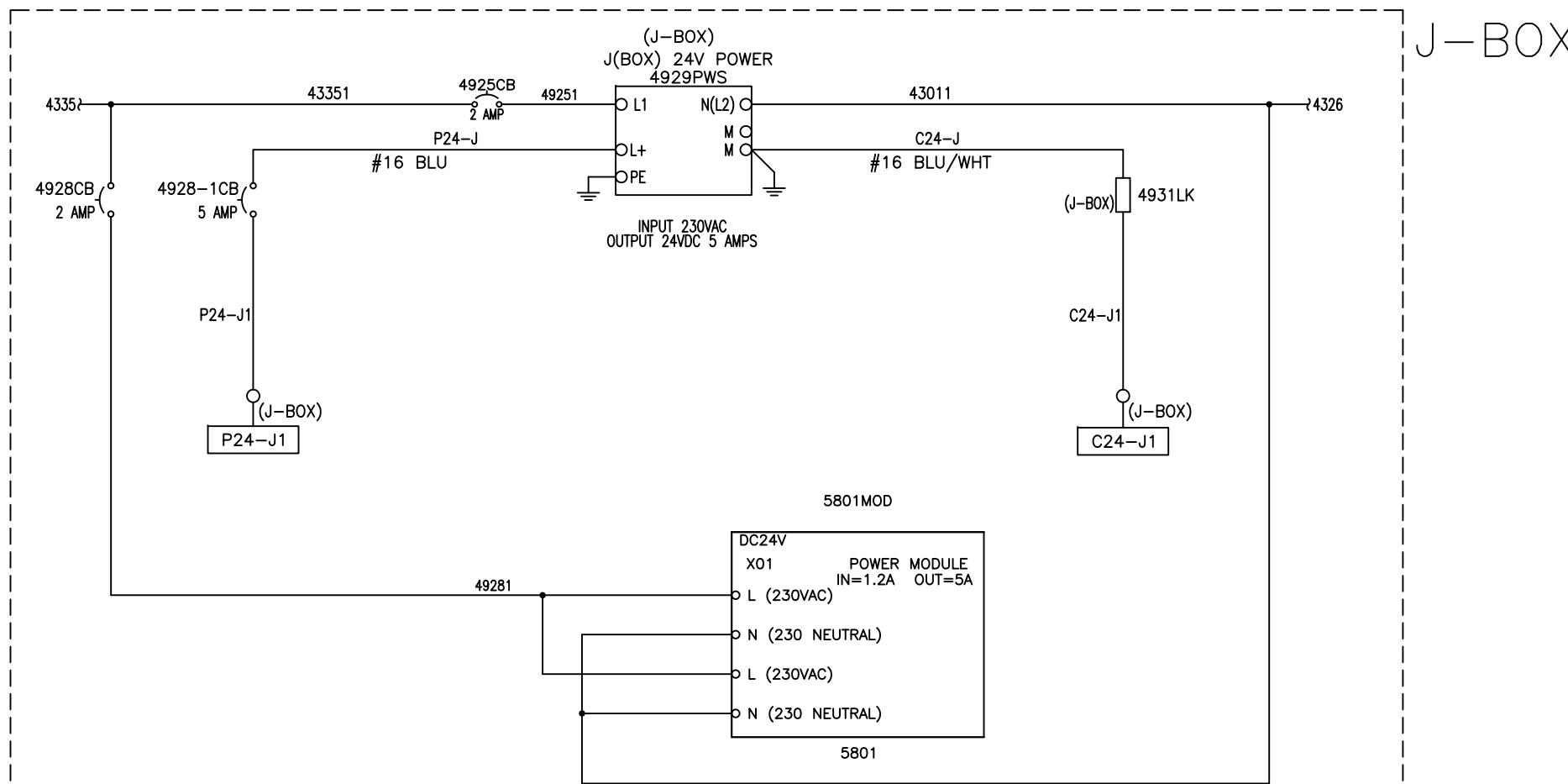
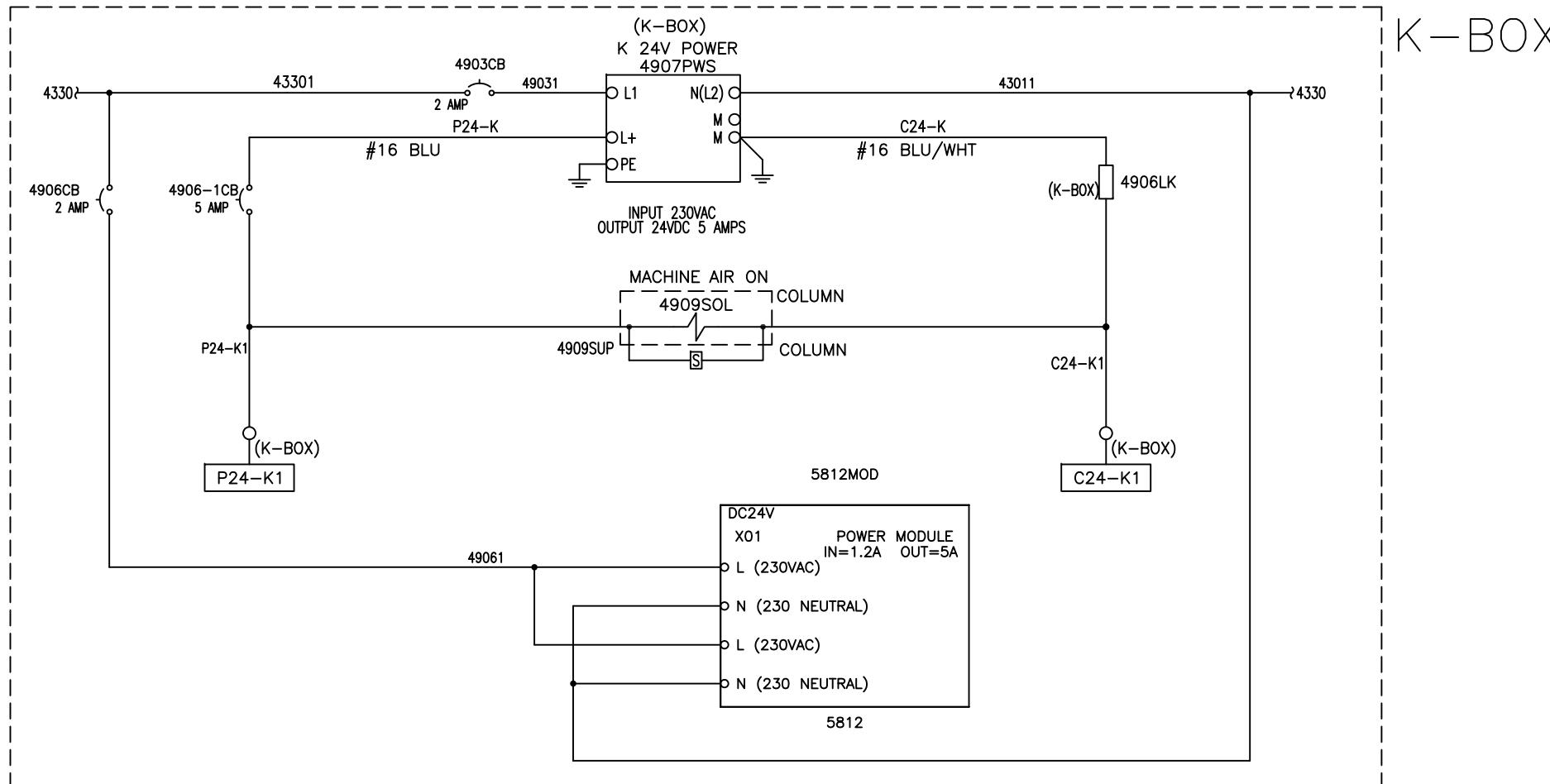
ONE TEAM		ALCOA	MA'ADEN
Ma'aden P.D. Number	A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number	2N00084
Client Drawing Number	N00084-E2-651	EDN CODE	Equipment Tag Number
		D-13	6130-SCA-001

## DC CONTROL – G & H (BOX)

LET	TER	CHANGE	BY	DATE	CHK
M/F					
TITLE					
ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY	CHECKED BY	DESIGNED BY			
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
48	N00084-E2-651				

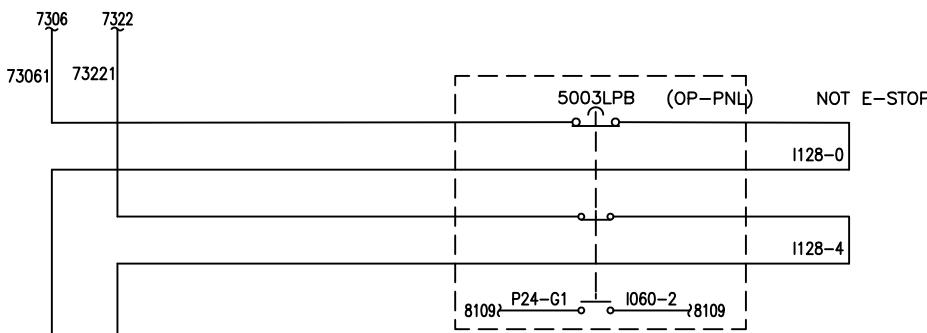
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48 N00084-E2-651



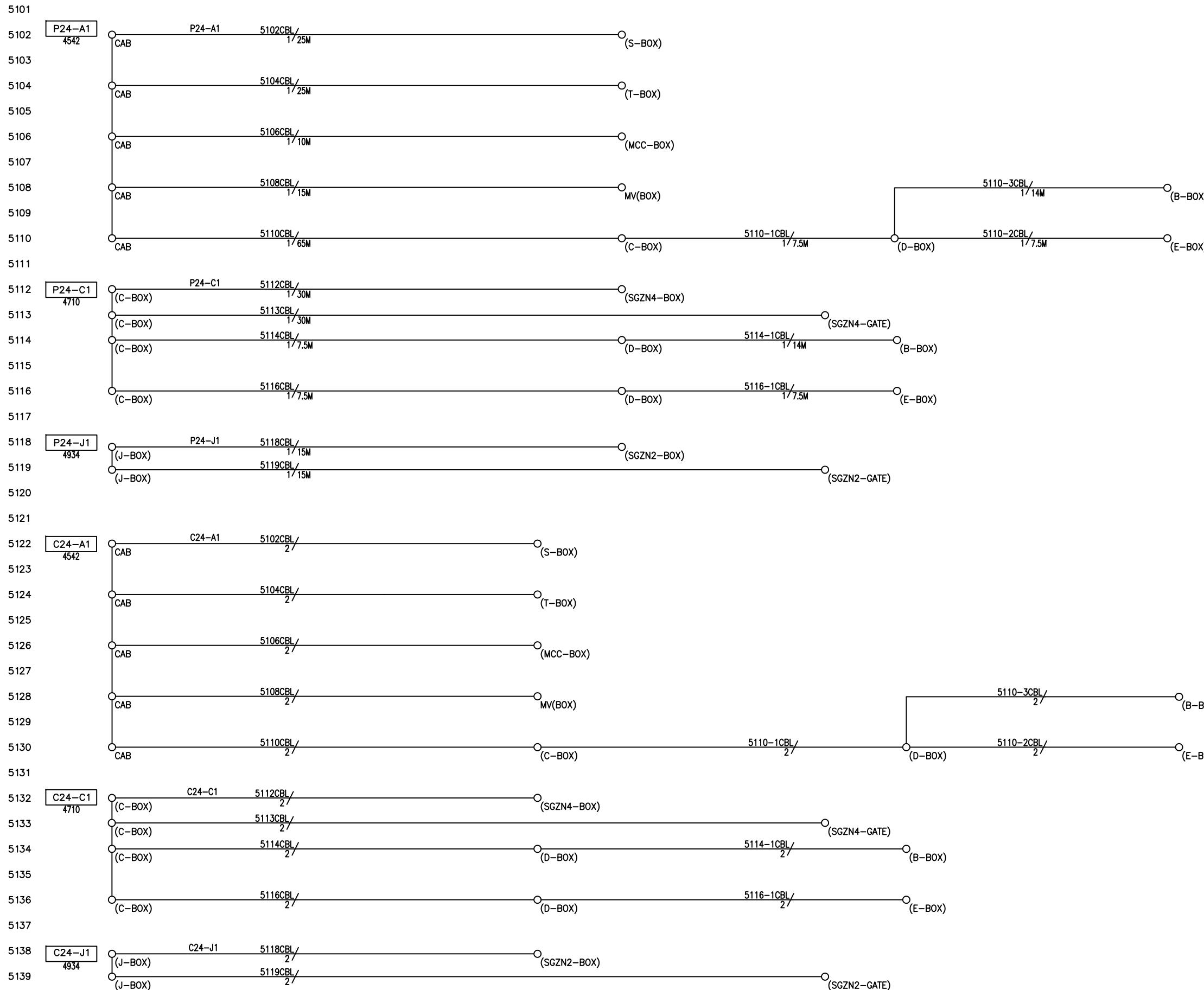
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ALCOA		Ma'aden
ONETEAM		Aluminum Project
Ingersoll P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
DC CONTROL - J & K (BOX)		
LET	CHANGE	BY DATE
TER		CHK BY
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
49	N00084-E2-651	



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<b>ALCOA</b>	<b>MA'ADEN</b>			
Ma'aden Aluminum Project				
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001			
<b>E-STOP CONTROL</b>				
LET	CHANGE	BY	DATE	CHK
TER				M/F
<b>TITLE</b>				
<b>ELECTRICAL SCHEMATICS</b>				
MACHINE	SHOP ORDER	DATE		
2N00084	E2	05/07/11		
DRAWN BY	CHECKED BY	DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
50	N00084-E2-651			



Ma'aden Aluminum Project			
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084		
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001		
DC CONTROL COMMONS			
LETTER	CHANGE	BY DATE	CHK BY
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
51	N00084-E2-651		

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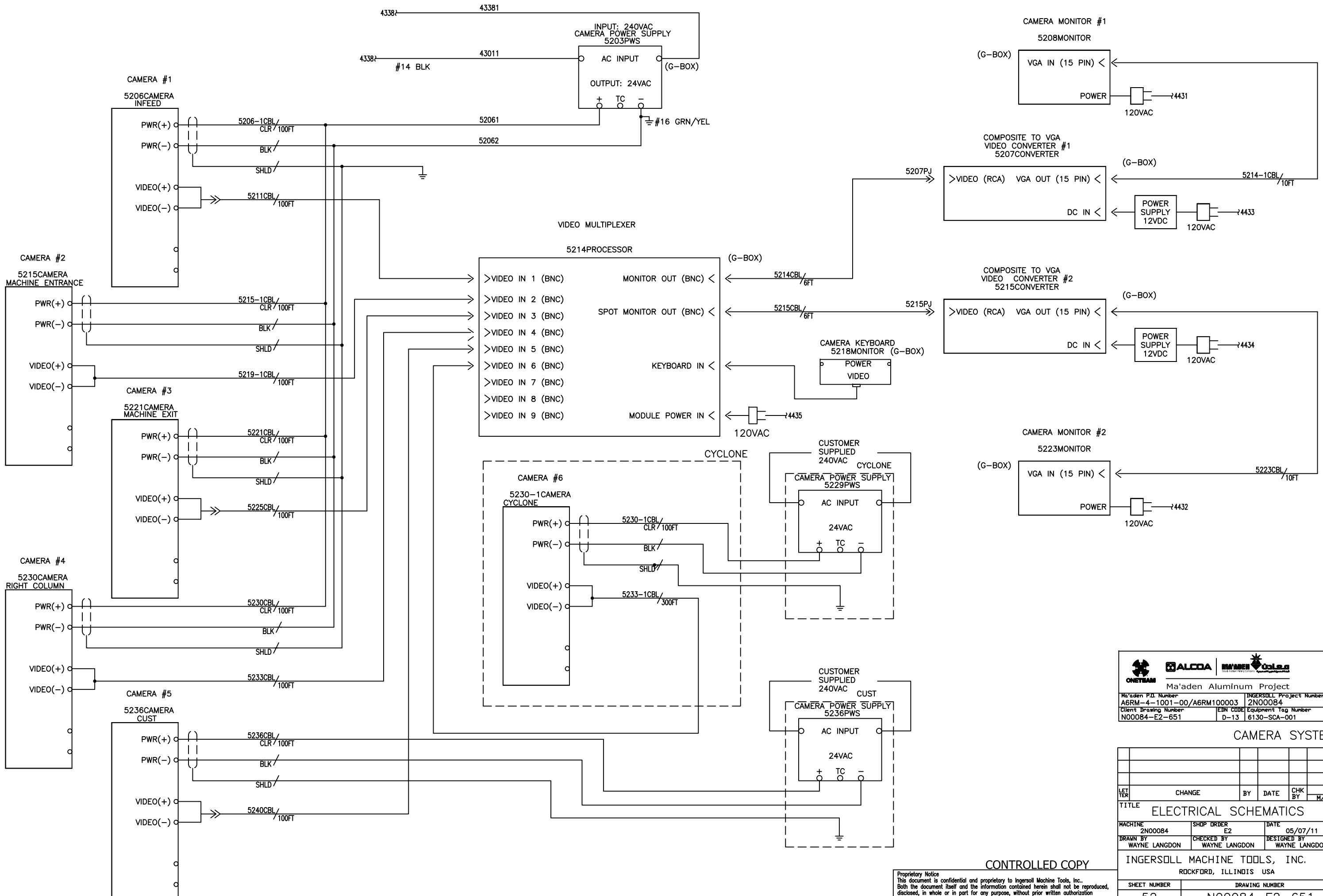
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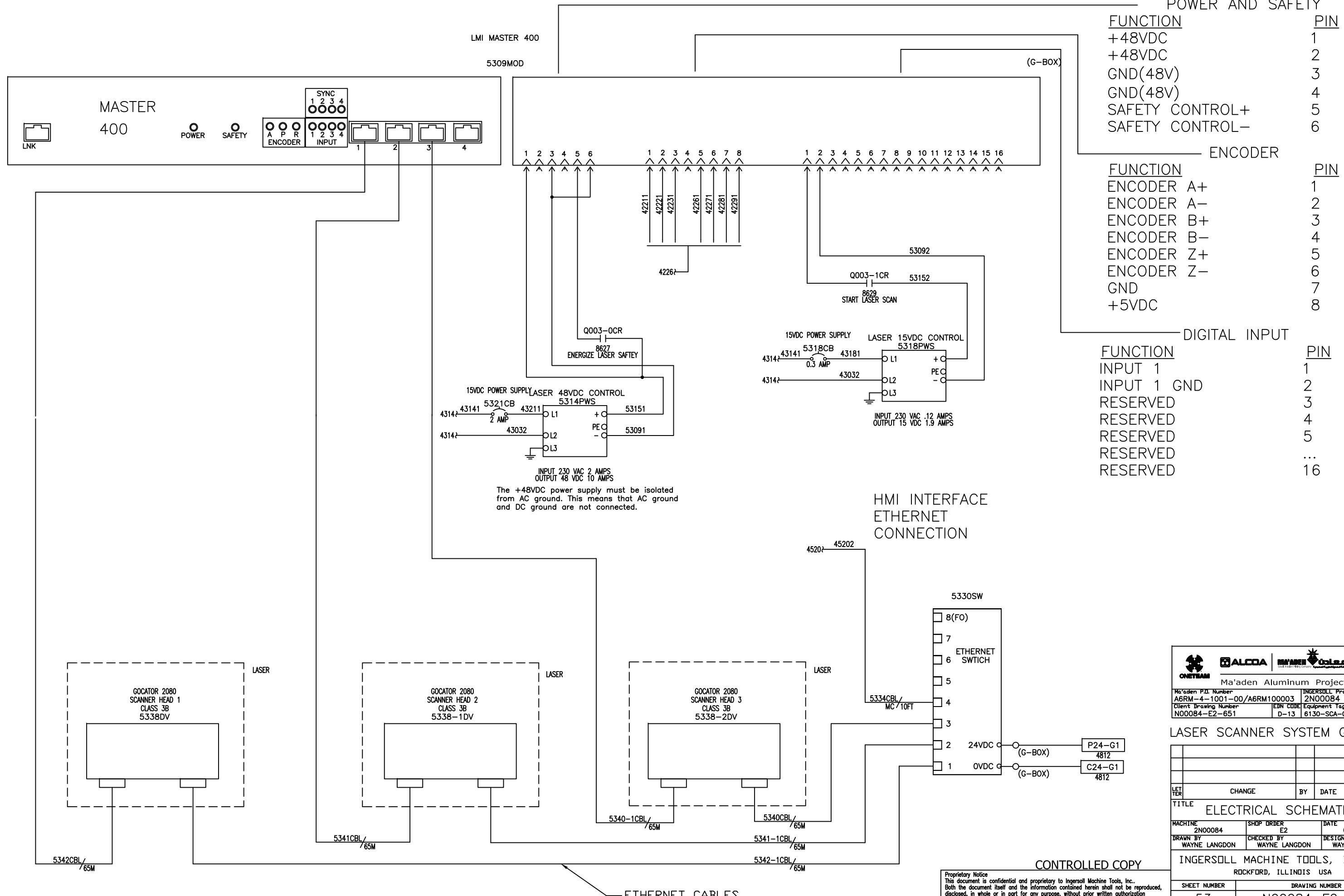
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## CAMERA SYSTEM

ET ER	CHANGE	BY	DATE	CHK BY
TITLE	ELECTRICAL CONTRACTS			M/F

ELECTRICAL SCHEMATICS		
ACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
RAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

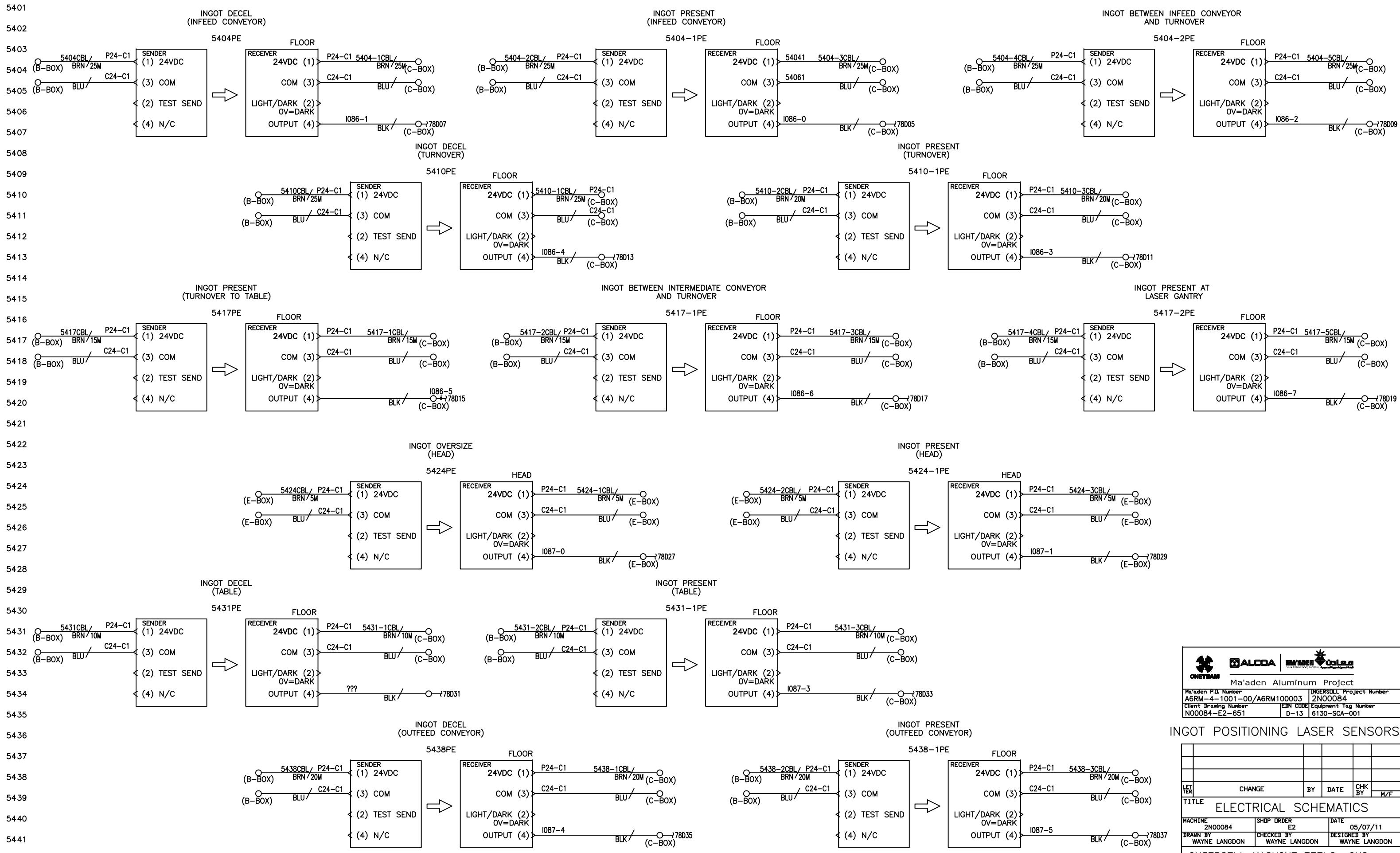
**INGERSOLL MACHINE TOOLS, INC.**  
**ROCKFORD, ILLINOIS USA**



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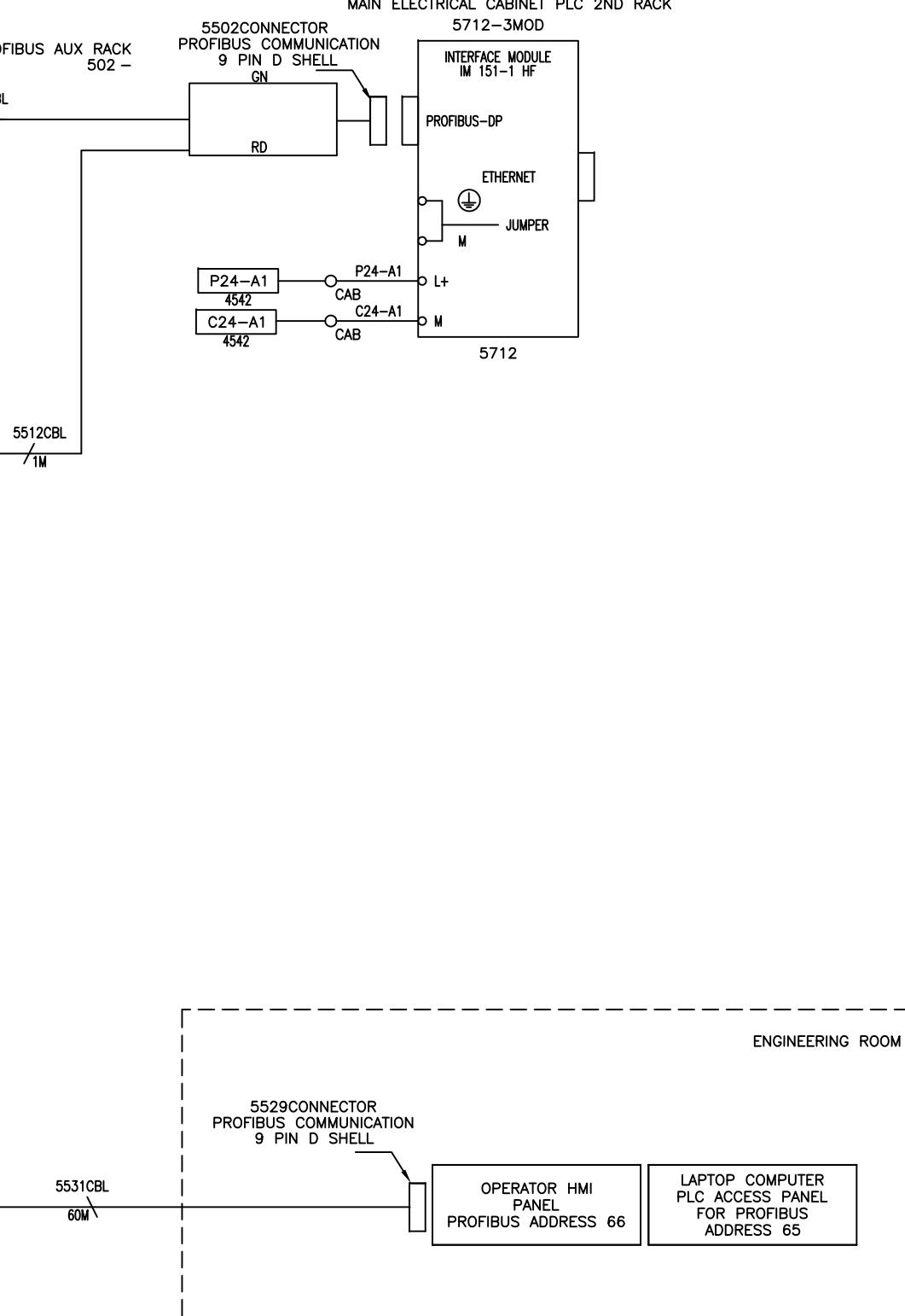
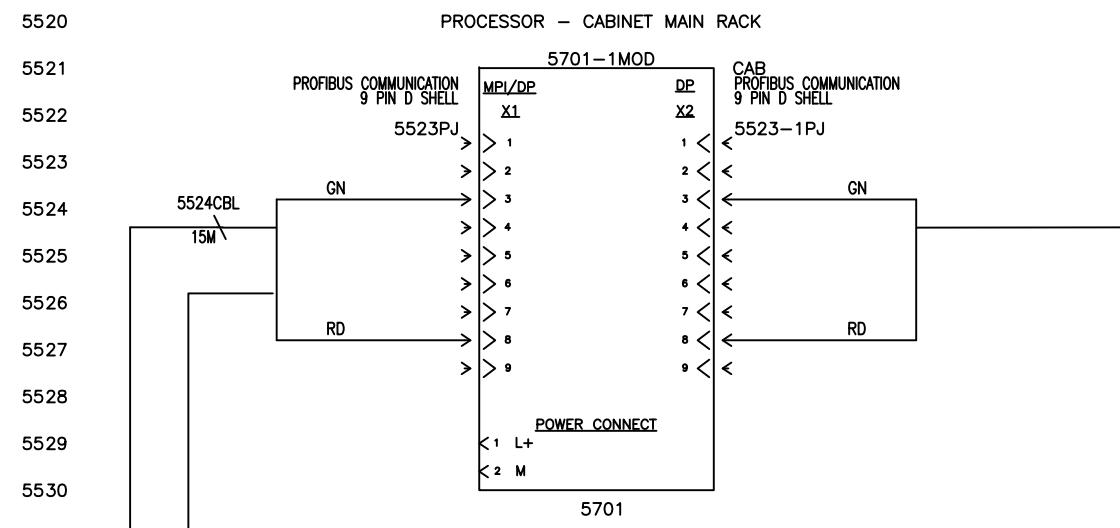
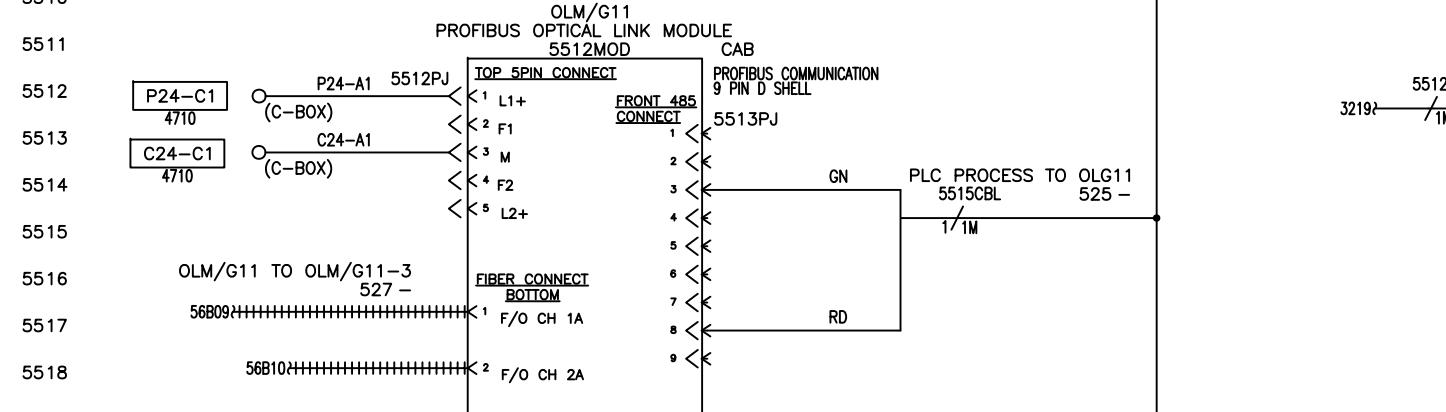
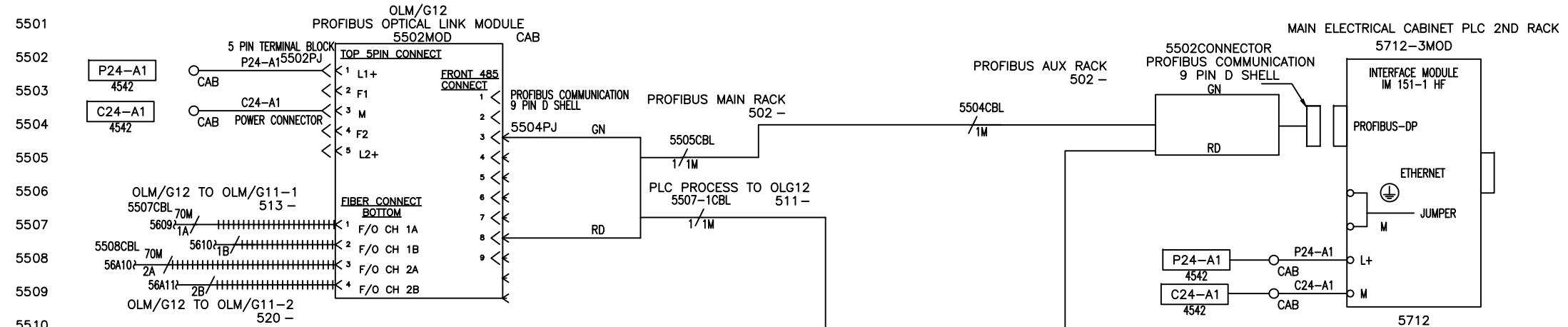
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 ONE TEAM	 ALCOA	 Ma'aden Steel Making By Choice Aluminum By Choice			
Ma'aden Aluminum Project					
Ma'aden P.I. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084				
Client Drawing Number N00084-E2-651	EIN CODE D-13	Equipment Tag Number 6130-SCA-001			
LASER SCANNER SYSTEM G(BOX)					
CT ER	CHANGE	BY	DATE	CHK BY	M/F
ITLE	ELECTRICAL SCHEMATICS				
ACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
RAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 53	DRAWING NUMBER N00084-E2-651				



Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

LETTER	CHANGE	BY	DATE	CHK BY
<b>TITLE</b> ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 54	DRAWING NUMBER N00084-E2-651			

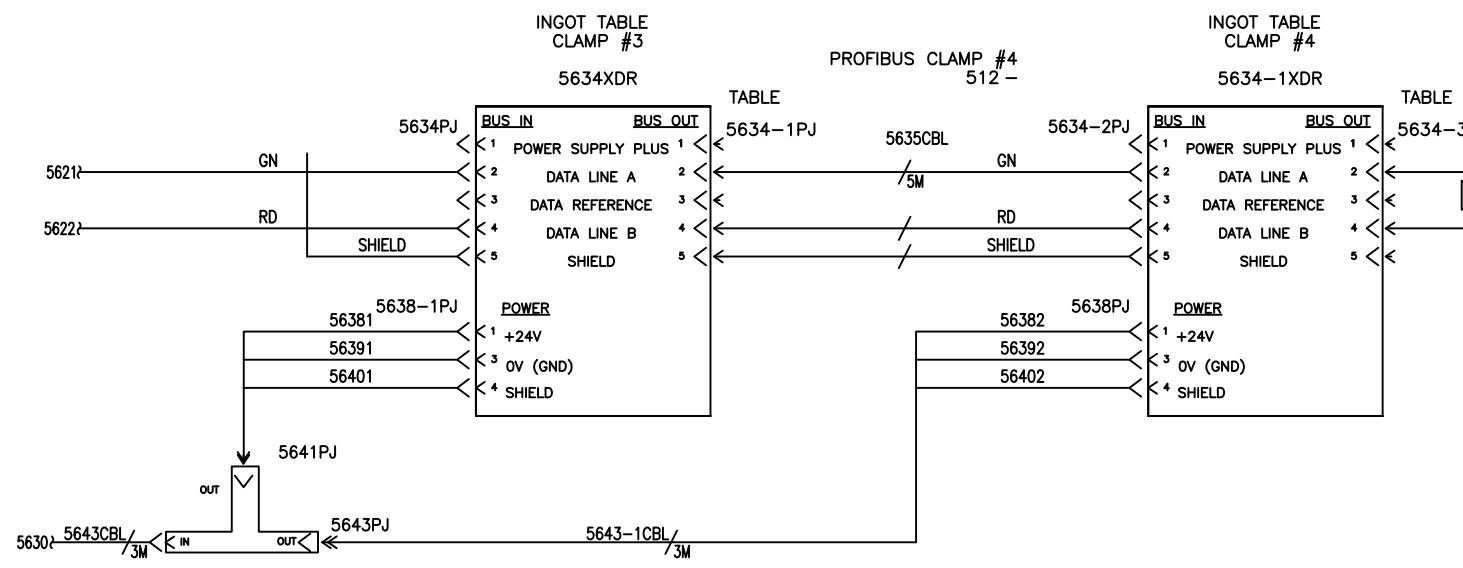
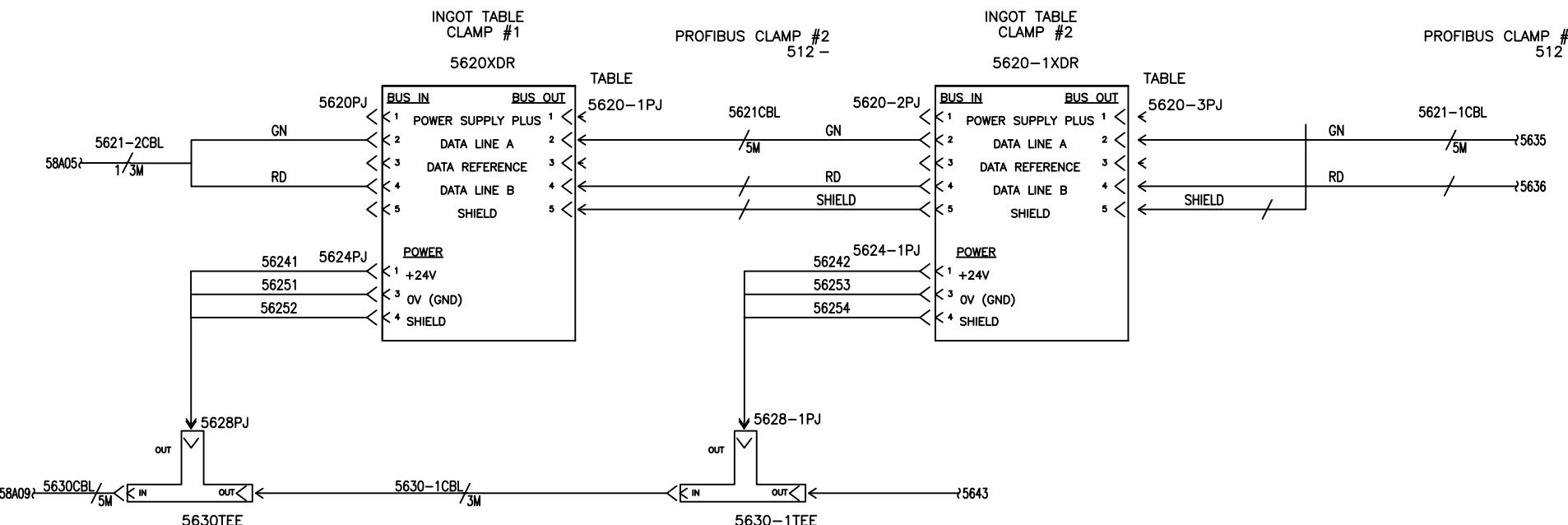
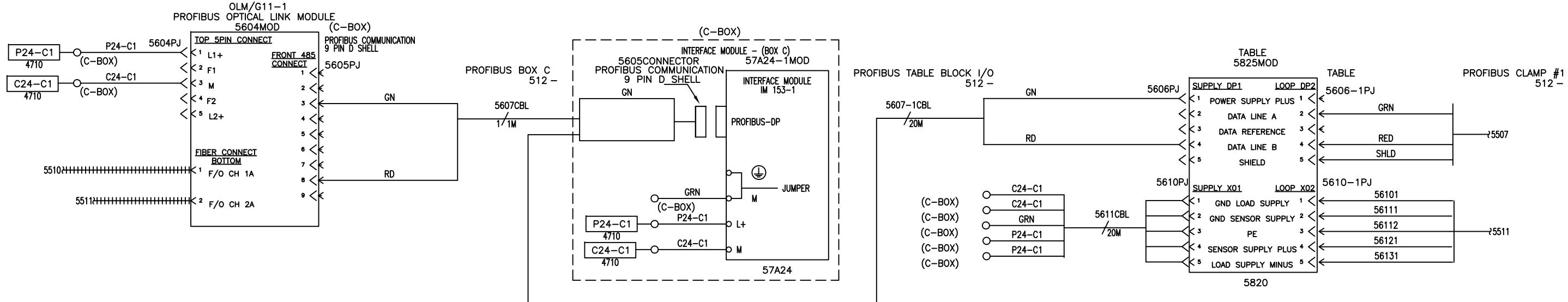


**ONE TEAM** **ALCOA** **MA'ADEN** **DaIleD**  
Ma'aden Aluminum Project

Ma'aden P.O. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM10003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

### I/O RACK INTERFACES (CAB)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
55	N00084-E2-651				



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 **ONETEAM** |  **ALCOA** |  **MATAHARI  
INDAH**  
Suka Makan Makanan  
 **Bintang**

# Ma'aden Aluminum Project

A6RM-4-1001-00/A6RM100003 2N00084  
Client Drawing Number EDN CODE Equipment Tag Number  
N00084-E2-651 D-13 6130-SCA-001

## I/O BACK INTERFACES (C-BOX)

#### 4.3 VRML INTERFACES (3 BOX)

100 100 100 100 100 100 100 100 100 100

ET  
CHANGE BY DATE CHK

ER	CHANNEL	BT	DATE	BY	M/F
TITLE ELECTRICAL SCHEMATICS					

2N00084 E2 05/07/11

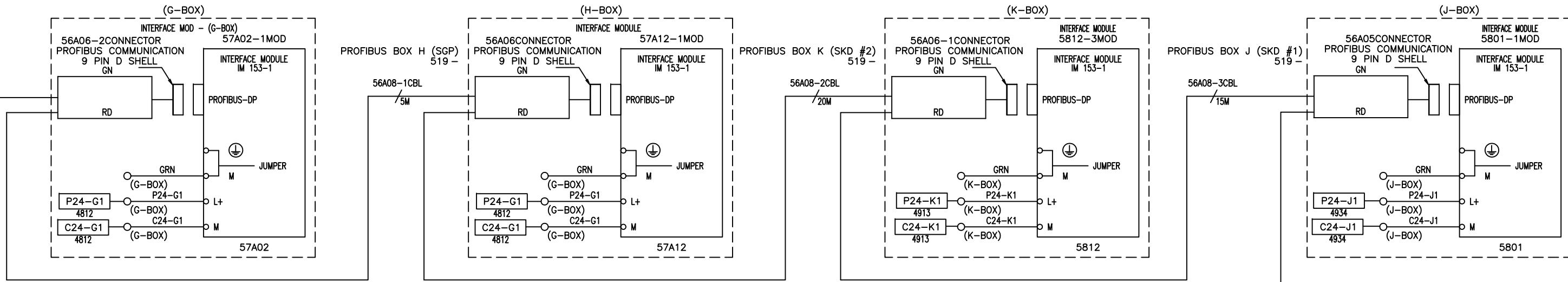
**DRAWN BY** WAYNE LANGDON      **CHECKED BY** WAYNE LANGDON      **DESIGNED BY** WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.

ROCKFORD, ILLINOIS USA

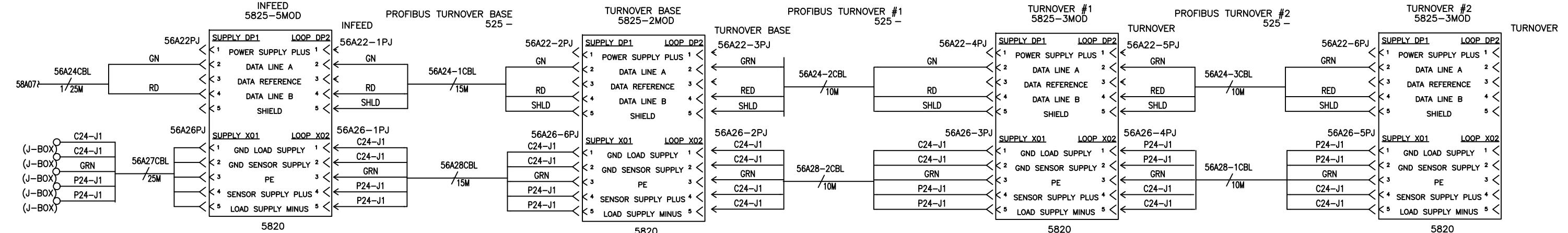
56 N00084-E2-651

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ALCOA		Maaden	Maaden		
ONE TEAM	ONE TEAM	ONE TEAM	ONE TEAM		
Maaden Aluminum Project					
Ingersoll Project Number		Ingersoll Project Number			
A6RM-4-1001-00/A6RM10003		2N00084			
Client Drawing Number		EDN CODE Equipment Tag Number			
N00084-E2-651		D-13 6130-SCA-001			
MACHINE I/O RACK INTERFACES					
LET	TER	CHANGE	BY DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE		SHOP ORDER	DATE		
2N00084		E2	05/07/11		
DRAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER		DRAWING NUMBER			
56A		N00084-E2-651			

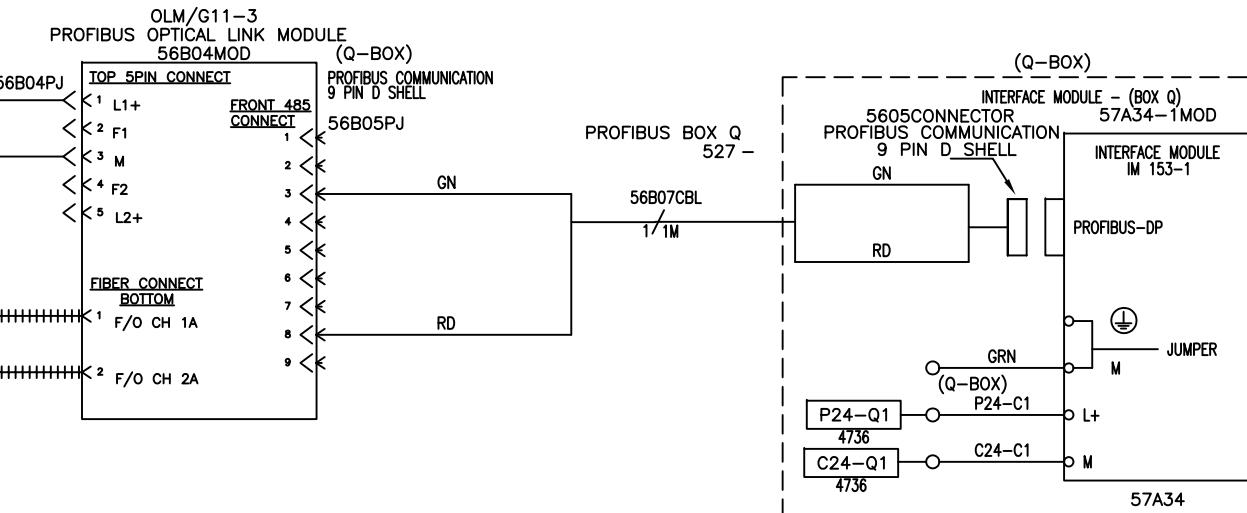
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<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

### MACHINE I/O RACK INTERFACES (Q-BOX)

LET	TER	CHANGE	BY	DATE	CHK
					M/F

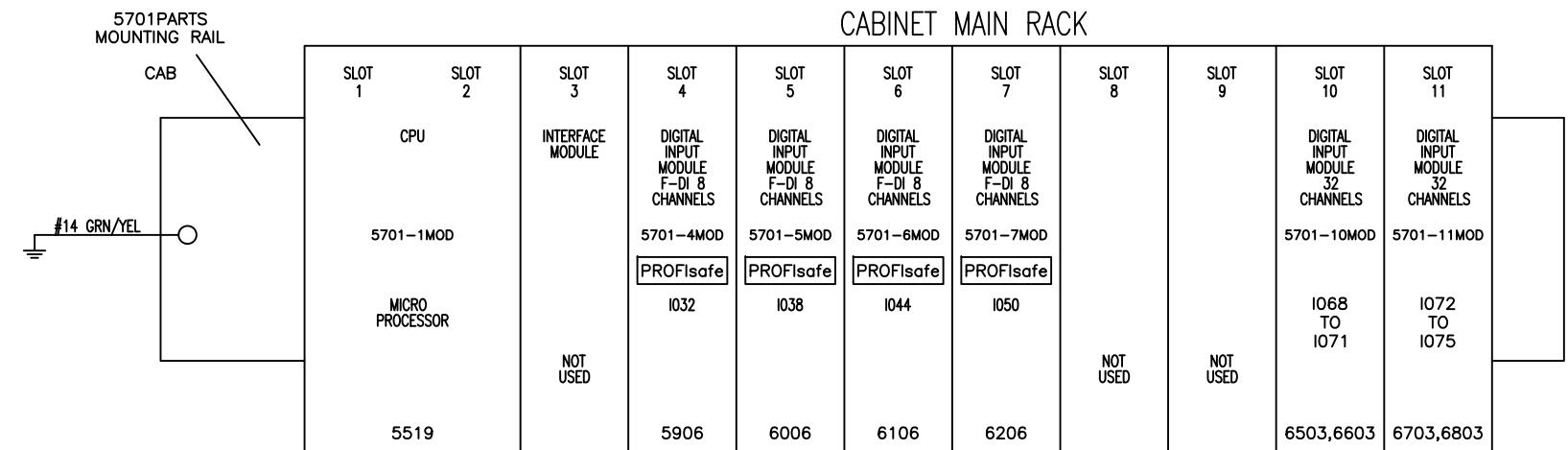
### TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

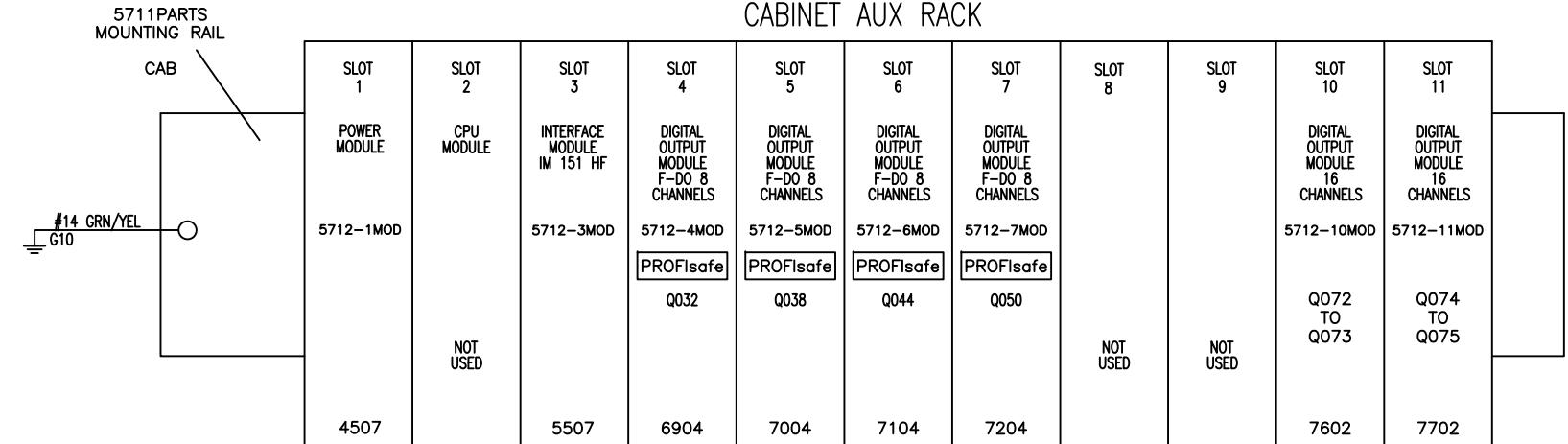
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SHEET NUMBER	DRAWING NUMBER
56B	N00084-E2-651



ADDRESSING LIMITS  
DIGITAL 0-127  
ANALOG 0-751



I/O RACK LAYOUT (CAB)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
57	N00084-E2-651				

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SHEET NUMBER

DRAWING NUMBER

57 N00084-E2-651

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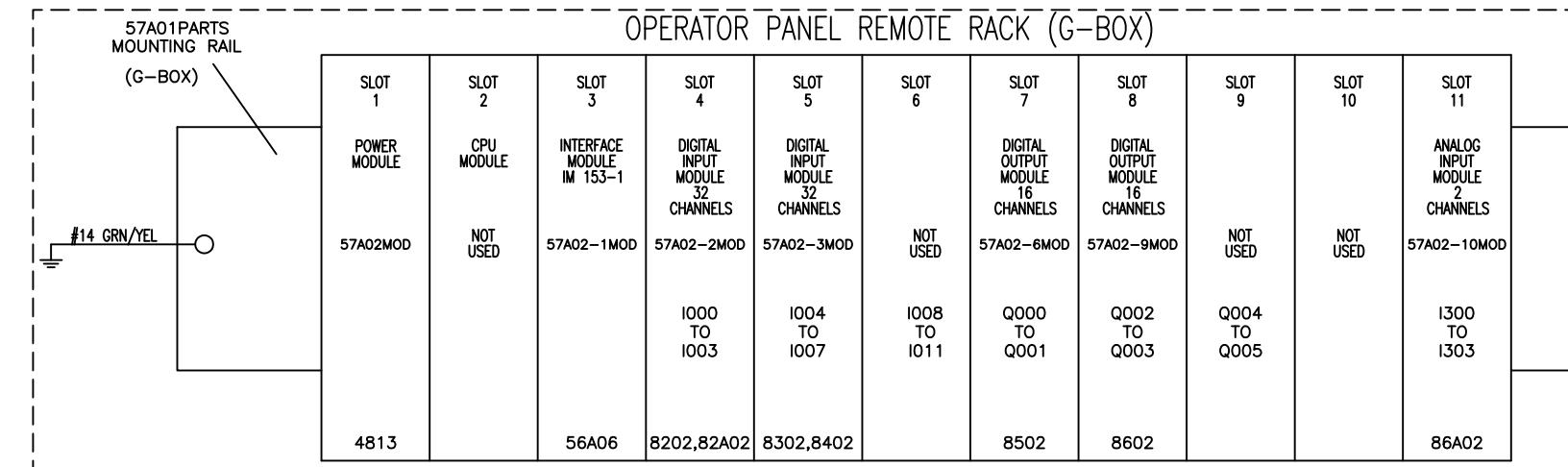
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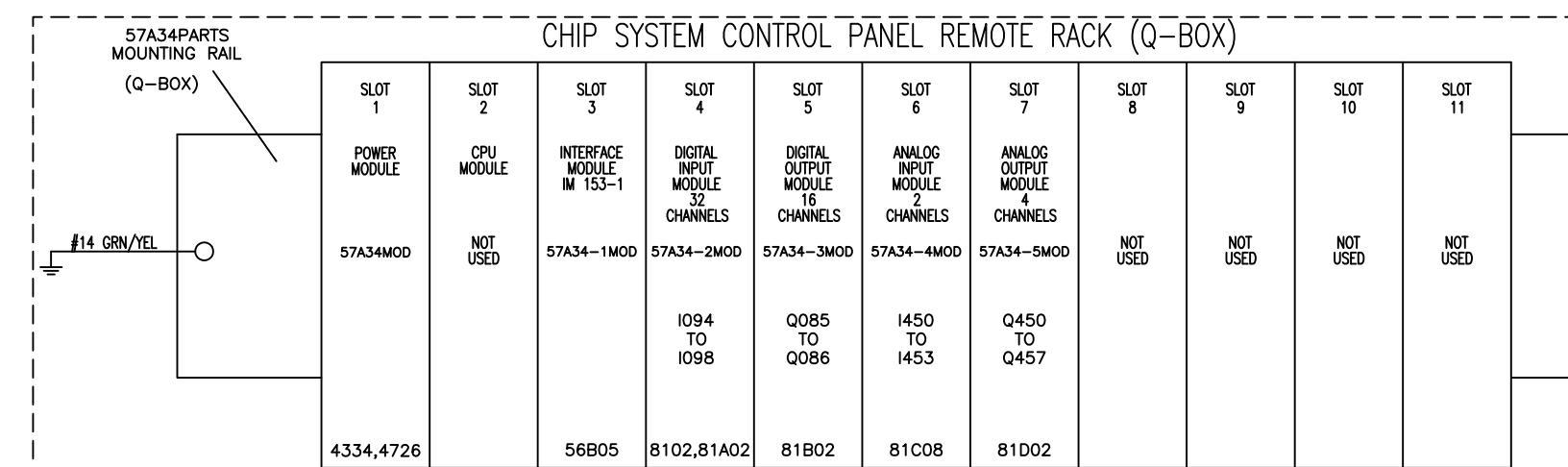
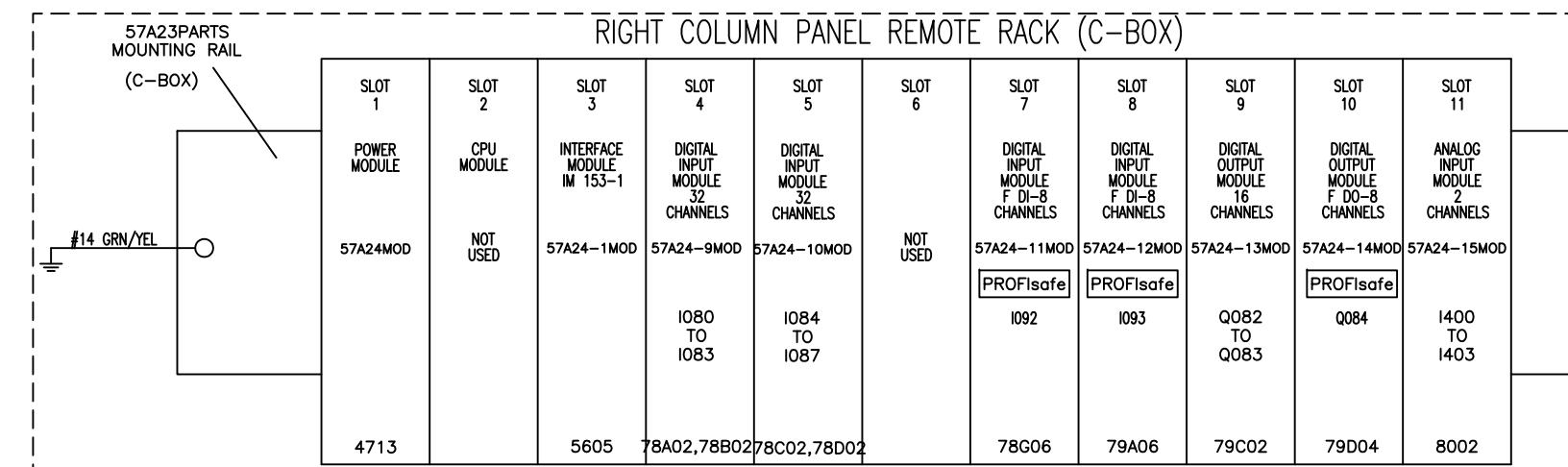
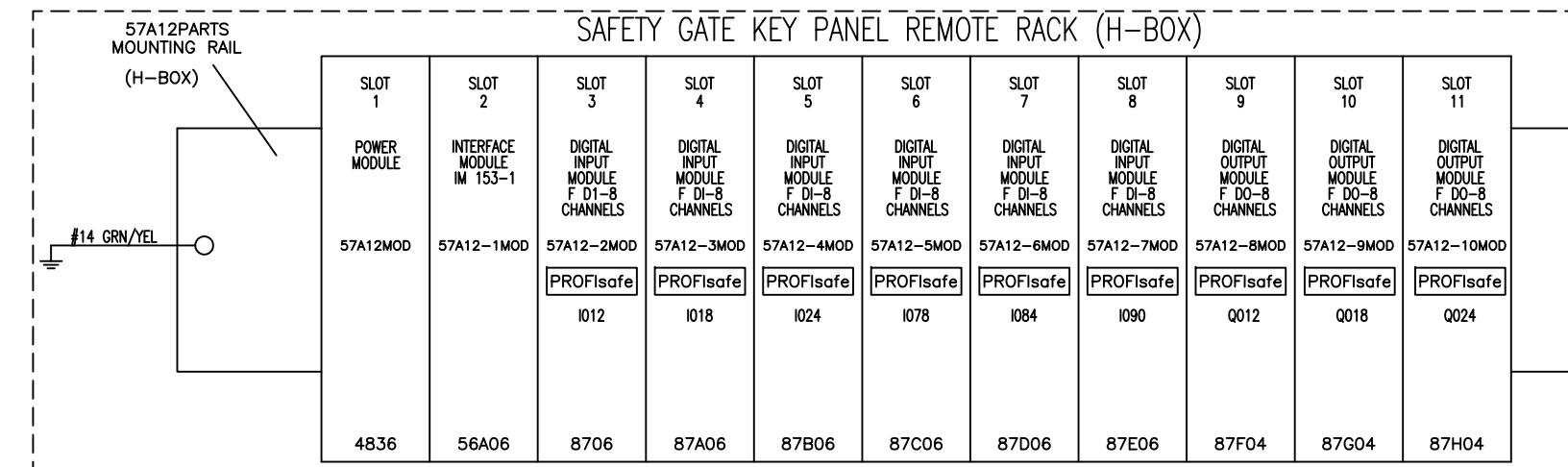
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ADDRESSING LIMITS
DIGITAL 0-127
ANALOG 0-751



Ma'aden Aluminum Project  
Ingersoll Project Number A6RM-4-1001-00/A6RM10003  
2N00084  
Client Drawing Number N00084-E2-651  
EDN CODE D-13 Equipment Tag Number 6130-SCA-001

I/O RACK LAYOUT G H C Q BOX

LETTER	CHANGE	BY	DATE	CHK BY
M/F				
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 57A	DRAWING NUMBER N00084-E2-651			

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57A N00084-E2-651

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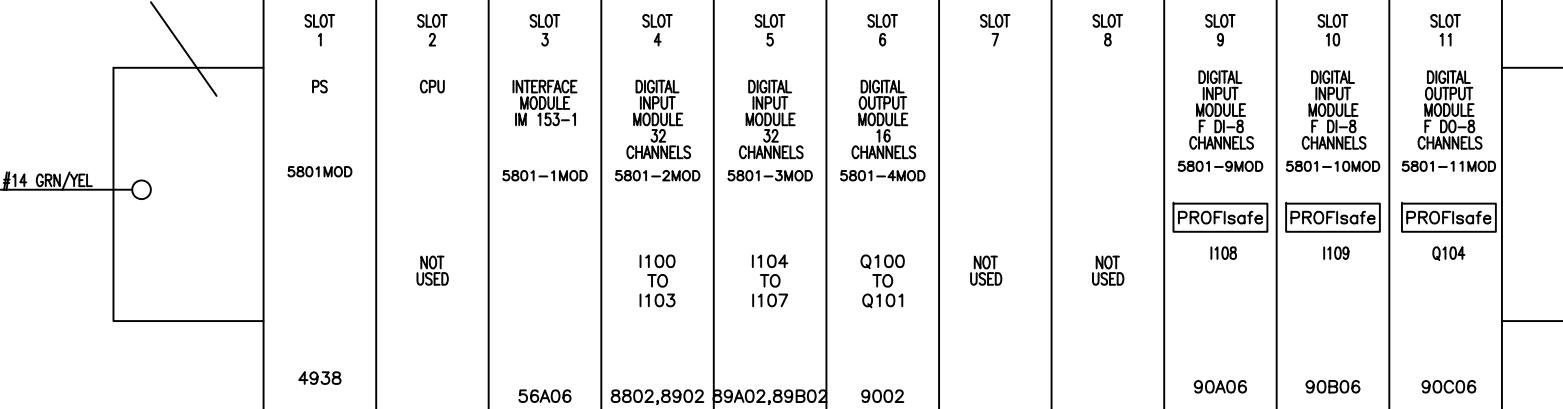
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5801PARTS  
MOUNTING RAIL

## FLUIDS PANEL SKID #1 REMOTE RACK

(J-BOX)

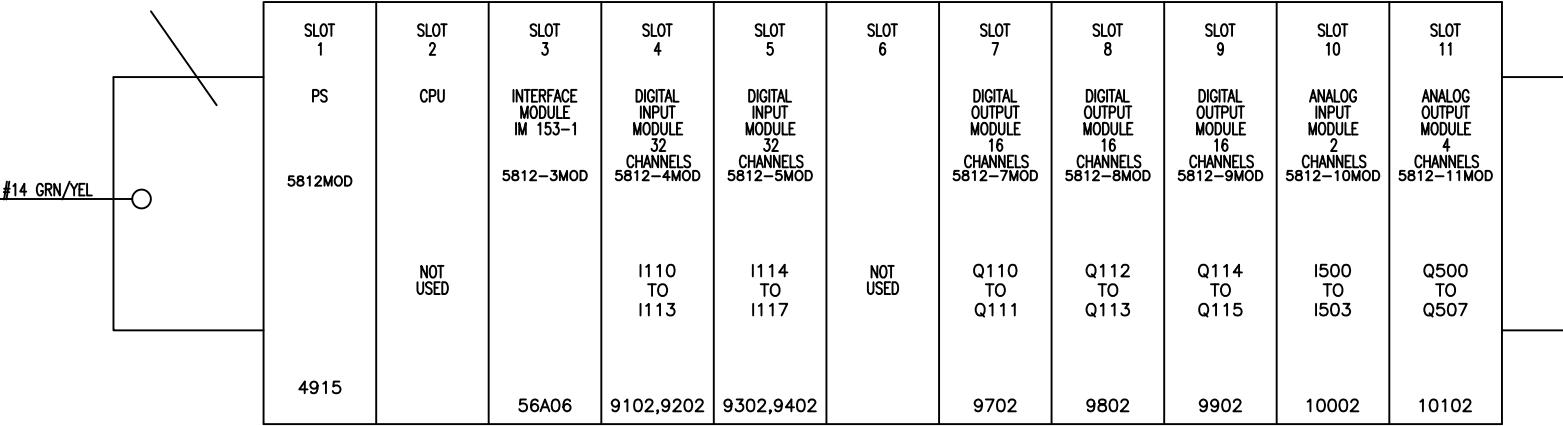
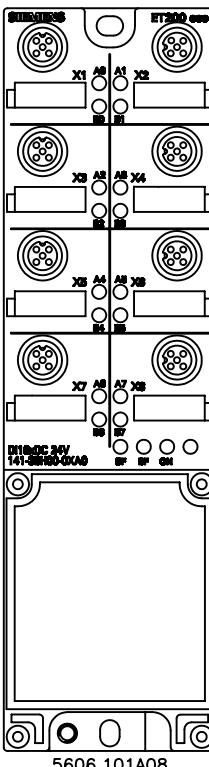
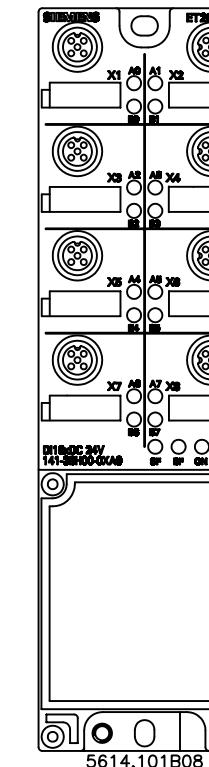
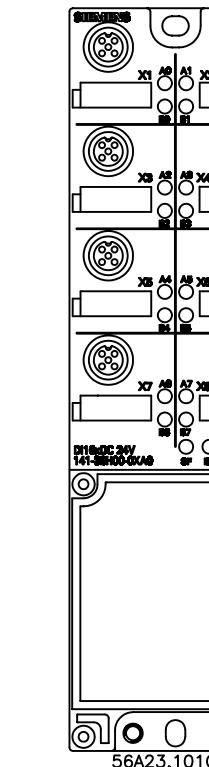
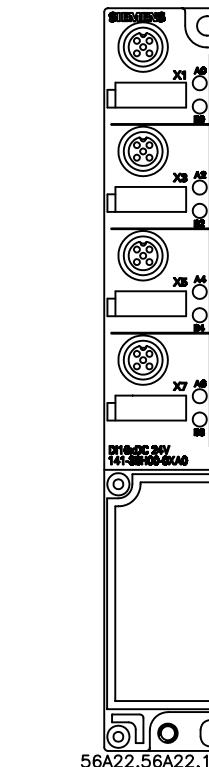
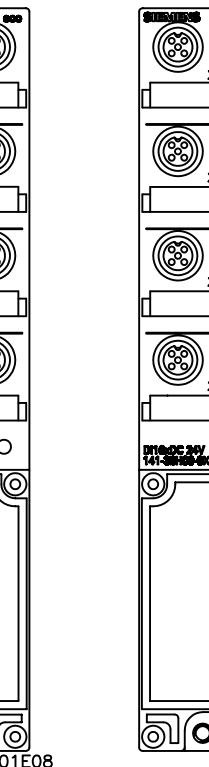
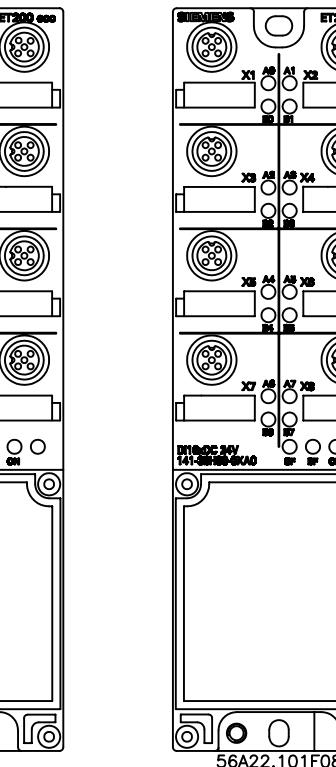


ADDRESSING LIMITS  
DIGITAL 0-127  
ANALOG 0-751

5811PARTS  
MOUNTING RAIL

## FLUIDS PANEL SKID #2 REMOTE RACK

(K-BOX)

I076  
5825MOD  
TABLE  
INPUT MODULE BLOCKI077  
5825-1MOD  
SPARE RACK  
INPUT MODULE BLOCKI120  
5825-2MOD  
TURNOVER BASE  
INPUT MODULE BLOCKI121  
5825-3MOD  
TURNOVER #1  
INPUT MODULE BLOCKI122  
5825-4MOD  
TURNOVER #2  
INPUT MODULE BLOCKI123  
5825-5MOD  
INFEED  
INPUT MODULE BLOCK

Ingersoll Project Number: A6RM-4-1001-00/A6RM100003  
Ma'aden P.O. Number: 2N00084  
Client Drawing Number: N00084-E2-651  
EDN CODE: Equipment Tag Number  
D-13 6130-SCA-001

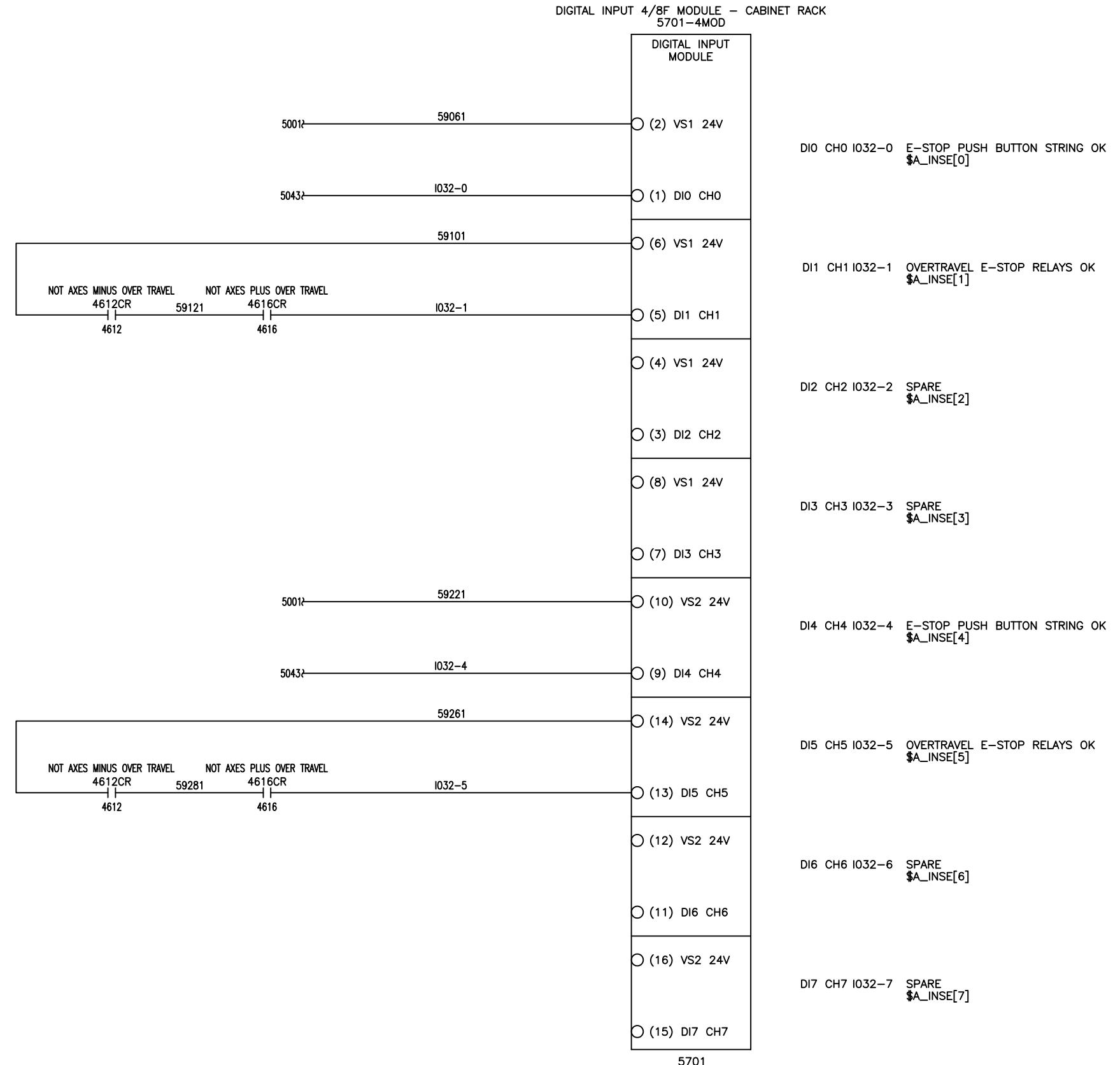
## I/O RACK LAYOUT (J-BOX) (K-BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
58	N00084-E2-651				

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SHEET NUMBER DRAWING NUMBER  
58 N00084-E2-651

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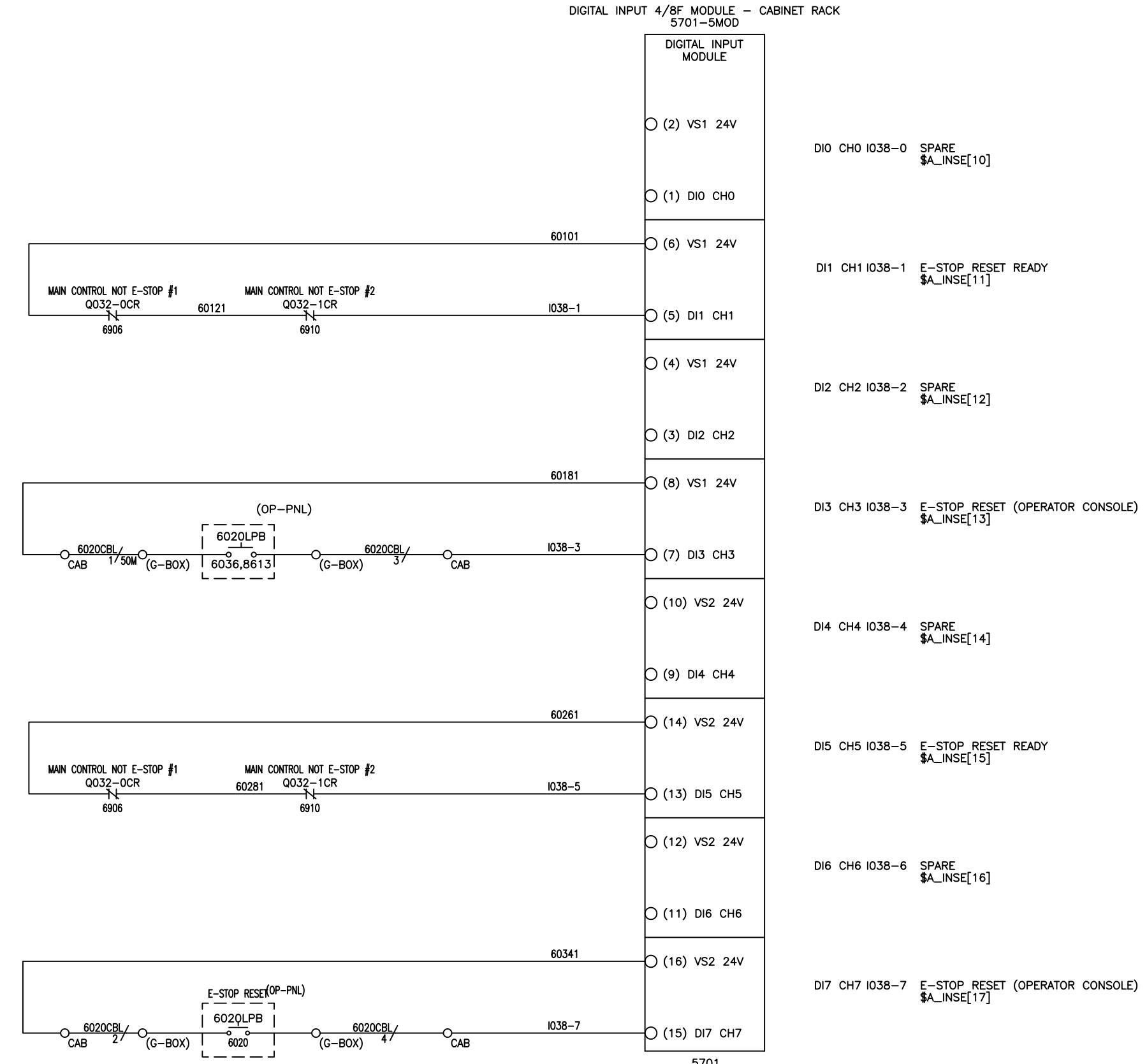


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MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER 59	DRAWING NUMBER N00084-E2-651	

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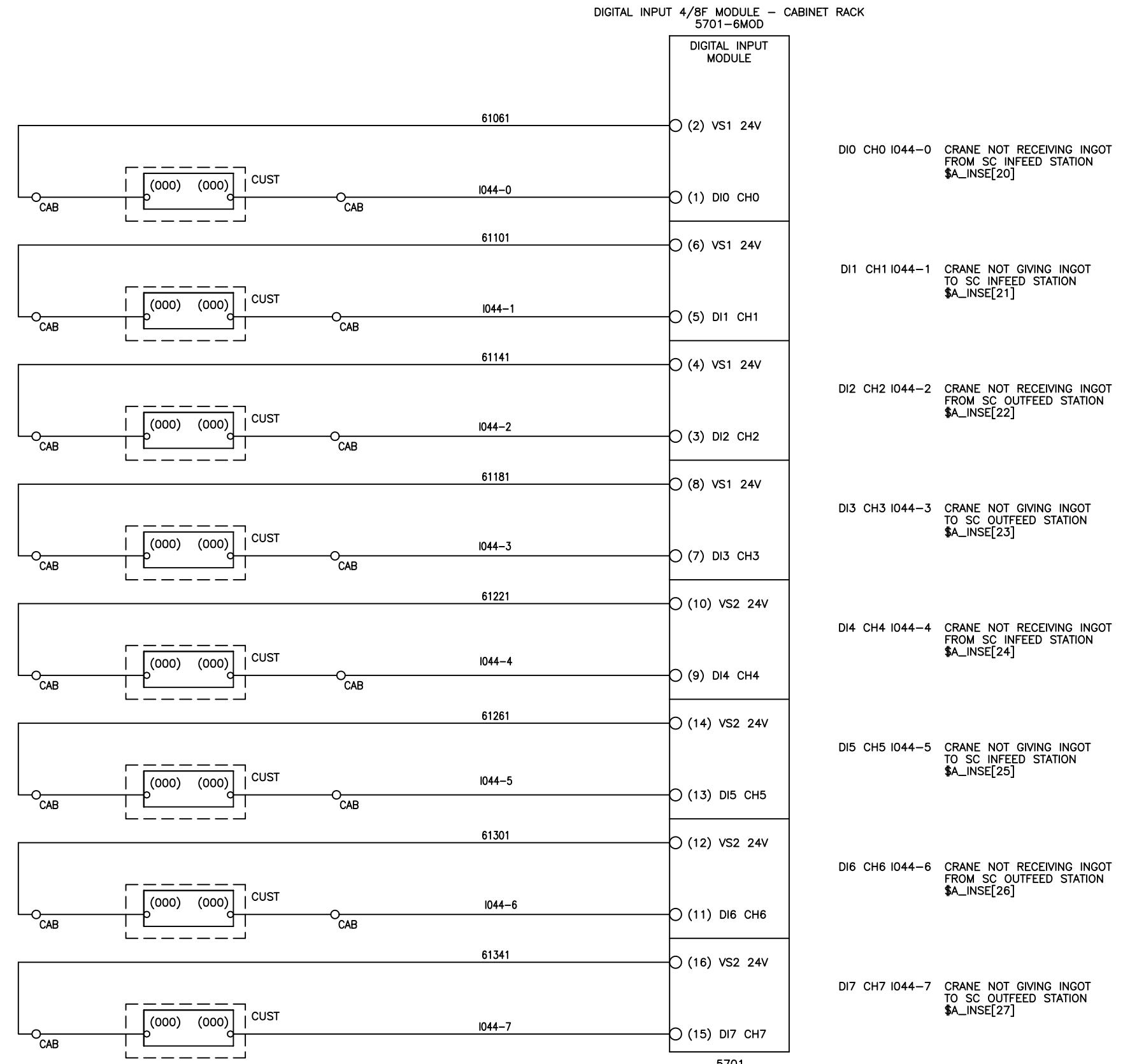


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LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY	WAYNE LANGDON	CHECKED BY	WAYNE LANGDON	DESIGNED BY	WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
60	N00084-E2-651				

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ONETEAM		ALCOA		MA'ADEN	
Ma'aden Aluminum Project					
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003		INGERSOLL Project Number			
Client Drawing Number D-13		EDN CODE		Equipment Tag Number D-13 6130-SCA-001	
SAFETY INPUTS - I044 (CAB)					
LET	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084		SHOP ORDER E2		DATE 05/07/11	
DRAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON		DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
61	N00084-E2-651				

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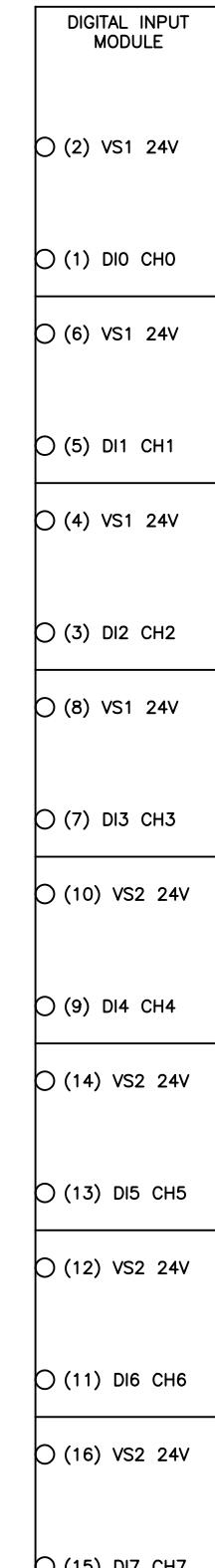
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DIGITAL INPUT 4/8F MODULE – CABINET RACK  
5701-7MODDI0 CH0 I050-0 SPARE  
\$A\_INSE[30]DI1 CH1 I050-1 SPARE  
\$A\_INSE[31]DI2 CH2 I050-2 SPARE  
\$A\_INSE[32]DI3 CH3 I050-3 SPARE  
\$A\_INSE[33]DI4 CH4 I050-4 SPARE  
\$A\_INSE[34]DI5 CH5 I050-5 SPARE  
\$A\_INSE[35]DI6 CH6 I050-6 SPARE  
\$A\_INSE[36]DI7 CH7 I050-7 SPARE  
\$A\_INSE[37]

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ALCOA	MA'ADEN	ONETEAM
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number	
Client Drawing Number D-13	EDN CODE	Equipment Tag Number 6130-SCA-001

## SAFETY INPUTS – I050 (CAB)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE						
ELECTRICAL SCHEMATICS						
MACHINE	SHOP ORDER			DATE		
2N00084	E2			05/07/11		
DRAWN BY	CHECKED BY			DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON			WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER		DRAWING NUMBER				
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Ma'aden Aluminum Project				
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number D-13	INGERSOLL Project Number D-13		
Client Drawing Number D-13	EDN CODE 6130-SCA-001	Equipment Tag Number D-13		
SPARE INPUTS (CAB)				
LET TER	CHANGE	BY	DATE	CHK M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
63	N00084-E2-651			

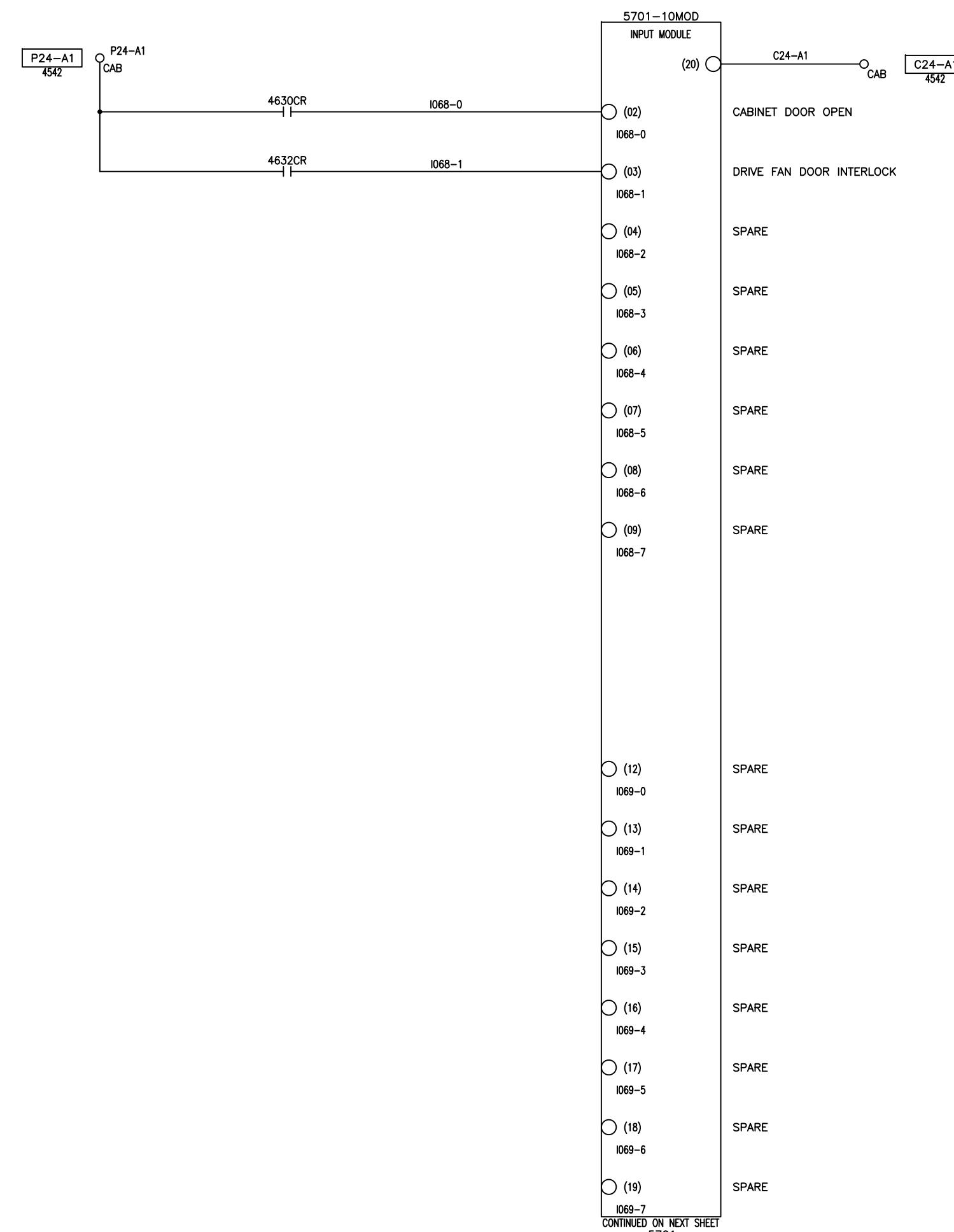
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 <b>ALCOA</b>	 <b>Ma'aden</b>	Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001		
SPARE INPUTS (CAB)				
LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE <b>ELECTRICAL SCHEMATICS</b>				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
64	N00084-E2-651			

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Ma'aden P.D. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM10003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

DIGITAL INPUTS I068-I069 (CAB)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE						

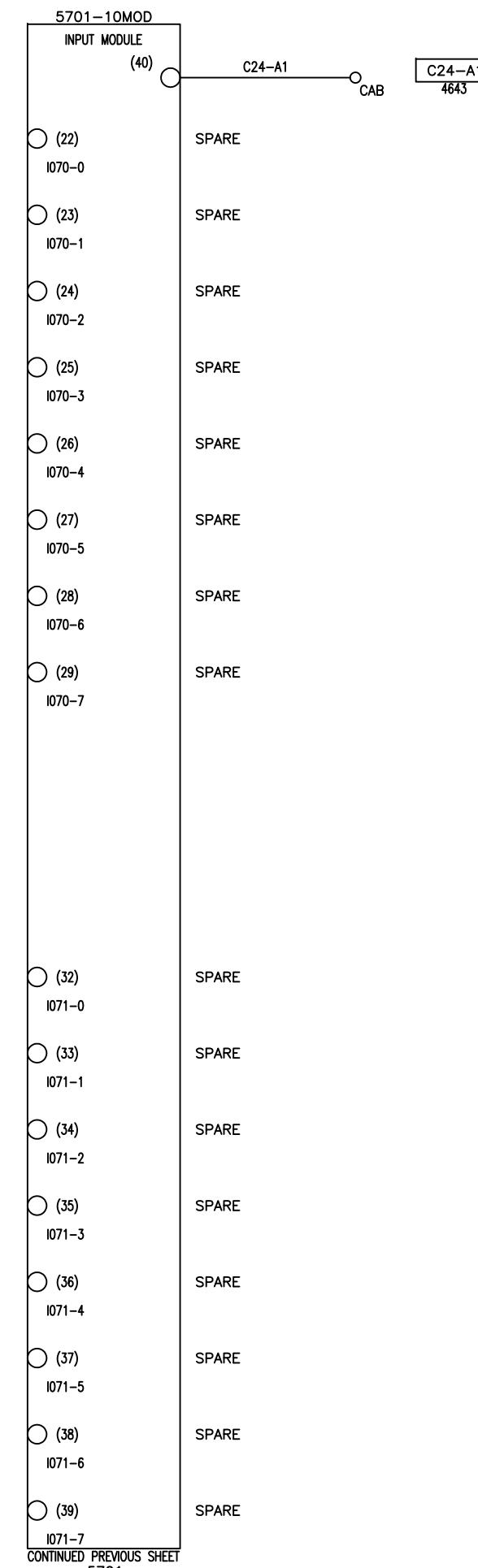
ELECTRICAL SCHEMATICS

MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
65	N00084-E2-651

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ALCOA		Ma'aden		
ONETEAM	ALCOA	MA'ADEN	Aluminum Project	
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001			
DIGITAL INPUTS I070-I071 (CAB)				
LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 66	DRAWING NUMBER N00084-E2-651			

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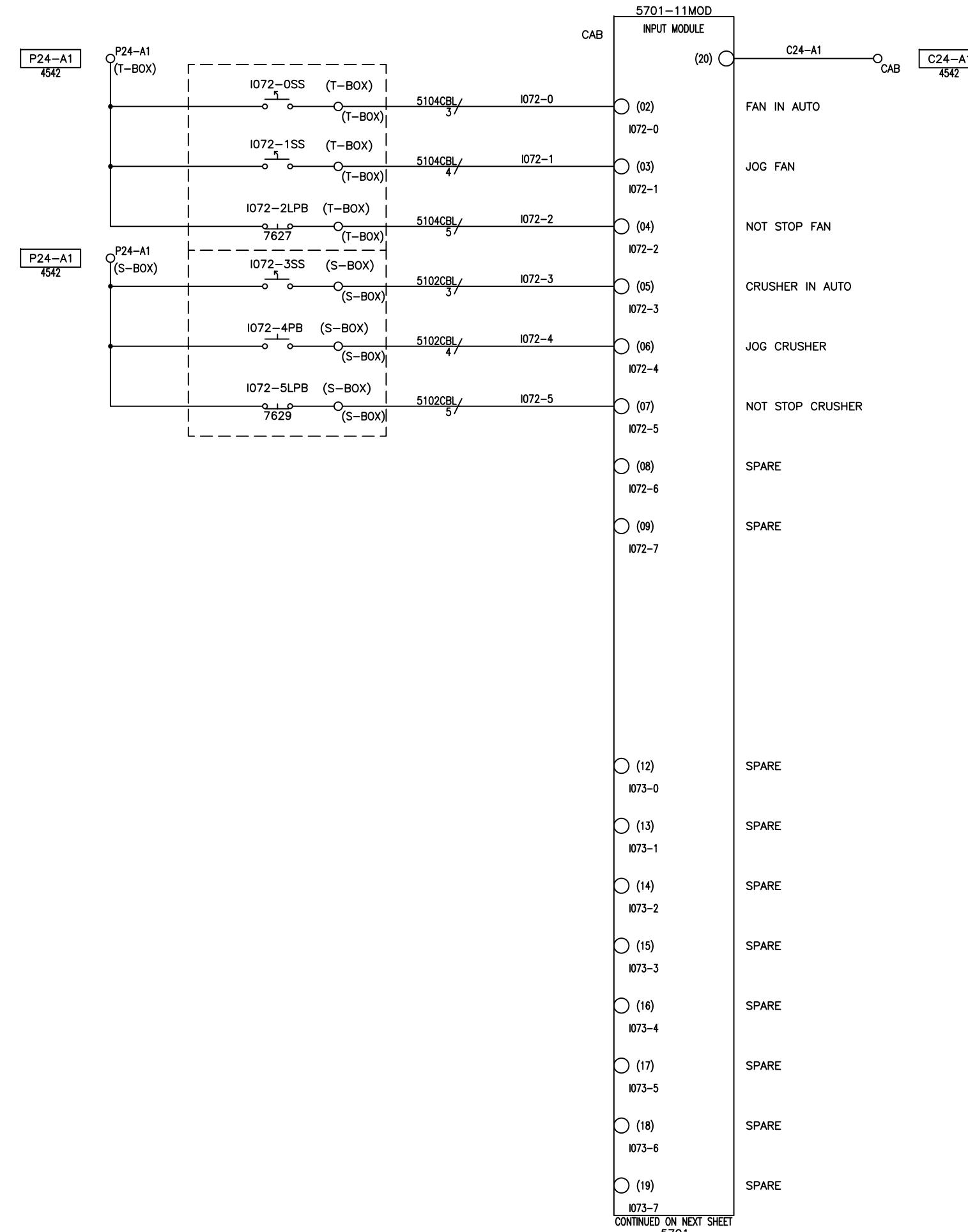
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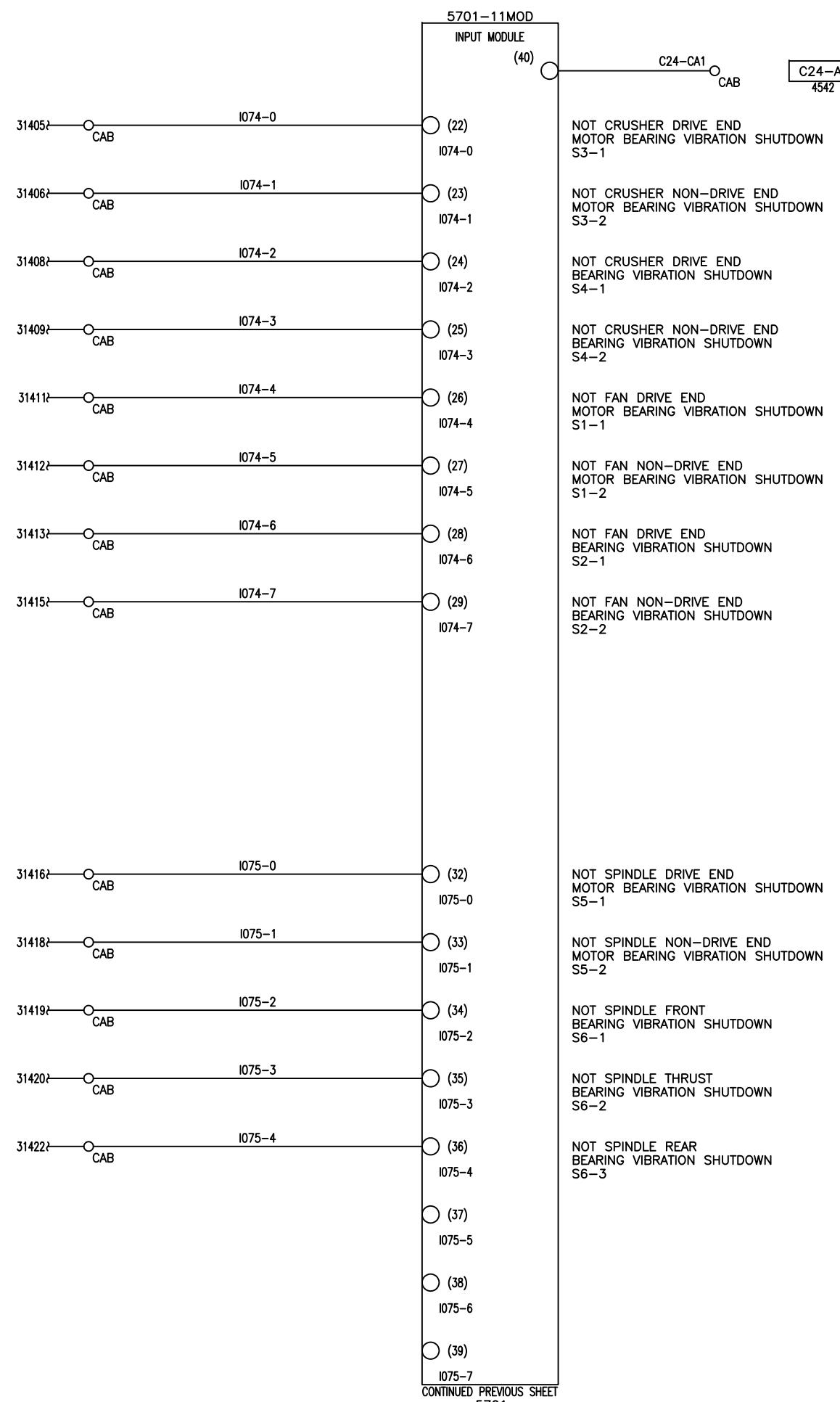
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<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
<b>Ma'aden Aluminum Project</b>		
Inga'den P.D. Number	INGERSOLL Project Number	
A6RM-4-1001-00/A6RM10003	2N00084	

Client Drawing Number EDN CODE Equipment Tag Number

N00084-E2-651 D-13 6130-SCA-001

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## DIGITAL INPUTS I074-I075 (CAB)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						

MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11

DRAWN BY	CHECKED BY	DESIGNED BY
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON

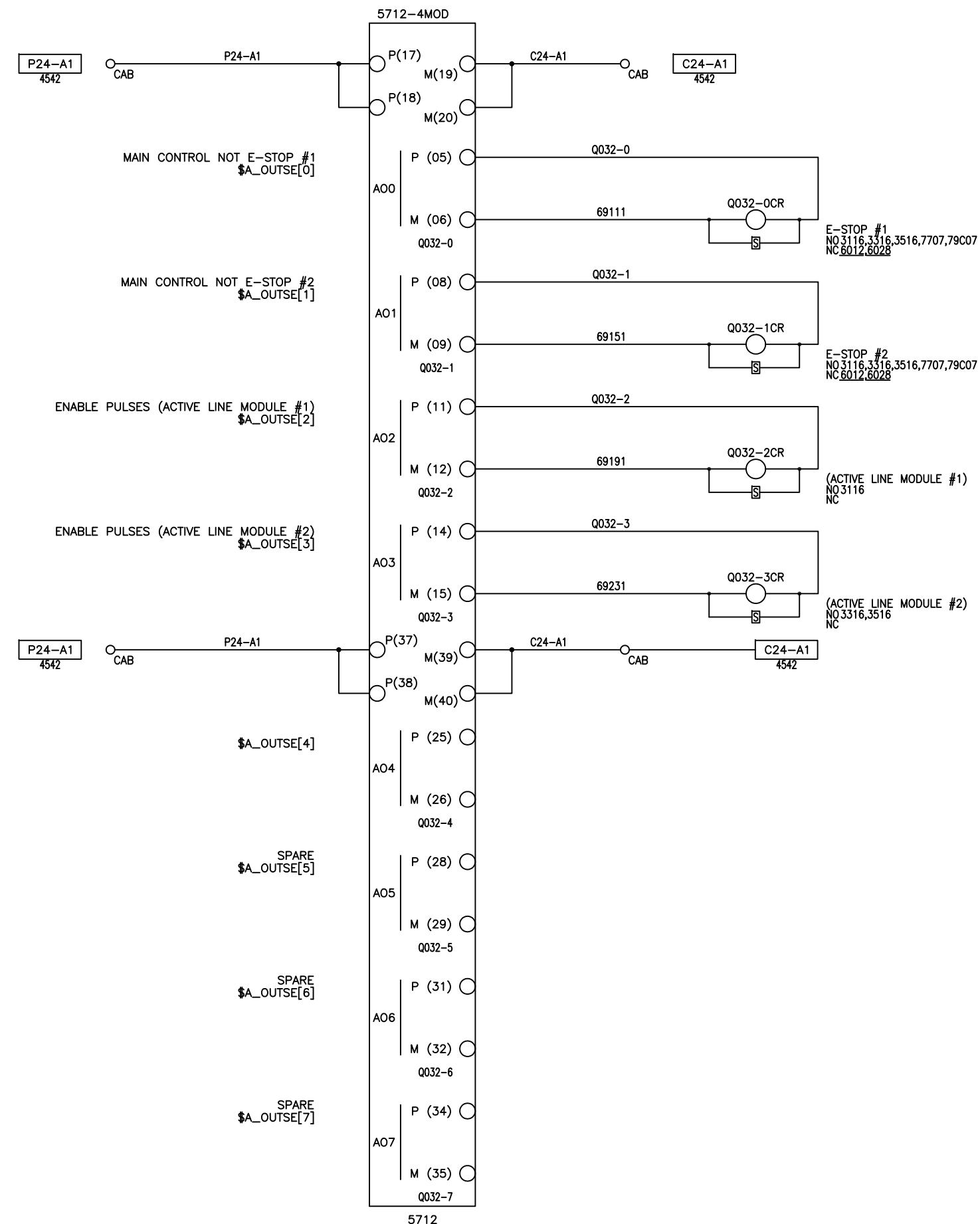
INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		

SHEET NUMBER	DRAWING NUMBER
68	N00084-E2-651

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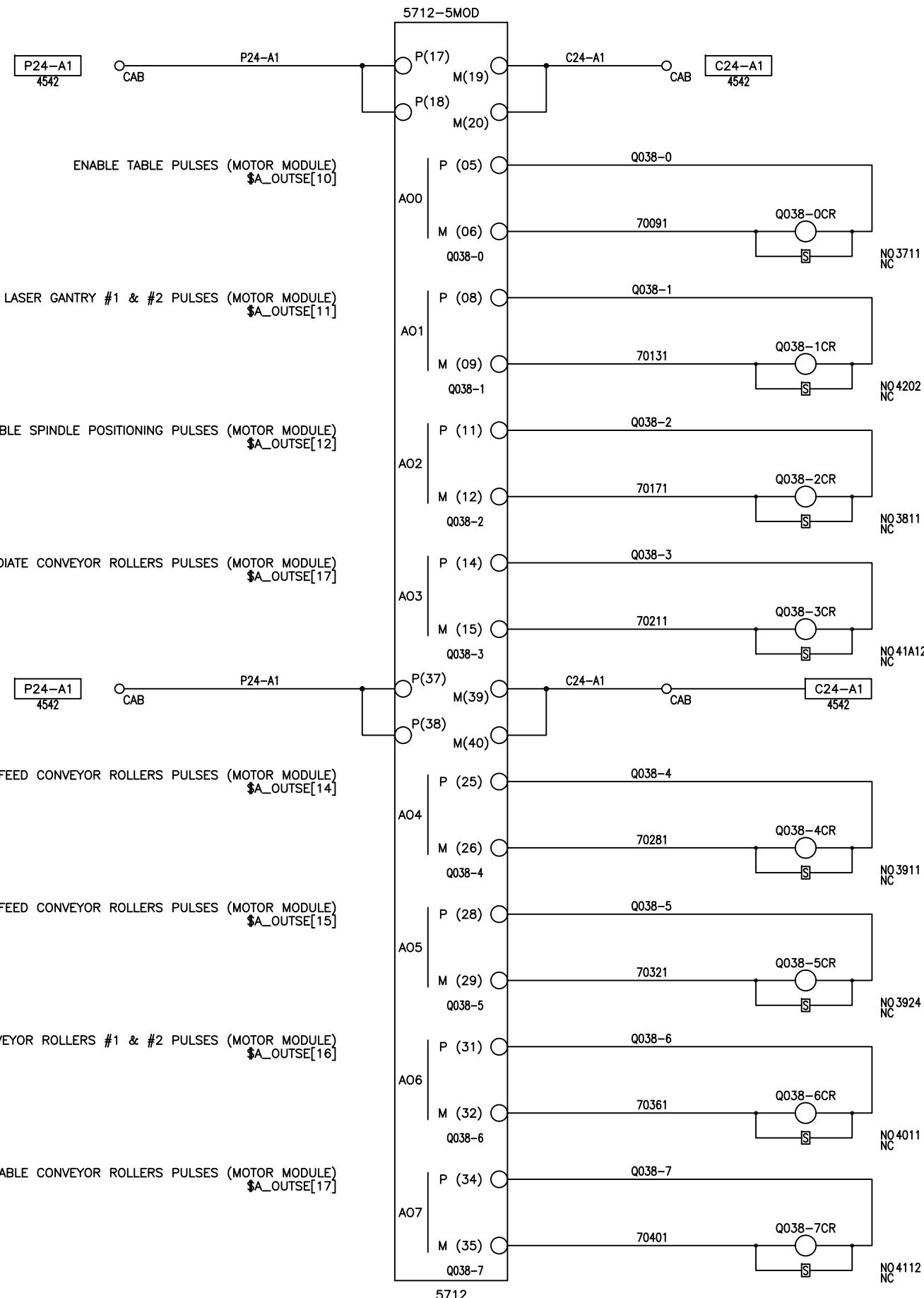
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ONE TEAM	ALCOA	MA'ADEN	Ma'aden Aluminum Project
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number EDN CODE	INGERSOLL Project Number Equipment Tag Number D-13 6130-SCA-001	
Client Drawing Number D-13			
SAFETY OUTPUTS - Q032 (CAB)			
LET	CHANGE	BY	DATE
TER			CHK
M/F			
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER 69	DRAWING NUMBER N00084-E2-651		

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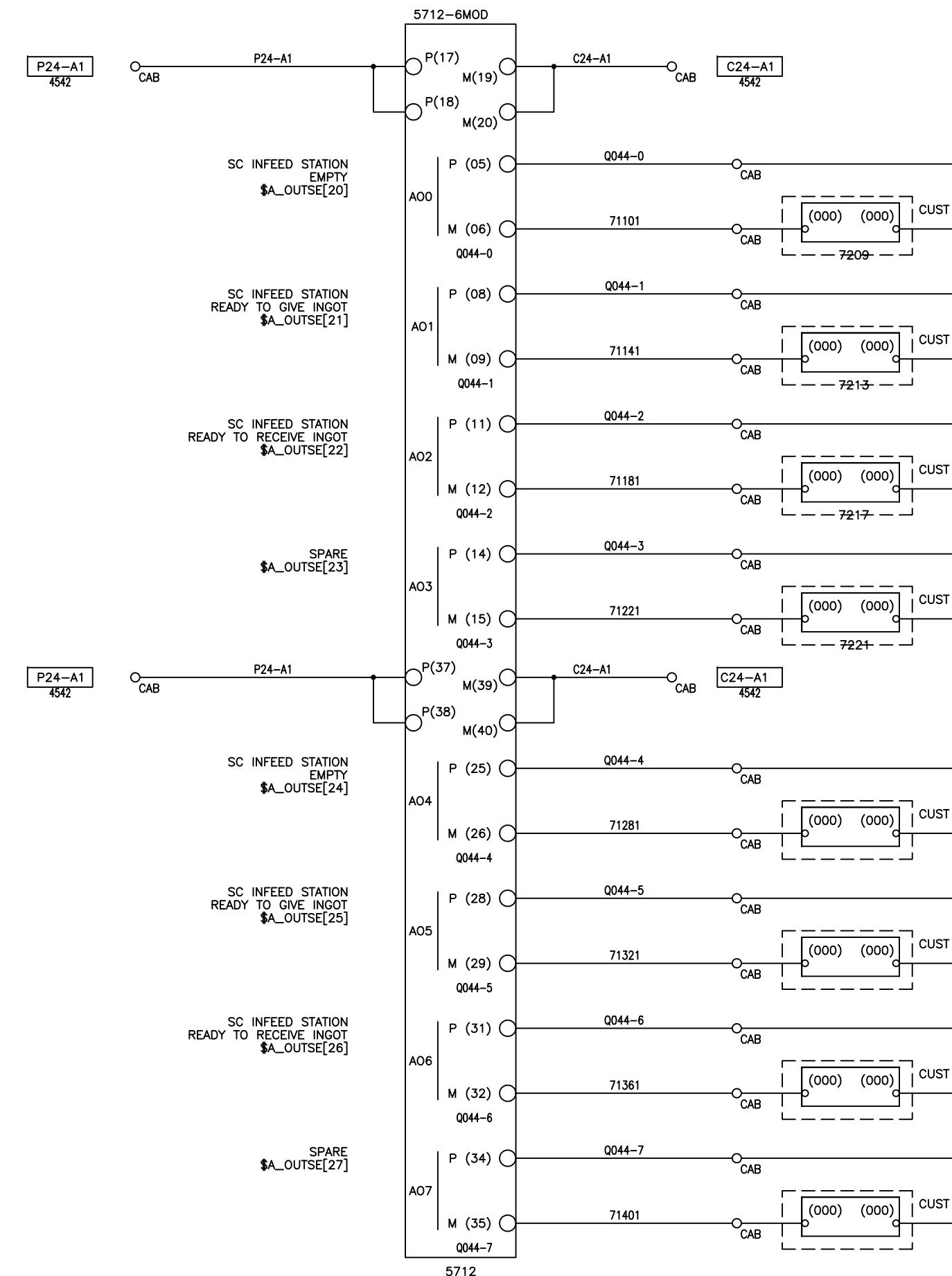


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LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
70	N00084-E2-651				

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 ONE TEAM	 ALCOA	 Ma'aden Saudi Arabian Mining Company			
Ma'aden Aluminum Project					
Ma'aden P.I. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number				
Client Drawing Number EIN CODE	Equipment Tag Number				
	D-13	6130-SCA-001			
<b>SAFETY OUTPUTS - Q044 (CAB)</b>					
ET ER	CHANGE	BY	DATE	CHK BY	M/F
ITLE ELECTRICAL SCHEMATICS					
ACHINE 2N00084	SHOP ORDER E2	DATE		05/07/11	
RAVN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY		WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
71	N00084-E2-651				

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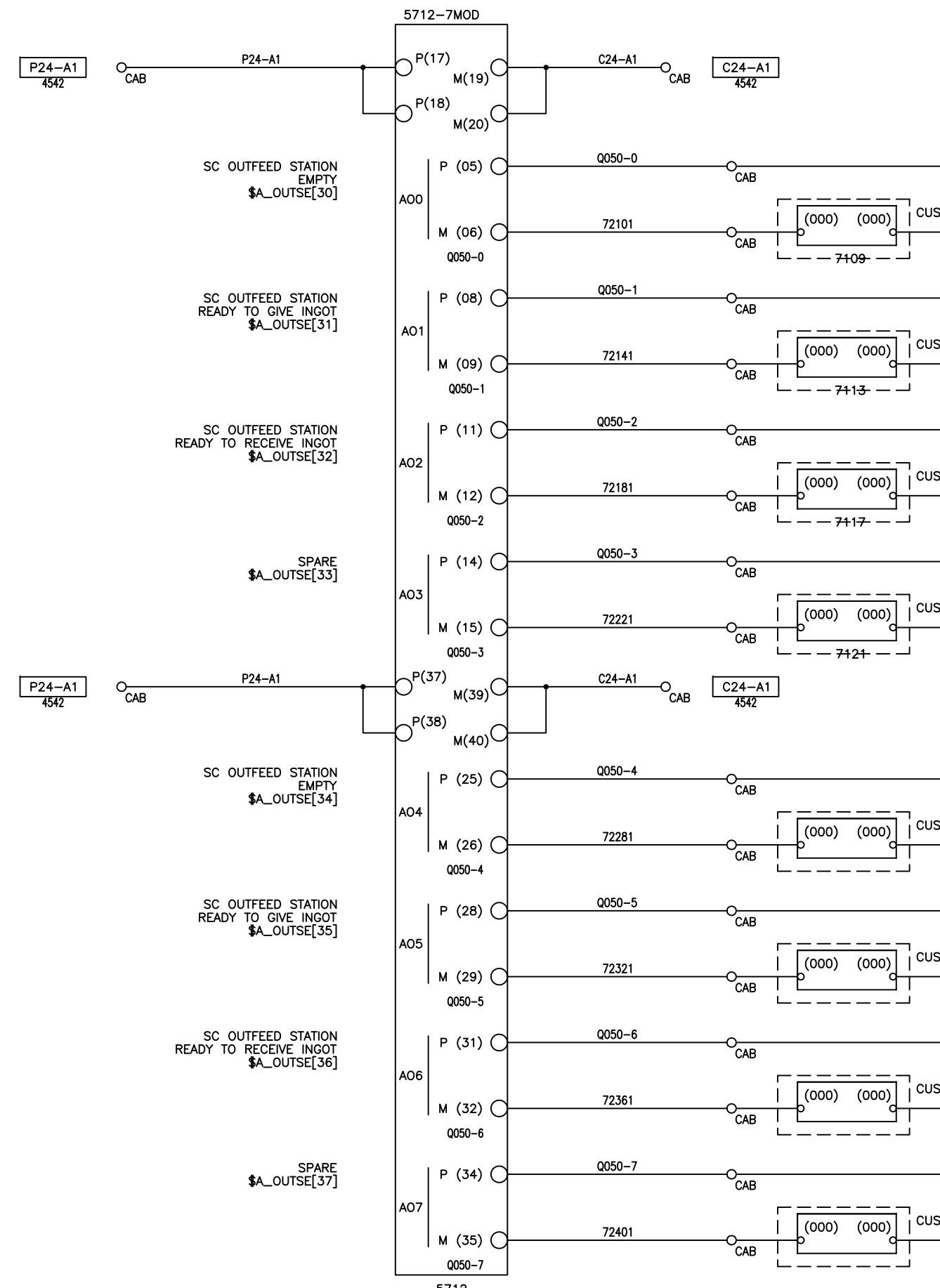
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ALCOA		Ma'aden	
Ma'aden Aluminum Project			
Ma'aden P.O. Number	INGERSOLL Project Number		
A6RM-4-1001-00/A6RM100003			
Client Drawing Number	EDN CODE Equipment Tag Number		
D-13	6130-SCA-001		
SAFETY OUTPUTS - Q050 (CAB)			
LETTER	CHANGE	BY DATE	CHK BY
M/F			
TITLE ELECTRICAL SCHEMATICS			
MACHINE	SHOP ORDER	DATE	
2N00084	E2	05/07/11	
DRAWN BY	CHECKED BY	DESIGNED BY	
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
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  	Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number D-13	EDN CODE 6130-SCA-001	M/F
Client Drawing Number D-13	Equipment Tag Number 6130-SCA-001		
SPARE - (CAB)			
LET TER	CHANGE	BY	DATE
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
73	N00084-E2-651		

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  	Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number D-13	EDN CODE 6130-SCA-001	M/F
Client Drawing Number D-13	Equipment Tag Number 6130-SCA-001		
SPARE - (CAB)			
LET TER	CHANGE	BY	DATE
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
74	N00084-E2-651		

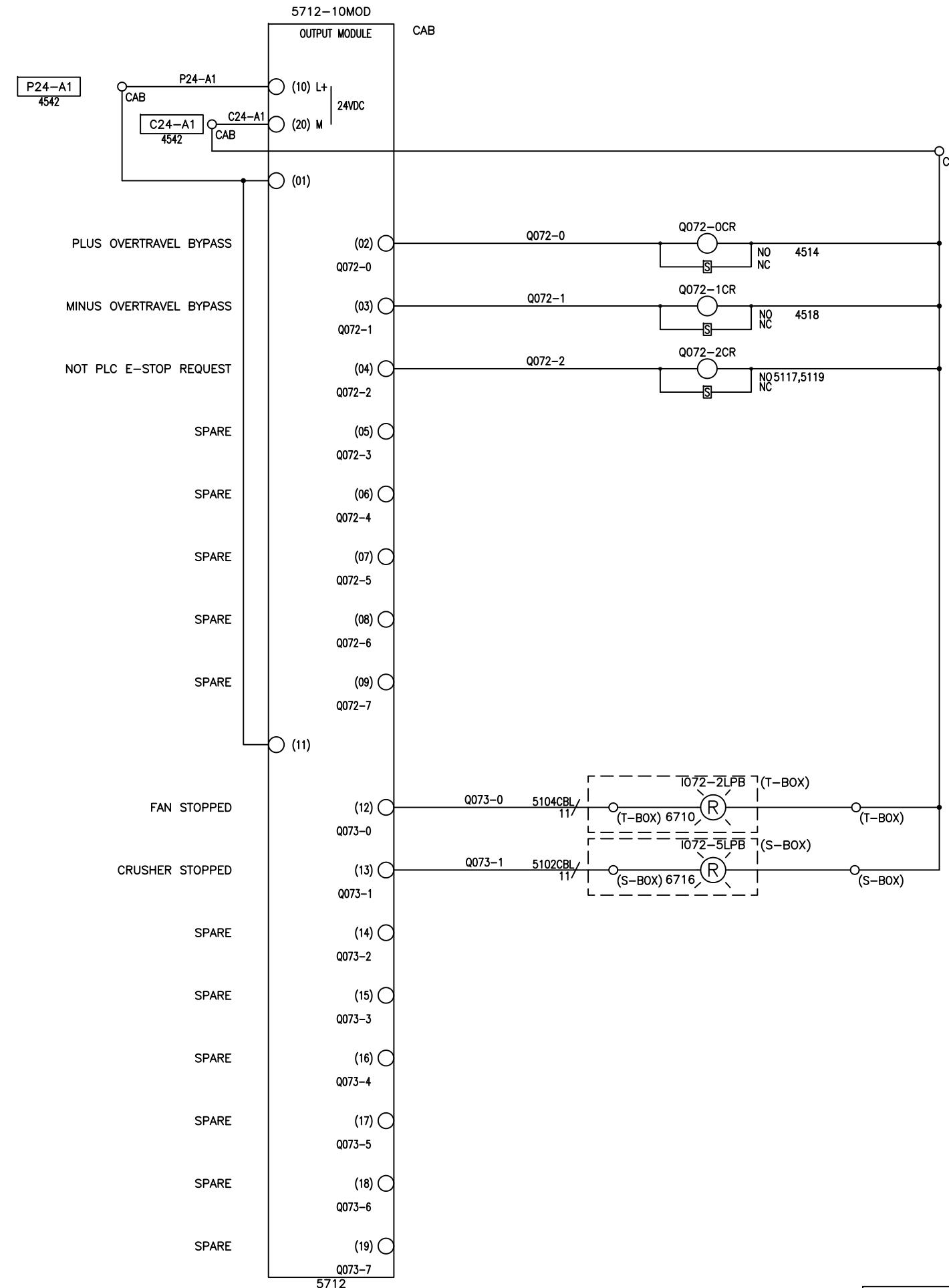
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			Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003		INGERSOLL Project Number D-13 6130-SCA-001			
Client Drawing Number D-13		EDN CODE Equipment Tag Number D-13 6130-SCA-001			
SPARE - (CAB)					
LET TER	CHANGE		BY	DATE	CHK BY
M/F					
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
75	N00084-E2-651				

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Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
DIGITAL OUTPUTS Q072-Q073 (CAB)		
LET	CHANGE	BY DATE
TER		CHK
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
76	N00084-E2-651	

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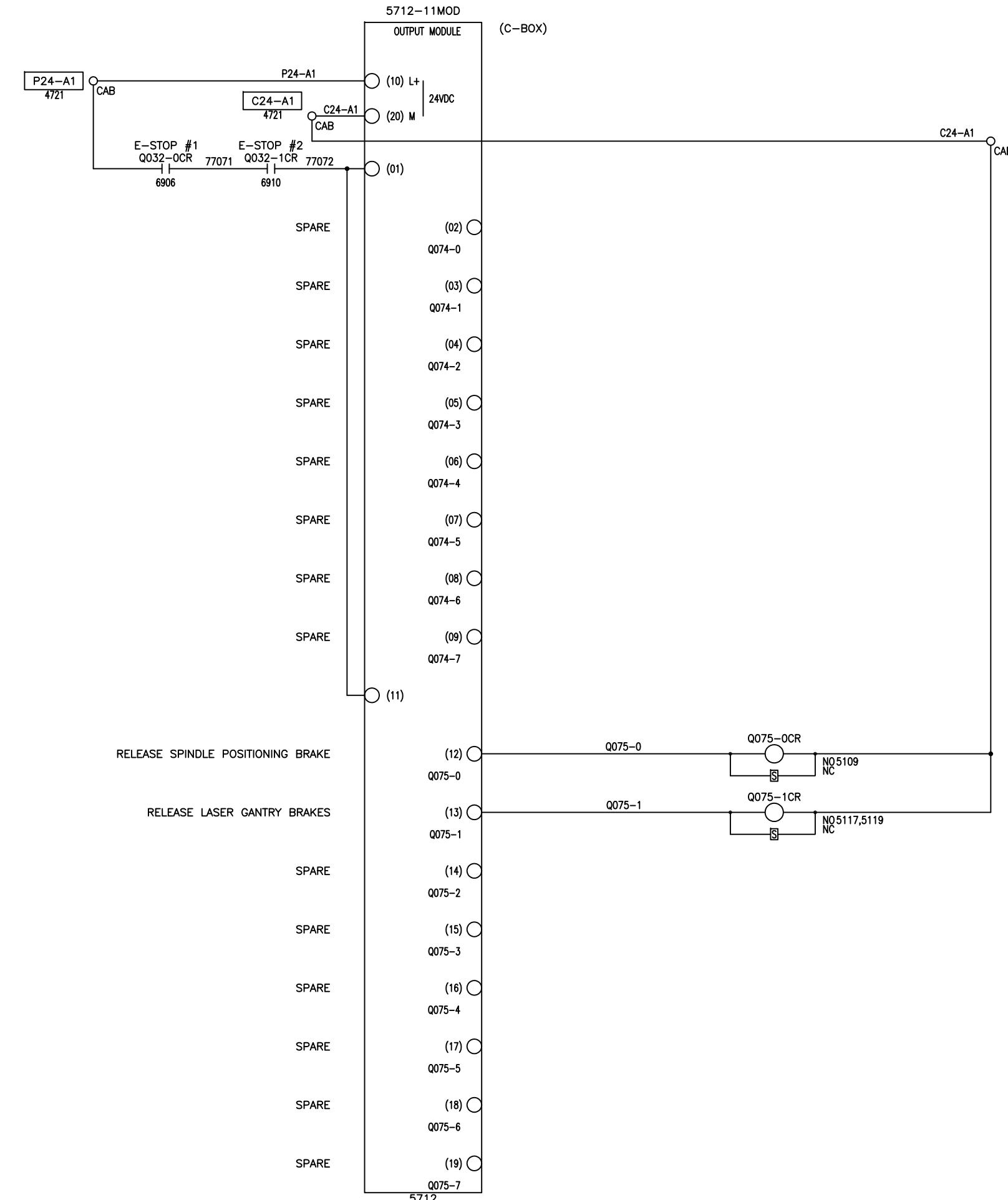
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ALCOA		Ma'aden	
ONETEAM		Alcoa Saudi Arabian Company	
Ma'aden P.O. Number	INGERSOLL Project Number		
A6RM-4-1001-00/A6RM100003	2N00084		
Client Drawing Number	EDN CODE Equipment Tag Number		
N00084-E2-651	D-13 6130-SCA-001		

### DIGITAL OUTPUTS Q074-Q075 (CAB)

LET	TER	CHANGE	BY	DATE	CHK	M/F
<b>TITLE</b>						
<b>ELECTRICAL SCHEMATICS</b>						
MACHINE	SHOP ORDER			DATE		
2N00084	E2			05/07/11		
DRAWN BY	CHECKED BY			DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON			WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
77	N00084-E2-651					

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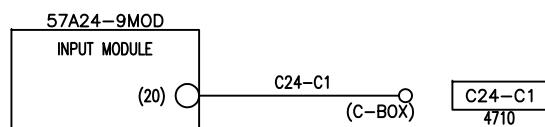
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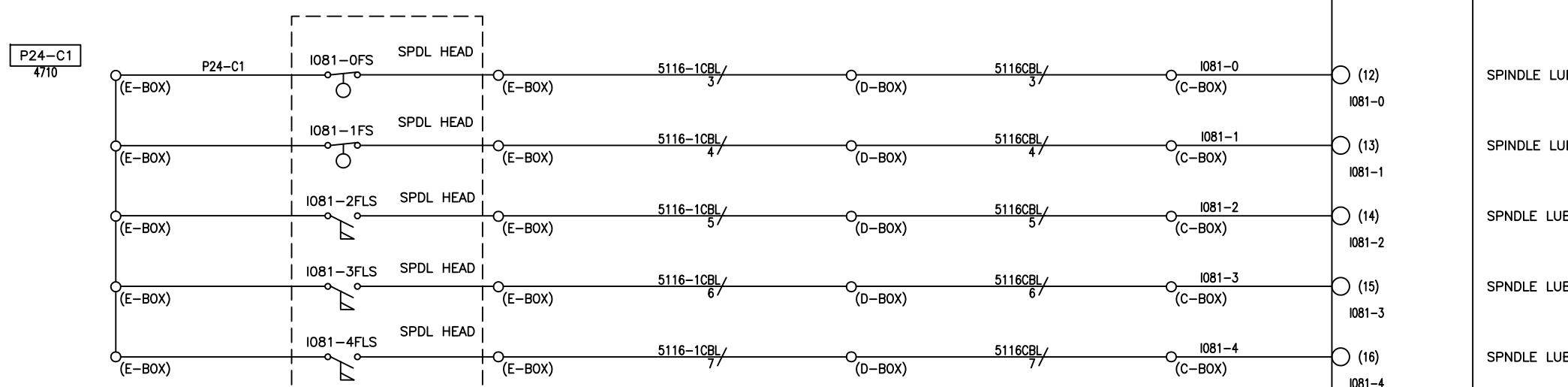
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- (02) I080-0 SPARE
- (03) I080-1 SPARE
- (04) I080-2 SPARE
- (05) I080-3 SPARE
- (06) I080-4 SPARE
- (07) I080-5 SPARE
- (08) I080-6 SPARE
- (09) I080-7 SPARE



SPINDLE LUBRICANT COLLECTION PAN OIL LEVEL NOT HIGH

SPINDLE LUBRICANT COLLECTION PAN OIL LEVEL NOT HIGH (ALARM)

SPNDLE LUBRICATION FRONT BEARING FLOW OK

SPNDLE LUBRICATION THRUST BEARING FLOW OK

SPNDLE LUBRICATION REAR BEARING FLOW OK

Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

DIGITAL INPUTS I080-I081 (C-BOX)

LET	TER	CHANGE	BY	DATE	CHK
					M/F

## TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
78A	N00084-E2-651

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CONTINUED ON NEXT SHEET

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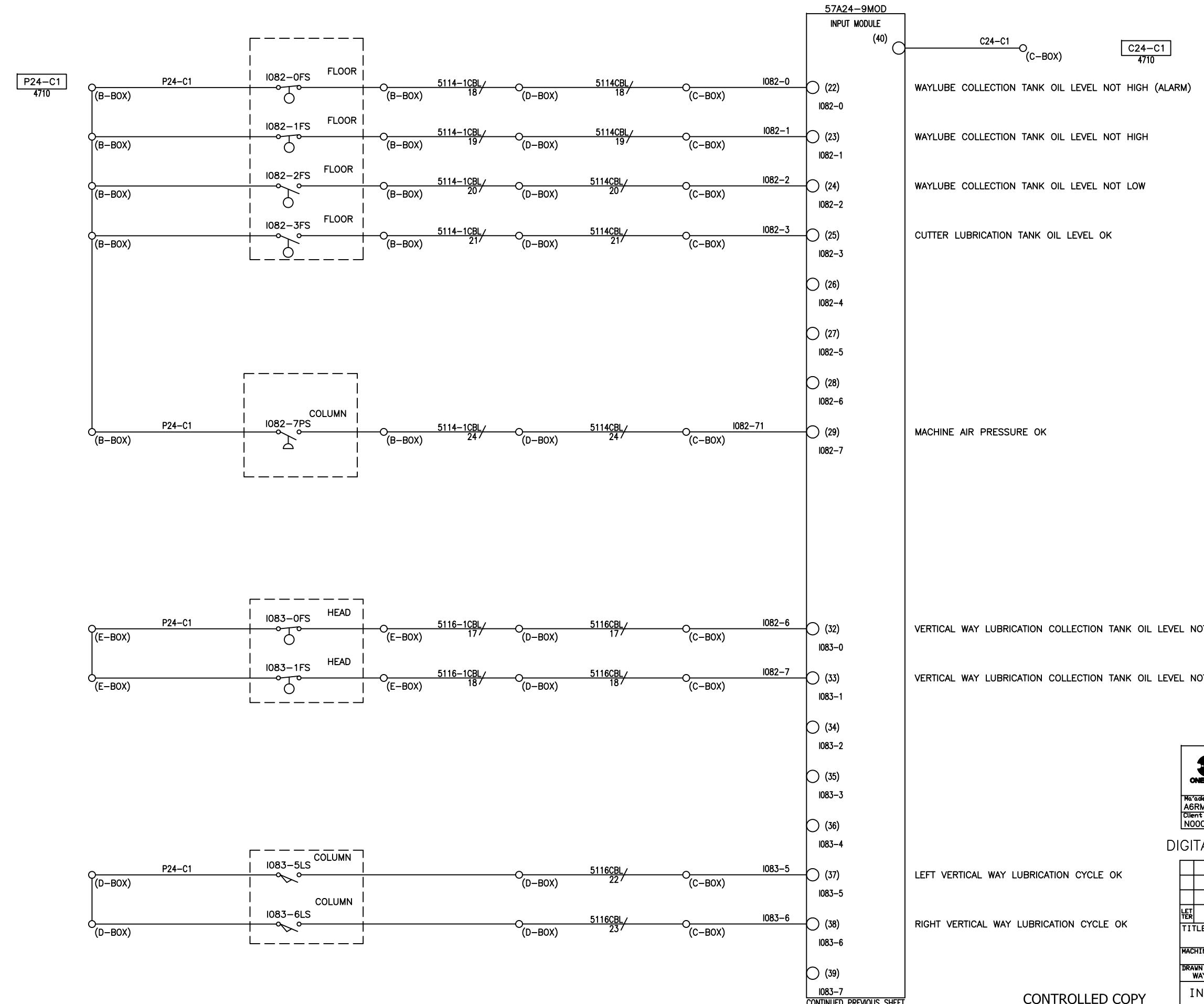
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CONTINUED PREVIOUS SHEET  
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ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 78B	DRAWING NUMBER N00084-E2-651			

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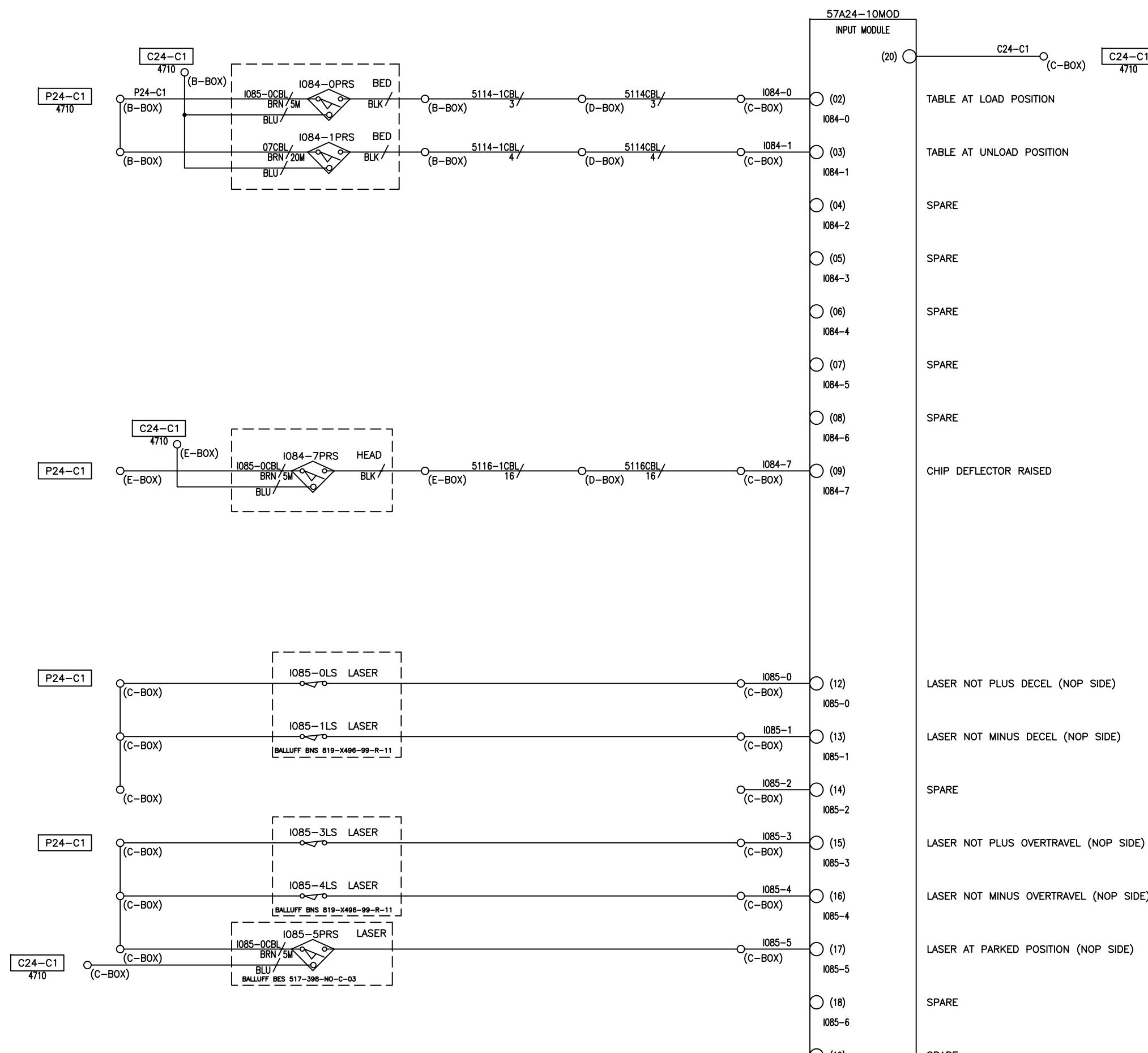
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CONTINUED ON NEXT SHEET  
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TITLE		ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	DATE				
2N00084	E2	05/07/11				
DRAWN BY	CHECKED BY	DESIGNED BY				
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
78C	N00084-E2-651					

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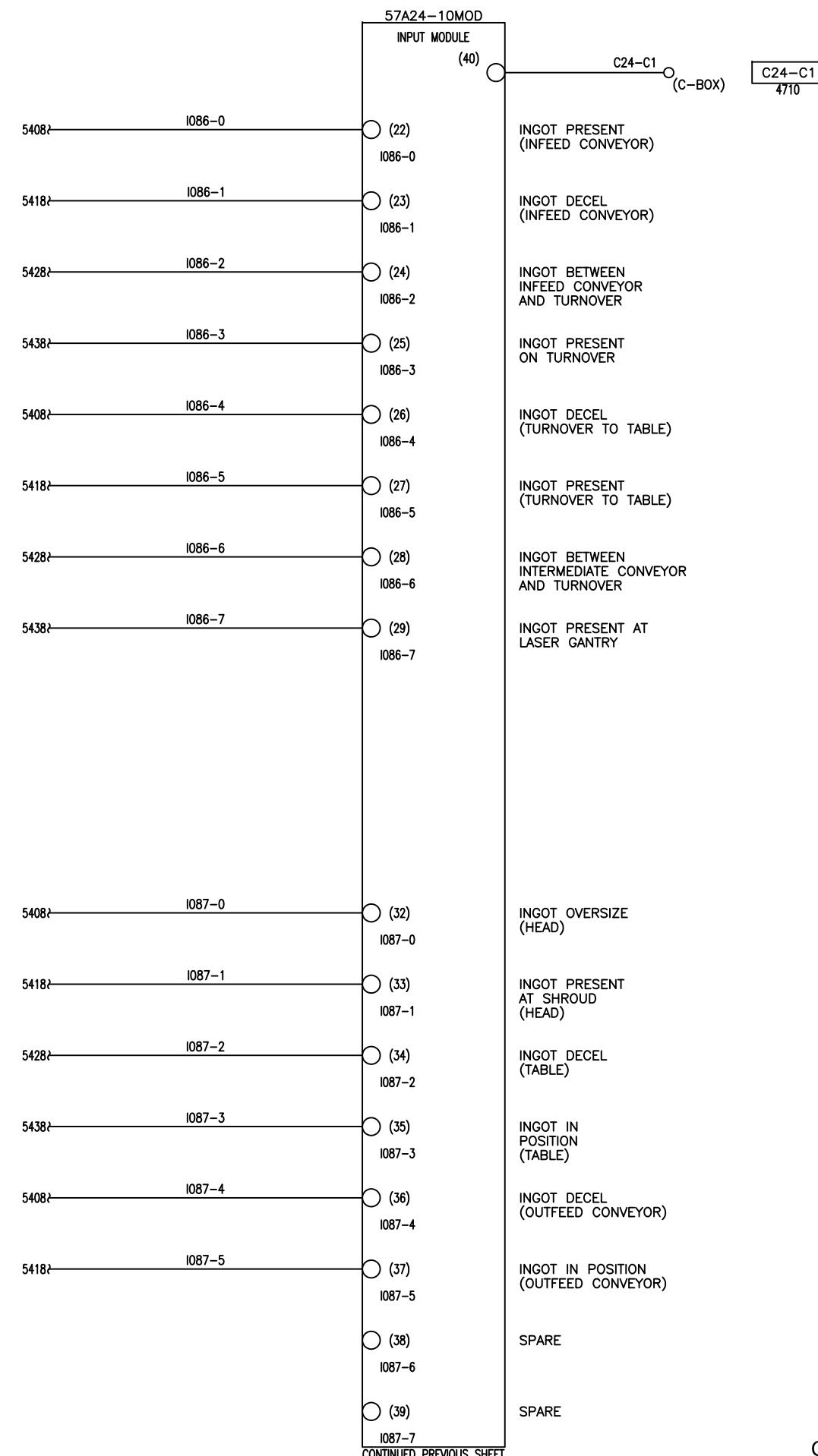
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<b>ONTEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

DIGITAL INPUTS I086-I087 (C-BOX)

LET	TER	CHANGE	BY	DATE	CHK	M/F
<b>TITLE</b>						
<b>ELECTRICAL SCHEMATICS</b>						
MACHINE	SHOP ORDER			DATE		
2N00084	E2			05/07/11		
DRAWN BY	CHECKED BY			DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON			WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER		DRAWING NUMBER				
78D		N00084-E2-651				

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Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001	

SPARE (C-BOX)

LET TER	CHANGE	BY	DATE	CHK BY
M/F				

## TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

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SHEET NUMBER	DRAWING NUMBER
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	<b>ALCOA</b>	
Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001	

SPARE (C-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F

**TITLE** ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

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SHEET NUMBER	DRAWING NUMBER
78F	N00084-E2-651

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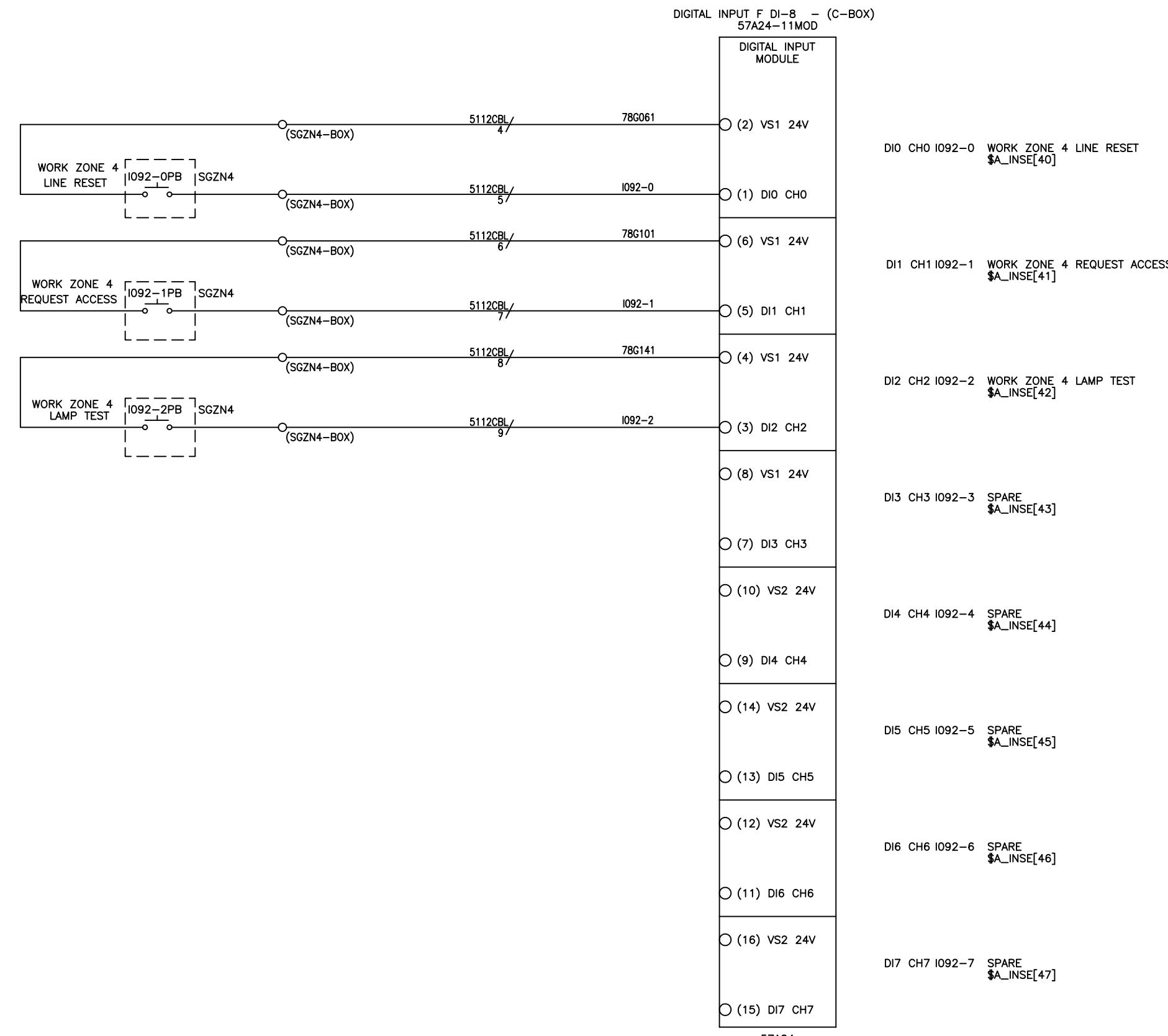
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<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>	<b>Ma'aden Aluminum Project</b>
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number E2	EDN CODE	Equipment Tag Number D-13 6130-SCA-001
Client Drawing Number			

SAFETY INPUTS ZONE #4 I092 (C-BOX)

LET	TER	CHANGE	BY	DATE	CHK	M/F
<b>TITLE</b>						
<b>ELECTRICAL SCHEMATICS</b>						
MACHINE	SHOP ORDER			DATE		
2N00084	E2			05/07/11		
DRAWN BY	CHECKED BY			DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON			WAYNE LANGDON		
<b>INGERSOLL MACHINE TOOLS, INC.</b>						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER		DRAWING NUMBER				
78G		N00084-E2-651				

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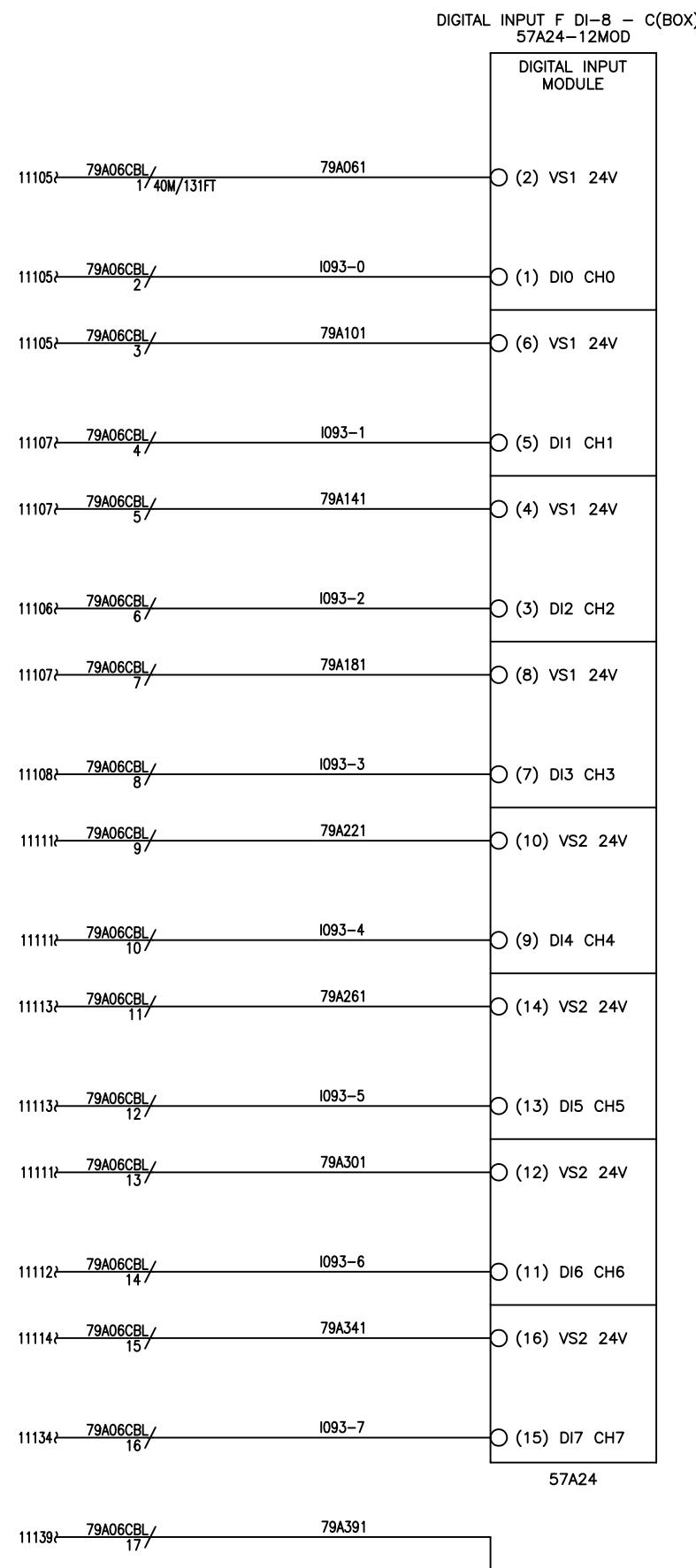
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DIO CHO I093-0 WORK ZONE 4  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I093-1 WORK ZONE 4  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I093-2 WORK ZONE 4  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I093-3 WORK ZONE 4  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I093-4 WORK ZONE 4  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I093-5 WORK ZONE 4  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I093-6 WORK ZONE 4  
SOLENOID RELEASED  
\$A\_INSE[56]

DI7 CH7 I093-7 WORK ZONE 4  
SOLENOID ENGAGED  
\$A\_INSE[57]

Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

SAFETY INPUTS ZONE #4 I093 (C-BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b>					
<b>ELECTRICAL SCHEMATICS</b>					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
<b>INGERSOLL MACHINE TOOLS, INC.</b>					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER 79A	DRAWING NUMBER N00084-E2-651				

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Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001	

SPARE (C-BOX)

LET TER	CHANGE	BY	DATE
TITLE ELECTRICAL SCHEMATICS			

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

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SHEET NUMBER	DRAWING NUMBER
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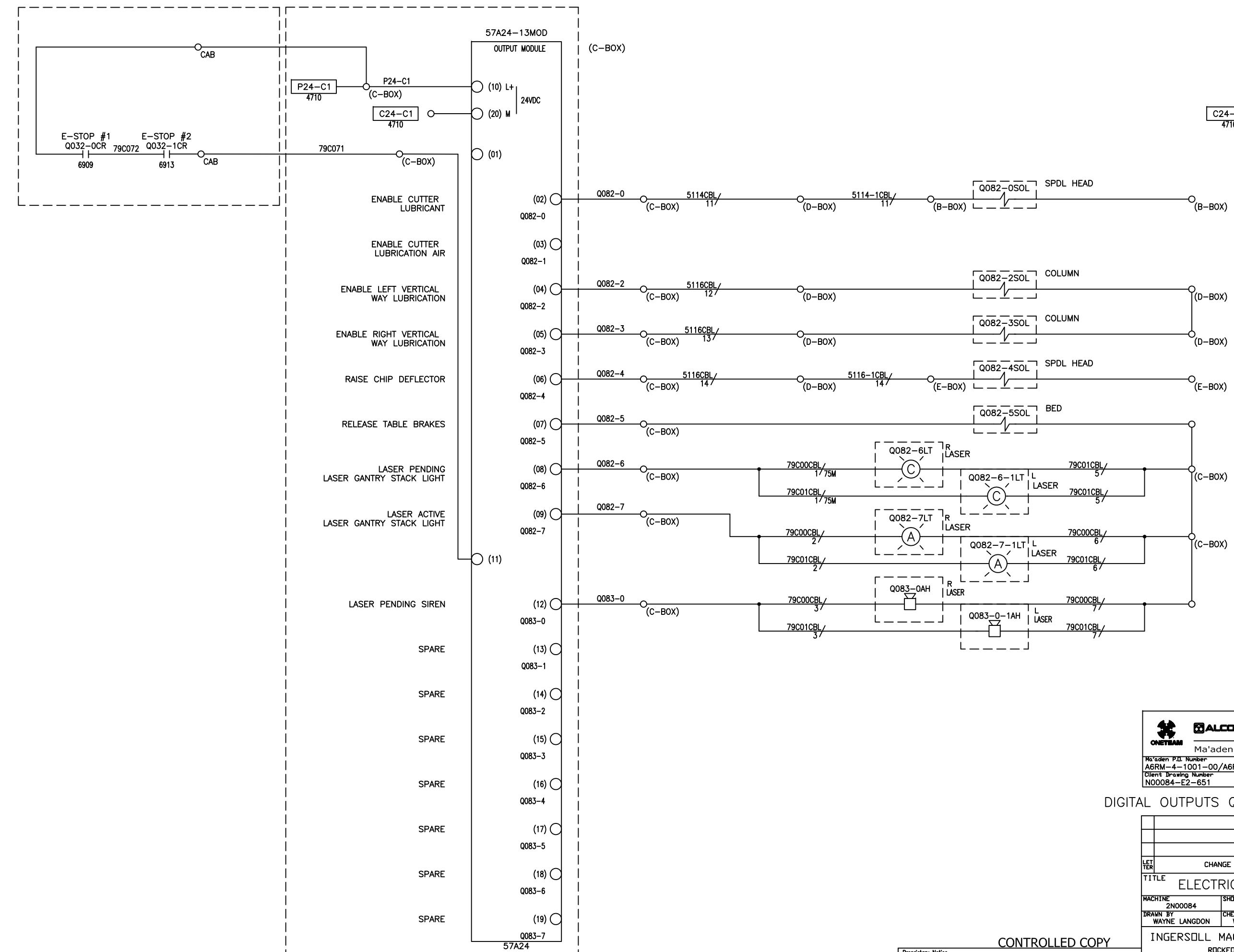
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Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

DIGITAL OUTPUTS Q082-Q083 (C-BOX)

LETTER	CHANGE		BY	DATE	CHK BY			
	M/F							
<b>TITLE</b>								
<b>ELECTRICAL SCHEMATICS</b>								
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11						
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON						
<b>INGERSOLL MACHINE TOOLS, INC.</b>								
ROCKFORD, ILLINOIS USA								
SHEET NUMBER 79C	DRAWING NUMBER							
N00084-E2-651								

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SHEET NUMBER  
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DRAWING NUMBER  
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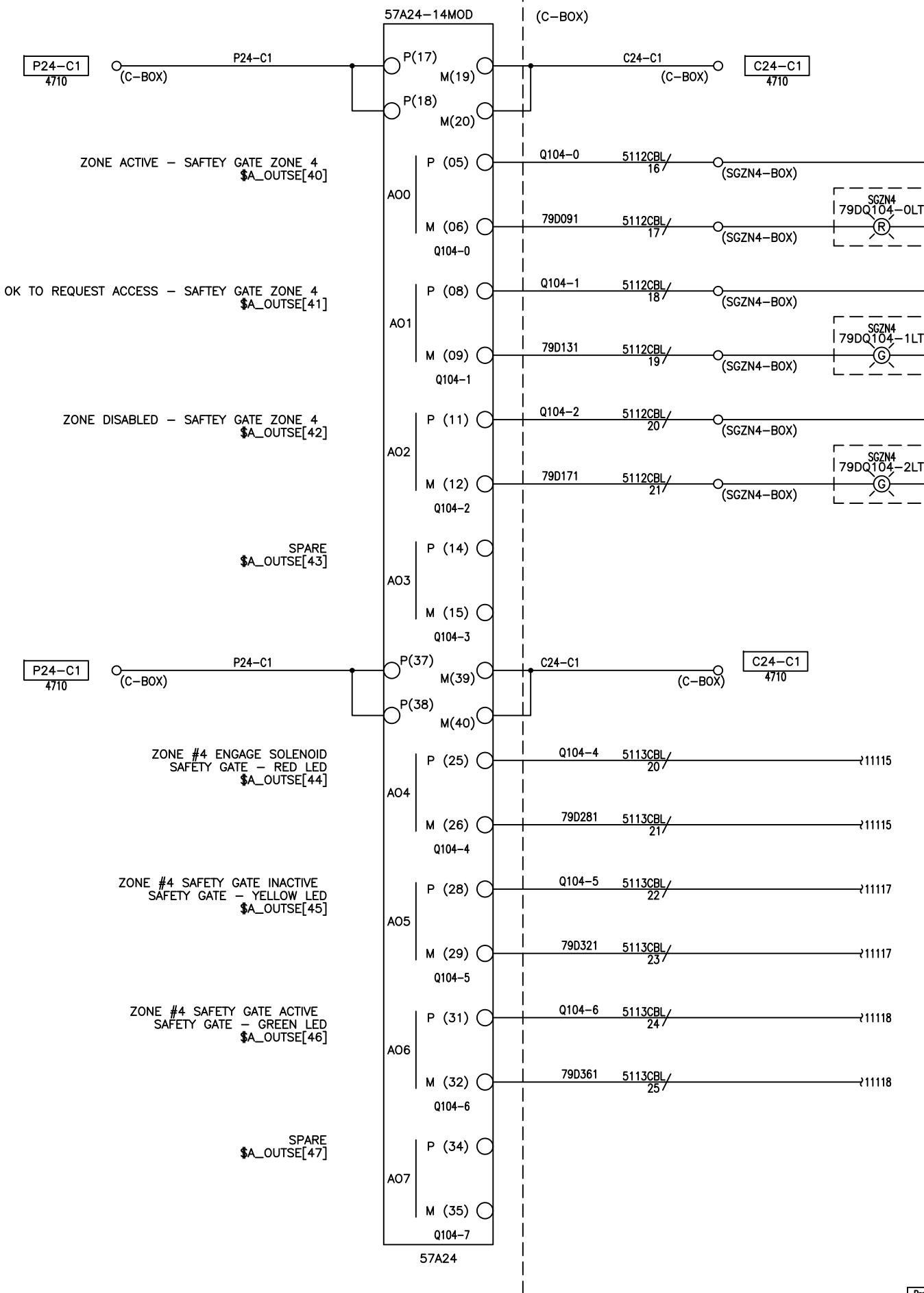
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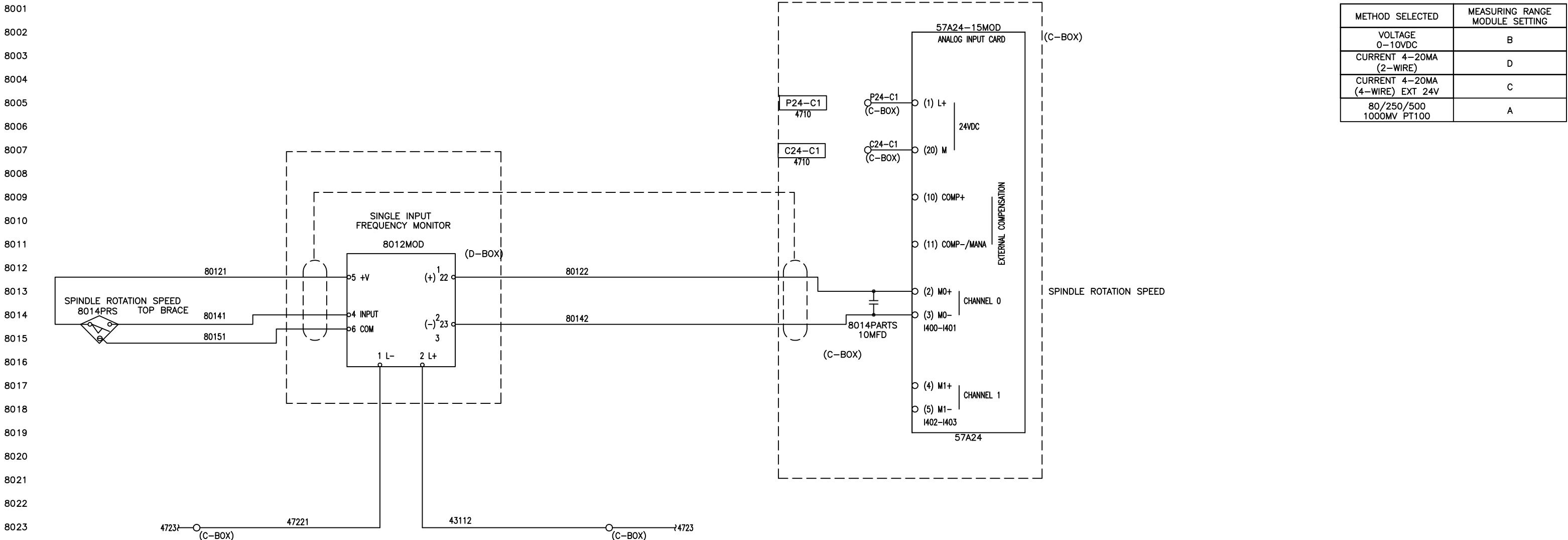
SAFETY OUTPUTS ZONE #4 Q084 (C-BOX)

<b>ALCOA</b>		<b>Ma'aden</b>
<b>ONETEAM</b>		<b>Aluminum Project</b>
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

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SHEET NUMBER	DRAWING NUMBER
79D	N00084-E2-651



METHOD SELECTED	MEASURING RANGE MODULE SETTING
VOLTAGE 0-10VDC	B
CURRENT 4-20MA (2-WIRE)	D
CURRENT 4-20MA (4-WIRE) EXT 24V	C
80/250/500 1000MV PT100	A

ONETEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Ingersoll P.O. Number A6RM-4-1001-00/A6RM100003	Ingersoll Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

ANALOG INPUT I400-I403 (C-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
80	N00084-E2-651			

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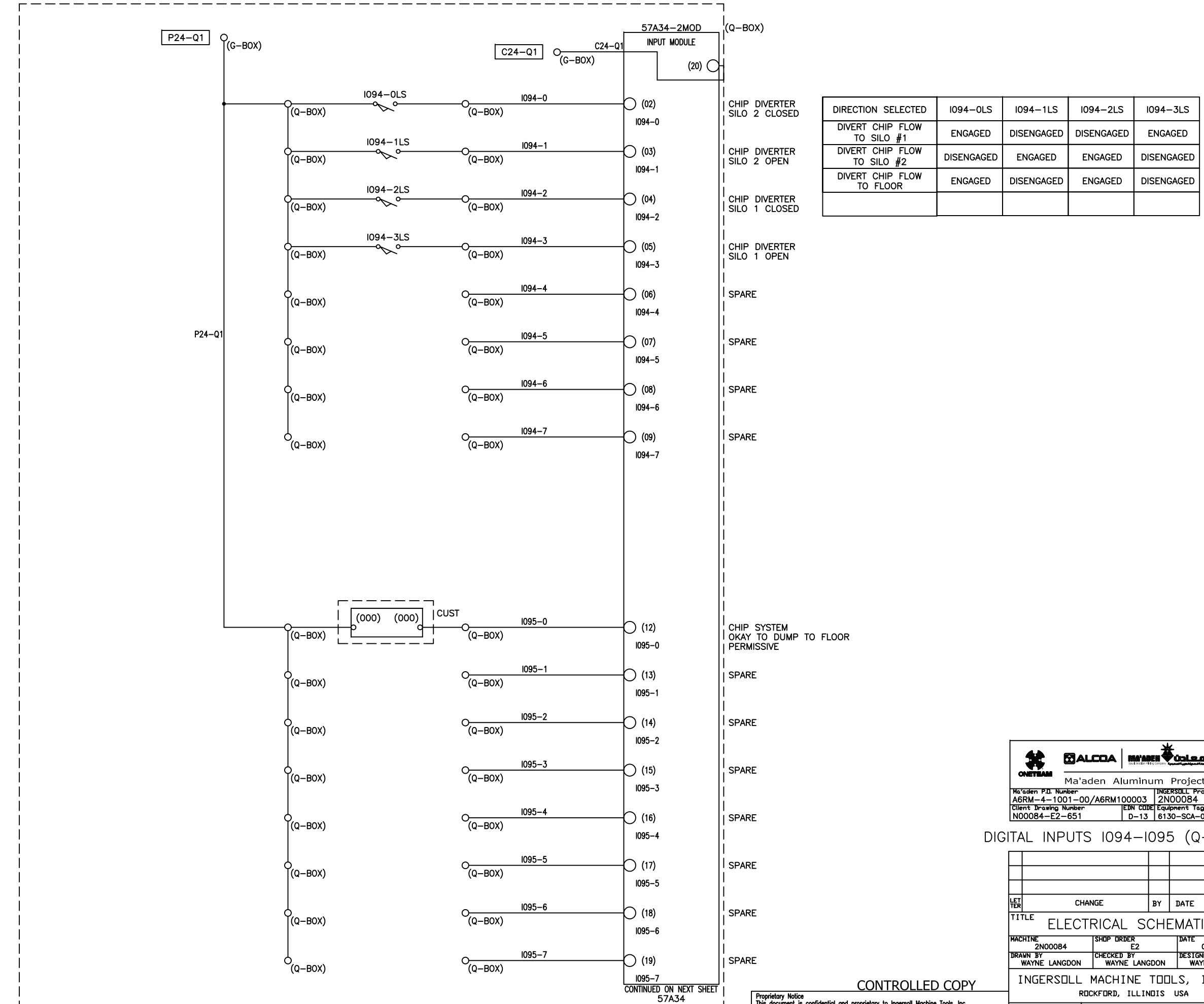
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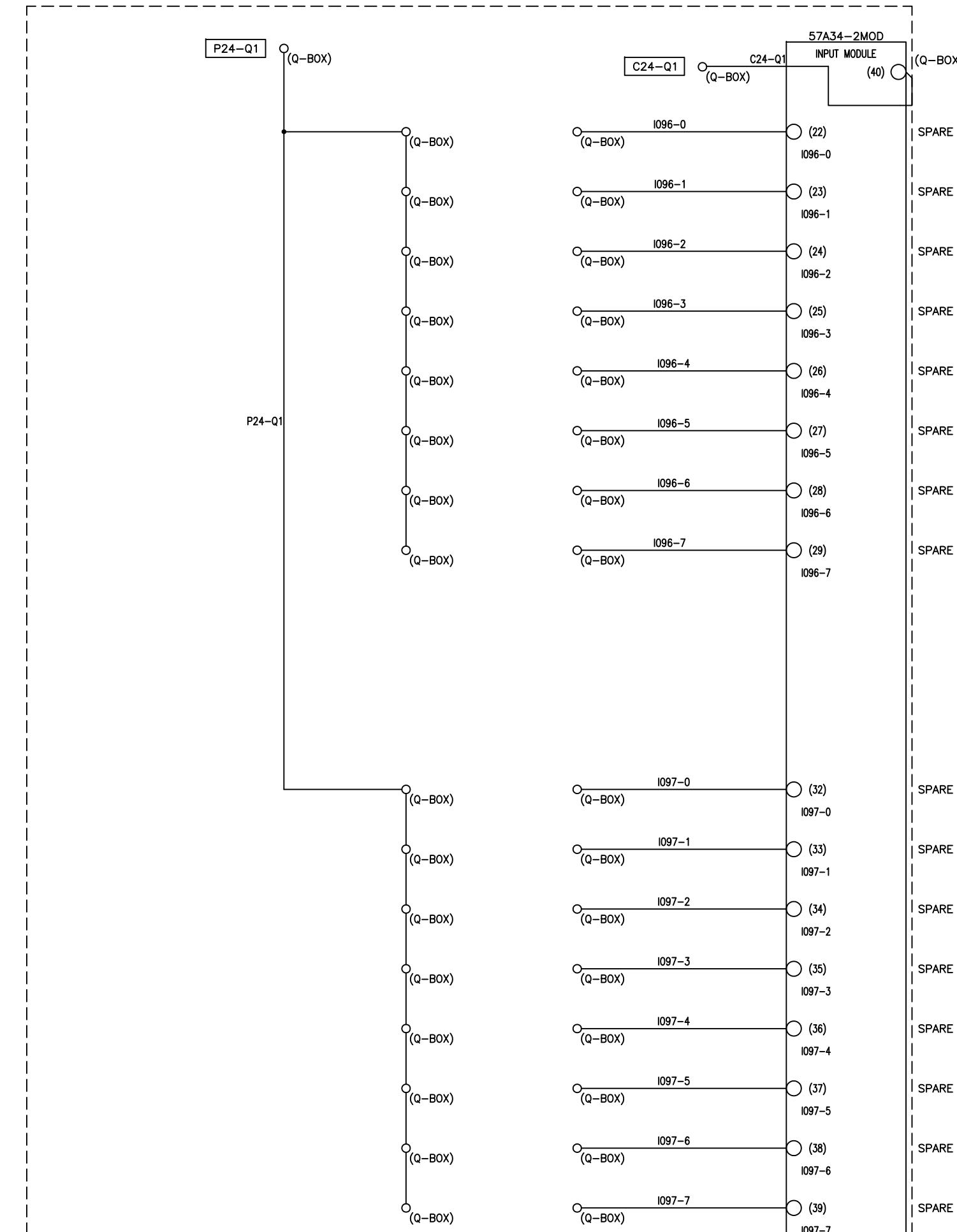
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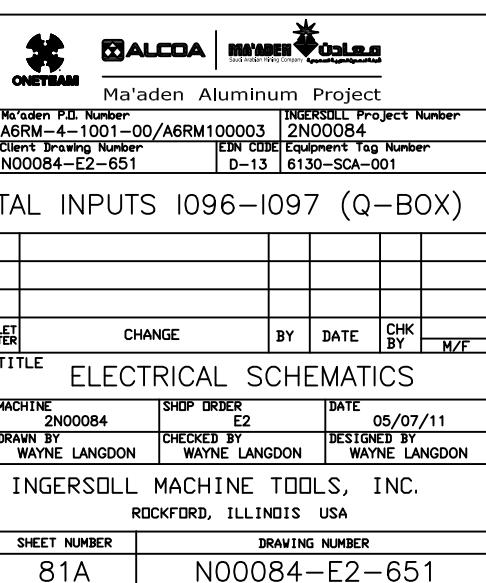
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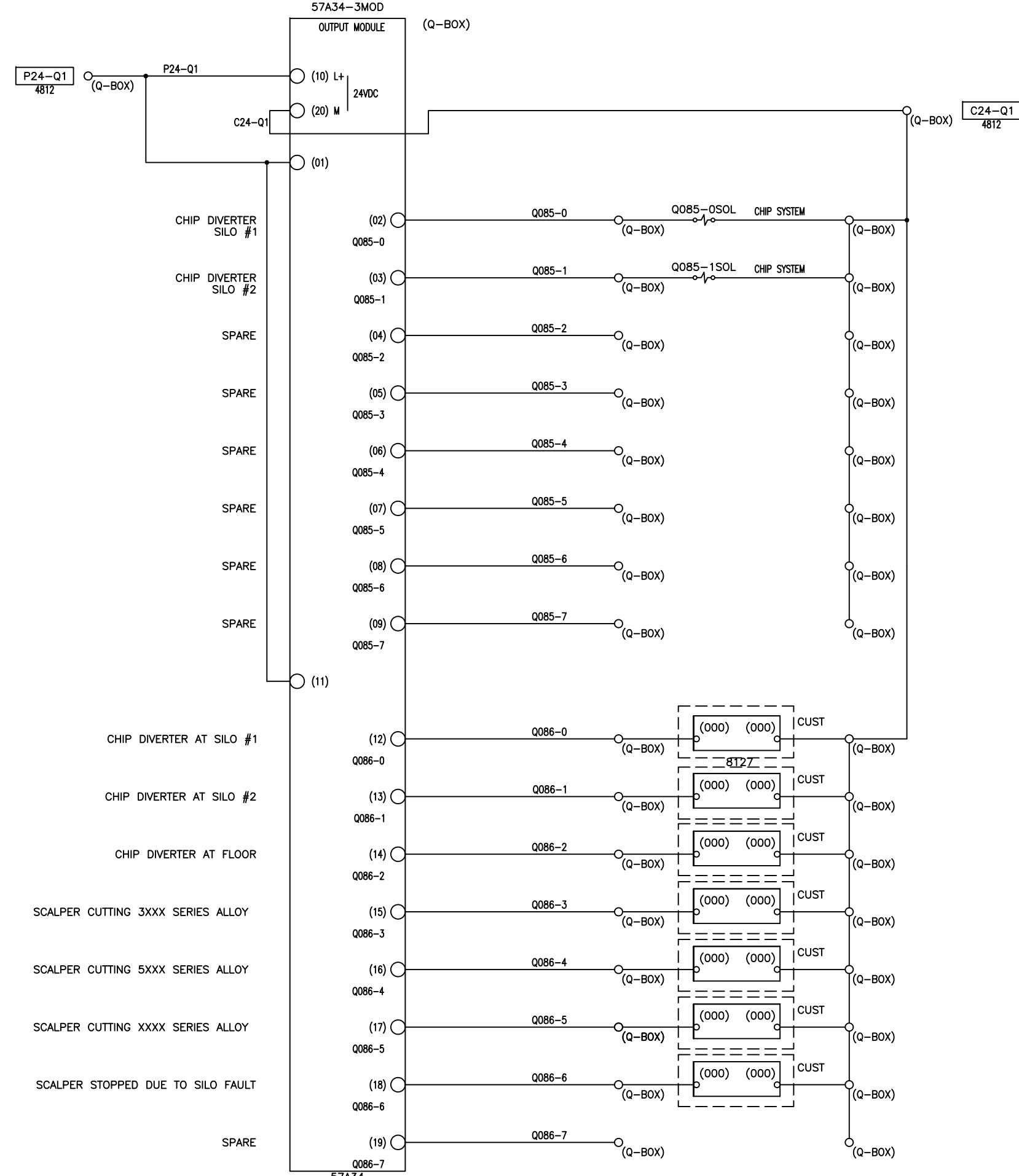


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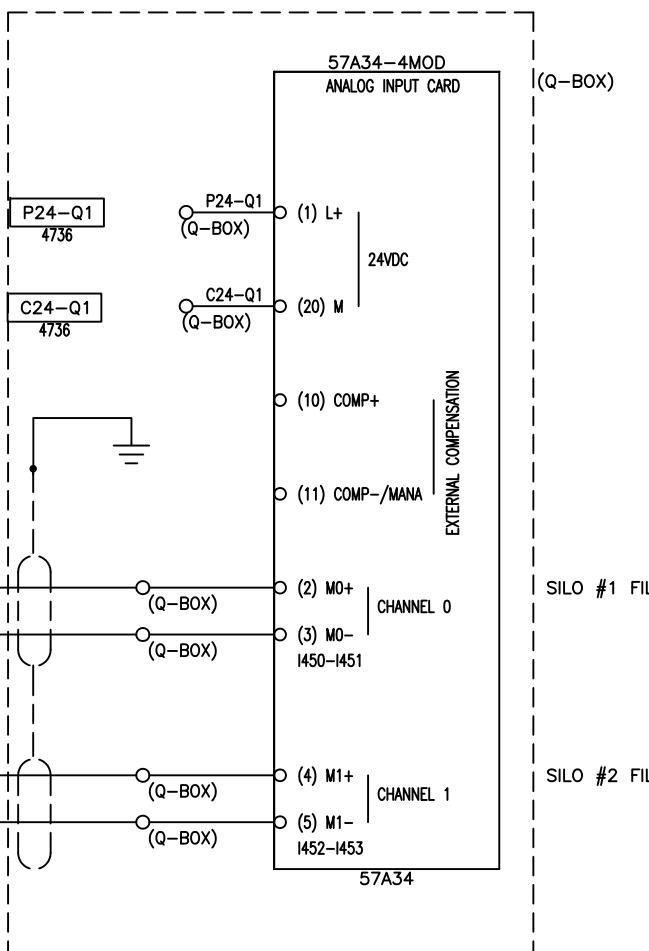
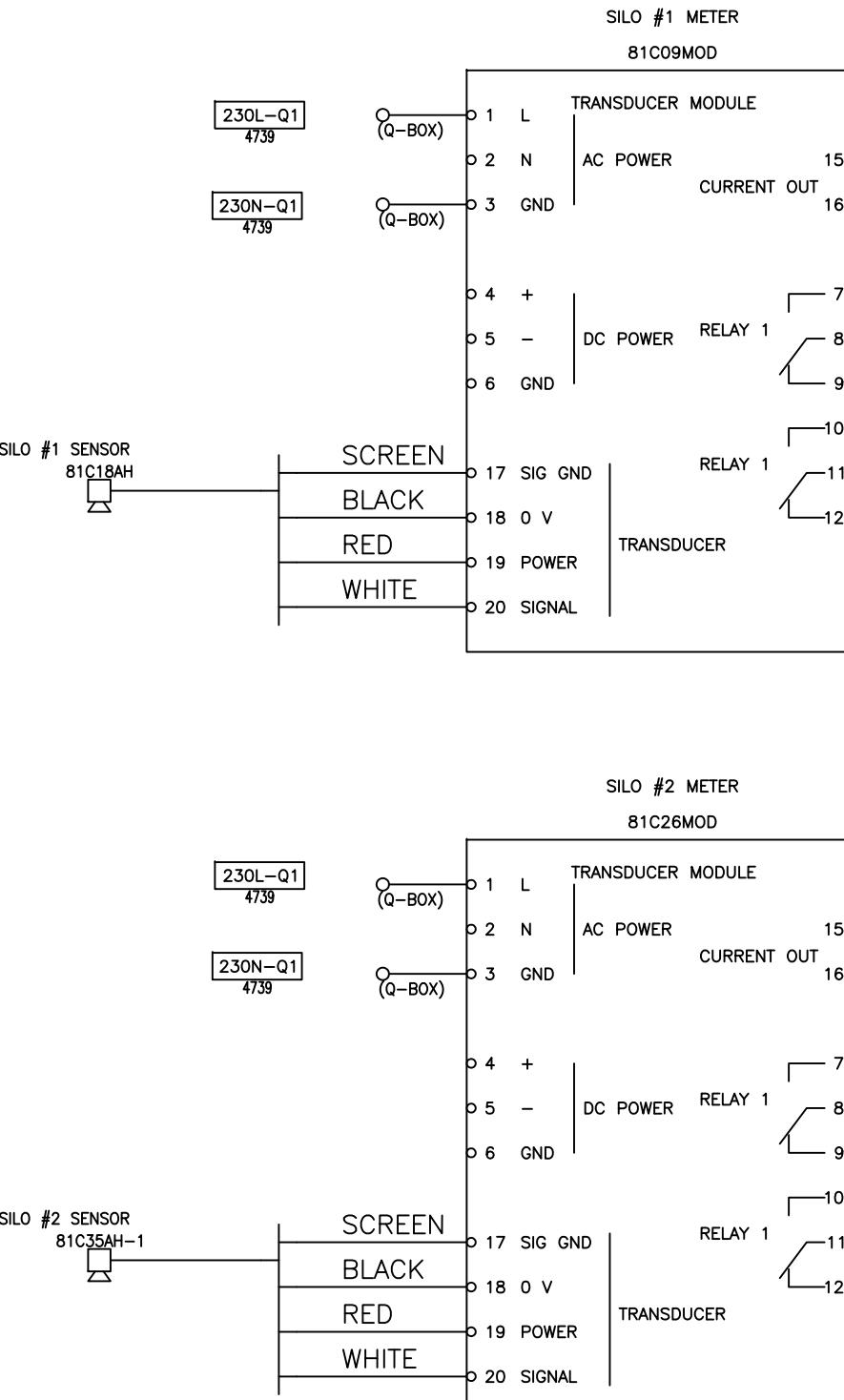
DIRECTION SELECTED	Q085-0SOL	Q085-1SOL
DIVERT CHIP FLOW TO SILO #1	ENGAGE	DISENGAGE
DIVERT CHIP FLOW TO SILO #1	DISENGAGE	ENGAGE
DIVERT CHIP FLOW TO FLOOR	ENGAGE	ENGAGE

#### DIGITAL OUTPUTS Q085-Q086 (Q-BOX)

 <b>ONETEAM</b>	 <b>ALCOA</b>	 <b>MA'ADEN</b>  <b>Oualea</b> Saudi Arabian Mining Company			
<b>Ma'aden Aluminum Project</b>					
<b>Ma'aden P.D. Number</b> <b>A6RM-4-1001-00/A6RM100003</b>		<b>INGERSOLL Project Number</b> <b>2N00084</b>			
<b>Client Drawing Number</b> <b>N00084-E2-651</b>		<b>EDN CODE</b> <b>D-13</b>			
		<b>Equipment Tag Number</b> <b>6130-SCA-001</b>			
<b>OUTPUTS Q085-Q086 (Q-BOX)</b>					
<b>ET ER</b>	<b>CHANGE</b>	<b>BY</b>	<b>DATE</b>	<b>CHK BY</b>	<b>M/F</b>
<b>TITLE</b> <b>ELECTRICAL SCHEMATICS</b>					
<b>ACHINE</b> <b>2N00084</b>		<b>SHOP ORDER</b> <b>E2</b>		<b>DATE</b> <b>05/07/11</b>	
<b>RAWN BY</b> <b>WAYNE LANGDON</b>		<b>CHECKED BY</b> <b>WAYNE LANGDON</b>		<b>DESIGNED BY</b> <b>WAYNE LANGDON</b>	
<b>INGERSOLL MACHINE TOOLS, INC.</b> <b>ROCKFORD, ILLINOIS USA</b>					
<b>SHEET NUMBER</b>		<b>DRAWING NUMBER</b>			
<b>81B</b>		<b>N00084-E2-651</b>			

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METHOD SELECTED	MEASURING RANGE MODULE SETTING
VOLTAGE 0-10VDC	B
CURRENT 4-20MA (2-WIRE)	D
CURRENT 4-20MA (4-WIRE) EXT 24V	C
80/250/500 1000MV PT100	A

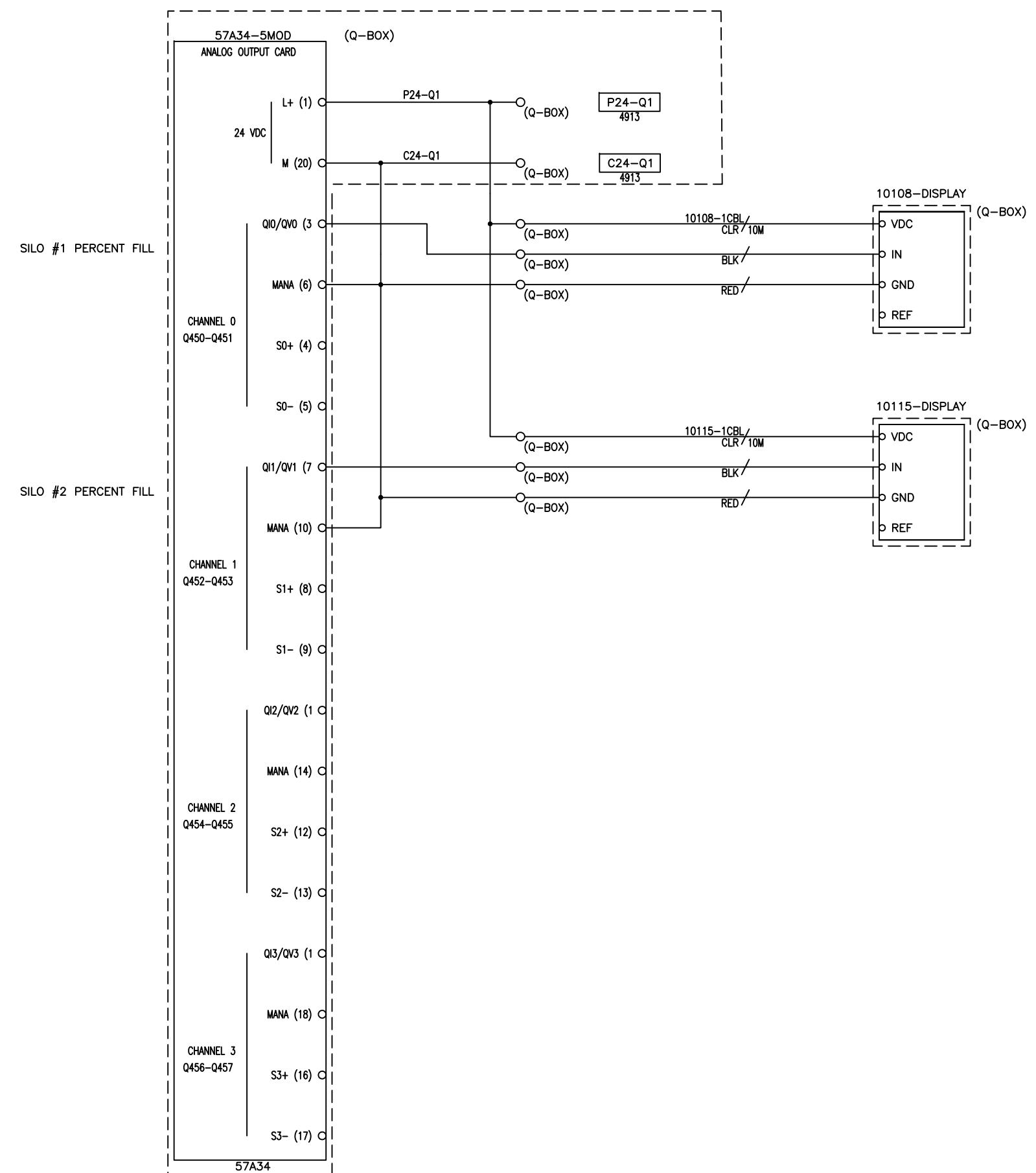
ONTEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Inga'den P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

### ANALOG INPUT I450-I453 (Q-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 81C	DRAWING NUMBER N00084-E2-651			

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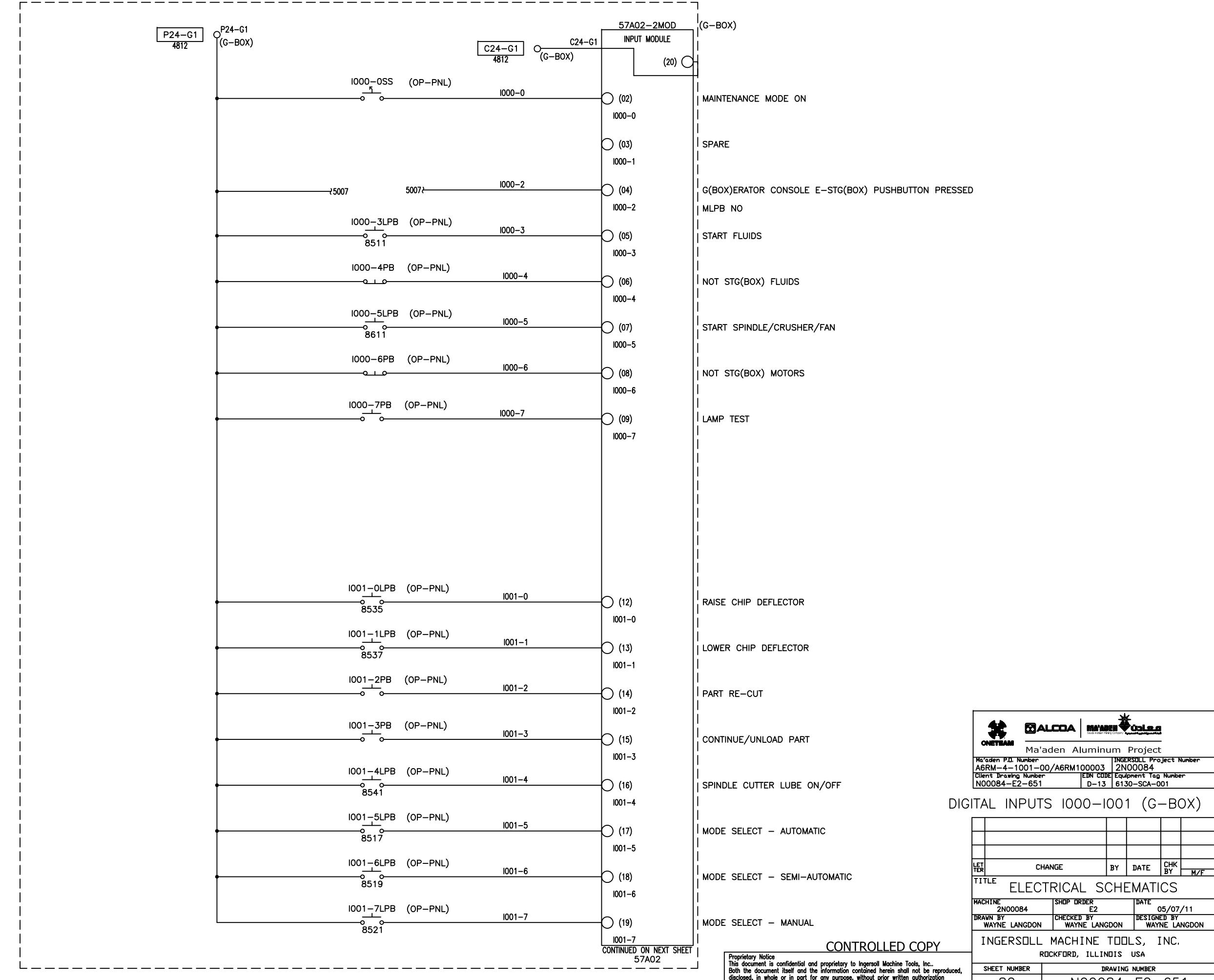
ONTEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

### ANALOG OUTPUTS Q450-Q457 (Q-BOX)

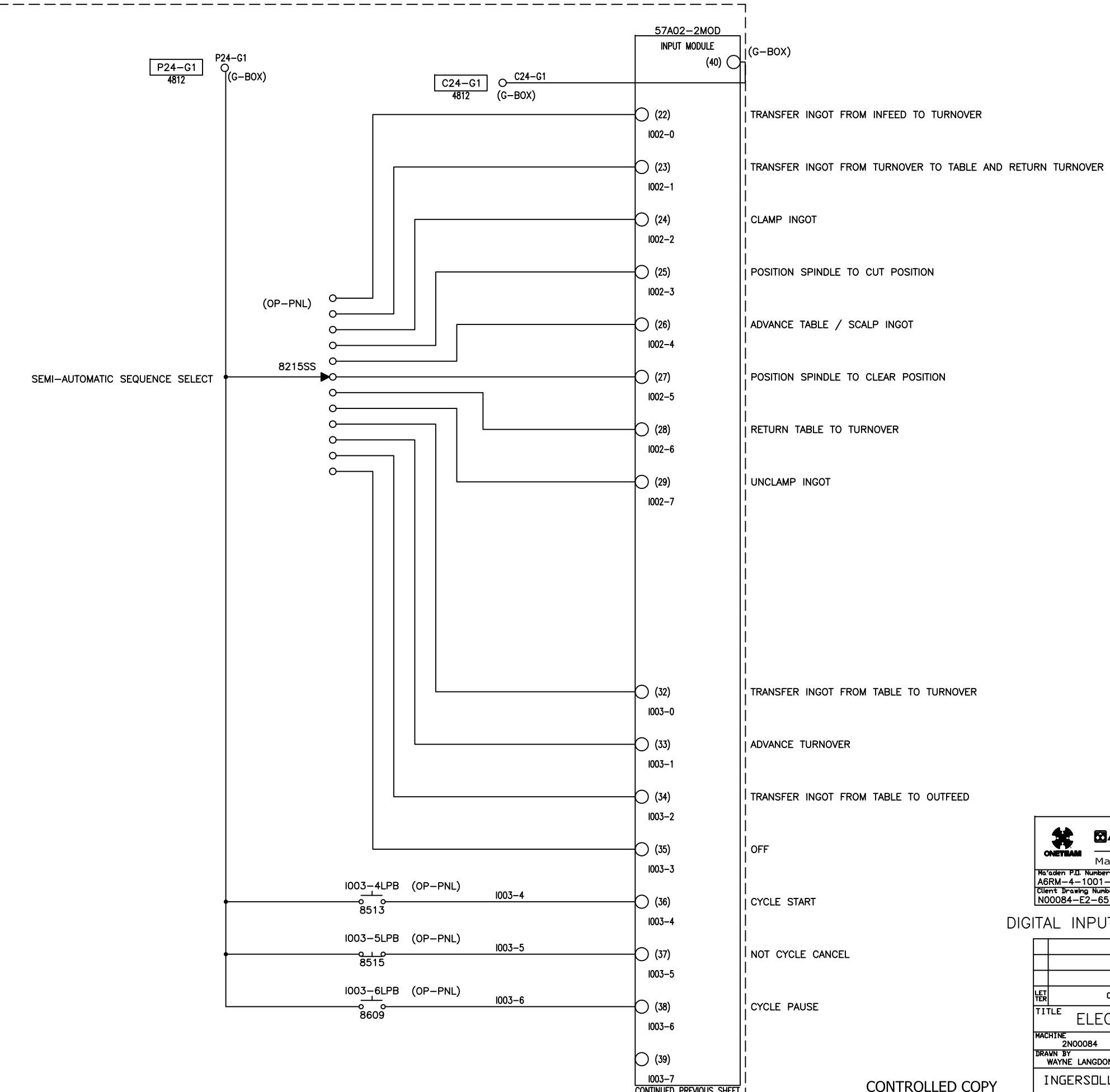
LET	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
81D	N00084-E2-651				

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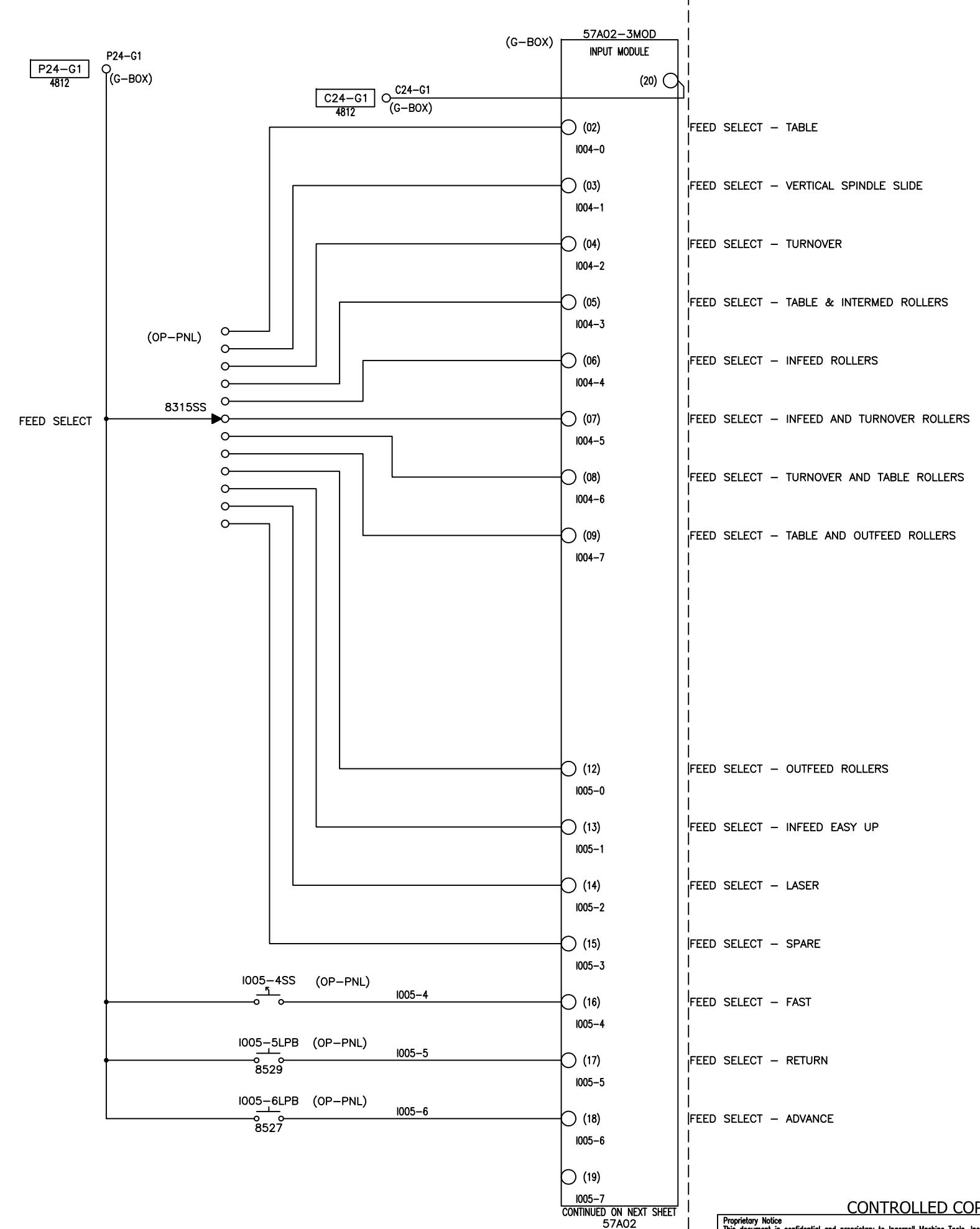
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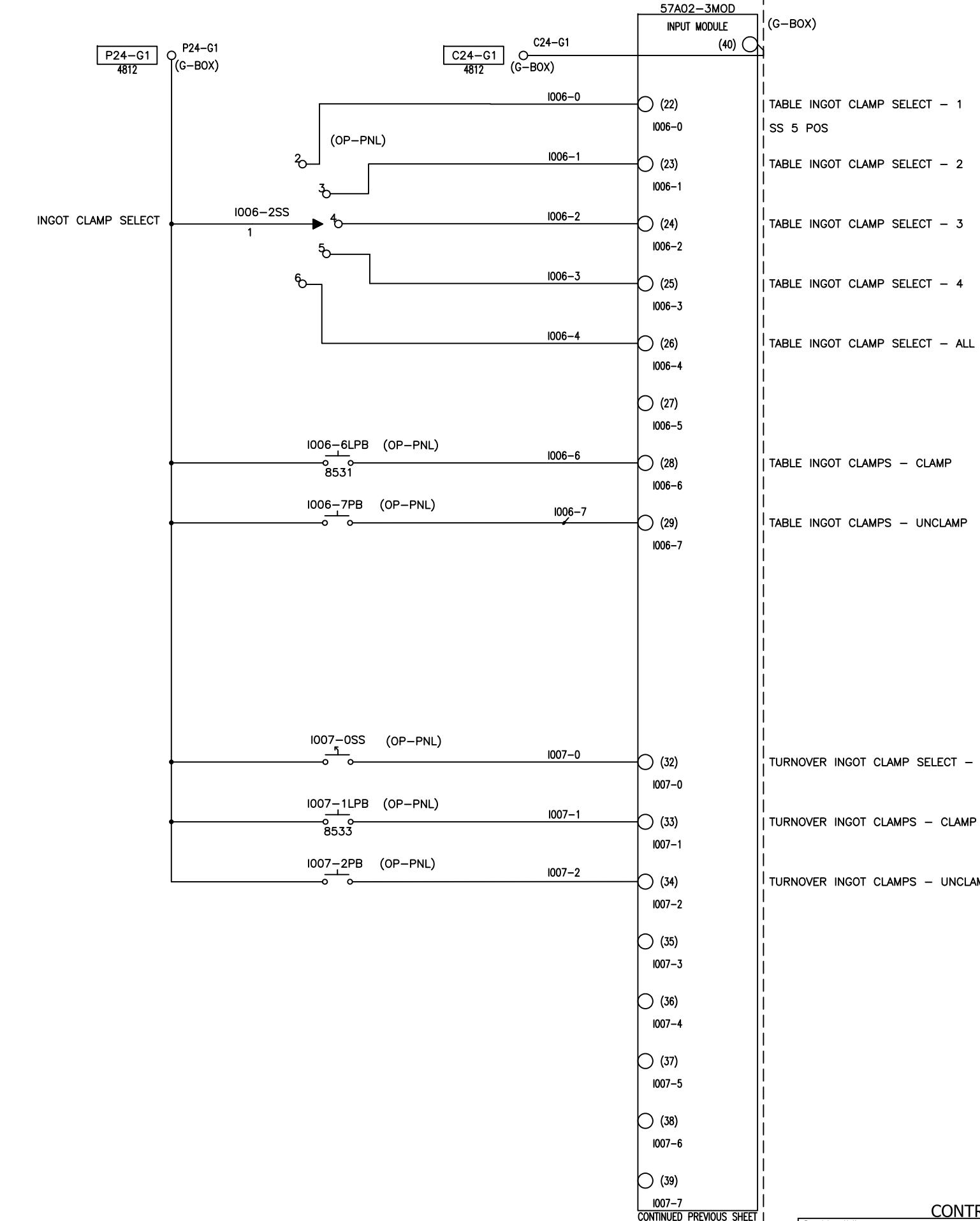
ALCOA		Ma'aden	
Ma'aden Aluminum Project			
Ma'aden P.D. Number	A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number	2N00084
Client Drawing Number	N00084-E2-651	EDN CODE	E130-SCA-001
DIGITAL INPUTS I002-I003 (G-BOX)			
LET	CHANGE	BY	DATE
TER			CHK
		M/F	
TITLE ELECTRICAL SCHEMATICS			
MACHINE	SHOP ORDER	DATE	
2N00084	E2	05/07/11	
DRAWN BY	CHECKED BY	DESIGNED BY	
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
82A	N00084-E2-651		

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ELECTRICAL SCHEMATICS						
MACHINE	SHOP ORDER	DATE				
DRAWN BY	E2	05/07/11				
CHECKED BY	WAYNE LANGDON	DESIGNED BY	WAYNE LANGDON			
LET	CHANGE	BY	DATE	CHK		
TER				M/F		
TITLE	ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE				
2N00084	E2	05/07/11				
DRAWN BY	CHECKED BY	DESIGNED BY	WAYNE LANGDON			
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
83	N00084-E2-651					



CONTINUED PREVIOUS SHEET  
57A02

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<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Project Number	Ingersoll Project Number	
A6RM-4-1001-00/A6RM100003	2N00084	

Client Drawing Number EDN CODE Equipment Tag Number

N00084-E2-651 D-13 6130-SCA-001

LETTER CHANGE BY DATE CHK BY M/F

TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11

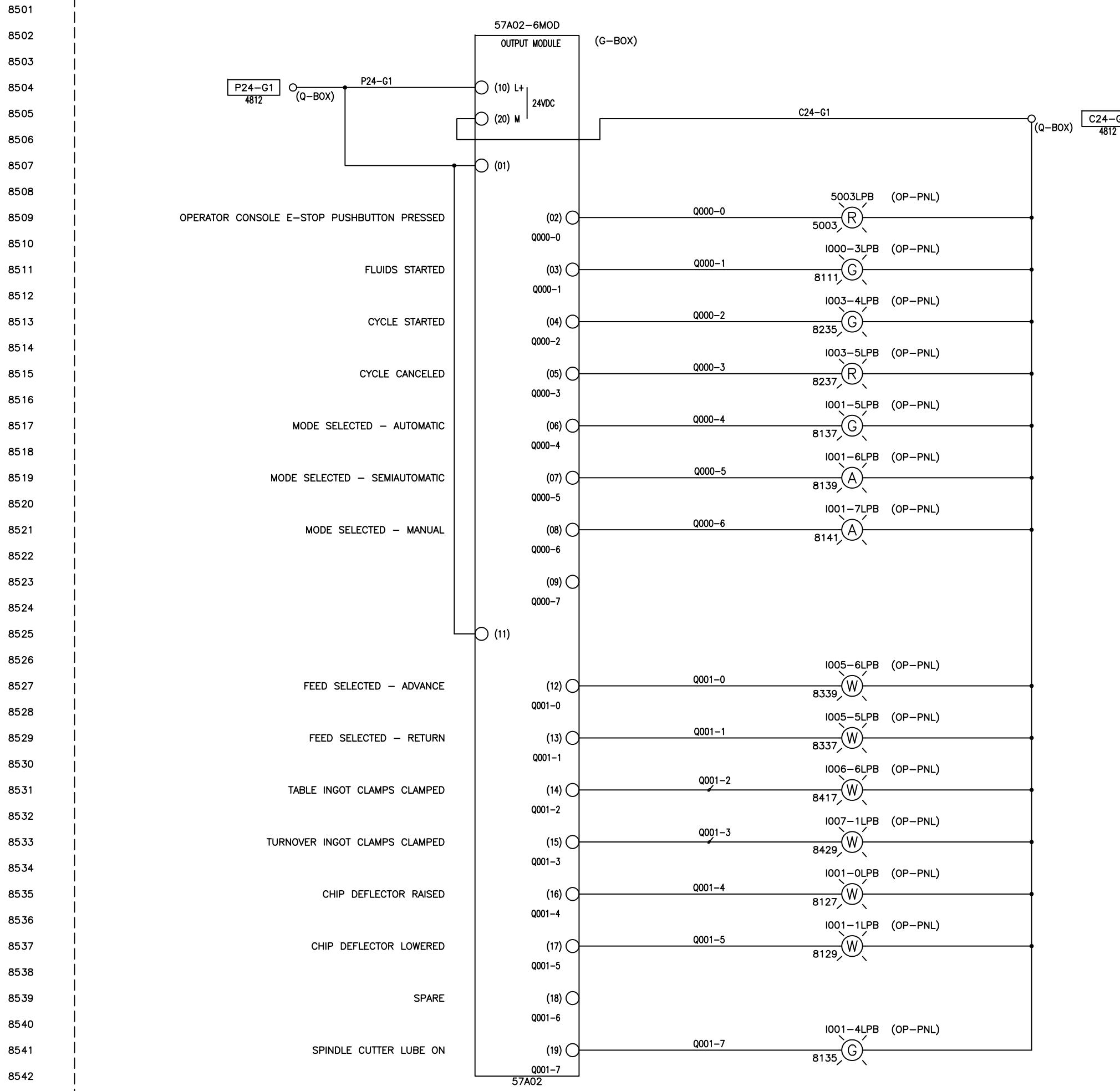
DRAWN BY WAYNE LANGDON CHECKED BY WAYNE LANGDON DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.

ROCKFORD, ILLINOIS USA

SHEET NUMBER DRAWING NUMBER

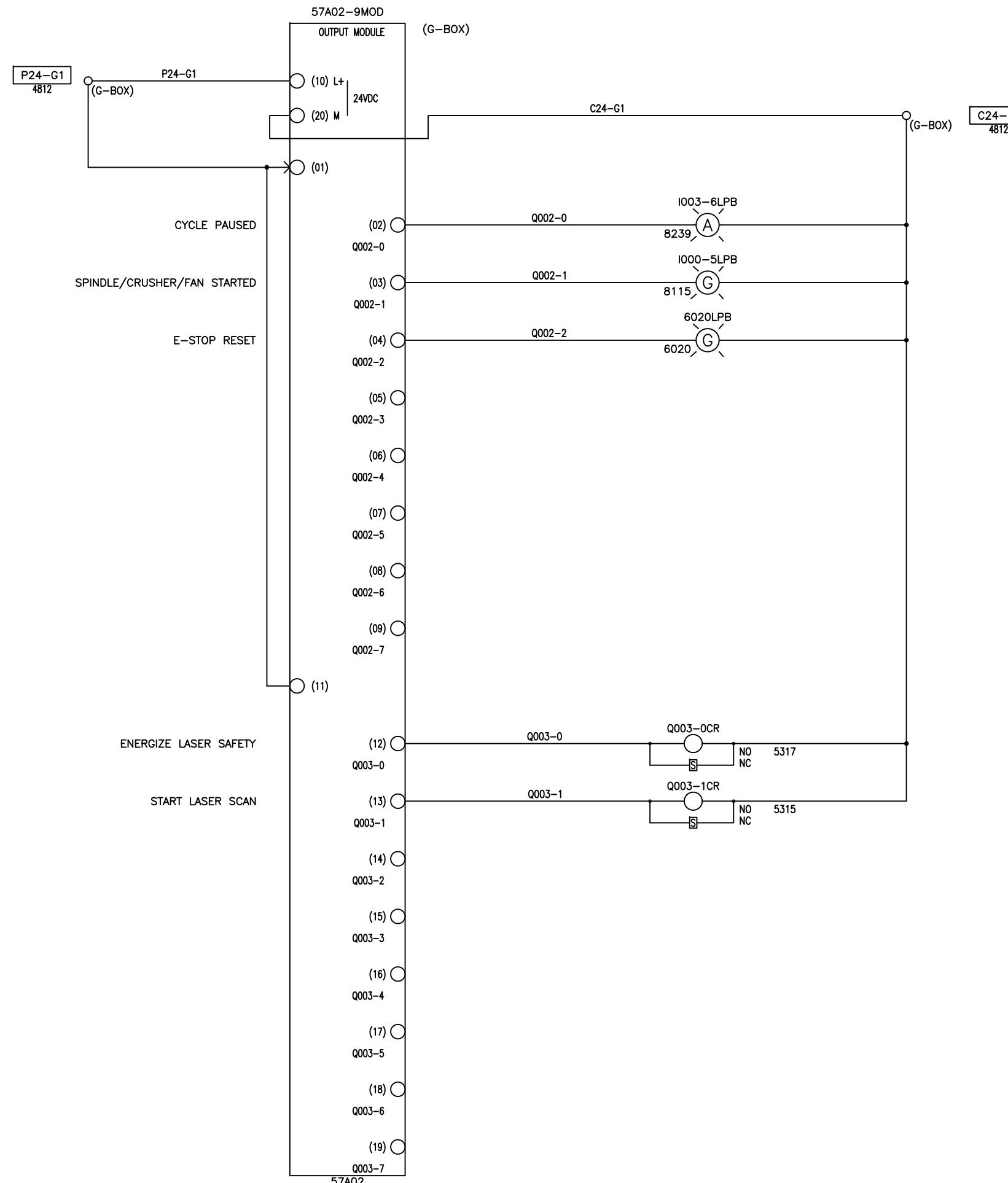
84 N00084-E2-651



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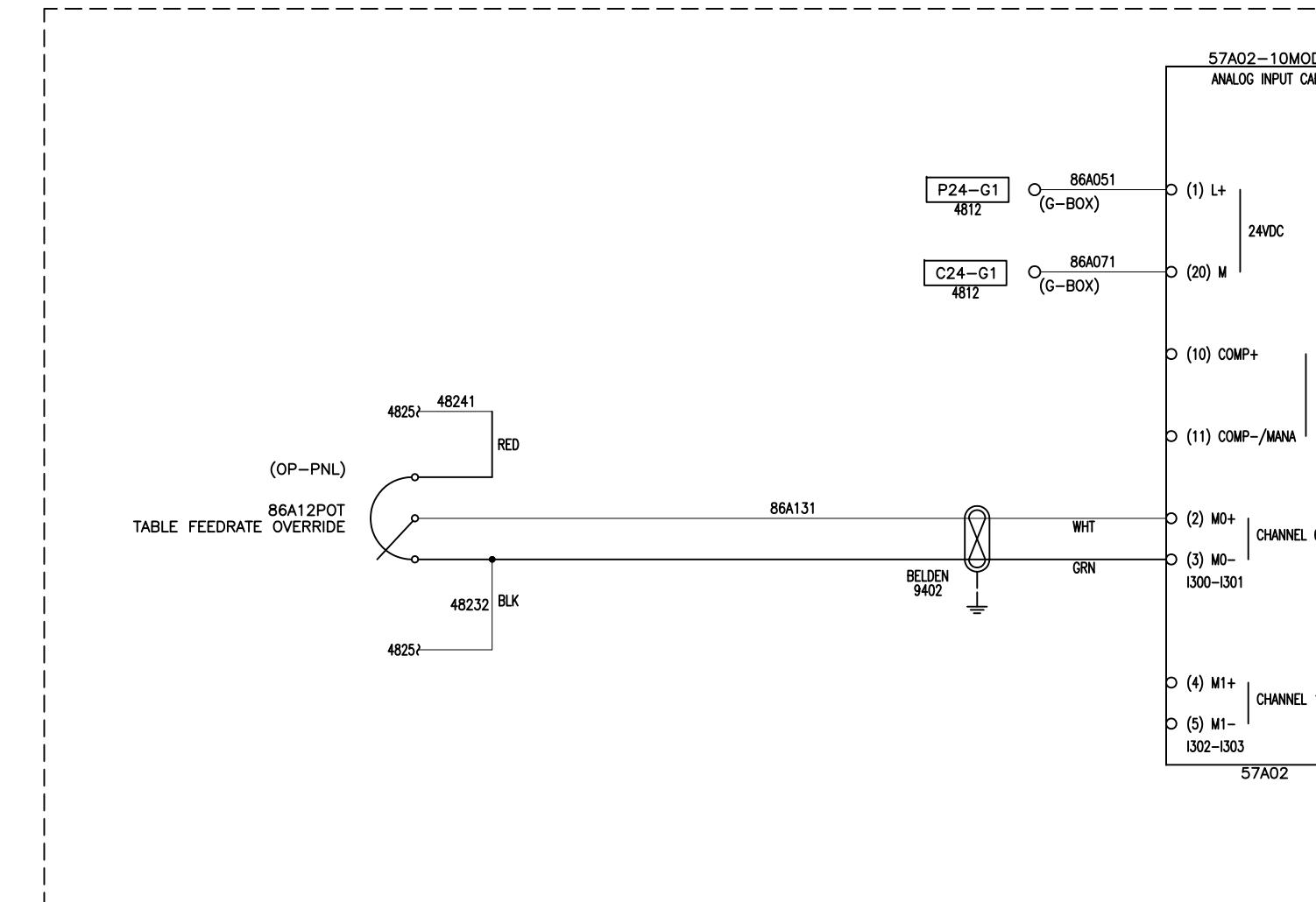
LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11					
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
85	N00084-E2-651				



<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>			
Ma'aden Aluminum Project					
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084				
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001			
<b>DIGITAL OUTPUTS Q002-Q003 (G-BOX)</b>					
LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
86	N00084-E2-651				

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(G-BOX)

TABLE FEED RATE OVERRIDE  
POT 10V

METHOD SELECTED	MEASURING RANGE MODULE SETTING
VOLTAGE 0-10VDC	B
CURRENT 4-20MA (2-WIRE)	D
CURRENT 4-20MA (4-WIRE) EXT 24V	C
80/250/500 1000MV PT100	A

ONETEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

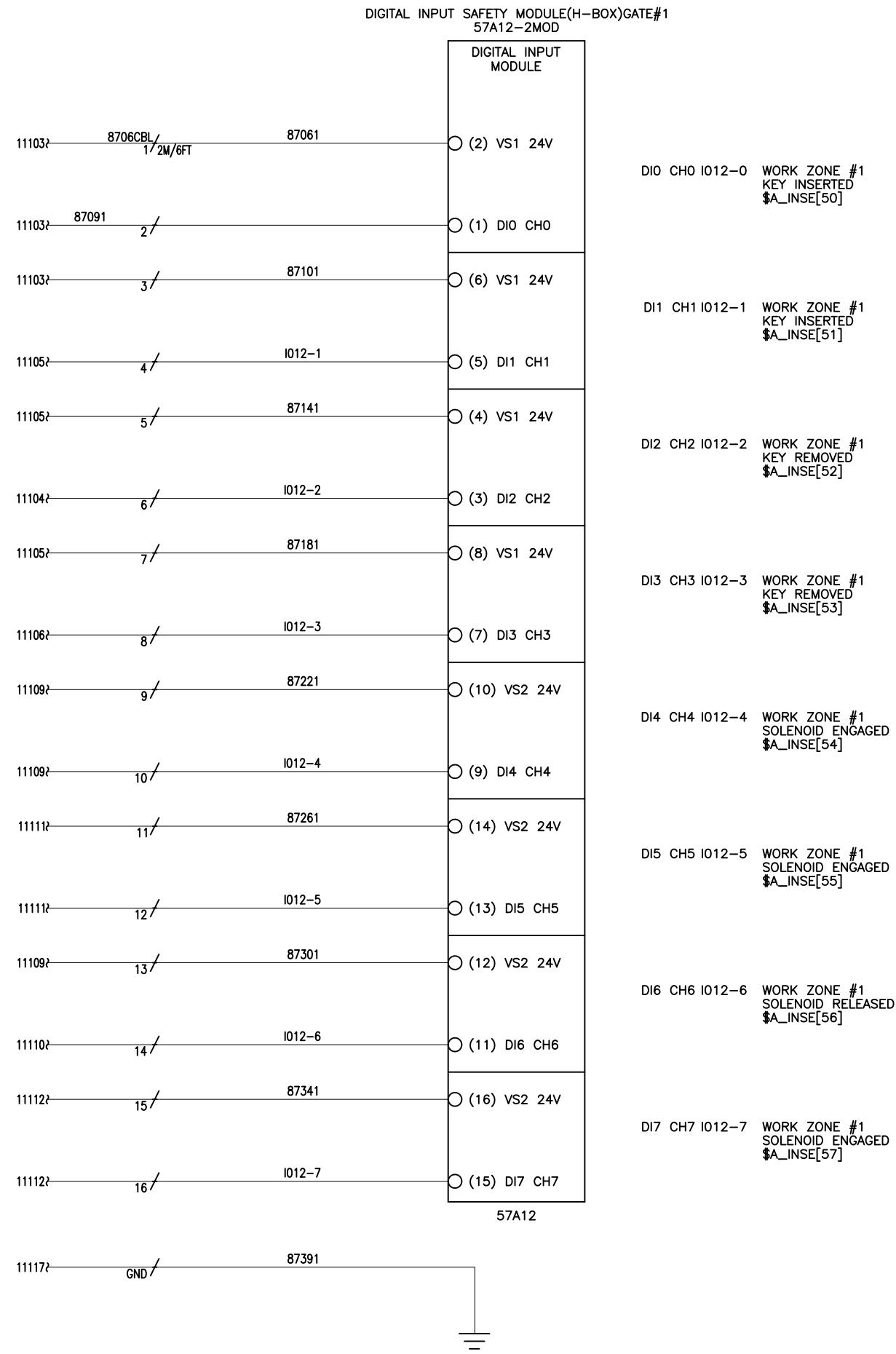
ANALOG INPUT I300-I303 (G-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 86A	DRAWING NUMBER N00084-E2-651			

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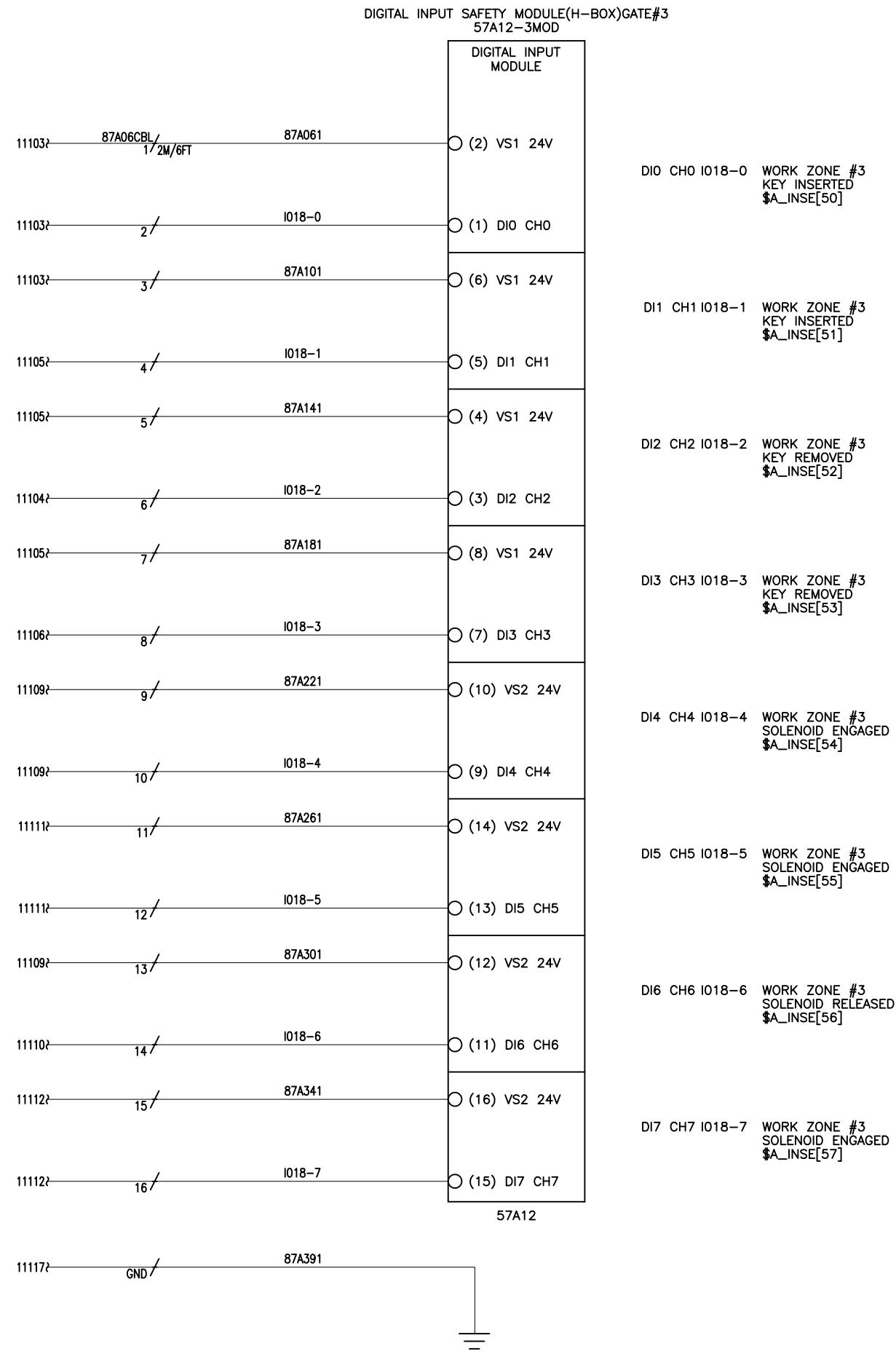
SAFETY INPUTS I012 ZONE #1 KEY LOCK (H-BOX)

ALCOA	Ma'aden	Ma'aden
ONETEAM	Alcoa	Ma'aden Company
Ma'aden P.O. Number	INGERSOLL Project Number	
A6RM-4-1001-00/A6RM100003	2N00084	
Client Drawing Number	EDN CODE	Equipment Tag Number
N00084-E2-651	D-13	6130-SCA-001
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
87	N00084-E2-651	

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DIO CH0 I018-0 WORK ZONE #3  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I018-1 WORK ZONE #3  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I018-2 WORK ZONE #3  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I018-3 WORK ZONE #3  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I018-4 WORK ZONE #3  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I018-5 WORK ZONE #3  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I018-6 WORK ZONE #3  
SOLENOID RELEASED  
\$A\_INSE[56]

DI7 CH7 I018-7 WORK ZONE #3  
SOLENOID ENGAGED  
\$A\_INSE[57]

SAFETY INPUTS I018 ZONE #3 KEY LOCK (H-BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084		SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
87A	N00084-E2-651				

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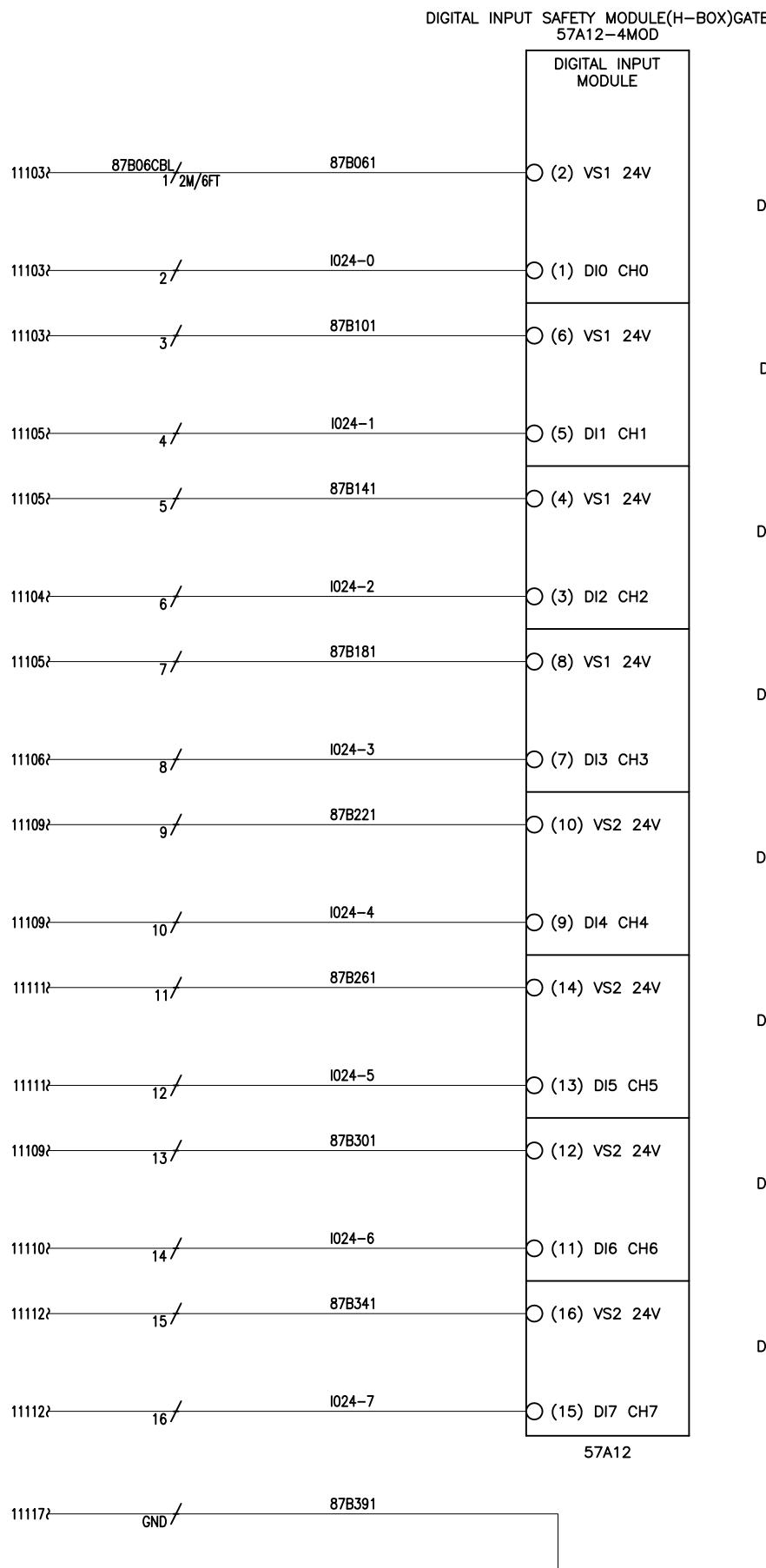
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DIO CH0 I024-0 WORK ZONE #5  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I024-1 WORK ZONE #5  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I024-2 WORK ZONE #5  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I024-3 WORK ZONE #5  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I024-4 WORK ZONE #5  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I024-5 WORK ZONE #5  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I024-6 WORK ZONE #5  
SOLENOID RELEASED  
\$A\_INSE[56]

DI7 CH7 I024-7 WORK ZONE #5  
SOLENOID ENGAGED  
\$A\_INSE[57]

SAFETY INPUTS I024 ZONE #5 KEY LOCK (H-BOX)

Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	

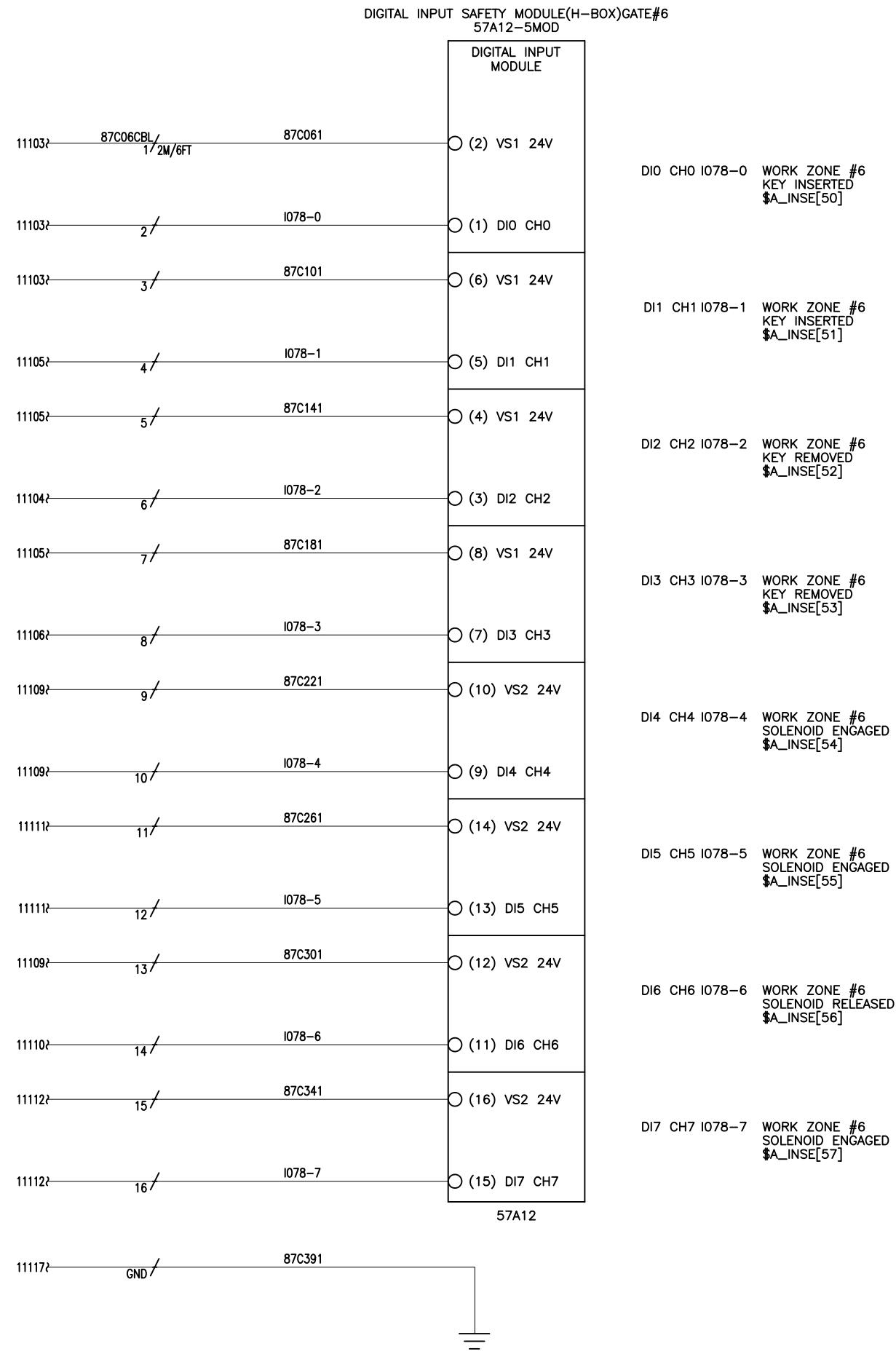
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
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LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
87B	N00084-E2-651				

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DIO CH0 I078-0 WORK ZONE #6  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I078-1 WORK ZONE #6  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I078-2 WORK ZONE #6  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I078-3 WORK ZONE #6  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I078-4 WORK ZONE #6  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I078-5 WORK ZONE #6  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I078-6 WORK ZONE #6  
SOLENOID RELEASED  
\$A\_INSE[56]

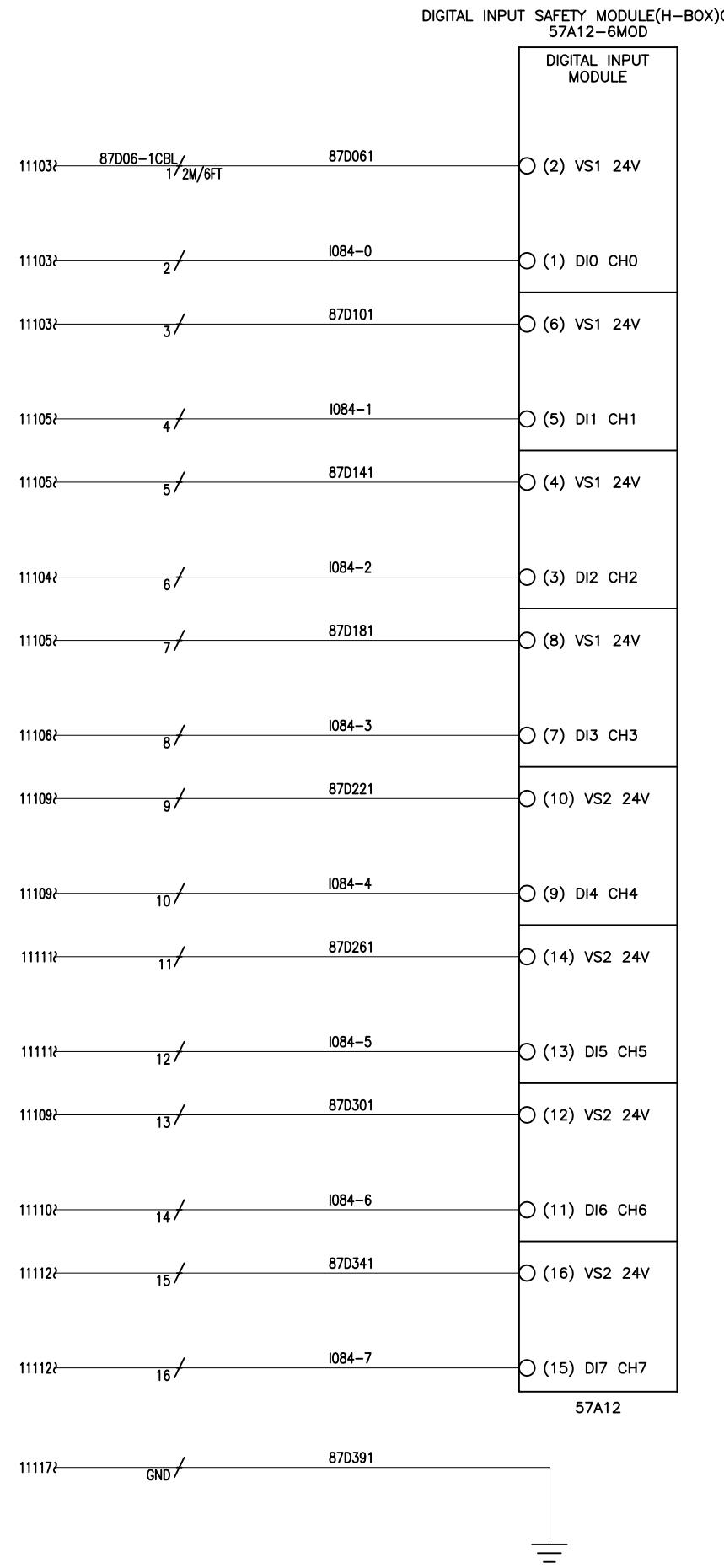
DI7 CH7 I078-7 WORK ZONE #6  
SOLENOID ENGAGED  
\$A\_INSE[57]

SAFETY INPUTS I078 ZONE #6 KEY LOCK (H-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084		SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
87C	N00084-E2-651			

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DIO CH0 I084-0 WORK ZONE #7  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I084-1 WORK ZONE #7  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I084-2 WORK ZONE #7  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I084-3 WORK ZONE #7  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I084-4 WORK ZONE #7  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I084-5 WORK ZONE #7  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I084-6 WORK ZONE #7  
SOLENOID RELEASED  
\$A\_INSE[56]

DI7 CH7 I084-7 WORK ZONE #7  
SOLENOID ENGAGED  
\$A\_INSE[57]

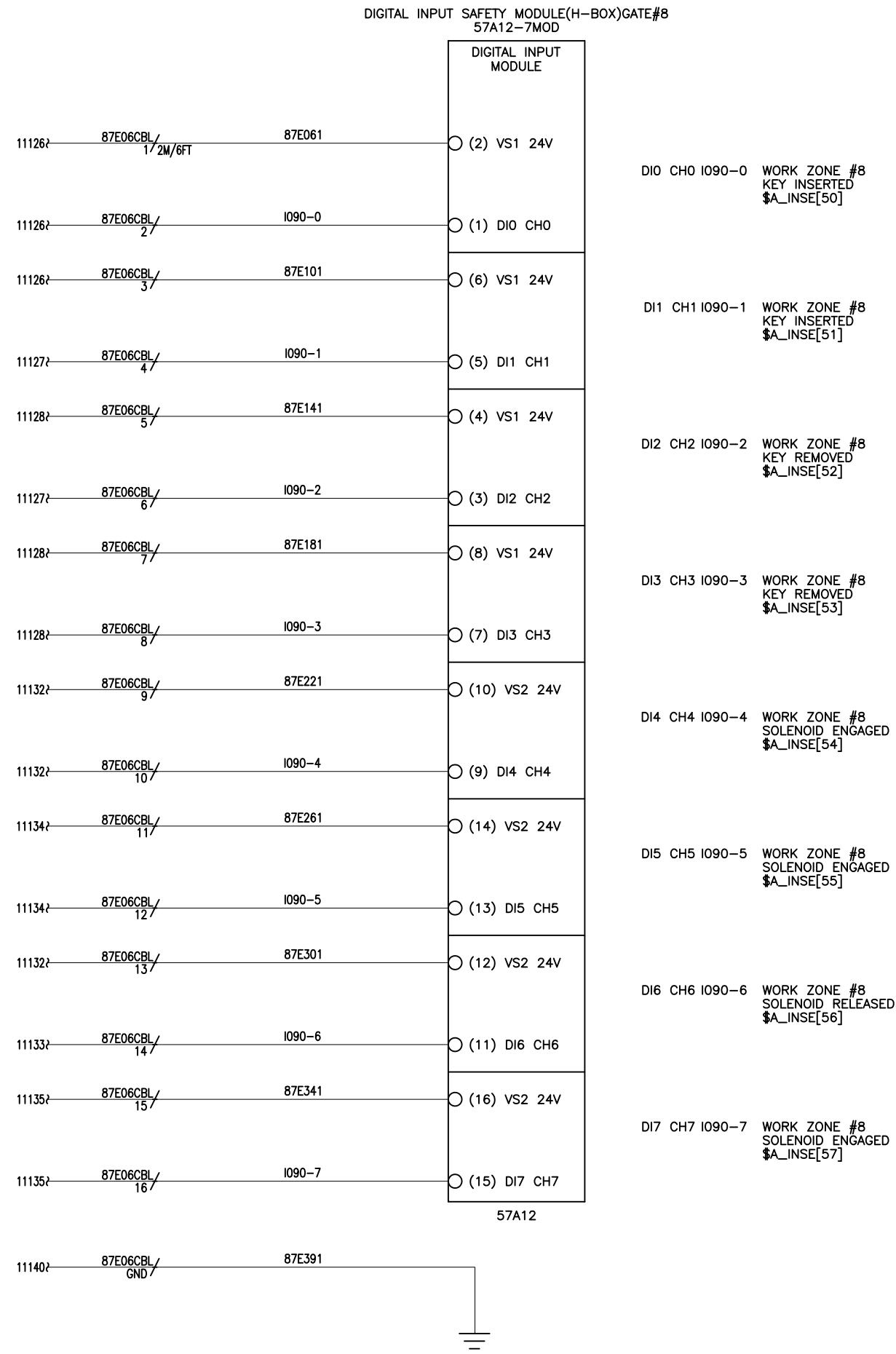
SAFETY INPUTS I084 ZONE #7 KEY LOCK (H-BOX)

ONETEAM		ALCOA		MA'ADEN	
Ma'aden Aluminum Project					
Ma'aden P.O. Number	INGERSOLL Project Number		A6RM-4-1001-00/A6RM100003	2N00084	
Client Drawing Number	EDN CODE		N00084-E2-651	Equipment Tag Number	
D-13 6130-SCA-001					
LET	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE		05/07/11	
2N00084	E2				
DRAWN BY	CHECKED BY	DESIGNED BY		WAYNE LANGDON	
WAYNE LANGDON	WAYNE LANGDON			WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
87D	N00084-E2-651				

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DIO CH0 I090-0 WORK ZONE #8  
KEY INSERTED  
\$A\_INSE[50]

DI1 CH1 I090-1 WORK ZONE #8  
KEY INSERTED  
\$A\_INSE[51]

DI2 CH2 I090-2 WORK ZONE #8  
KEY REMOVED  
\$A\_INSE[52]

DI3 CH3 I090-3 WORK ZONE #8  
KEY REMOVED  
\$A\_INSE[53]

DI4 CH4 I090-4 WORK ZONE #8  
SOLENOID ENGAGED  
\$A\_INSE[54]

DI5 CH5 I090-5 WORK ZONE #8  
SOLENOID ENGAGED  
\$A\_INSE[55]

DI6 CH6 I090-6 WORK ZONE #8  
SOLENOID RELEASED  
\$A\_INSE[56]

DI7 CH7 I090-7 WORK ZONE #8  
SOLENOID ENGAGED  
\$A\_INSE[57]

SAFETY INPUTS I090 ZONE #8 KEY LOCK (H-BOX)

Ma'aden Project	INGERSOLL Project Number	
A6RM-4-1001-00/A6RM10003	2N00084	

Client Drawing Number EDN CODE Equipment Tag Number

N00084-E2-651 D-13 6130-SCA-001

LETTER CHANGE BY DATE CHK M/F

TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11

DRAWN BY WAYNE LANGDON CHECKED BY WAYNE LANGDON DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.

ROCKFORD, ILLINOIS USA

SHEET NUMBER DRAWING NUMBER

87E N00084-E2-651

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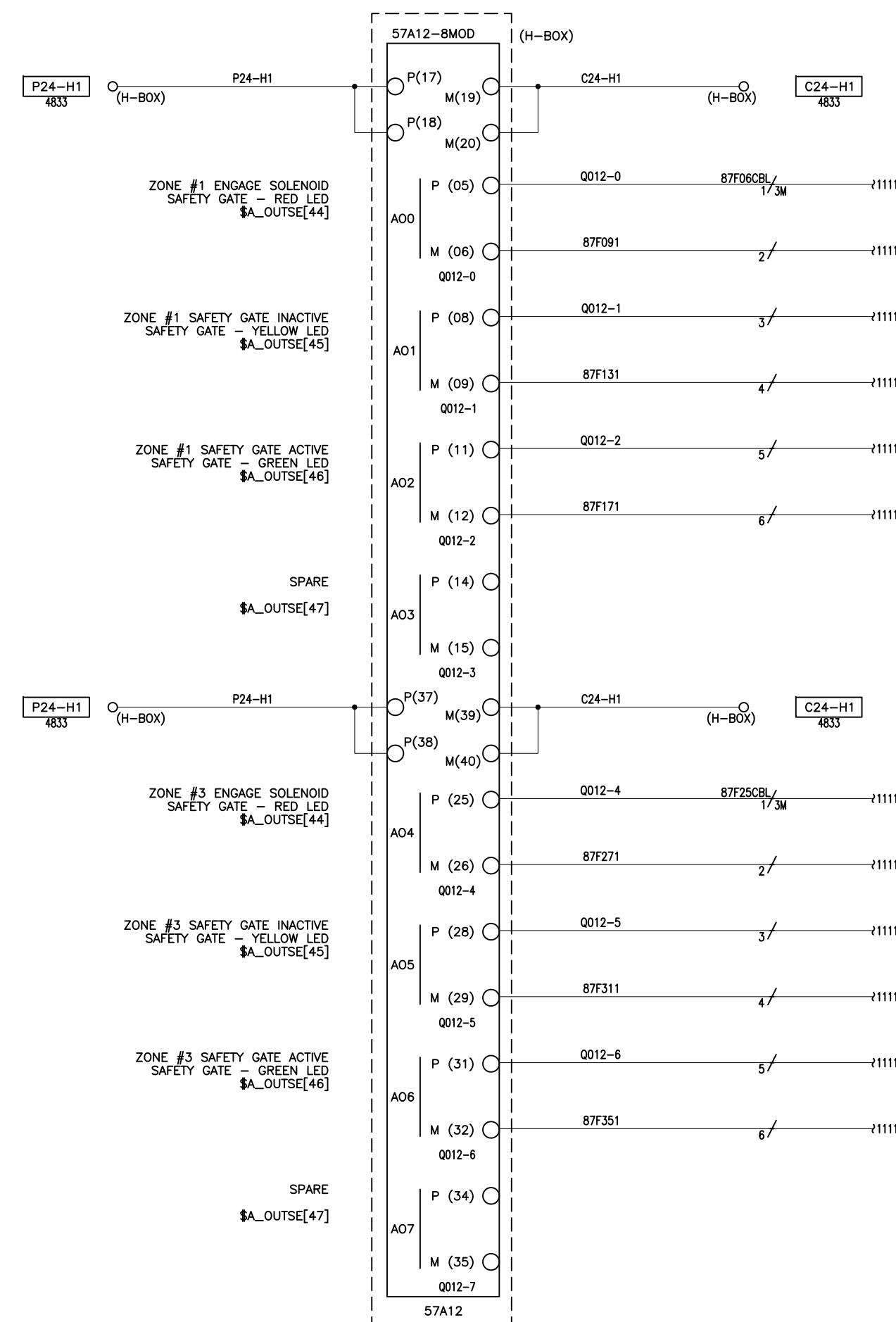
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SAFETY OUTPUTS Q12 ZONE #1 &amp; #3 KEY LOCK (H-BOX)

Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER 87F	DRAWING NUMBER N00084-E2-651	

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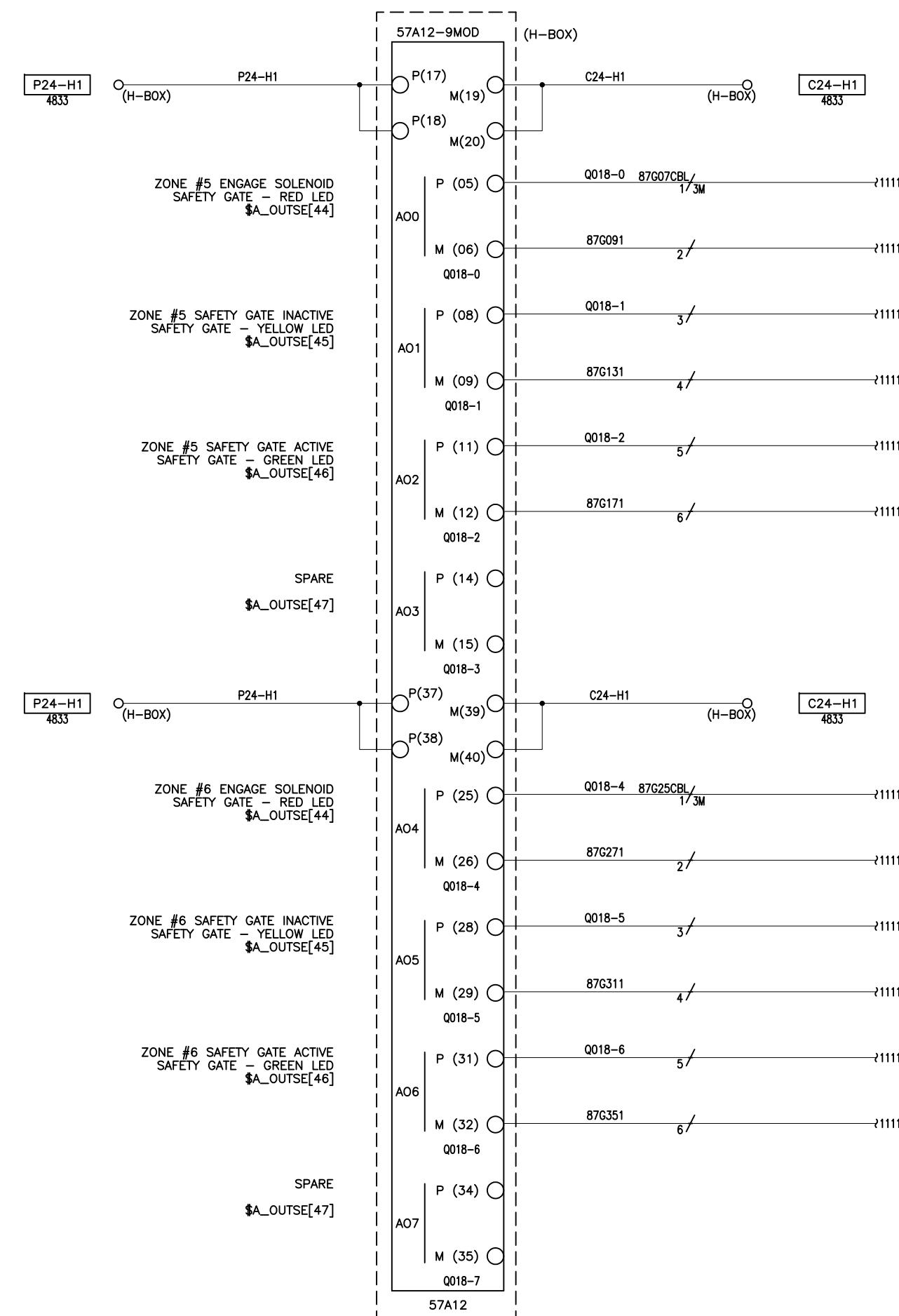
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SAFETY OUTPUTS Q18 ZONE #5 &amp; #6 KEY LOCK (H-BOX)

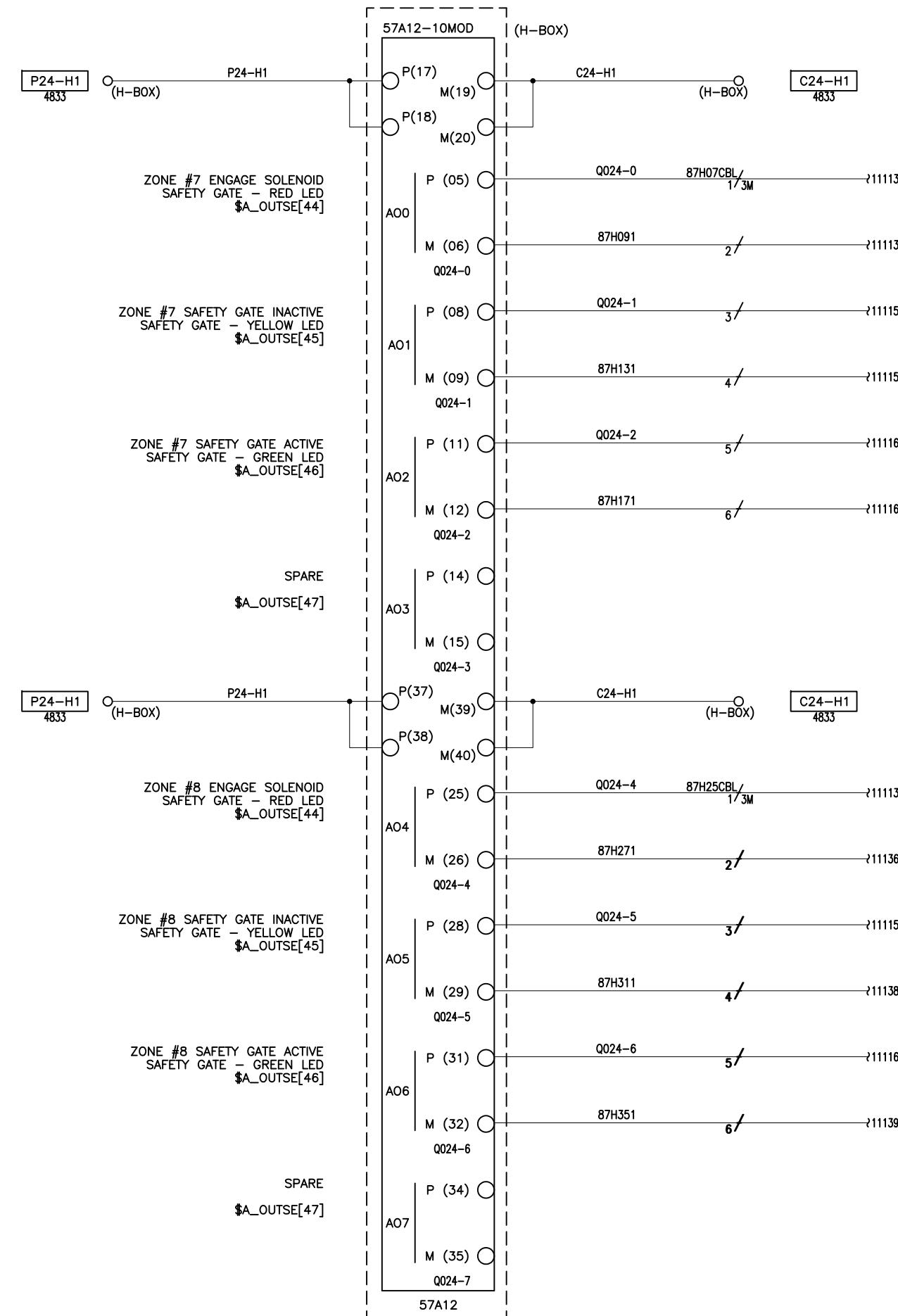
<b>ALCOA</b>		<b>Ma'aden</b>	<b>Ma'aden</b>
Ma'aden Aluminum Project			
Ma'aden P.D. Number	INGERSOLL Project Number		
A6RM-4-1001-00/A6RM10003	2N00084		
Client Drawing Number			
N00084-E2-651	EDN CODE	Equipment Tag Number	
D-13	6130-SCA-001		
<b>ELECTRICAL SCHEMATICS</b>			
LETTER	CHANGE	BY	DATE
			CHK BY
M/F			
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SHEET NUMBER	DRAWING NUMBER		
87G	N00084-E2-651		

87H01

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87H03

87H04



SAFETY OUTPUTS Q24 ZONE #7 &amp; #8 KEY LOCK (H-BOX)

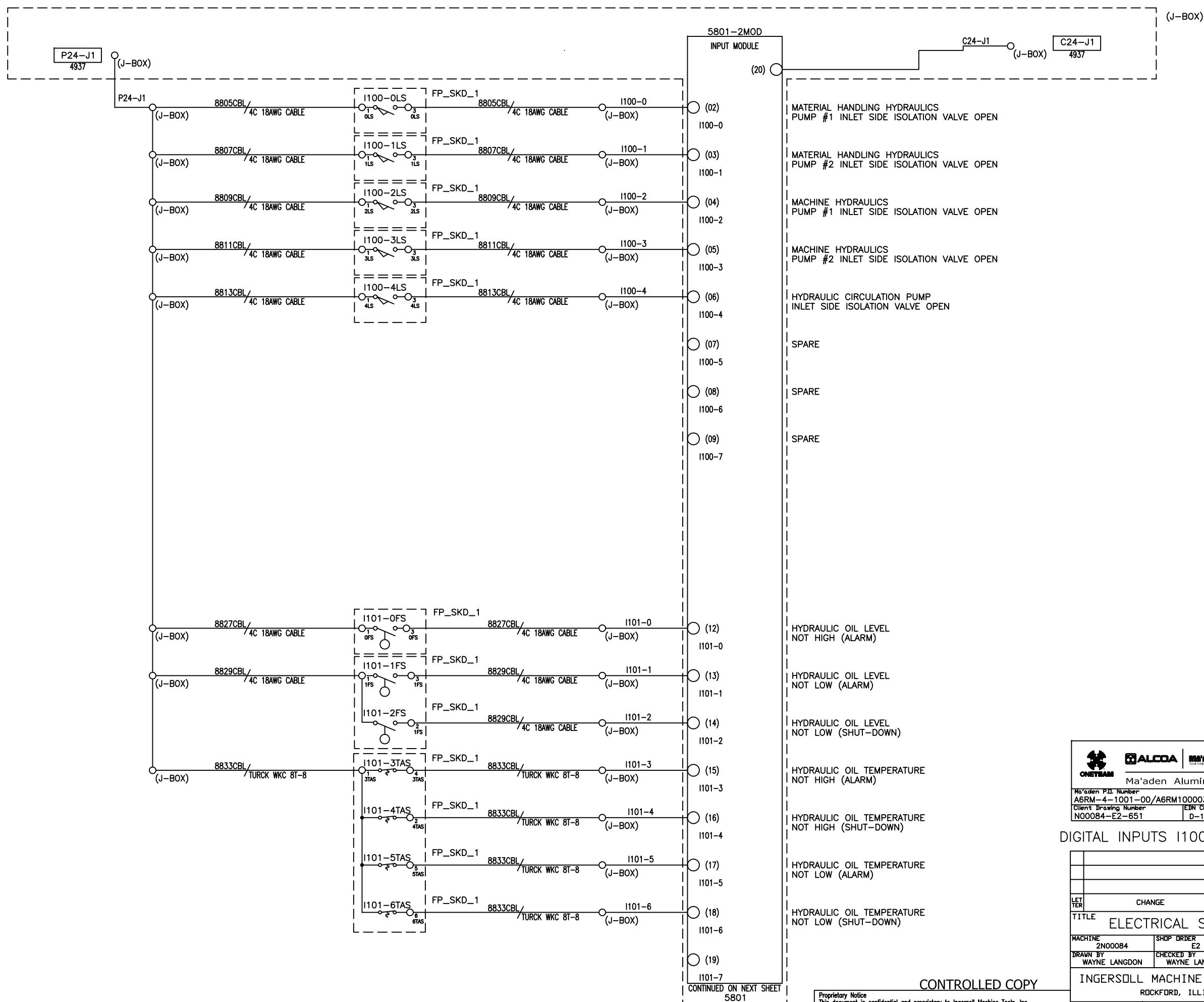
<b>ONETEAM</b>		<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project			
Ma'aden P.D. Number	INGERSOLL Project Number		
A6RM-4-1001-00/A6RM100003	2N00084		
Client Drawing Number			
N00084-E2-651	EDN CODE	Equipment Tag Number	
D-13	6130-SCA-001		
<b>TITLE</b>			
ELECTRICAL SCHEMATICS			
MACHINE	SHOP ORDER	DATE	
2N00084	E2	05/07/11	
DRAWN BY	CHECKED BY	DESIGNED BY	
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
87H	N00084-E2-651		

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87H42

87H43



Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003 INGERSOLL Project Number 2N00084

Client Drawing Number N00084-E2-651 EDN CODE Equipment Tag Number D-13 6130-SCA-001

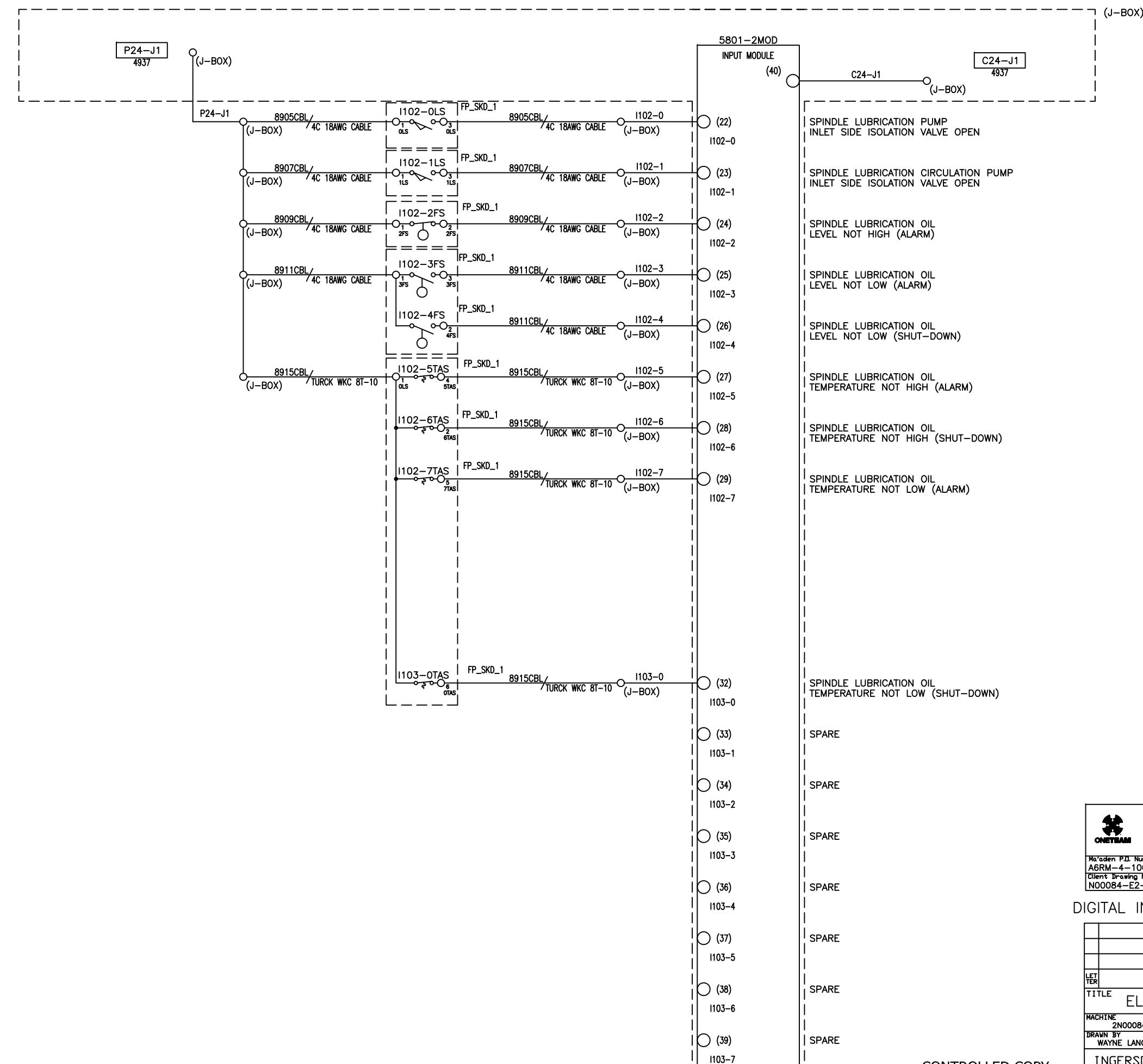
**DIGITAL INPUTS I100-I101 (J-BOX)**

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**INGERSOLL MACHINE TOOLS, INC.**  
**ROCKFORD, ILLINOIS USA**

**SHEET NUMBER** 88 **DRAWING NUMBER** N00084-E2-651



The image shows the ALCOA logo (a stylized 'A' inside a square) and the Ma'aden logo (a star and the word 'Ma'aden' with 'Oleqa' underneath). Below these is a banner with the text 'Ma'aden Aluminum Project'.

#### DIGITAL INPUTS I102–I103 (J-BOX)

LET TER	CHANGE	BY	DATE	CHK BY
				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER		DRAWING NUMBER		
89		N00084-E2-651		

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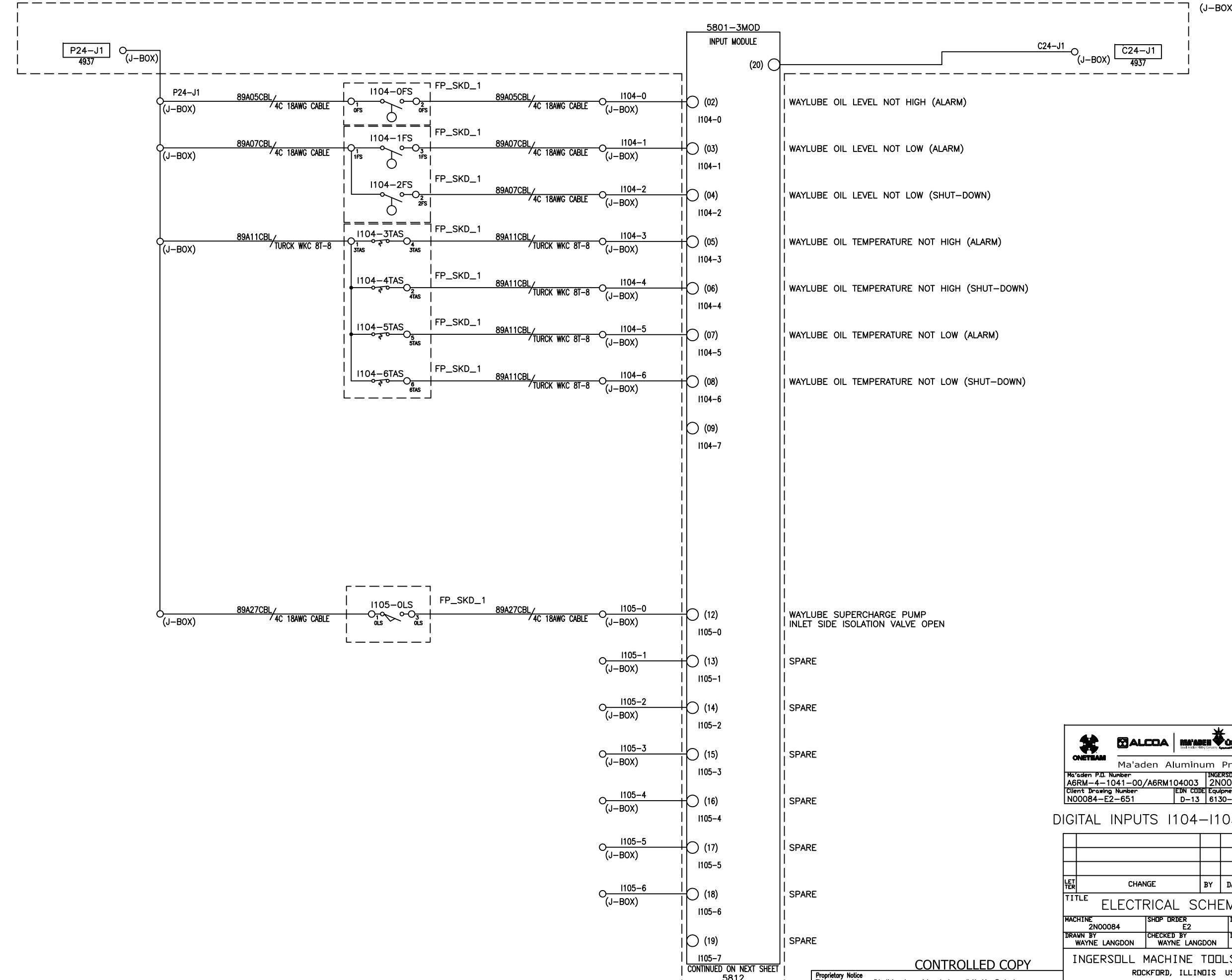
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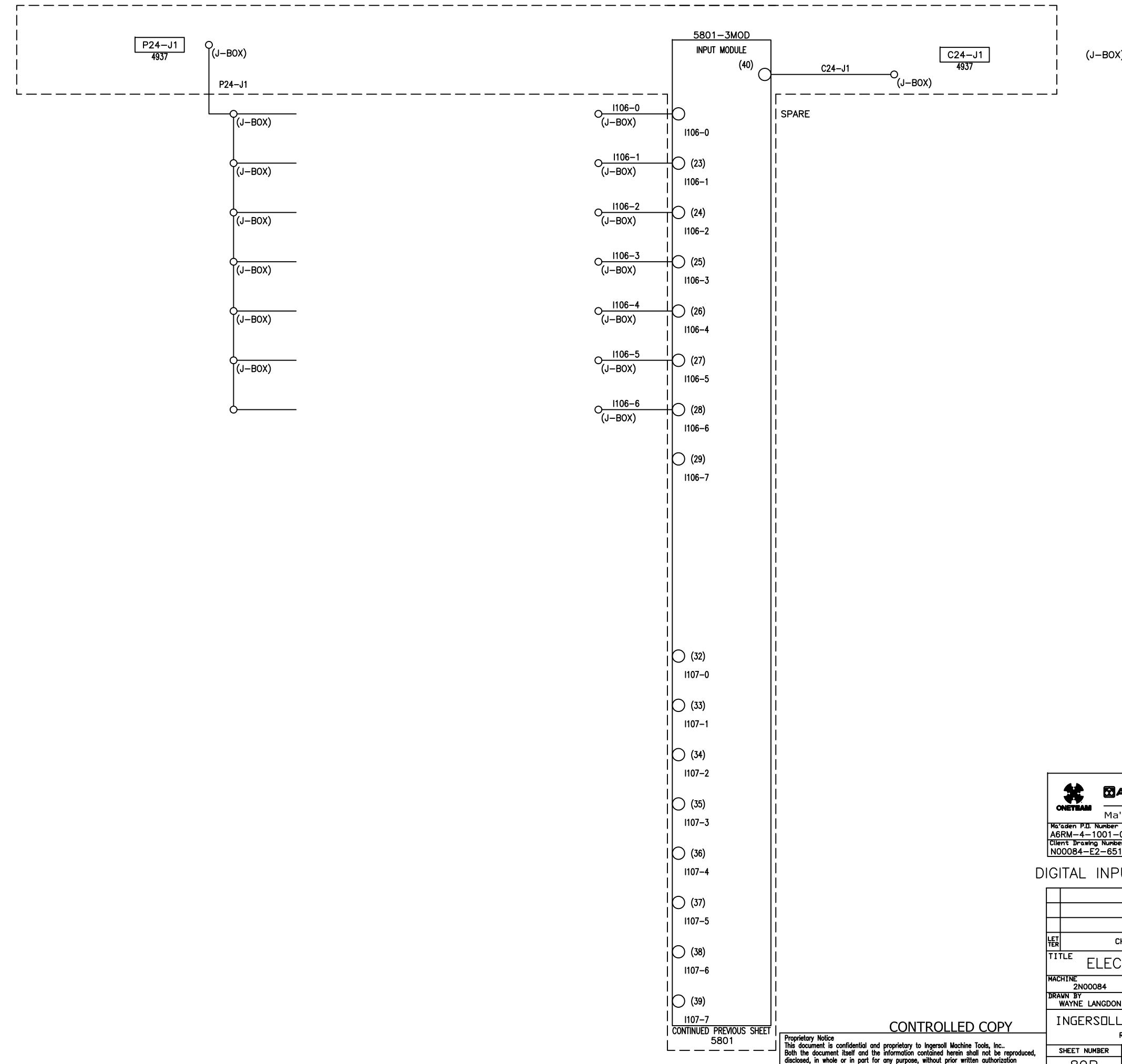
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<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Project	INGERSOLL Project	Alcoa
A6RM-4-1001-00/A6RM100003	2N00084	

DIGITAL INPUTS I106-I107 (J-BOX)

LET	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					

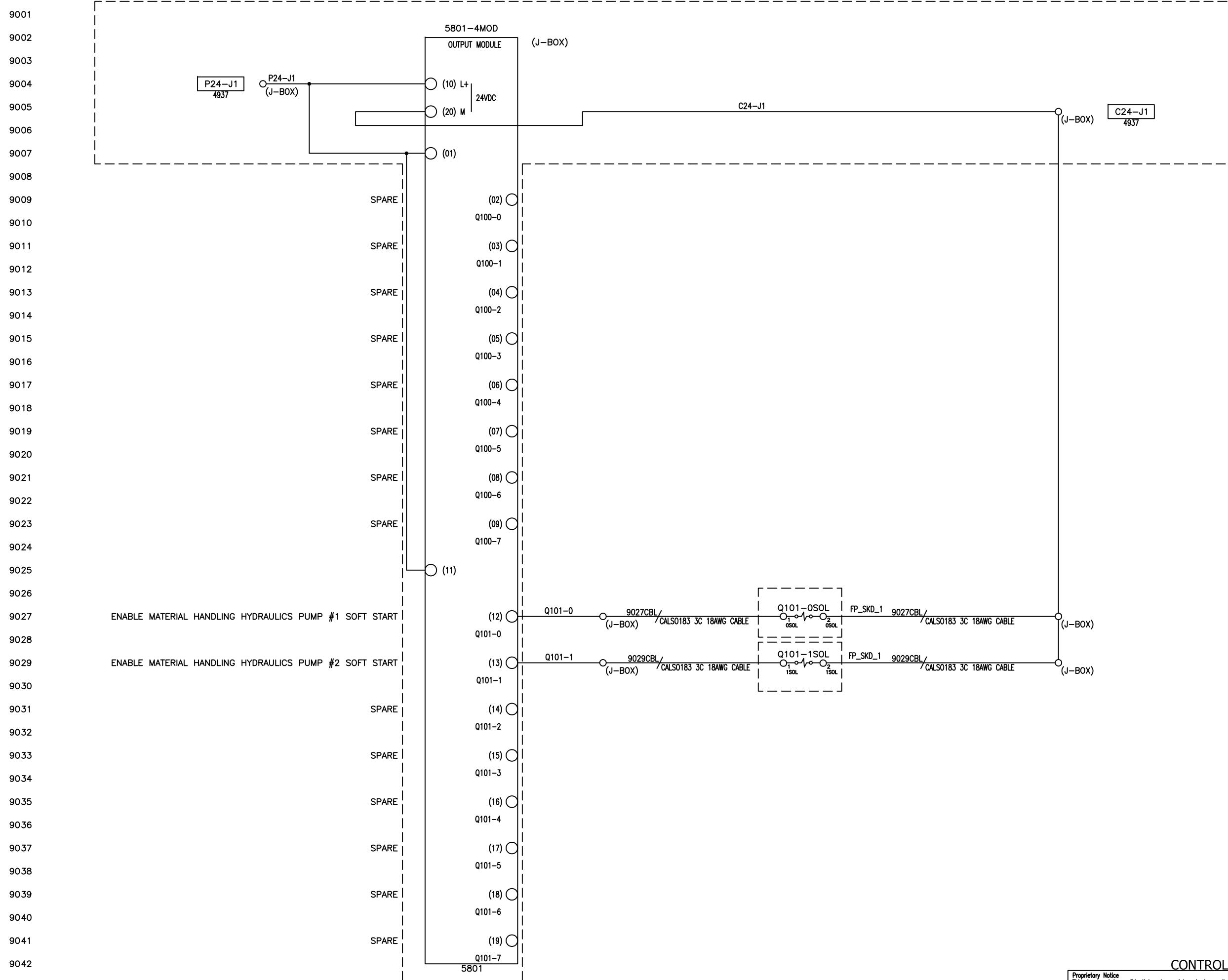
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
89B	N00084-E2-651

CONTINUED PREVIOUS SHEET  
5801

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Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

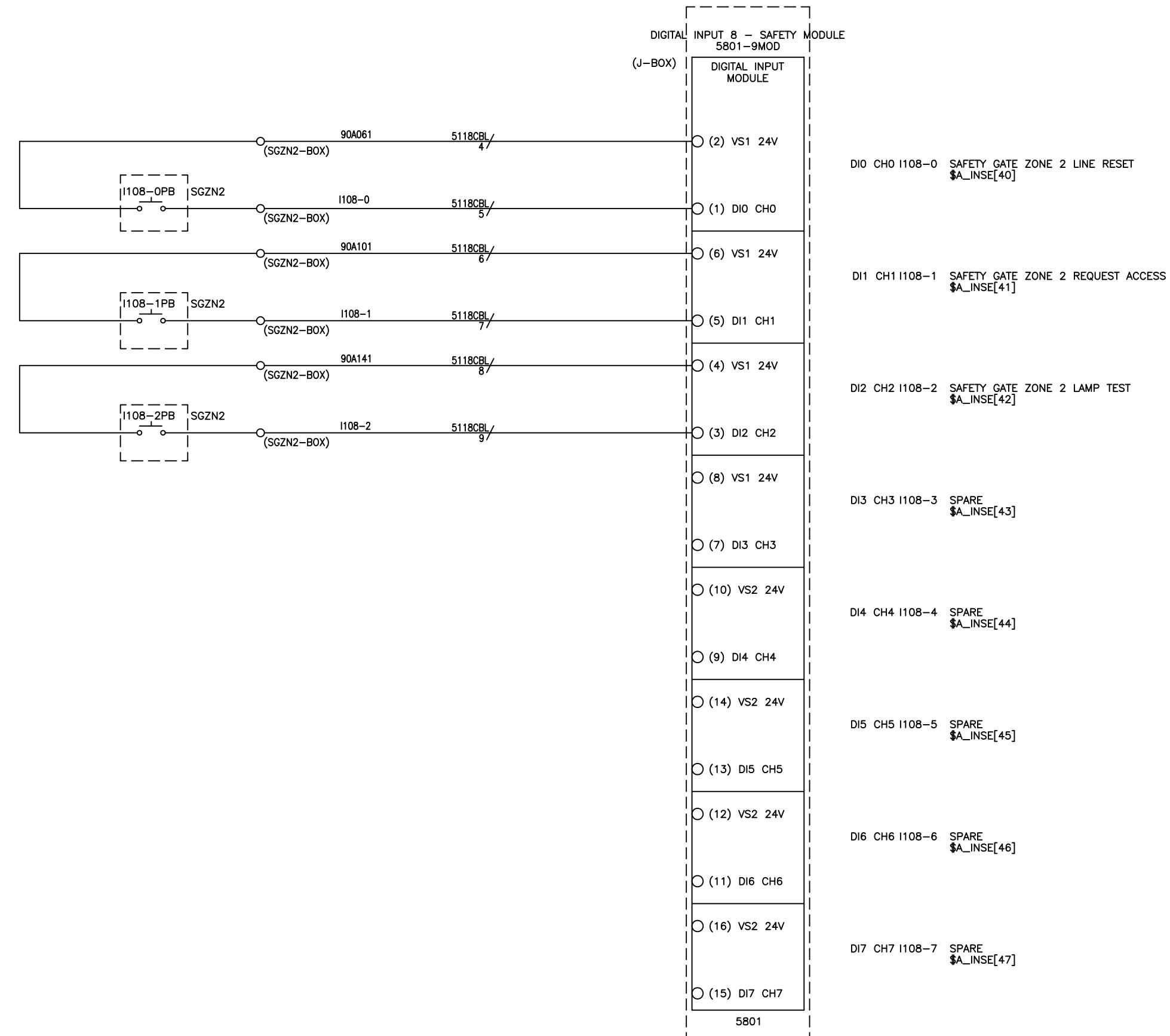
### DIGITAL OUTPUTS Q100-Q101 (J-BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 90	DRAWING NUMBER N00084-E2-651				

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90 N00084-E2-651

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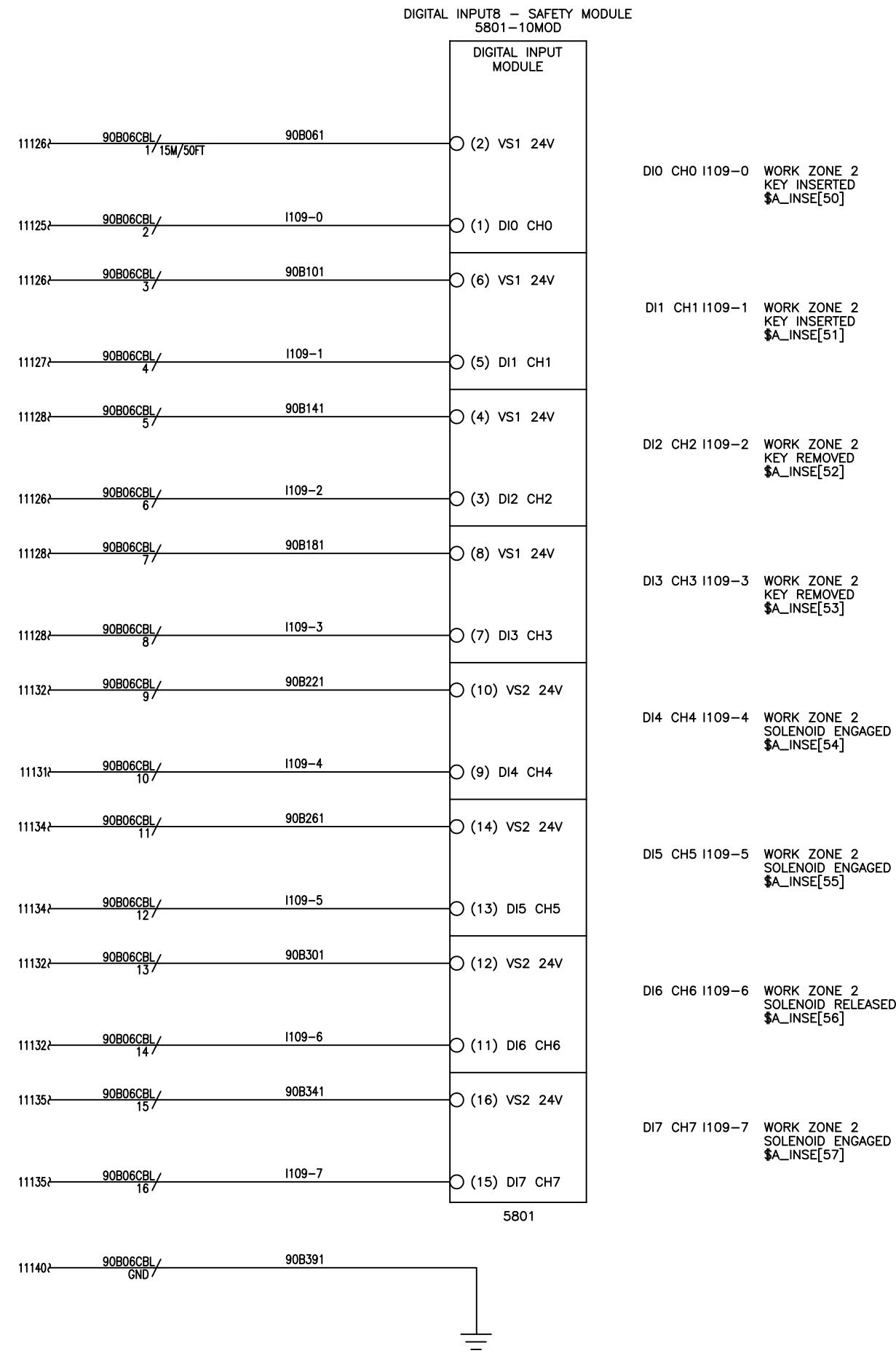


### SAFETY INPUT ZONE #2 I108 (J-BOX)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11						
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
90A	N00084-E2-651					

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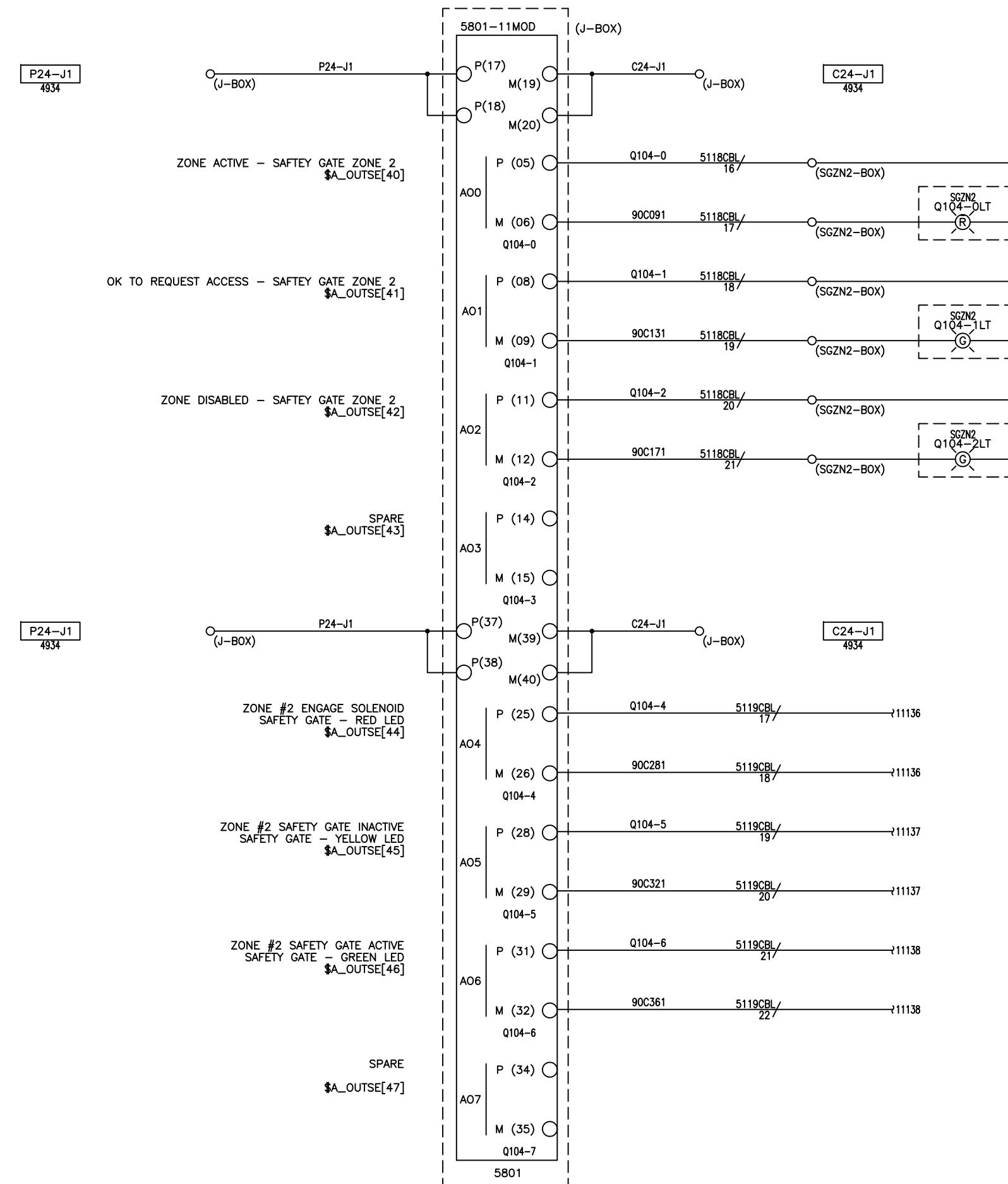
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LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
90B	N00084-E2-651				

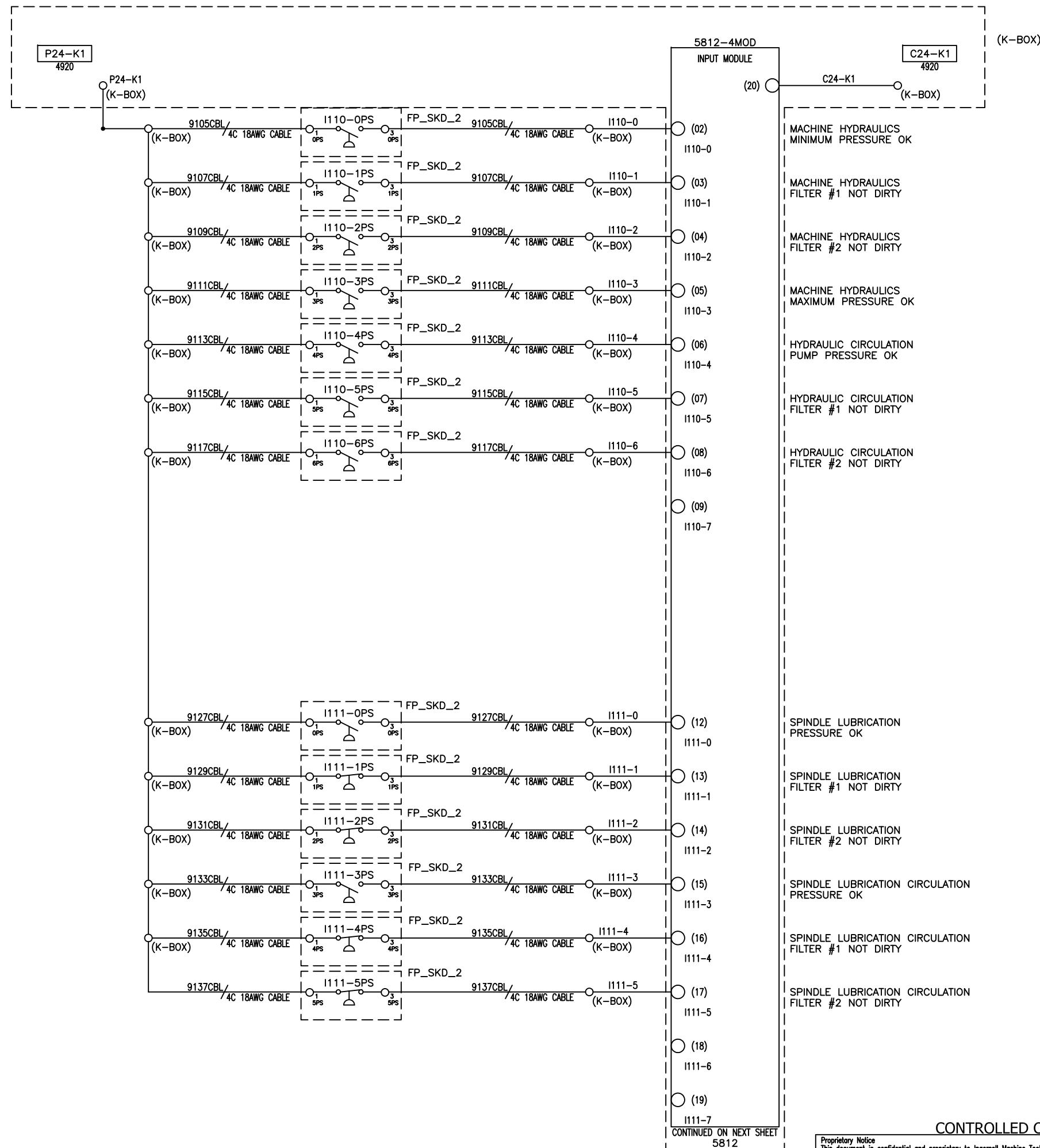
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SAFETY OUTPUTS ZONE #2 Q104 (J-BOX)

ALCOA		Ma'aden	
ONETEAM		Aluminum Project	
Ma'aden P.O. Number	A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number	
Client Drawing Number	D-13	EDN CODE	Equipment Tag Number
6130-SCA-001			
LETTER CHANGE BY DATE CHK BY M/F			
TITLE ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER 90C	DRAWING NUMBER N00084-E2-651		

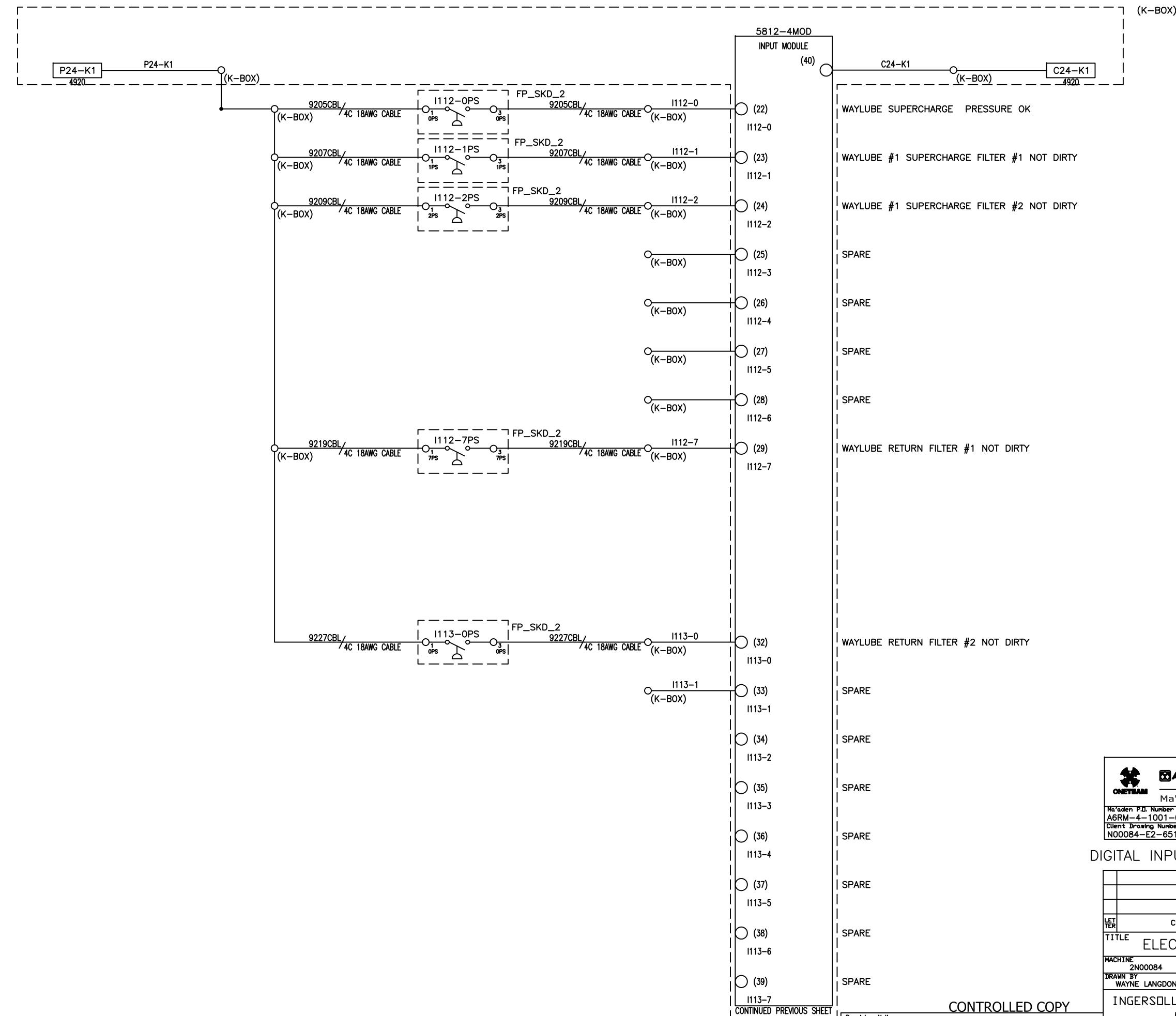
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Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
DIGITAL INPUTS I110-I111 (K-BOX)		
LET	CHANGE	BY DATE
TER		CHK BY M/F
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER	
91	N00084-E2-651	

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CONTINUED ON NEXT SHEET  
5812



DIGITAL INPUTS |112-|113 (K-BOX)

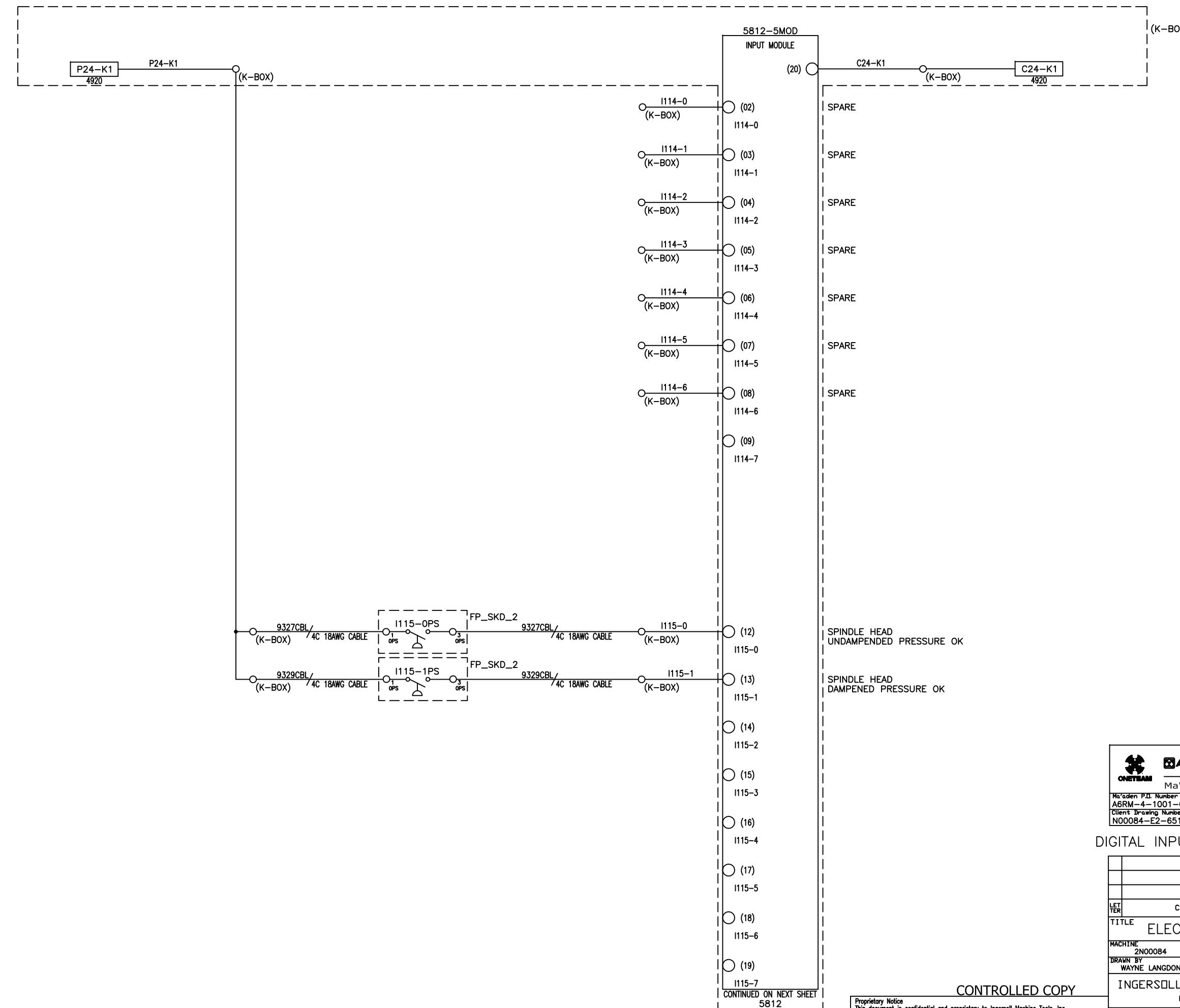
LET TER	CHANGE	BY	DATE	CHK BY
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# ELECTRICAL SCHEMATICS

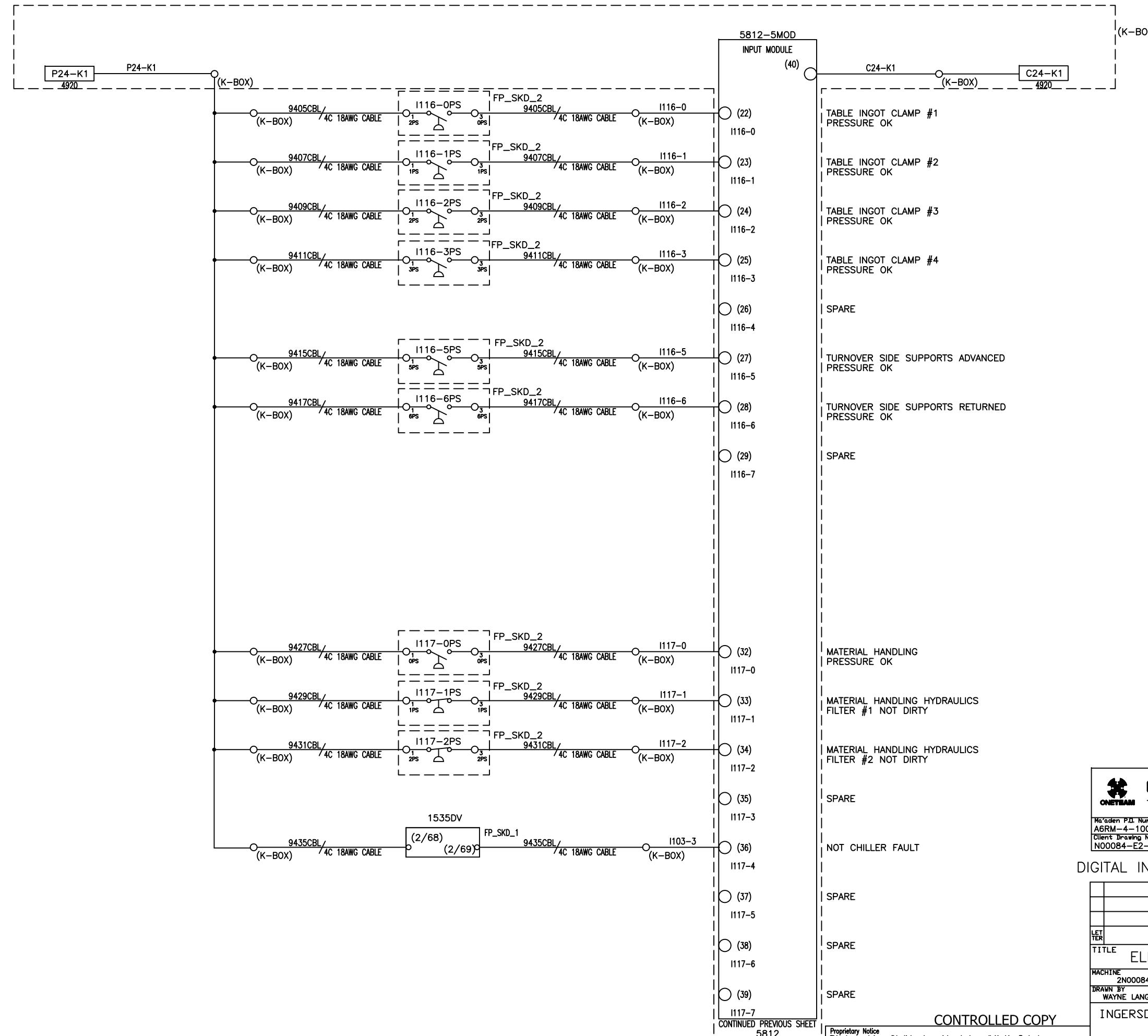
MACHINE 2N00084 SHIP ORDER E2 DATE 05/07/11  
DRAWN BY WAYNE LANGDON CHECKED BY WAYNE LANGDON DESIGNED BY WAYNE LANGDON

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Ma'aden Aluminum Project		
Inga'den P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
DIGITAL INPUTS I114-I115 (K-BOX)		
LET TER	CHANGE	BY DATE
TITLE	ELECTRICAL SCHEMATICS	M/F
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER 93	DRAWING NUMBER N00084-E2-651	



ONE TEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Inga'den P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001
DIGITAL INPUTS I116-I117 (K-BOX)		
LET	CHANGE	BY DATE
TER		CHK BY M/F
TITLE ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA		
SHEET NUMBER 94	DRAWING NUMBER N00084-E2-651	

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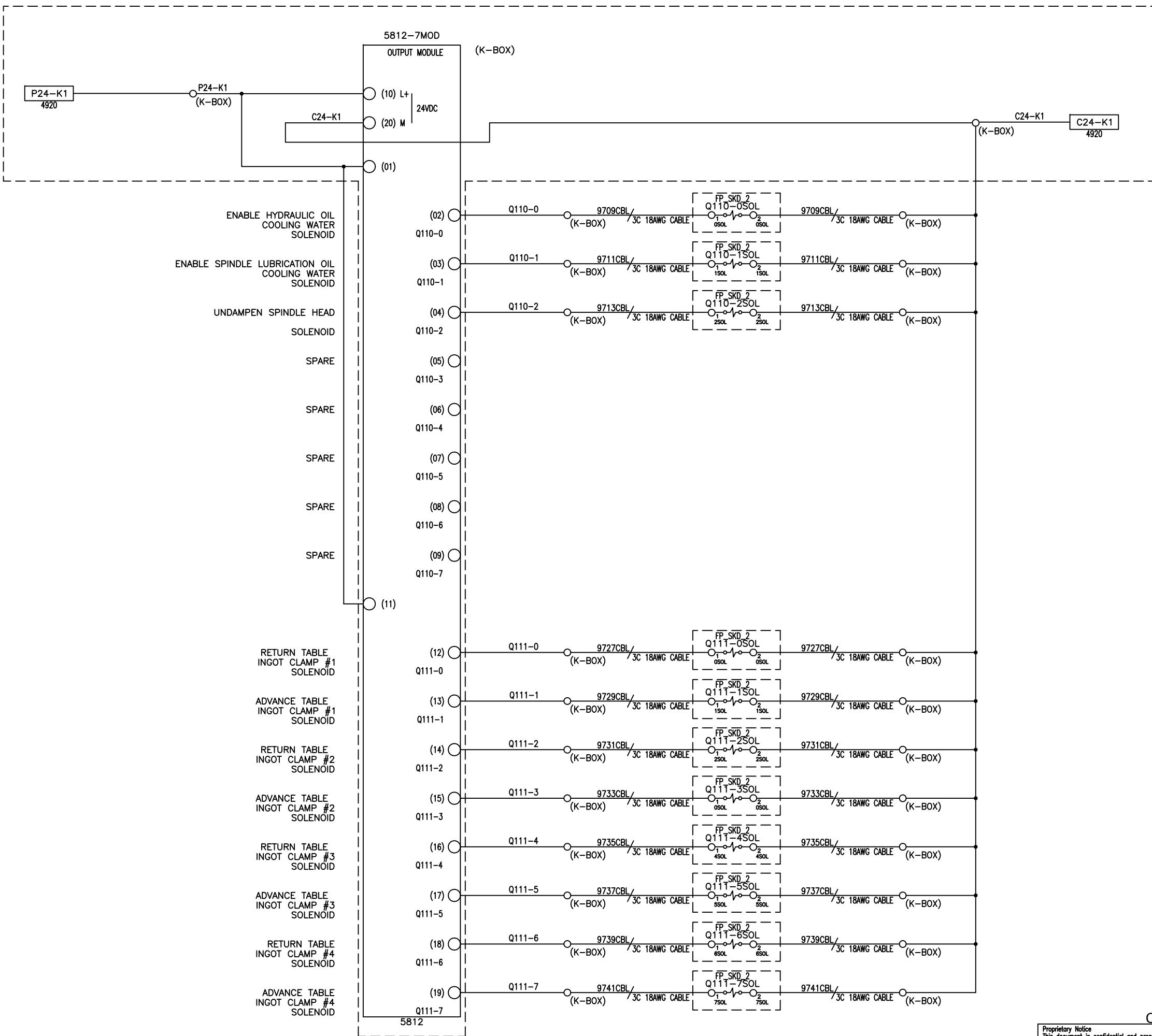
		Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001		
SPARE (K-BOX)				
LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
95	N00084-E2-651			

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 <b>ALCOA</b>	 <b>Ma'aden</b>	Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001		
SPARE (K-BOX)				
LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE <b>ELECTRICAL SCHEMATICS</b>				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
96	N00084-E2-651			

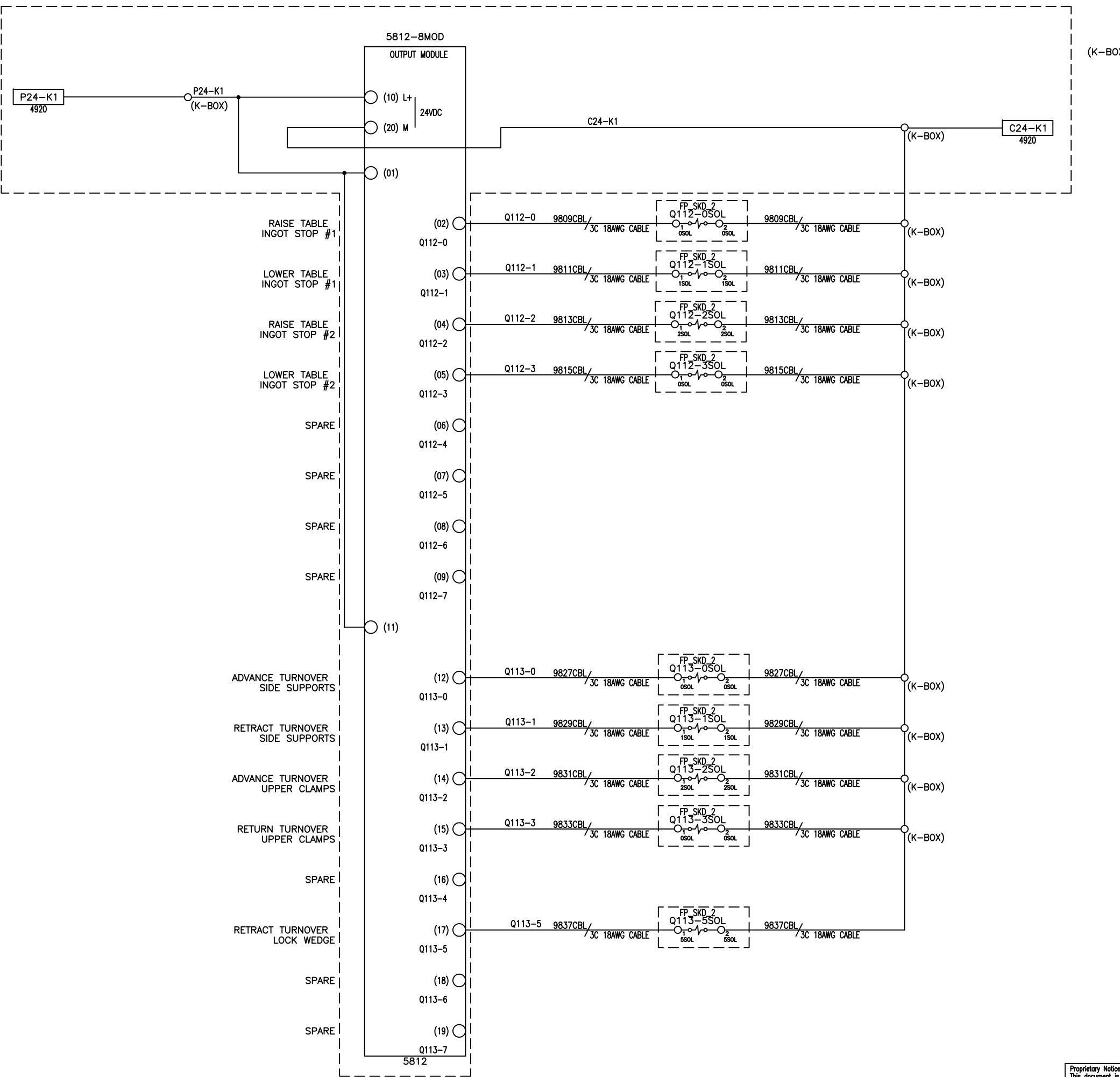
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Machined P.D. Number	INGERSOLL Project Number										
A6RM-4-1001-00/A6RM10003	2N00084										
Client Drawing Number	EDN CODE Equipment Tag Number										
N00084-E2-651	D-13 6130-SCA-001										
DIGITAL OUTPUTS Q110-Q111 (K-BOX)											
<table border="1"> <tr><td>LETTER</td><td>CHANGE</td><td>BY</td><td>DATE</td><td>CHK BY</td></tr> <tr><td></td><td></td><td></td><td></td><td>M/F</td></tr> </table>		LETTER	CHANGE	BY	DATE	CHK BY					M/F
LETTER	CHANGE	BY	DATE	CHK BY							
				M/F							
TITLE ELECTRICAL SCHEMATICS											
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11									
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON									
INGERSOLL MACHINE TOOLS, INC.											
ROCKFORD, ILLINOIS USA											
SHEET NUMBER	DRAWING NUMBER										
97	N00084-E2-651										



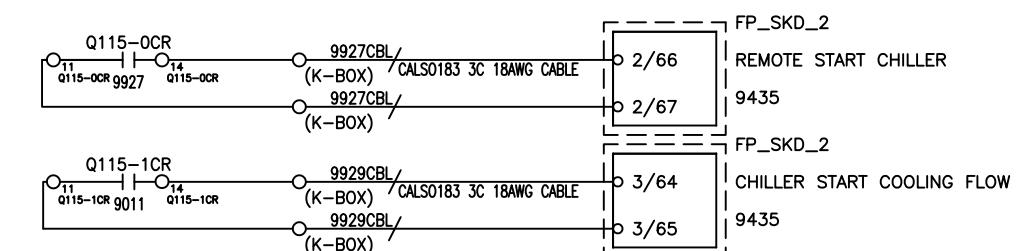
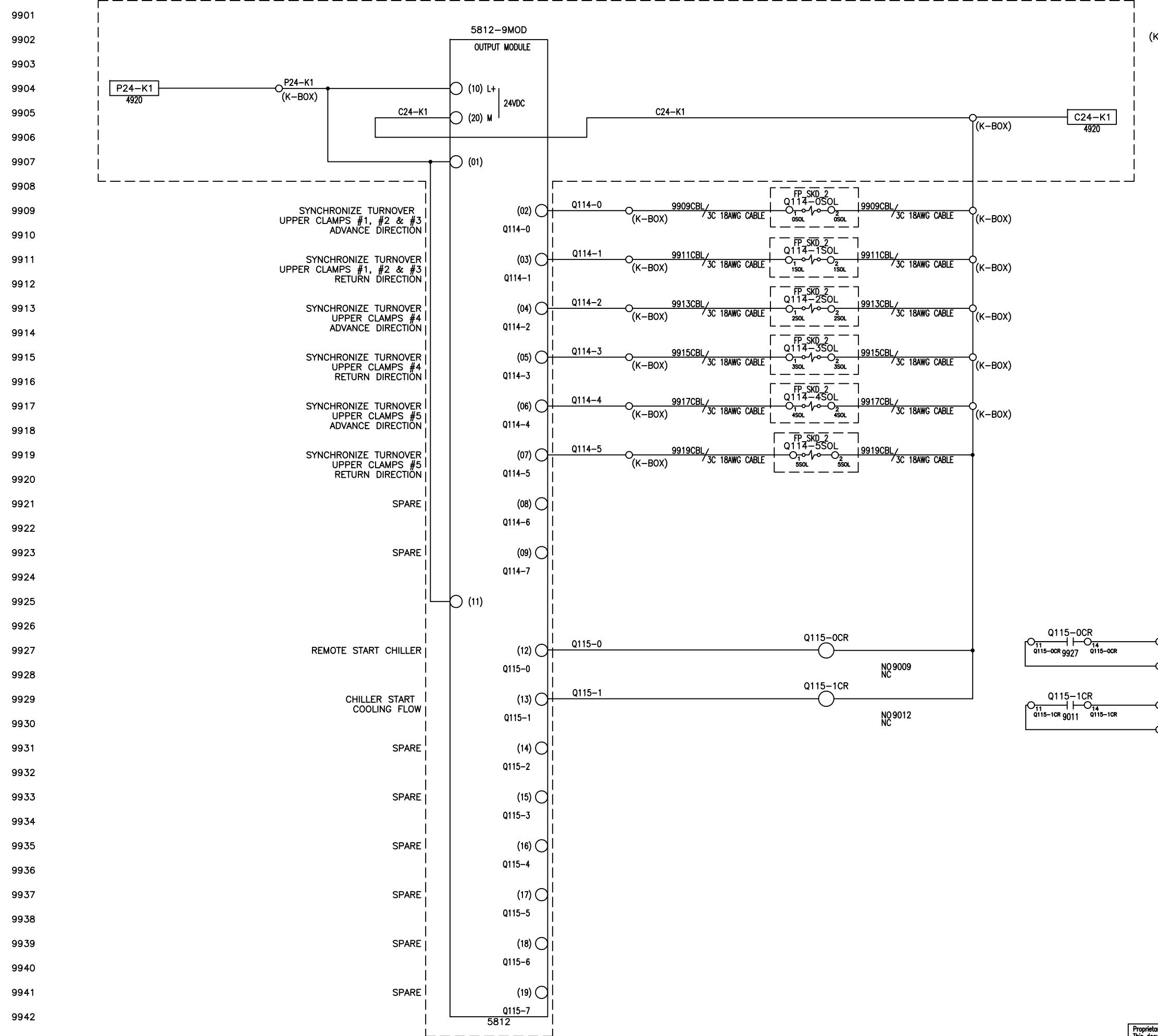
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#### DIGITAL OUTPUTS Q112–Q113 (K-BOX)

ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		

C. e reproduced, ization	ROCKFORD, ILLINOIS USA
SHEET NUMBER	DRAWING NUMBER



DIGITAL OUTPUTS Q114–Q115 (K-BOX)

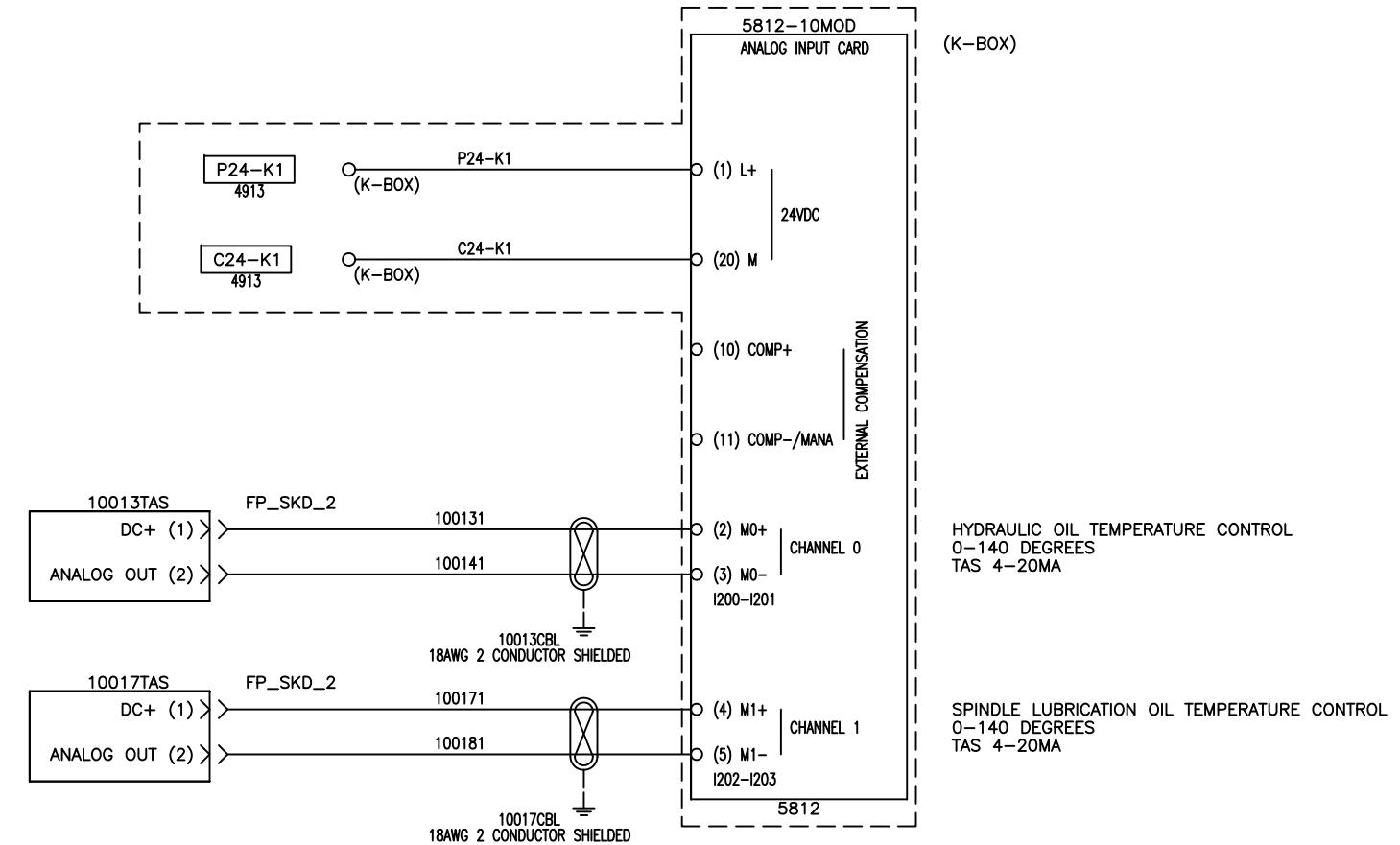
LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b>					
<b>ELECTRICAL SCHEMATICS</b>					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY	CHECKED BY	DESIGNED BY			
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON			
<b>INGERSOLL MACHINE TOOLS, INC.</b>					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
99	N00084-E2-651				

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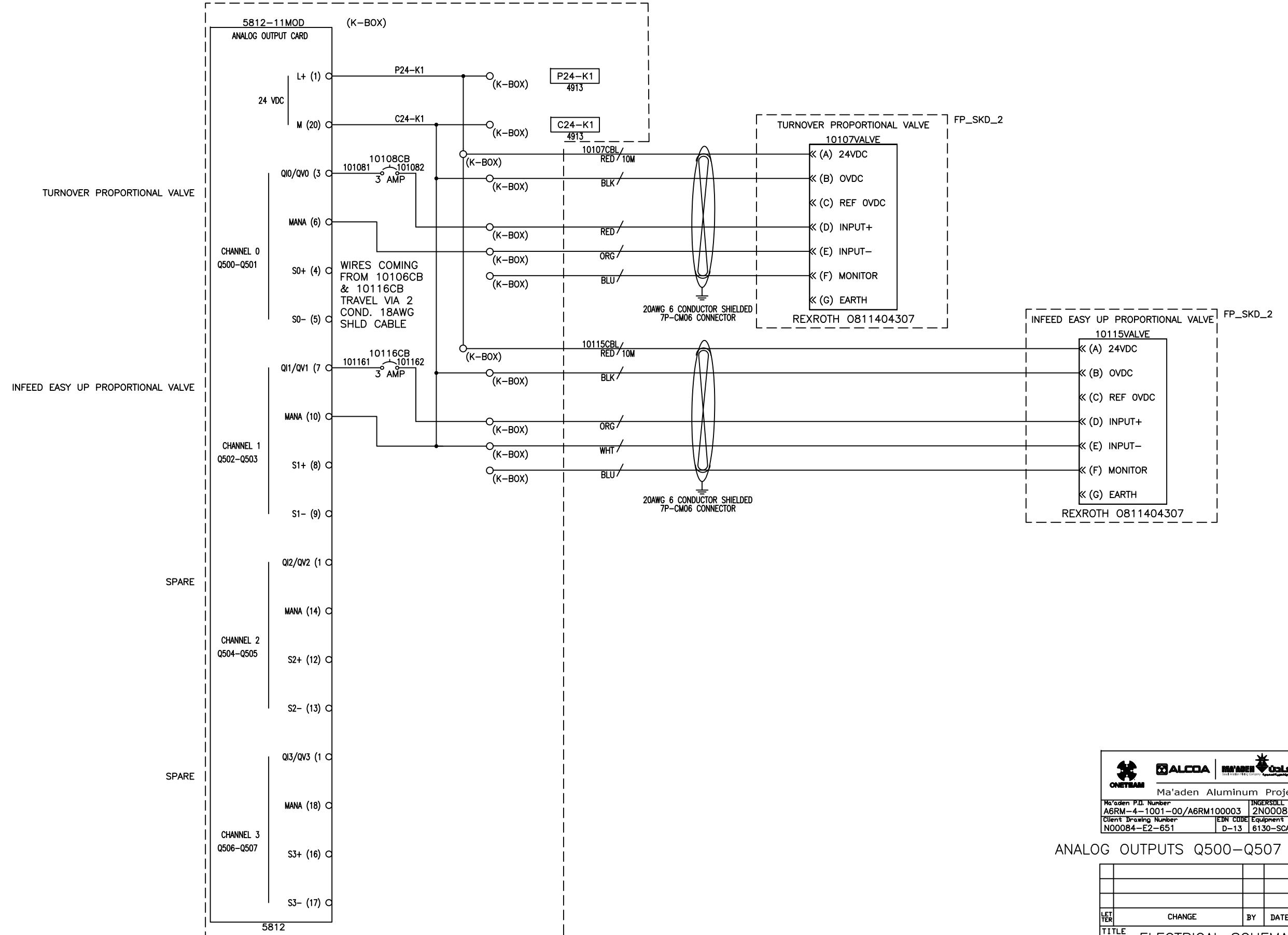
METHOD SELECTED	MEASURING RANGE MODULE SETTING
VOLTAGE 0-10VDC	B
CURRENT 4-20MA (2-WIRE)	D
CURRENT 4-20MA (4-WIRE) EXT 24V	C
80/250/500 1000MV PT100	A

Ma'aden Project Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM100003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

ANALOG INPUTS 1500-1503 (K-BOX)

LET	CHANGE	BY	DATE	CHK
TER				M/F
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
100	N00084-E2-651			

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Ma'aden Aluminum Project	INGERSOLL Project Number	2N00084
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003 Client Drawing Number N00084-E2-651	EDN CODE	Equipment Tag Number D-13 6130-SCA-001

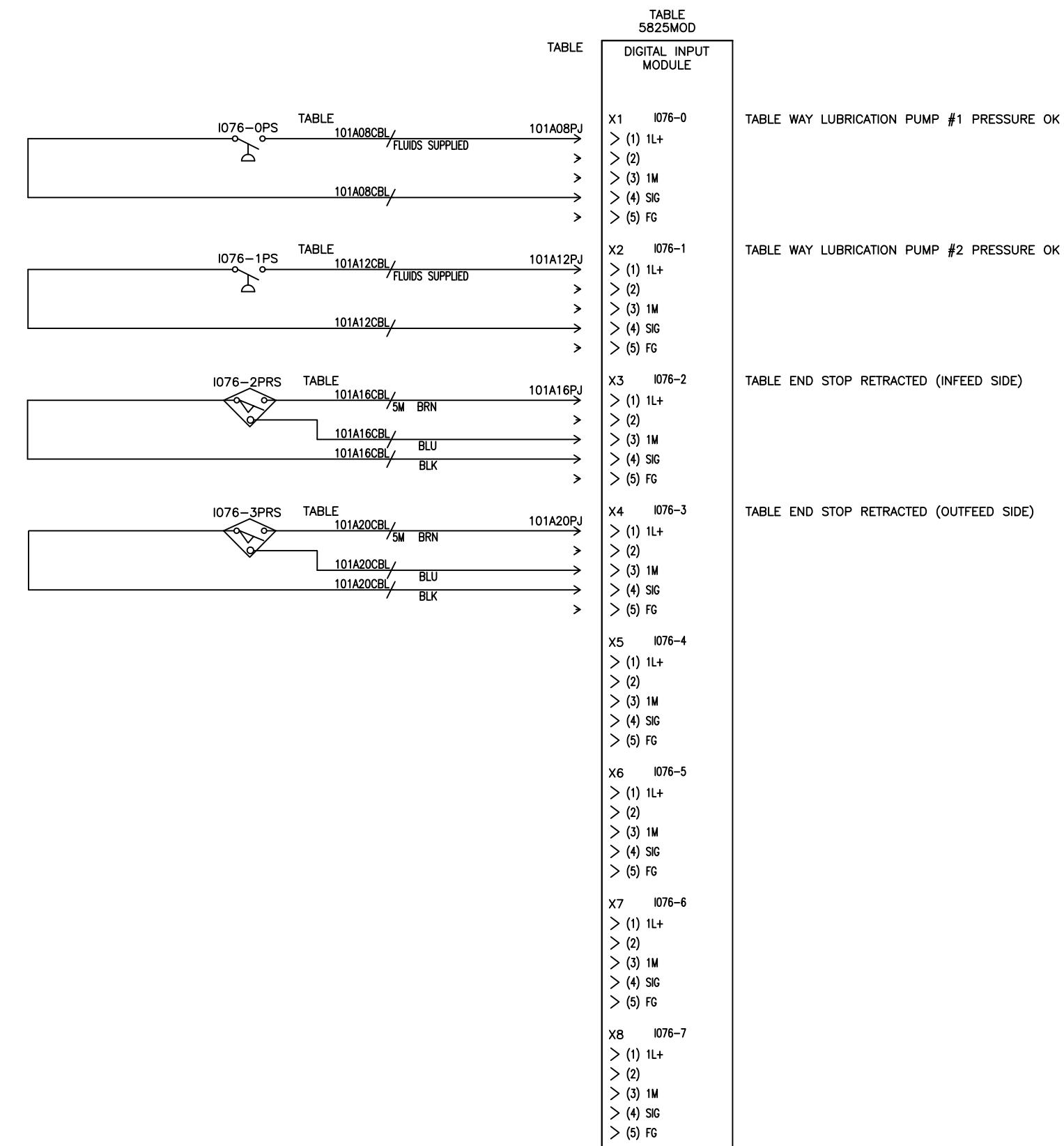
### ANALOG OUTPUTS Q500-Q507 (K-BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
101	N00084-E2-651				

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101 N00084-E2-651

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Ma'aden P.D. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM100003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

DIGITAL BLOCK INPUTS I076 (TABLE)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						

MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11

DRAWN BY	CHECKED BY	DESIGNED BY
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
101A	N00084-E2-651

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SPARE REMOTE I/O BLK 5825-1MOD		
INFEED	DIGITAL INPUT MODULE	
6605PJ	X1 I077-0 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	SPARE
	X2 I077-1 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	
	X3 I077-2 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	SPARE
	X4 I077-3 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	
	X5 I077-4 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	SPARE
	X6 I077-5 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	SPARE
	X7 I077-6 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	
	X8 I077-7 > (1) 1L+ > (2) > (3) 1M > (4) SIG > (5) FG	

5820

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Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

DIGITAL BLOCK INPUTS I077 (SPARE)

LET	TER	CHANGE	BY	DATE	CHK	M/F

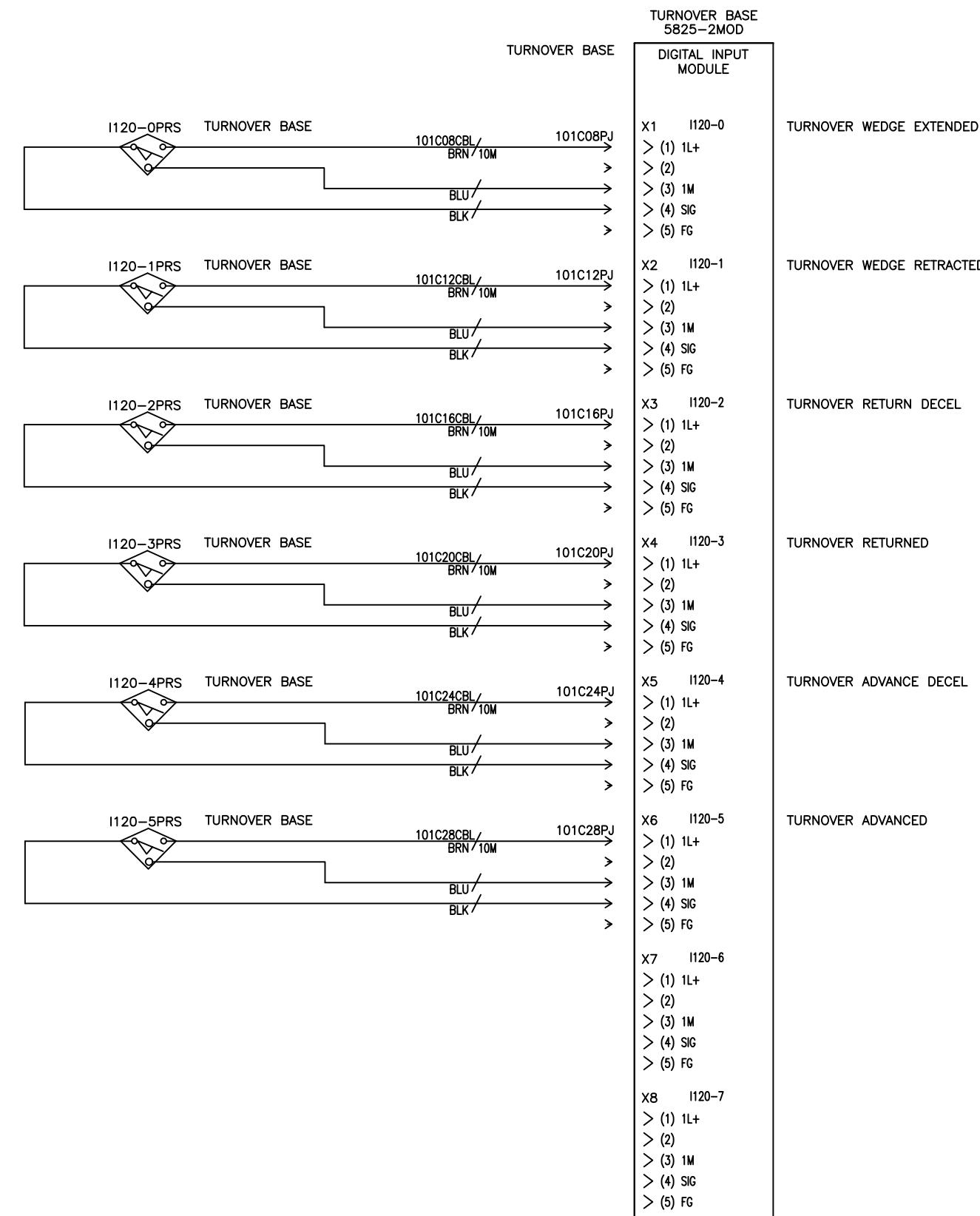
TITLE ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
101B	N00084-E2-651

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### DIGITAL BLOCK INPUTS I120 (TURNOVER BASE)

			Ma'aden Aluminum Project		
			Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	

Client Drawing Number  
N00084-E2-651

EDN CODE Equipment Tag Number  
D-13 6130-SCA-001

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		

SHEET NUMBER	DRAWING NUMBER
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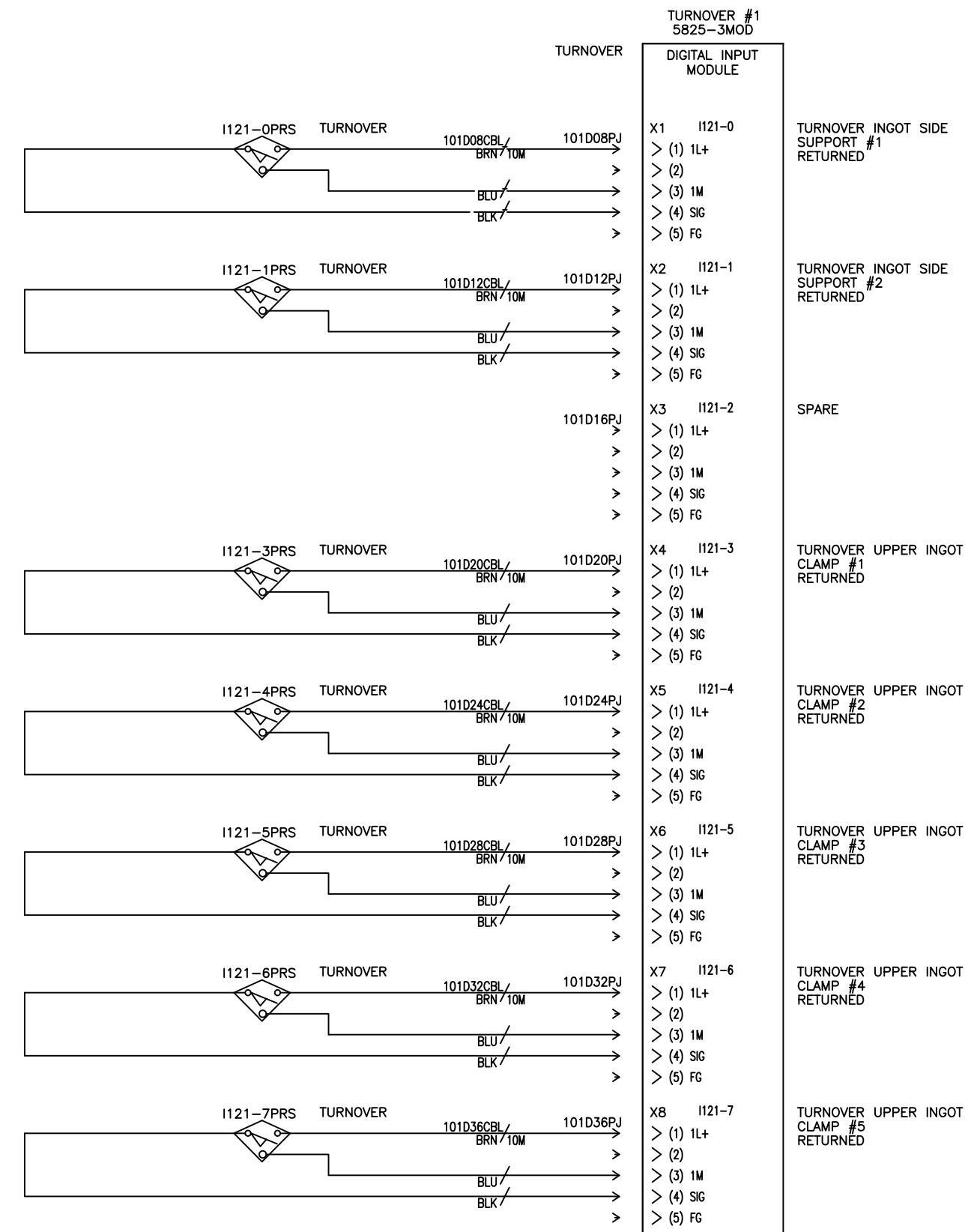
101C N00084-E2-651

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SHEET NUMBER  
101C

DRAWING NUMBER  
N00084-E2-651

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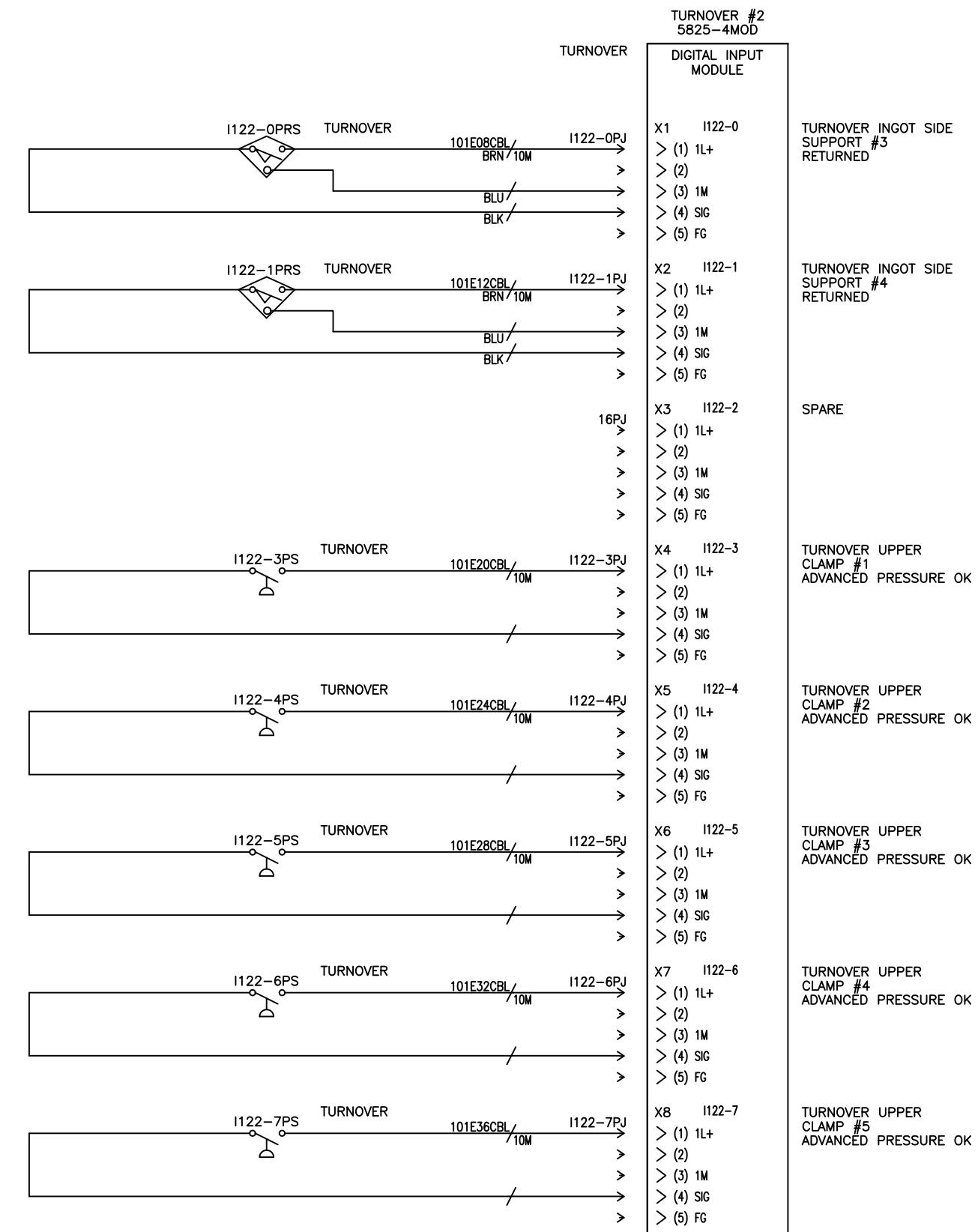
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<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>			
Ma'aden Aluminum Project					
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084				
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001			
DIGITAL BLOCK INPUTS I121 (TURNOVER#1)					
LET	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 101D	DRAWING NUMBER N00084-E2-651				

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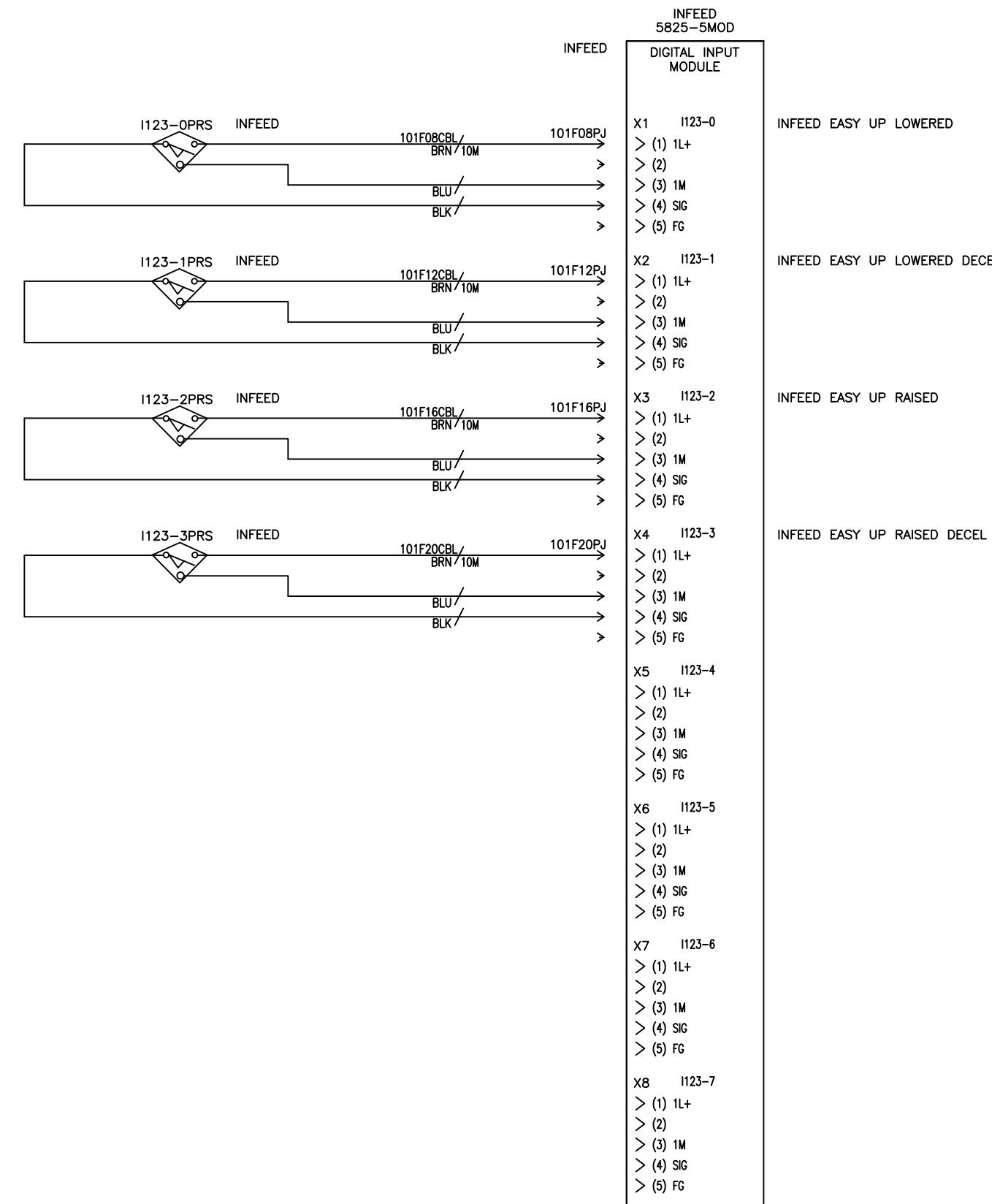
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TITLE		ELECTRICAL SCHEMATICS		
MACHINE	SHOP ORDER	DATE		
2N00084	E2	05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.		ROCKFORD, ILLINOIS USA		
SHEET NUMBER	DRAWING NUMBER			
101E	N00084-E2-651			

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Ma'aden P.O. Number	INGERSOLL Project Number
A6RM-4-1001-00/A6RM10003	2N00084
Client Drawing Number	EDN CODE Equipment Tag Number
N00084-E2-651	D-13 6130-SCA-001

DIGITAL BLOCK INPUTS I123 (INFEED)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						

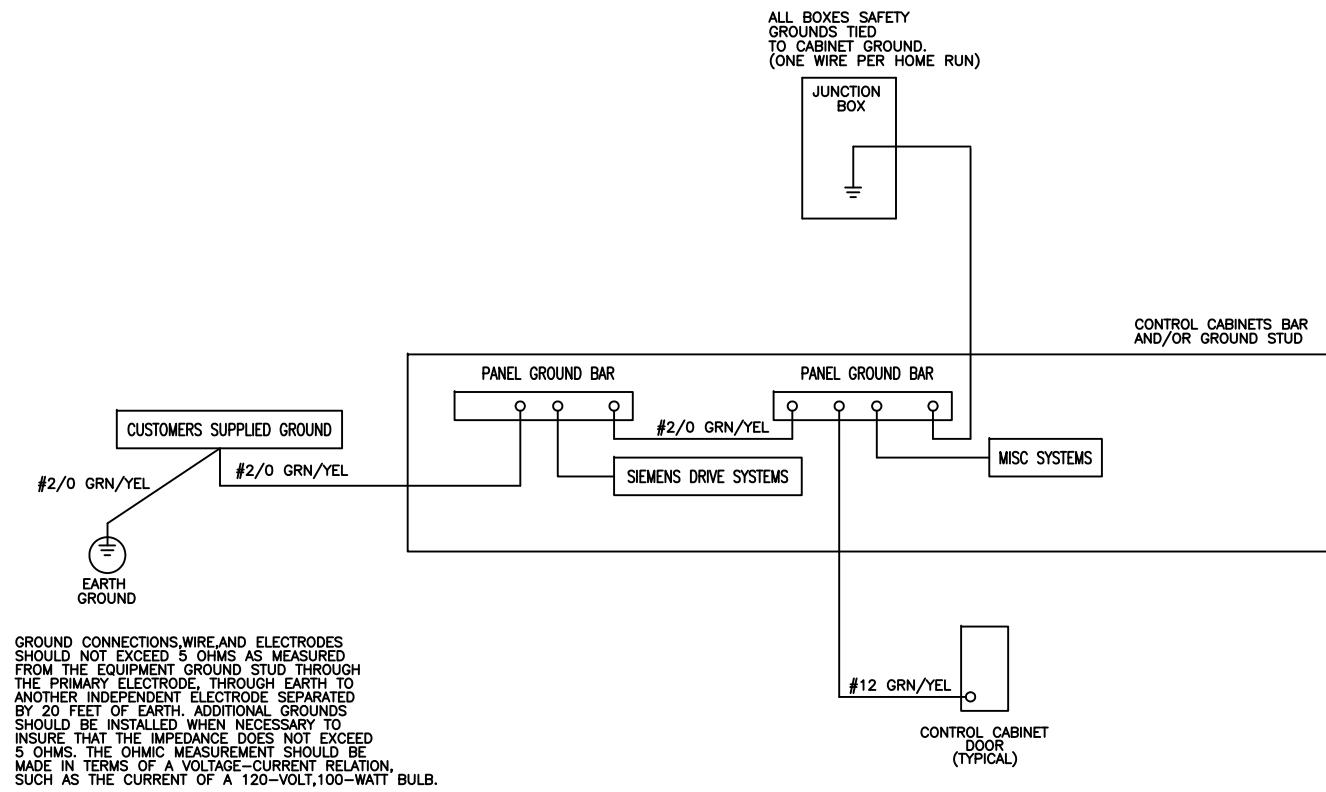
MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11

DRAWN BY	CHECKED BY	DESIGNED BY
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON

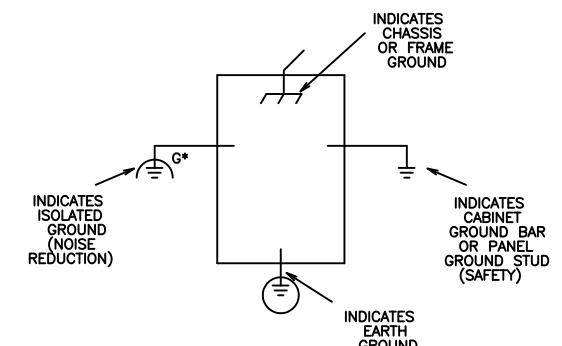
INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
101F	N00084-E2-651

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- NOTES:
1. SAFETY GROUNDS TO BE WIRED IN ACCORDANCE WITH ANSI/NFPA 79 CODE.
  2. INDIVIDUAL DEVICES WILL BE GROUNDED PER VENDOR REQUIREMENTS.
  3. SYMBOLS



4. EACH CABINET GROUND BAR (NON-ISOLATED) WILL BE ATTACHED TO A CABINET GROUNDING STUD WITH A PHYSICAL WIRE.

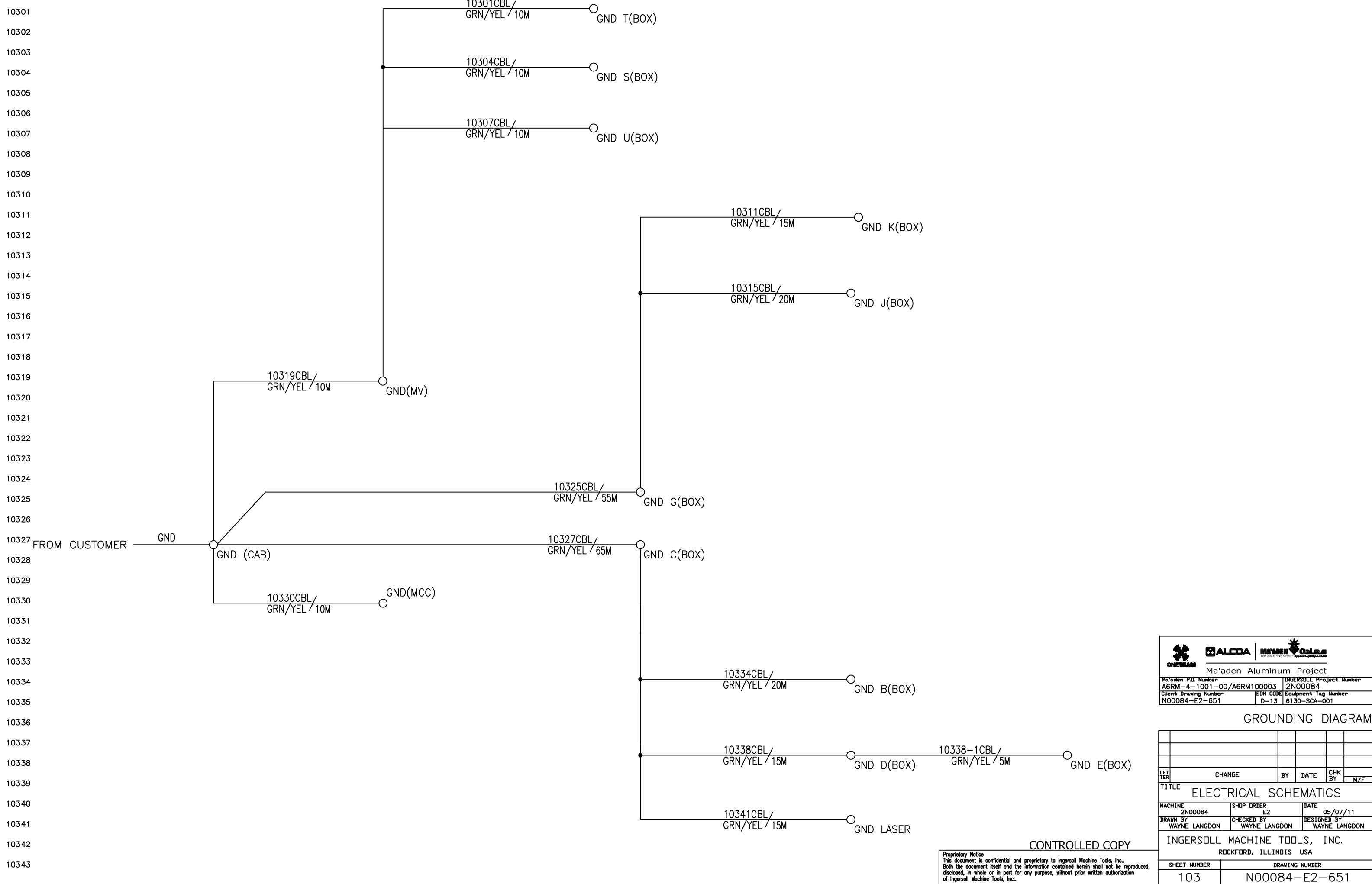
Ma'aden Aluminum Project	INGERSOLL Project Number	2N00084
A6RM-4-1001-00/A6RM10003	Client Drawing Number	N00084-E2-651

#### GROUNDING DIAGRAM

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE					
ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER		DATE		
2N00084	E2		05/07/11		
DRAWN BY	CHECKED BY		DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON		WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
102	N00084-E2-651				

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SHEET NUMBER DRAWING NUMBER  
102 N00084-E2-651



<b>ONETEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project		
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

#### GROUNDING DIAGRAM

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b>					

#### ELECTRICAL SCHEMATICS

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
<b>INGERSOLL MACHINE TOOLS, INC.</b>		
ROCKFORD, ILLINOIS USA		
SHEET NUMBER 103	DRAWING NUMBER N00084-E2-651	

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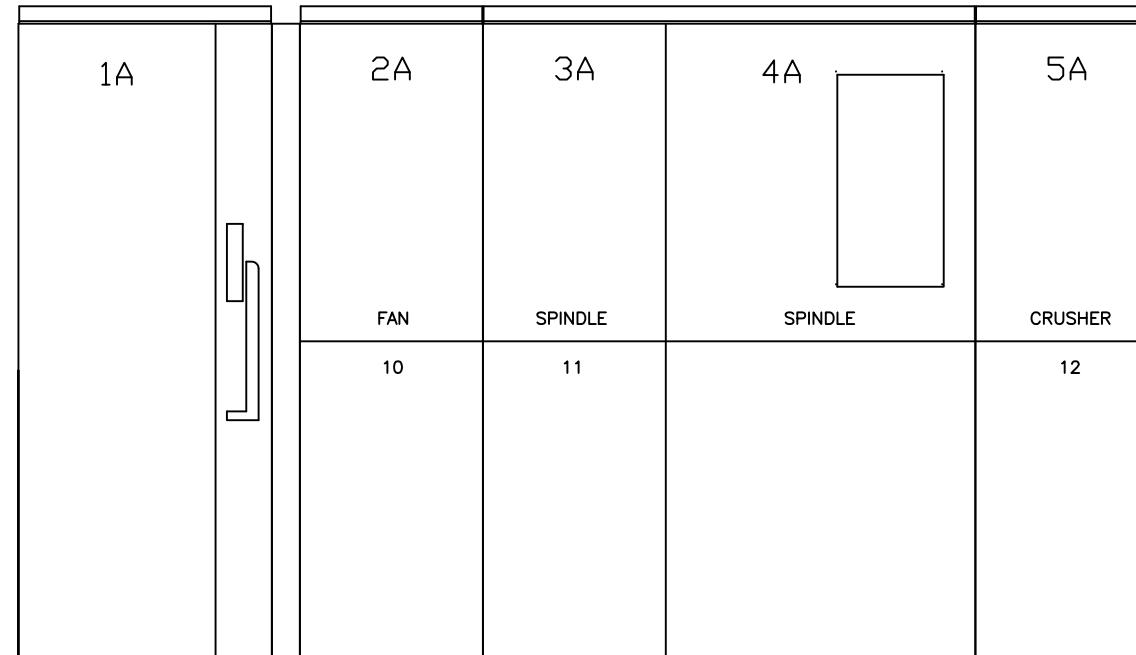
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### MEDIUM VOLTAGE CABINET LAYOUT



### MEDIUM VOLTAGE 4160VAC CABINET LAYOUTS

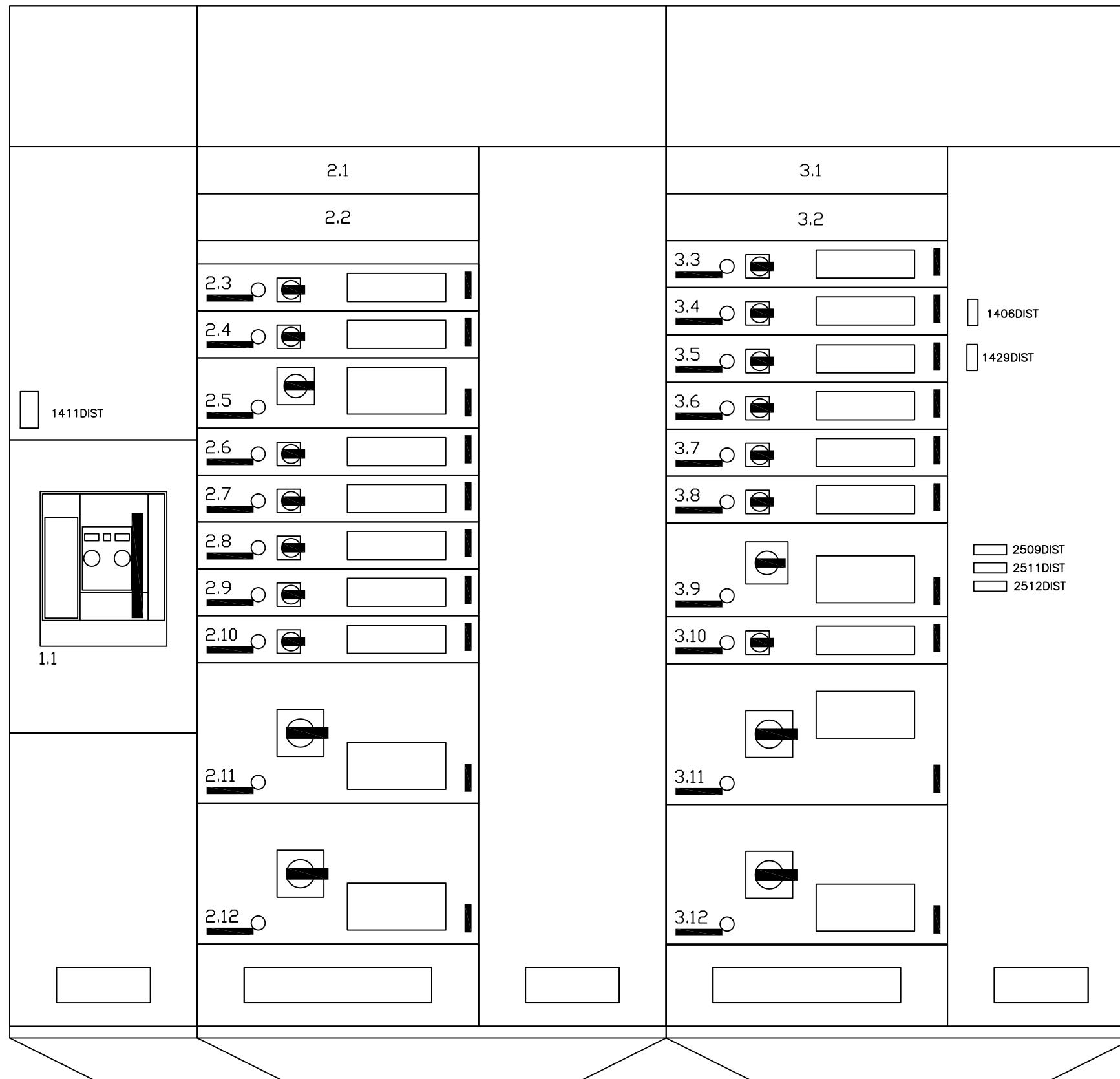
LET	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER		DATE		
2N00084	E2		05/07/11		
DRAWN BY	CHECKED BY		DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON		WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC.					
ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
104	N00084-E2-651				

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## Section 1 Section 2



Cabinet depth [mm]: 600  
Cabinet width [mm]: 2400

## Section 3

MCC 480 BREAKOUT		
	SPARE	SPARE
2.3	AIR CONDITIONERS 240VAC DIRTY	25A FEEDER
2.4	CUSTOMER SUPPLIED 240VAC CLEAN	25A FEEDER
3.3	MCC CABINET SIMOCODE CONTROLS 240VAC CLEAN	25A FEEDER
3.4	MAIN CABINET LIGHTS & OUTLETS 240VAC DIRTY	25A FEEDER
3.5	COMPUTER 120VAC SUPPLY 240VAC CLEAN	25A FEEDER
2.5	CHILLER UNIT	50A FEEDER
2.6	SPINDLE LUBE RETURN PUMP	2.2KW STARTER
2.7	SPINDLE LUBE PRESSURE PUMP	4 KW STARTER
2.8	SPINDLE LUBE CIRC. PUMP	4 KW STARTER
2.9	HYD CIRCULATION PUMP	4 KW STARTER
2.10	HYD. PRESSURE PUMP 3	7.5 KW STARTER
2.11	HYD. PRESSURE PUMP 1	75 KW STARTER
2.12	CONVEYOR SERVO DRIVE	250 A FEEDER
3.6	VERTICAL WAY LUBE RETURN PUMP	0.55 KW STARTER
3.7	TABLE LUBE RETURN PUMP	4 KW STARTER
3.8	WAY LUBE SUPERCHARGE PUMP	4 KW STARTER
3.9	WAY LUBE PRESSURE PUMPS	0.18 KW STARTER
3.10	HYD. PRESSURE PUMP 4	7.5 KW STARTER
3.11	HYD. PRESSURE PUMP 2	75 KW STARTER
3.12	MACHINE SERVO DRIVE	250 A FEEDER



## MCC 480VAC CABINET LAYOUTS

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b>					
<b>ELECTRICAL SCHEMATICS</b>					
MACHINE	SHOP ORDER	DATE			
2N00084	E2	05/07/11			
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
105	N00084-E2-651				

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VIEW FROM TOP OF CABINETS

DOOR #4 1200 MM	DOOR #3 800 MM	DOOR #2 1200 MM	DOOR #1 800 MM
--------------------	-------------------	--------------------	-------------------

DOOR SIDE

BREAK POINTS FOR SHIPPING NOTES:

1. ALL AC AND DC CONTROL WIRES WILL BE PLUGGED AT INDICATED BREAK POINTS. PLUGS CAN BE PLACED INSIDE DUCTWAY.
2. ALL INFEED AND DRIVE BLOWERS WILL BE PLUGGED AT INDICATED BREAK POINTS. PLUGS SHOULD BE MOUNTED ON PANEL VIA DIN RAIL.
3. INFEED CONTROL POWER WILL BE PLUGGED AT INDICATED BREAK POINTS. PLUGS SHOULD BE MOUNTED ON PANEL VIA DIN RAIL.
4. ALL OTHER CABLES AND WIRES THAT CROSS THESE BREAK POINTS SHOULD BE CONNECTED AT BOTH ENDS DURING PANEL BUILD AND THEN DISCONNECTED AT ONE END AND ROLLED UP FOR SHIPMENT.
5. IF THERE IS A QUESTION ON WHETHER A CABLE OR WIRE SHOULD BE PLUGGED PLEASE CONTACT THE ENGINEERING DEPARTMENT.
6. STAGGER THE CONNECTORS INSIDE THE DUCTWAY SO THAT THEY ALL FIT WHEN THE COVER IS ATTACHED.

NOTES:

- SET THERMOSTATS INSIDE AIR CONDITIONERS AT 90 DEGREES F.  
WITHOUT RESTRICTING THE AIR FLOW MOUNT AIR CONDITIONERS AS CLOSE TO THE TOP OF THE ENCLOSURE AS POSSIBLE.
- CABINET BUILDER TO MAKE AND MOUNT TAGS. SEE FOLLOWING SHEET FOR TAGS.
- CABINET BUILDER TO ATTACH THE PANEL TO EACH PANEL SUPPORT VIA A BOLT OR TAPPED SCREW AT THE MIDDLE OF EACH BRACE. ONLY IF PANEL SUPPORTS ARE PROVIDED PER THE CABINET SPECIFICATION.
- CABINET BUILDER TO PROVIDE PLEXIGLASS OVER ANY EXPOSED TERMINAL THAT HAS 110VAC OR MORE CONNECTED TO IT. COVER SHOULD PREVENT FINGERS FROM TOUCHING TERMINAL. SEE CABINET LAYOUT SHEETS FOR IDENTIFICATION OF MAJOR AREAS THAT NEED PLEXIGLASS.
- THE TIGHTENING TORQUE FOR THE M4 SCREWS OF THE DC LINK BUS BARS IS TO BE 1.8Nm.
- THE BLACK ON YELLOW LIGHTENING BOLT STICKERS ARE TO BE MOUNTED NEXT TO THE MAIN DISCONNECT HANDLE AND ON EACH PLEXIGLAS COVER.

SCALE = NA

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ONTEAM	ALCOA	MA'ADEN	Ma'aden Aluminum Project
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084		
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001	

CONTROL CABINET OVERVIEW

LET TER	CHANGE	BY	DATE
			CHK BY
			M/F
TITLE	ELECTRICAL SCHEMATICS		
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC.			
ROCKFORD, ILLINOIS USA			
SHEET NUMBER	DRAWING NUMBER		
106	N00084-E2-651		

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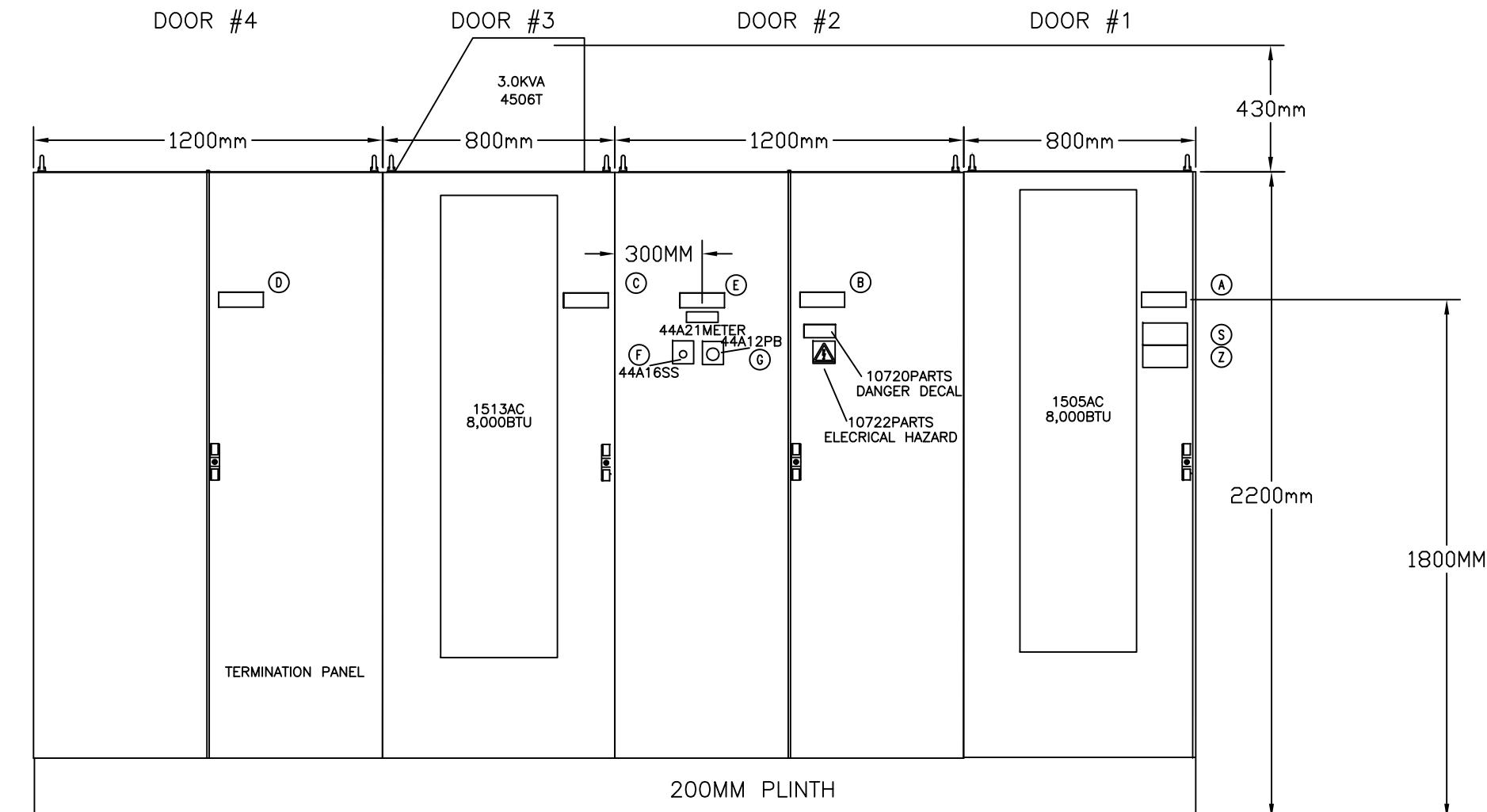
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THE BLACK ON YELLOW LIGHTENING BOLT STICKERS ARE TO BE MOUNTED NEXT TO THE MAIN DISCONNECT HANDLE AND ON EACH PLEXIGLAS COVER.



ONETEAM	ALCOA	MA'ADEN
Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

#### CONTROL CABINET OVERVIEW

LET	CHANGE	BY	DATE	CHK		
TITLE						
MACHINE	SHOP ORDER	DATE				
2N00084	E2	05/07/11				
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
107	N00084-E2-651					

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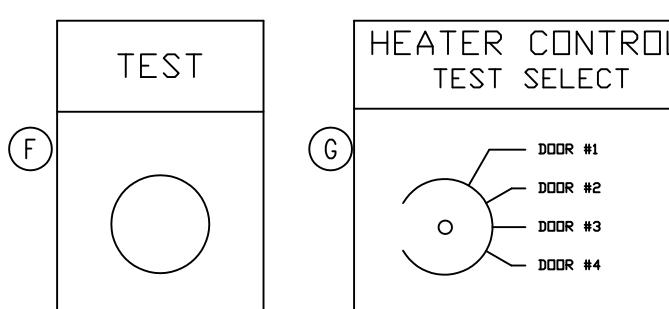
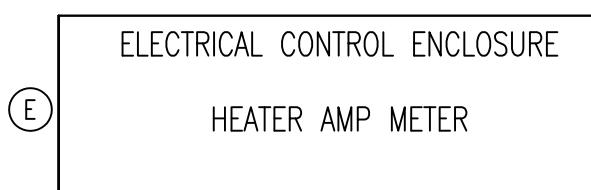
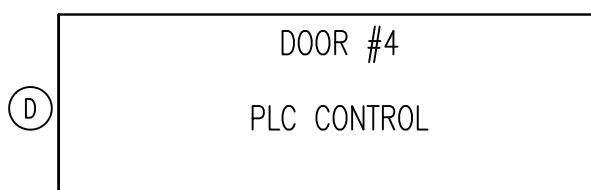
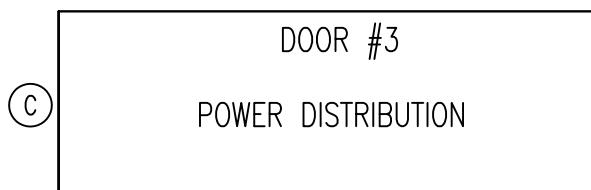
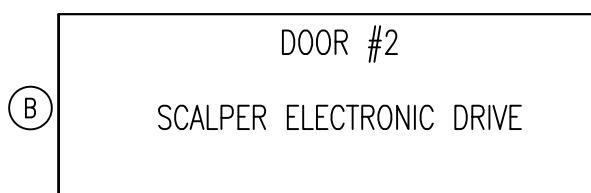
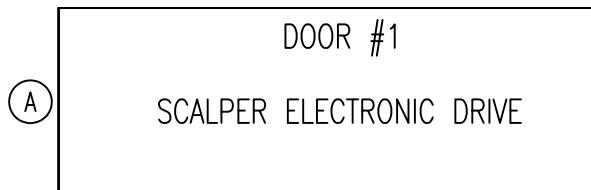
SCALE = 0.1

CONTROLLED COPY

107 N00084-E2-651

LETTERS WITH CIRCLES IDENTIFY WHERE  
TAGS GO ON CABINET. SEE PREVIOUS SHEETS.

PLASTIC TAG  
BLACK LETTERS WITH WHITE BACKGROUND  
HEIGHT = 2.0"  
WIDTH = 6.0"



PLASTIC TAG  
BLACK LETTERS WITH WHITE BACKGROUND  
HEIGHT = 3.0"  
WIDTH = 6.0"

INGERSOLL MACHINE TOOLS INC.  
MACHINE SERIAL NO. 2N00084  
480 VOLTS 3 PHASE 60 HERTZ  
FULL LOAD CURRENT 670 AMPS  
CIRCUIT BREAKER CAPACITY 600 AMPS  
SHORT CIRCUIT INTERRUPTING CAPACITY 30,000 AMPS  
AMP. RATING OF LARGEST MOTOR 328 AMPS  
ELECTRICAL DIAGRAM NO. N00084-E2-651  
ENCLOSURE NEMA TYPE RATING: NEMA 12  
OVERCURRENT PROTECTION PROVIDED AT MACHINE  
SUPPLY TERMINALS

(7)

PLASTIC TAG  
BLACK LETTERS WITH WHITE BACKGROUND  
HEIGHT = 2.0"  
WIDTH = 2.0"

(X) GND

PLASTIC TAG  
BLACK LETTERS WITH WHITE BACKGROUND  
HEIGHT = 2.0"  
WIDTH = 6.0"

(Y) MAIN DISCONNECT

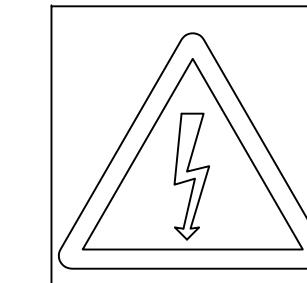
PLASTIC TAG  
WHITE LETTERS WITH ORANGE BACKGROUND  
HEIGHT = 3.0"  
WIDTH = 6.0"

(R) WARNING  
DOOR INTERLOCKED WITH  
MAIN CIRCUIT BREAKER.  
OPENING THIS DOOR MAY REMOVE  
POWER FROM THE MACHINE.

(S) CAUTION  
ELECTRICAL ENCLOSURE CONTAINS  
ELECTRICAL COMPONENTS AND  
SOURCES OF POWER SUPPLIED TO  
THE MACHINE THAT REMAIN LIVE  
WHEN THE MAIN CIRCUIT BREAKER IS  
DISCONNECTED.

PLASTIC TAG  
BLACK LETTERS WITH WHITE BACKGROUND  
HEIGHT = 2.0"  
WIDTH = 2.0"

MOUNT THE AXIS TAGS UNDER THE DRIVES AS SHOWN.



THE BLACK ON YELLOW LIGHTNING BOLT STICKERS ARE TO  
BE MOUNTED NEXT TO THE MAIN DISCONNECT HANDLE AND  
ON EACH PLEXIGLAS COVER.

ONTEAM ALCOA Ma'aden  
Ma'aden Aluminum Project  
Ma'aden P.O. Number INGERSOLL Project Number  
A6RM-4-1001-00/A6RM10003 2N00084  
Client Drawing Number EDN CODE Equipment Tag Number  
N00084-E2-651 D-13 6130-SCA-001

CONTROL CABINET TAGS

LETTER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS					

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		
ROCKFORD, ILLINOIS USA		
SHEET NUMBER 108	DRAWING NUMBER N00084-E2-651	

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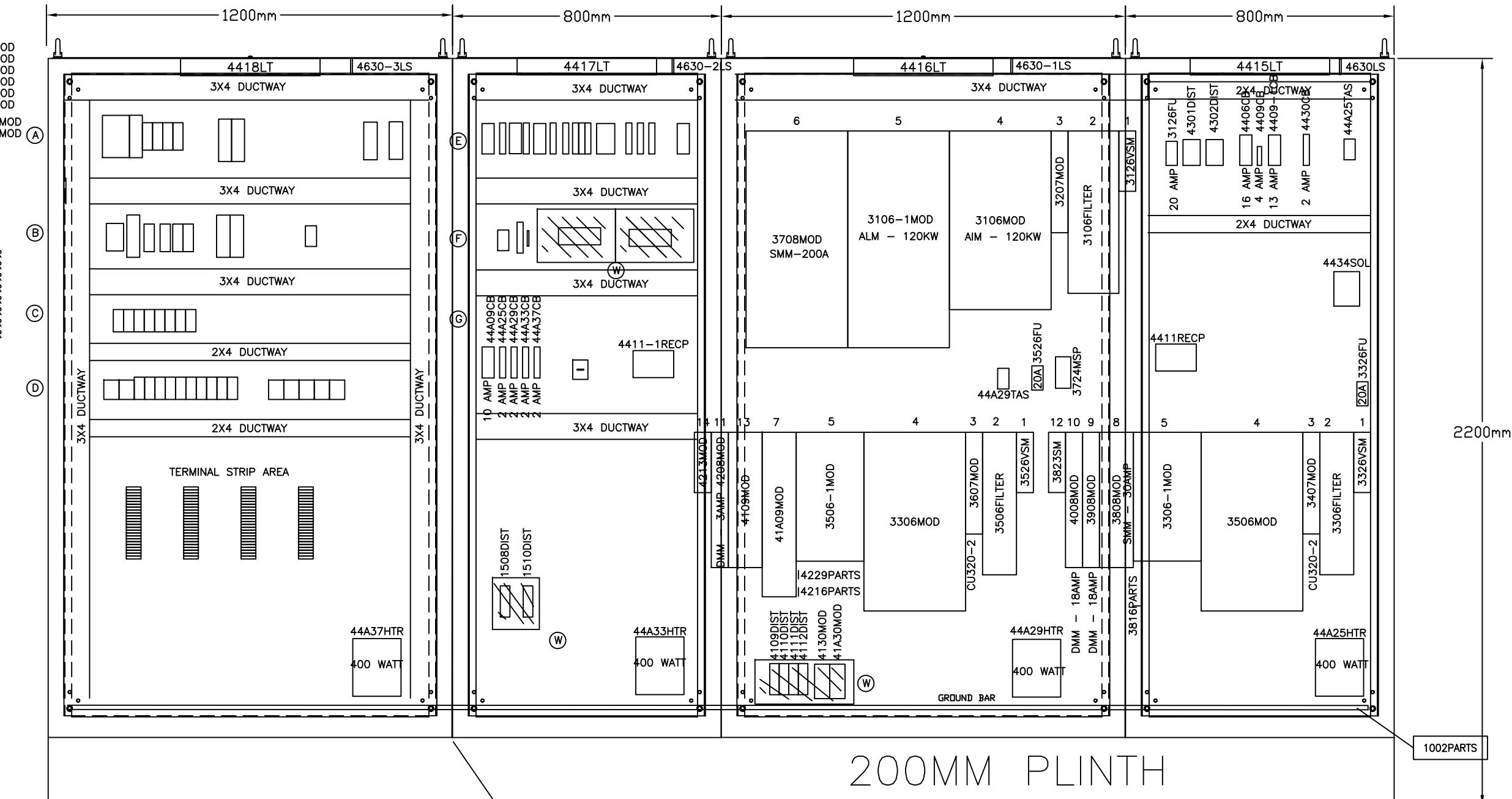
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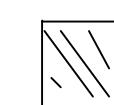
10901PARTS			
CABINET SPEC & ASSEMBLY SPEC			
10901	ROW E		
	4301CB	25 AMP	
10902	4306CB	2 AMP	
	4310CB	4 AMP	
	4314CB	2 AMP	
10903	4318CB	4 AMP	ROW
	4322CB	2 AMP	5701
10904	4326CB	2 AMP	5701
	4330CB	2 AMP	5701
	4334CB	2 AMP	5701
10905	4338CB	2 AMP	5701
	43A03CB	5 AMP	5701
10906	43A07CB	10 AMP	5712-1MOD
	43A09CB	6 AMP	5712-3MOD
	43A17CB	6 AMP	5502
10907	4502CB	13 AMP	5512
10908			5712-5MOD
			5712-6MOD
			5712-7MOD
10909	ROW F		5712-10MOD
	44A33TAS		5712-11MOD
10910	4604CB	15 AMP	44A37TAS
	4604LK		ROW
	4503PWS		46
10911	43A03PWS		46
			ROW D
10912	ROW G		46
		Q032-0CR	46
		Q032-1CR	46
		Q032-2CR	46
10913		Q032-3CR	46
		Q038-0CR	46
		Q038-1CR	46
10914		Q038-2CR	46
		Q038-3CR	46
10915		Q038-4CR	46
		Q038-5CR	46
		Q038-6CR	46
10916		Q038-7CR	46

DOOR #

10901PARTS  
CABINET SPEC &  
ASSEMBLY SPEC



CABINET BAY SC  
PANEL



W COVER TERMINALS ON THESE DEVICES WITH PLEXIGLASS

1. VOLTAGE SENSING MODULE
  2. FILTER
  3. CONTROL UNIT CU320-2
  4. ACTIVE INTERFACE MODULE
  5. ACTIVE LINE MODULE
  6. TABLE MOTOR MODULE
  7. INTERMEDIATE CONVEYOR ROLLER MOTOR MODULE
  8. SPINDLE POSITIONING MOTOR MODULE
  9. INFEED & OUTFEED CONVEYOR ROLLER MOTOR MODULE
  10. TURNOVER CONVEYOR ROLLER MOTOR MODULE
  11. LASER GANTRY MOTOR MODULE
  12. SPINDLE POSITIONING ENCODER SENSOR MODULE
  13. TABLE CONVEYOR ROLLER MOTOR MODULE
  14. TERMINAL MODULE TM41

HEIGHT = 2200mm  
WIDTH = 2000mm  
DEPTH = 600mm

SCALE = 0.15

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CONTROL PANEL LAYOUT

ET ER	CHANGE	BY	DATE	CHK BY
M/F				
<b>TITLE</b> ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE		05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY		WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.				
ROCKFORD, ILLINOIS USA				
SHEET NUMBER		DRAWING NUMBER		
109		N00084-E2-651		

CAB	CAB	CAB	CAB
CAB 1	CAB 2	CAB 3	CAB 4
Number	Number	Number	Number
P24-A1	C24-A1	43142	I044-5
P24-A1	C24-A1	43181	I044-6
P24-A1	C24-A1	43182	I074-0
P24-A1	C24-A1	43221	I074-1
P24-A1	C24-A1	43222	I074-2
P24-A1	C24-A1	43261	I074-3
P24-A1	C24-A1	43262	I074-4
P24-A1	C24-A1	43301	I074-5
P24-A1	C24-A1	43302	I074-6
P24-A1	C24-A1	43341	I074-7
P24-A1	C24-A1	43342	I075-0
P24-A1	C24-A1	43381	I075-1
P24-A1	C24-A1	44102	I075-2
P24-A1	C24-A1	44104	I075-3
P24-A1	C24-A1	44106	I075-4
P24-A1	C24-A1	44301	SPARE
P24-A1	C24-A1	44311	SPARE
P24-A1	C24-A1	45011	SPARE
P24-A1	C24-A1	45021	SPARE
P24-A1	C24-A1	46051	SPARE
P24-A1	C24-A1	46051	SPARE
P24-A1	C24-A1	46051	SPARE
P24-A1	C24-A1	46202	SPARE
P24-A1	C24-A1	46221	SPARE
P24-A1	C24-A1	46241	SPARE
P24-A1	C24-A1	46261	Q044-0
P24-A1	C24-A1	60181	Q044-1
P24-A1	C24-A1	60341	Q044-2
P24-A1	C24-A1	61061	Q044-3
P24-A1	C24-A1	61101	Q044-4
P24-A1	C24-A1	61141	Q044-5
P24-A1	SPARE	61181	Q044-6
P24-A1	SPARE	61221	Q044-7
P24-A1	SPARE	61261	Q045-0
P24-A1	SPARE	61301	Q045-1
P24-A1	SPARE	61341	Q045-2
P24-A1	C24-BRK	71101	Q045-3
P24-A1	C24-BRK	71141	Q050-4
P24-A1	C24-BRK	71181	Q050-5
P24-A1	C24-BRK	71221	Q050-6
P24-A1	SPARE	71281	Q050-7
P24-A1	SPARE	71321	SPARE
P24-A1	SPARE	71361	SPARE
P24-A1	SPARE	71401	SPARE
SPARE	SPARE	72101	SPARE
SPARE	SPARE	72141	SPARE
SPARE	43A091	72181	SPARE
SPARE	43A171	72221	SPARE
SPARE	43A191	72281	GND
P24-C1	44A091	72321	GND
SPARE	44A101	72361	GND
SPARE	44A141	72401	GND
SPARE	44A151	SPARE	GND
C24-A1	44A162	SPARE	GND
C24-A1	44A171	SPARE	GND
C24-A1	44A231	SPARE	GND
C24-A1	44A231	79C071	GND
C24-A1	44A231	SPARE	GND
C24-A1	44A231	SPARE	GND
C24-A1	14091	SPARE	GND
C24-A1	39244	SPARE	GND
C24-A1	39301	SPARE	GND
C24-A1	41361	SPARE	GND
C24-A1	43011	SPARE	GND
C24-A1	43011	I038-3	GND
C24-A1	43031	I038-7	GND
C24-A1	43061	I044-0	GND
C24-A1	43062	I044-1	GND
C24-A1	43101	I044-2	GND
C24-A1	43102	I044-3	GND
C24-A1	43141	I044-4	GND

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CONTROL PANEL TERMINAL STRIP LAYOUT

NU00084-EZ-631 D-13 6150-SCA-001

## FRONT PANEL TERMINAL STRIP LAYOUT

100% of the time, the system will be able to correctly identify the target word.

Table 1. Summary of the main characteristics of the four groups of patients.

For more information about the study, please contact the study team at 1-800-258-4263 or visit [www.cancer.gov](http://www.cancer.gov).

**LETTER**      **CHANGE**      **BY**      **DATE**      **CHK BY**

**TITLE** ELECTRICAL COMMISSIONER

## ELECTRICAL SCHEMATICS

MACHINE SN00004	SHOP ORDER 52	DATE 25/07/11
--------------------	------------------	------------------

2N00084	E2	05/07/11
DRAWN BY	CHECKED BY	DESIGNED BY

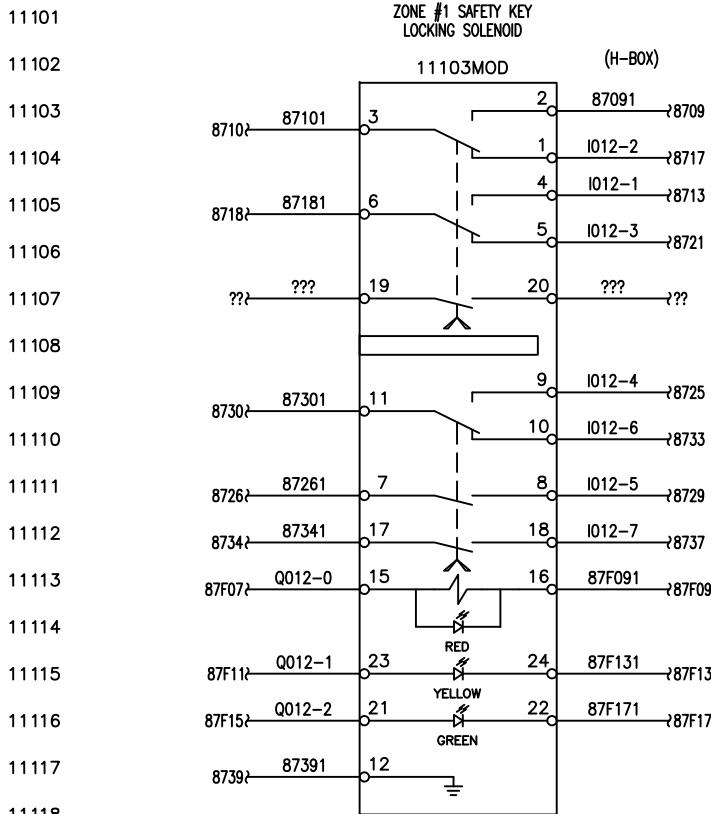
WAYNE LANGDON      WAYNE LANGDON      WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.

**ROCKFORD, ILLINOIS USA**

**SHEET NUMBER**      **DRAWING NUMBER**

CREW NUMBER	DRAWING NUMBER
110	N00084 E3 651



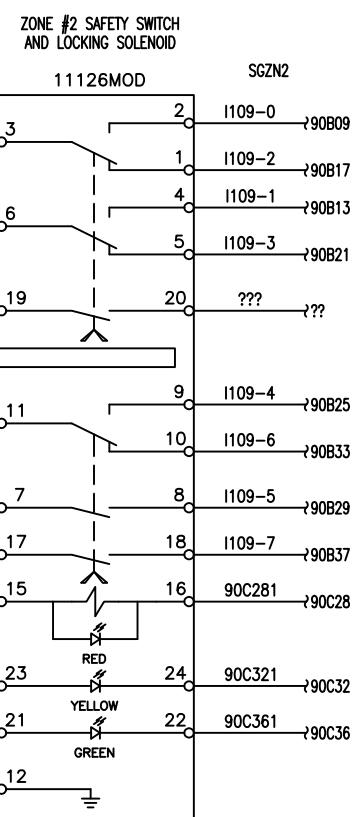
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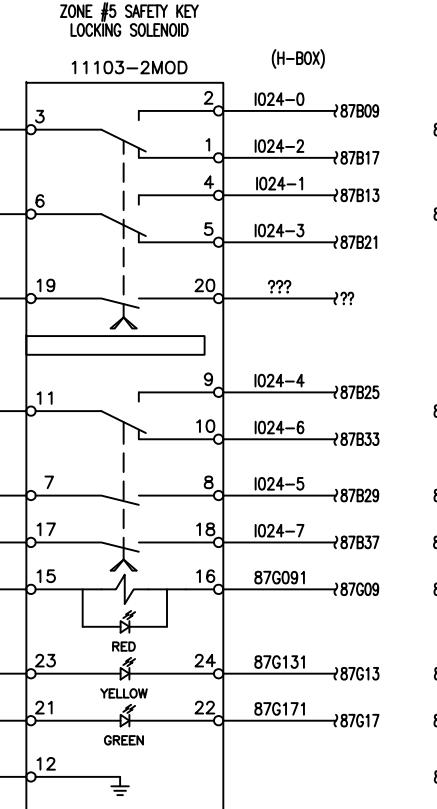
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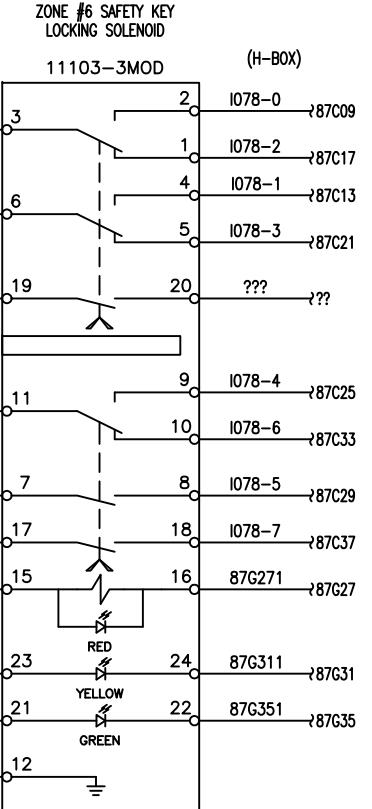
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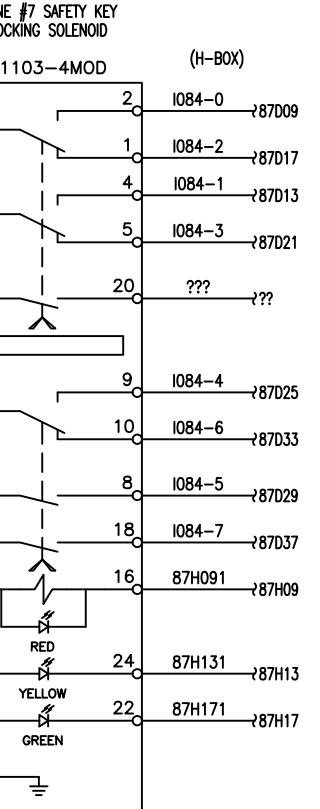
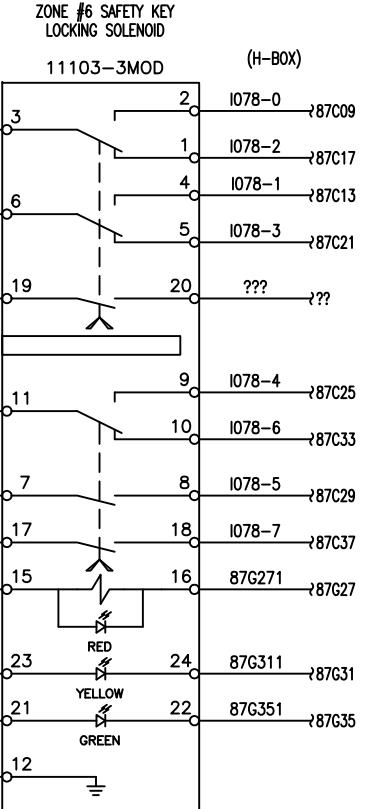
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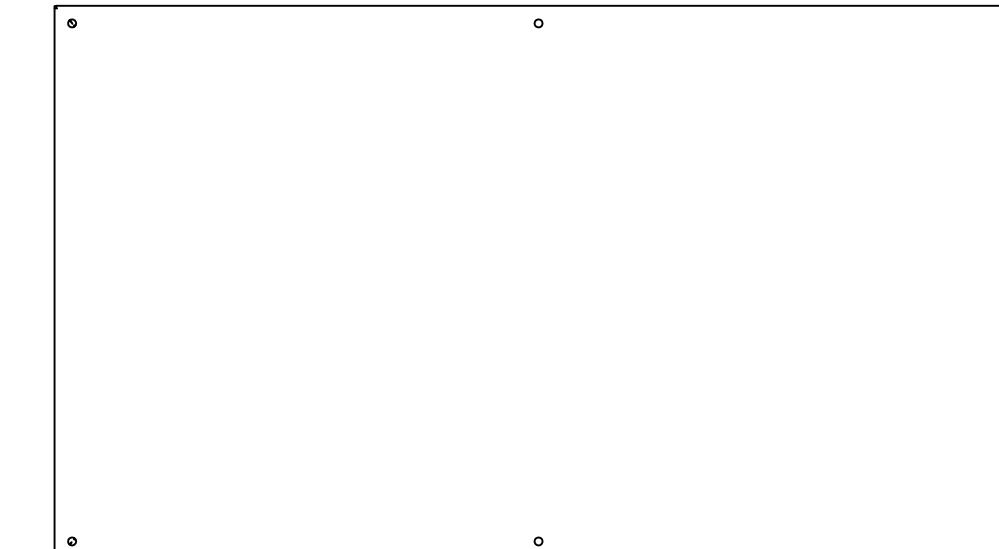
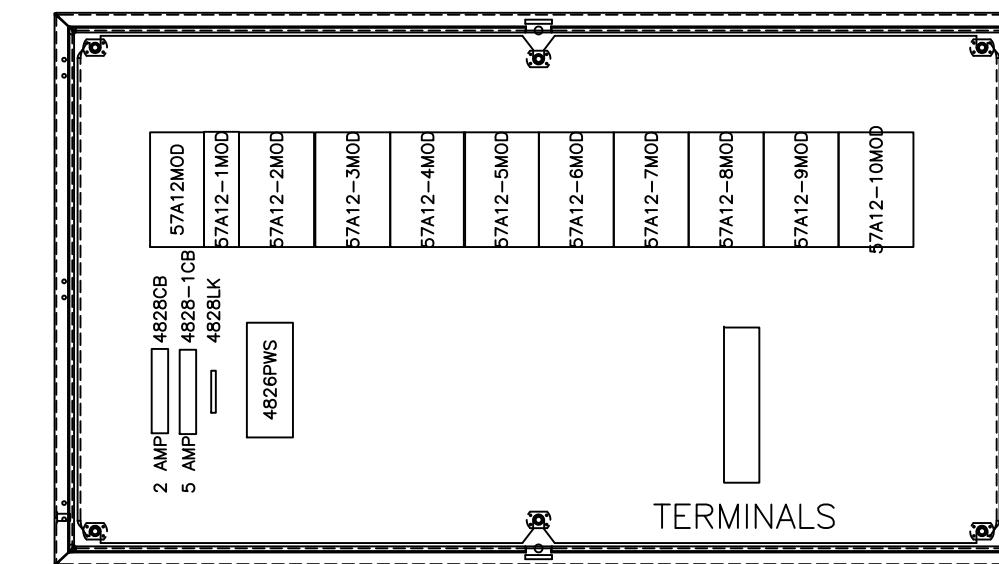
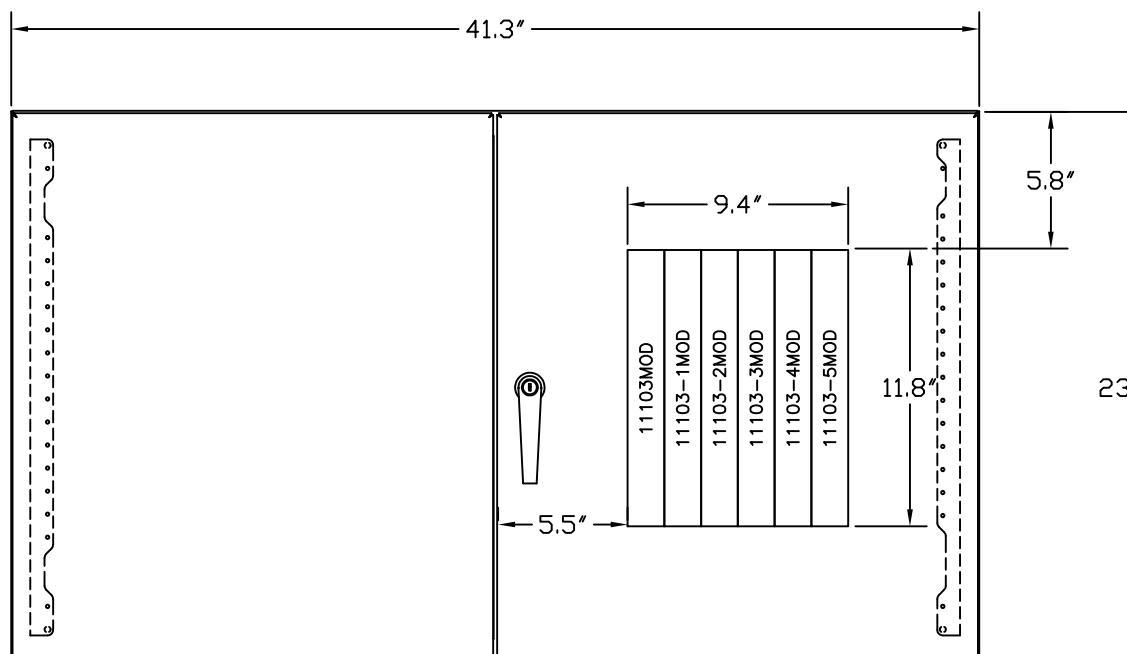
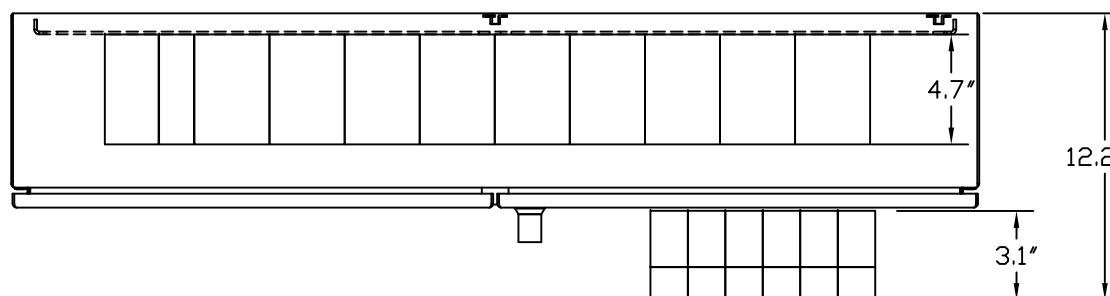
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<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>										
Ma'aden P.D. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084											
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001											
<b>SAFETY GATE LAYOUT</b>												
<table border="1"> <tr><td>LET</td><td>CHANGE</td><td>BY</td><td>DATE</td><td>CHK BY</td></tr> <tr><td>TER</td><td></td><td></td><td></td><td>M/F</td></tr> </table>			LET	CHANGE	BY	DATE	CHK BY	TER				M/F
LET	CHANGE	BY	DATE	CHK BY								
TER				M/F								
<b>TITLE</b> ELECTRICAL SCHEMATICS												
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11										
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON										
ING												

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11243



SCALE:  
0.25

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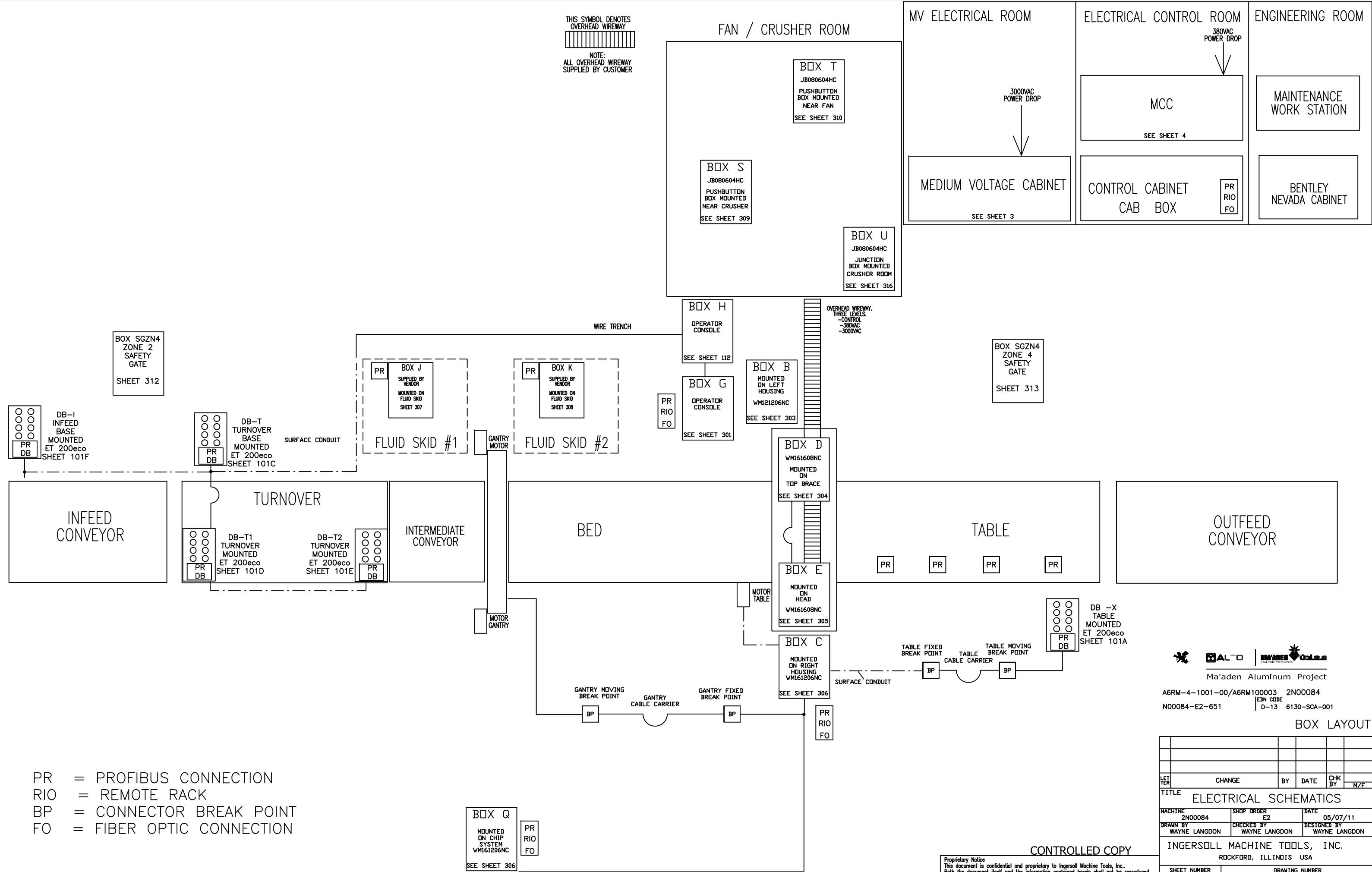
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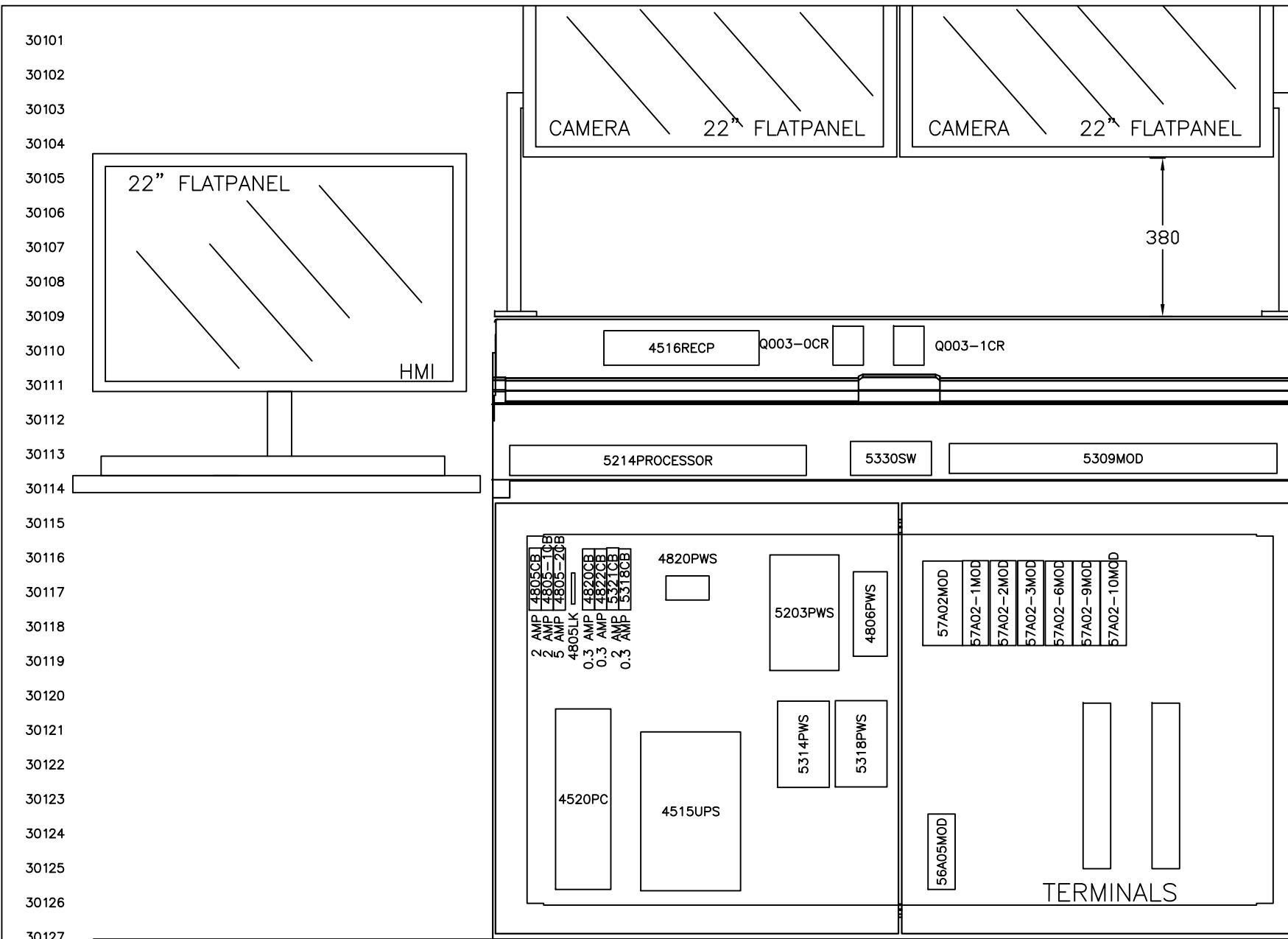
H-BOX
1
Number
P24-H1
SPARE
SPARE
C24-H1
SPARE
SPARE
C24-J1
C24-J1
SPARE
SPARE
C24-G1
SPARE

Ma'aden Aluminum Project		
Ma'aden P.I. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

BOX H (SAFETY GATE KEY CONSOLE)

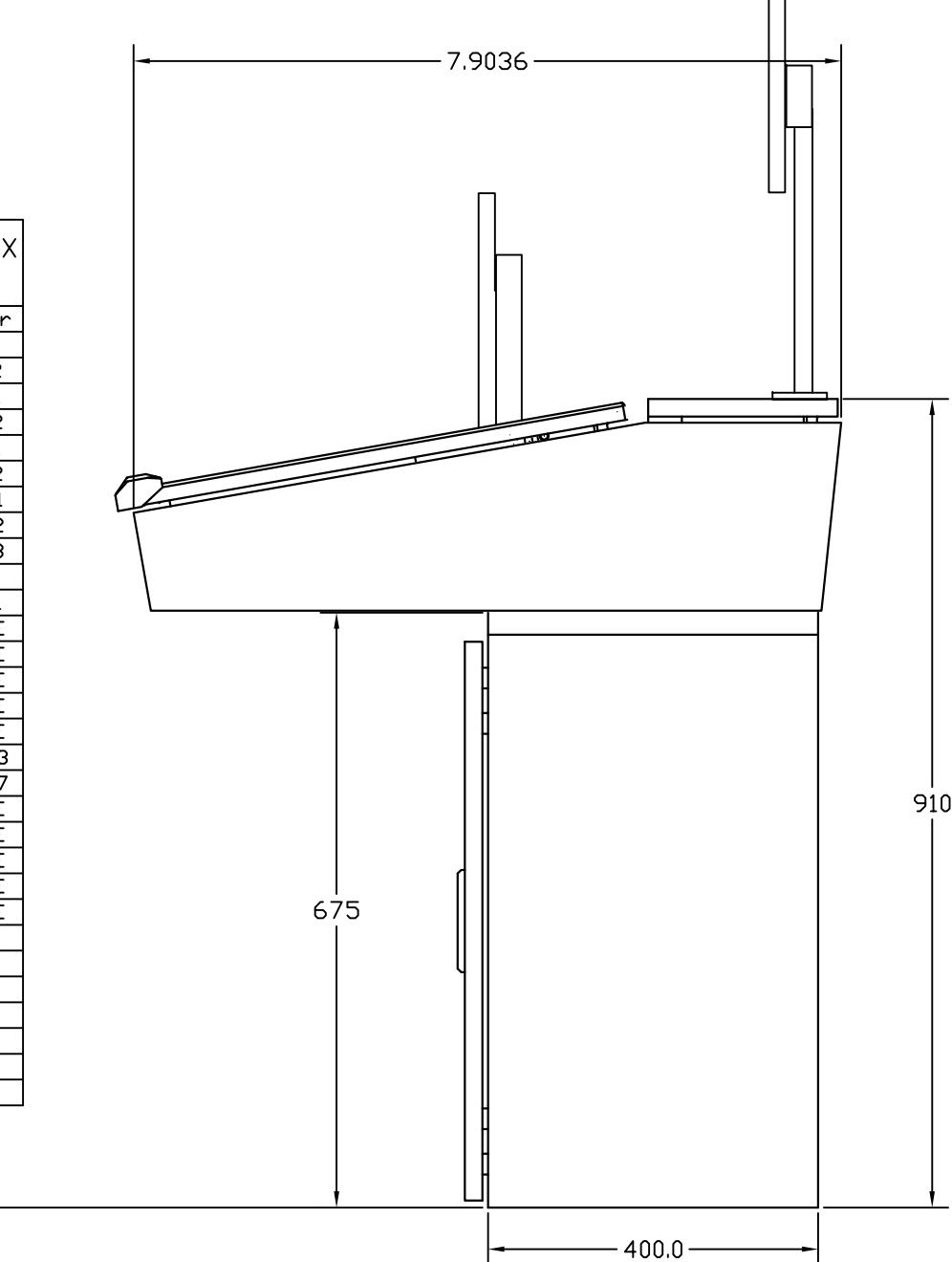
LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2		DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 112	DRAWING NUMBER N00084-E2-651				





G-B0X
1
Number
P24-G1
SPARE
C24-G1
C24-Q1
SPARE
86A051
86A071
43011

G-B  
2  
Numk  
431  
431  
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431  
433  
480  
480  
601  
603  
SPAN  
SPAN  
SPAN  
SPAN  
I038  
I038  
SPAN  
SPAN  
SPAN  
SPAN  
SPAN  
SPAN  
GN  
GN  
GN  
GN  
GN  
GR  
GR



**30130PARTS  
OPERATORS CONSOL  
ASSEMBLY**

30132PARTS  
TERMINALS

30134PARTS  
CAMERA SCREEN RAIL  
ASSEMBLY

SCA  
0.25

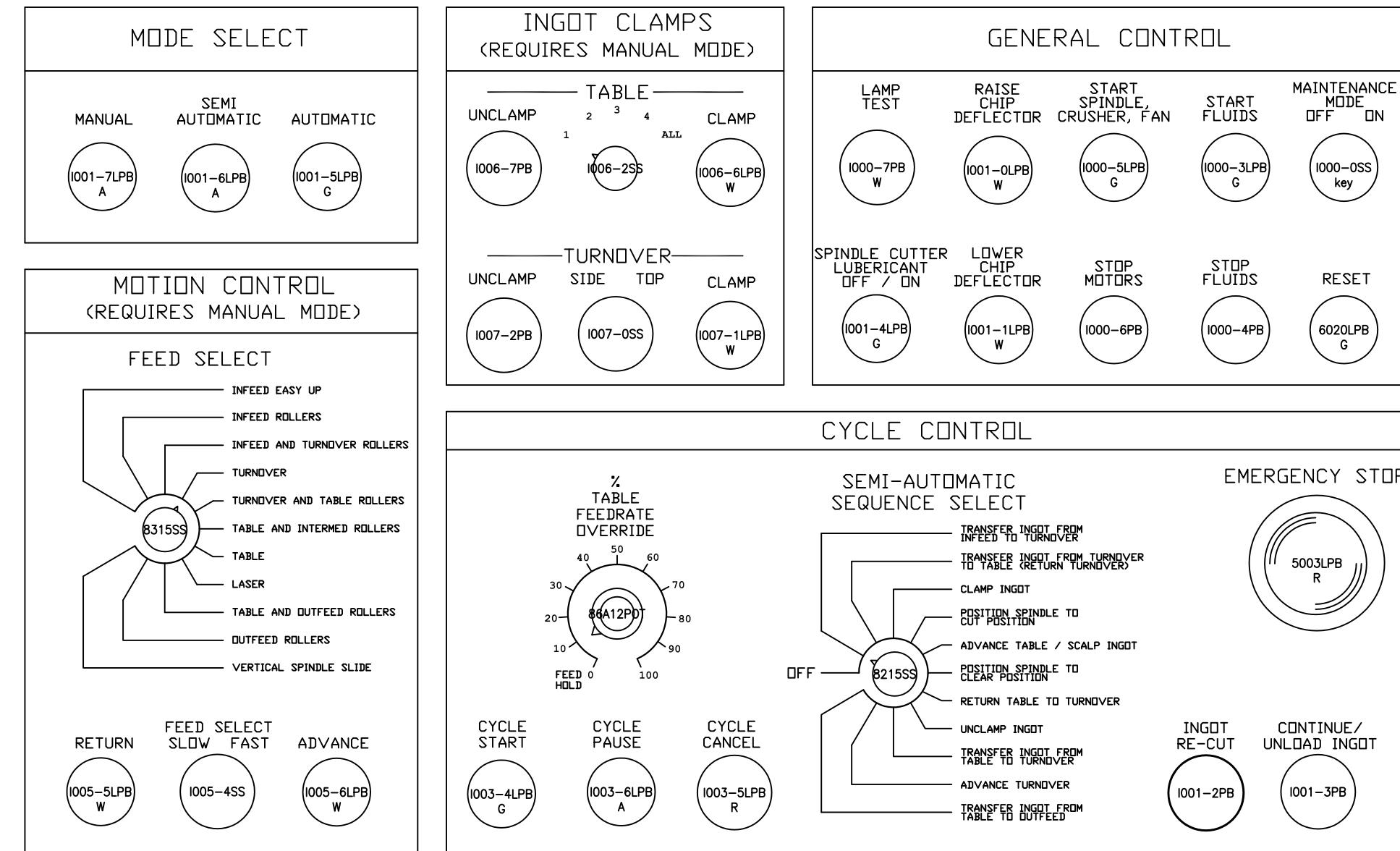
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  		Ma'aden Aluminum Project	
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003		INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651		EIN CODE D-13	Equipment Tag Number 6130-SCA-001
BOX G (OPERATOR CONSOLE)			
ET ER	CHANGE	BY	DATE
			CHK BY
M/F			
TITLE ELECTRICAL SCHEMATICS			
ACHINE 2N00084		SHOP ORDER E2	DATE 05/07/11
RAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER 301		DRAWING NUMBER N00084-E2-651	

30201  
30202  
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30242  
30243



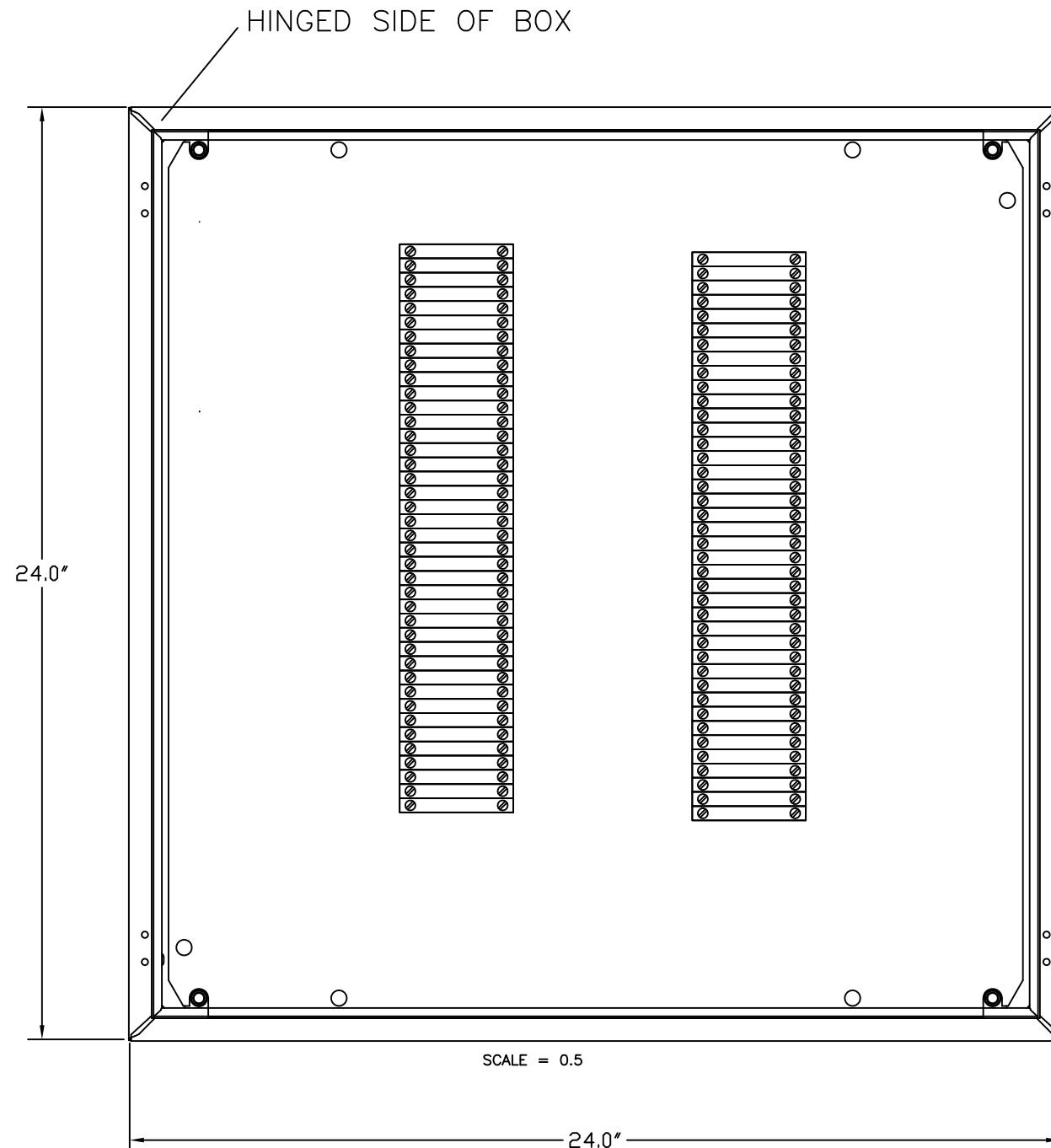
<b>ONTEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>		
Ma'aden Aluminum Project				
Ma'aden P.D. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084			
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001			
<b>OPERATOR CONSOLE</b>				
LETTER	CHANGE	BY DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 302	DRAWING NUMBER N00084-E2-651			

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INGERSOLL

30301	30301PARTS BOX B TERMINALS
30302	
30303	30303PARTS BOX B
30304	ENCLOSURE
	80 TERMINALS
30305	75 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG) 5 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)



**WIRING NOTES:**  
WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE POX TO ANOTHER DEVICE IN THE POX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

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**BOY B (LEET COLUMN)**

BOX D (LEFT COLUMN)						
	CHANGE		BY	DATE	CHK BY	
TLE	ELECTRICAL SCHEMATICS					M/F
CHINE 2N00084	SHOP ORDER E2		DATE 05/07/11			
AWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON		DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC.						
ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
303	N00084-E2-651					

30401 30401PARTS  
BOX D  
TERMINALS

30402

30403 30403PARTS  
BOX D  
ENCLOSURE

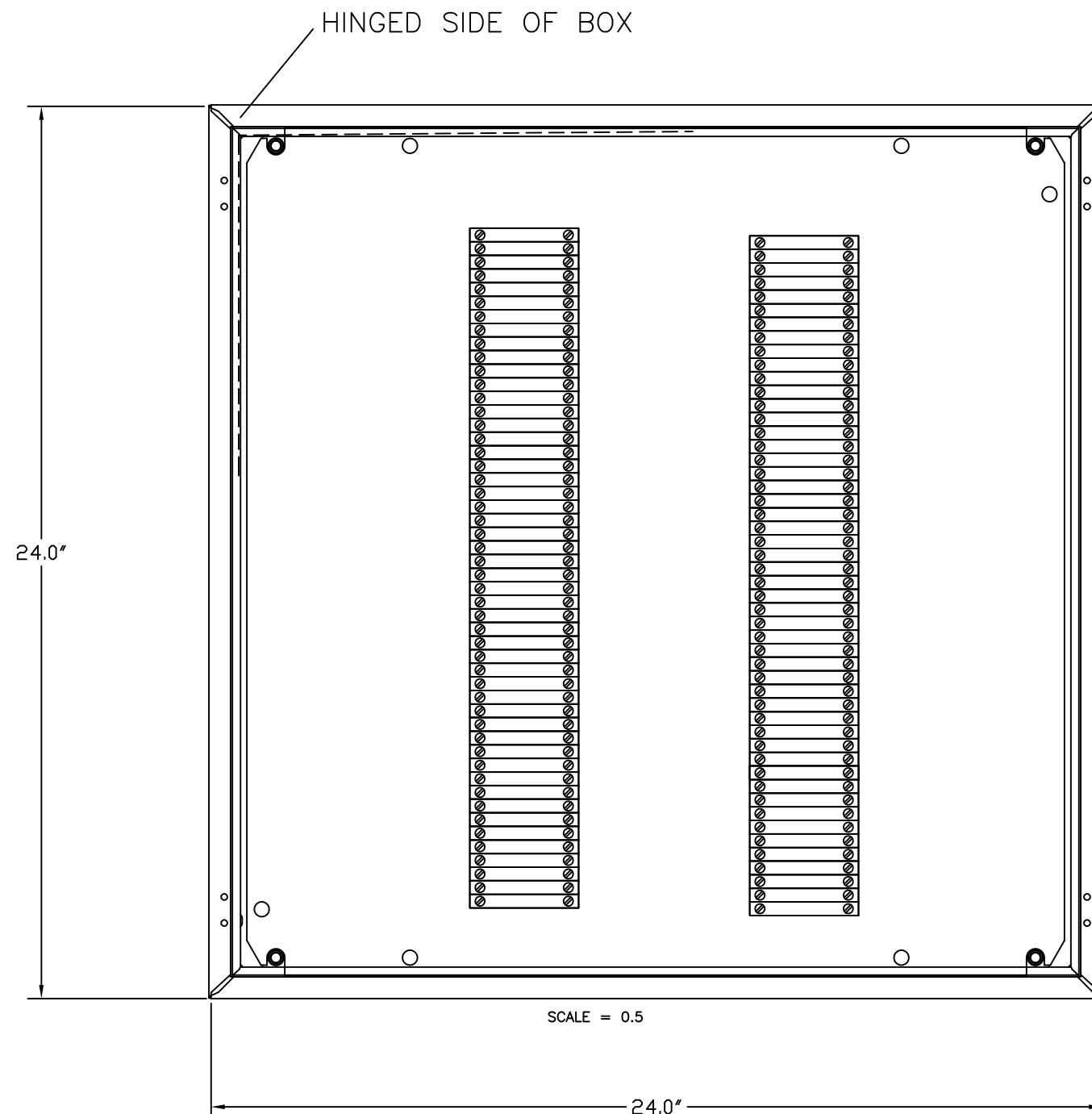
102 TERMINALS

97 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
5 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

30405

30406

	D-BOX 1	D-BOX 2
Number		
P24-C1	22141	
P24-C1	46201	
P24-C1	46201	
P24-C1	46202	
SPARE	46221	
SPARE	46241	
SPARE	46261	
P24-A1	SPARE	
SPARE	SPARE	
C24-C1	SPARE	
C24-C1	SPARE	
C24-C1	I081-0	
C24-C1	I081-0	
SPARE	I081-1	
SPARE	I081-1	
C24-A1	I081-2	
SPARE	I081-3	
SPARE	I081-4	
C24-BRK	I082-0	
SPARE	I082-1	
SPARE	I082-2	
43A091	I082-3	
9011	I082-6	
9021	I082-7	
9022	I083-4	
9031	I083-5	
9032	I083-6	
9041	I084-7	
9042	I085-0	
9051	I085-1	
9052	I085-2	
9061	SPARE	
9071	SPARE	
9072	SPARE	
9081	SPARE	
9082	SPARE	
9091	Q082-0	
9101	Q082-2	
9102	Q082-3	
9103	Q082-4	
9111	SPARE	
9121	SPARE	
9122	SPARE	
16092	SPARE	
16112	SPARE	
16122	GND	
16141	GND	
22091	GND	
22111	GND	
22121	GND	



BOX D (TOP BRACE)

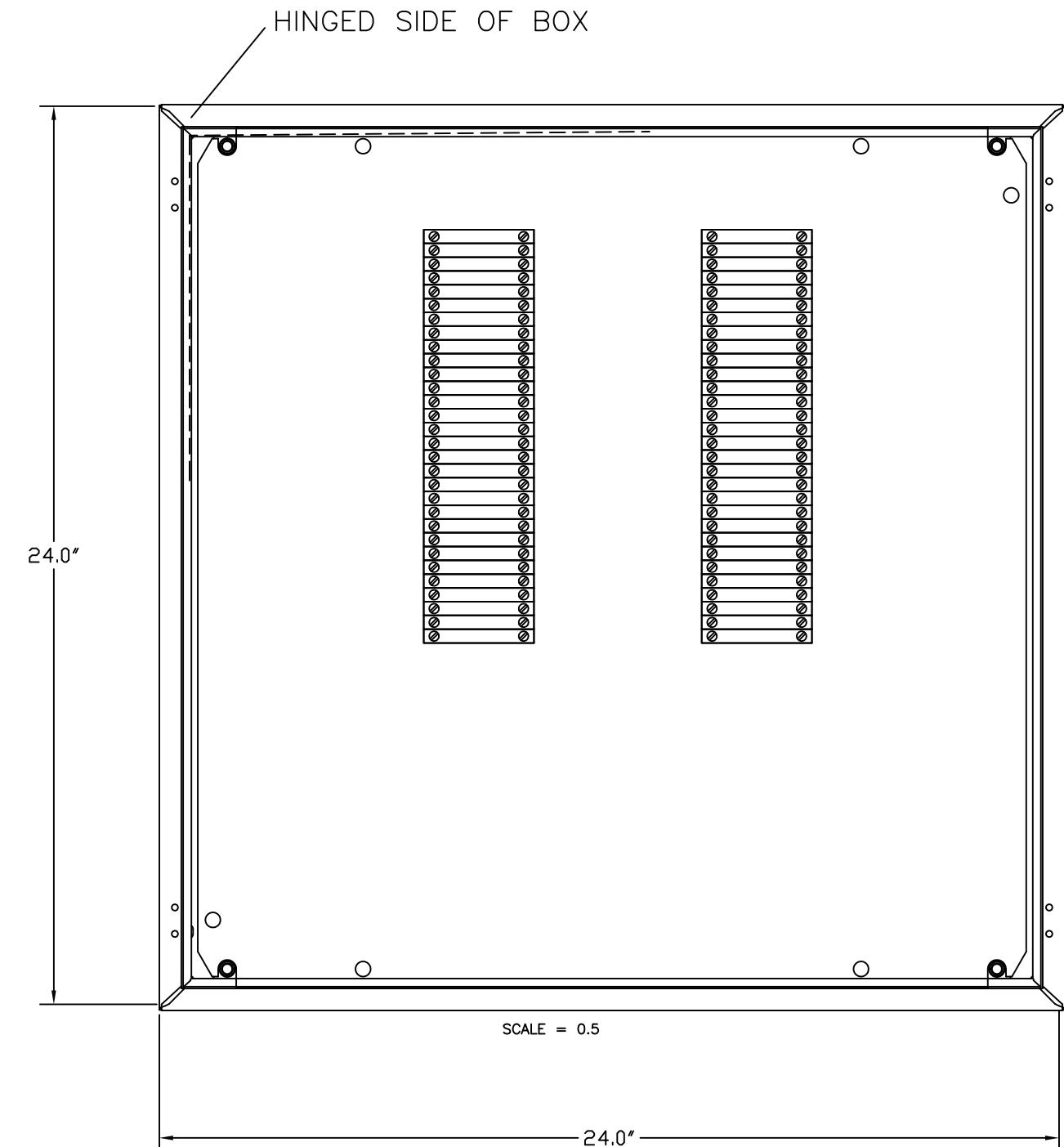
LET TER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE 2N00084		SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON		CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 304		DRAWING NUMBER N00084-E2-651			

WIRING NOTES:  
WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

30501 30501PARTS  
BOX E  
TERMINALS  
30502  
30503 30503PARTS  
BOX E  
ENCLOSURE  
30504

30505  
30506  
30507  
65 TERMINALS  
30508 60 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
30509 5 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

	E-BOX 1	E-BOX 2
30512	Number	Number
30513	P24-C1	16141
30514	P24-C1	22091
30515	P24-C1	22111
30516	P24-C1	22121
30517	P24-C1	22141
30518	P24-C1	46201
30519	P24-C1	46241
30520	P24-C1	46261
30521	P24-C1	SPARE
30522	SPARE	SPARE
30523	SPARE	SPARE
30524	P24-A1	I081-0
30525	SPARE	I081-1
30526	SPARE	I081-2
30527	C24-A1	I081-3
30528	C24-C1	I081-4
30529	I082-6	I082-7
30530	I082-7	I087-0
30531	I087-1	I087-1
30532	SPARE	SPARE
30533	C24-C1	Q082-4
30534	C24-C1	Q082-4
30535	SPARE	GND
30536	SPARE	GND
30537	SPARE	GND
30538	16092	16112
30539	16122	



WIRING NOTES:  
WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

SCALE = 1

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ONETEAM ALCOA Ma'aden  
Ma'aden Aluminum Project  
Ma'aden P.O. Number INGERSOLL Project Number  
A6RM-4-1001-00/A6RM100003 2N00084  
Client Drawing Number EDN CODE Equipment Tag Number  
N00084-E2-651 D-13 6130-SCA-001

BOX E (MACHINE HEAD)

LET	TER	CHANGE	BY	DATE	CHK	M/F
TITLE ELECTRICAL SCHEMATICS						
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11						
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON				
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA						
SHEET NUMBER	DRAWING NUMBER					
305	N00084-E2-651					

30601 30601PARTS  
BOX C  
TERMINAL BLOCKS

30602

30603 30603PARTS  
BOX C  
ENCLOSURE

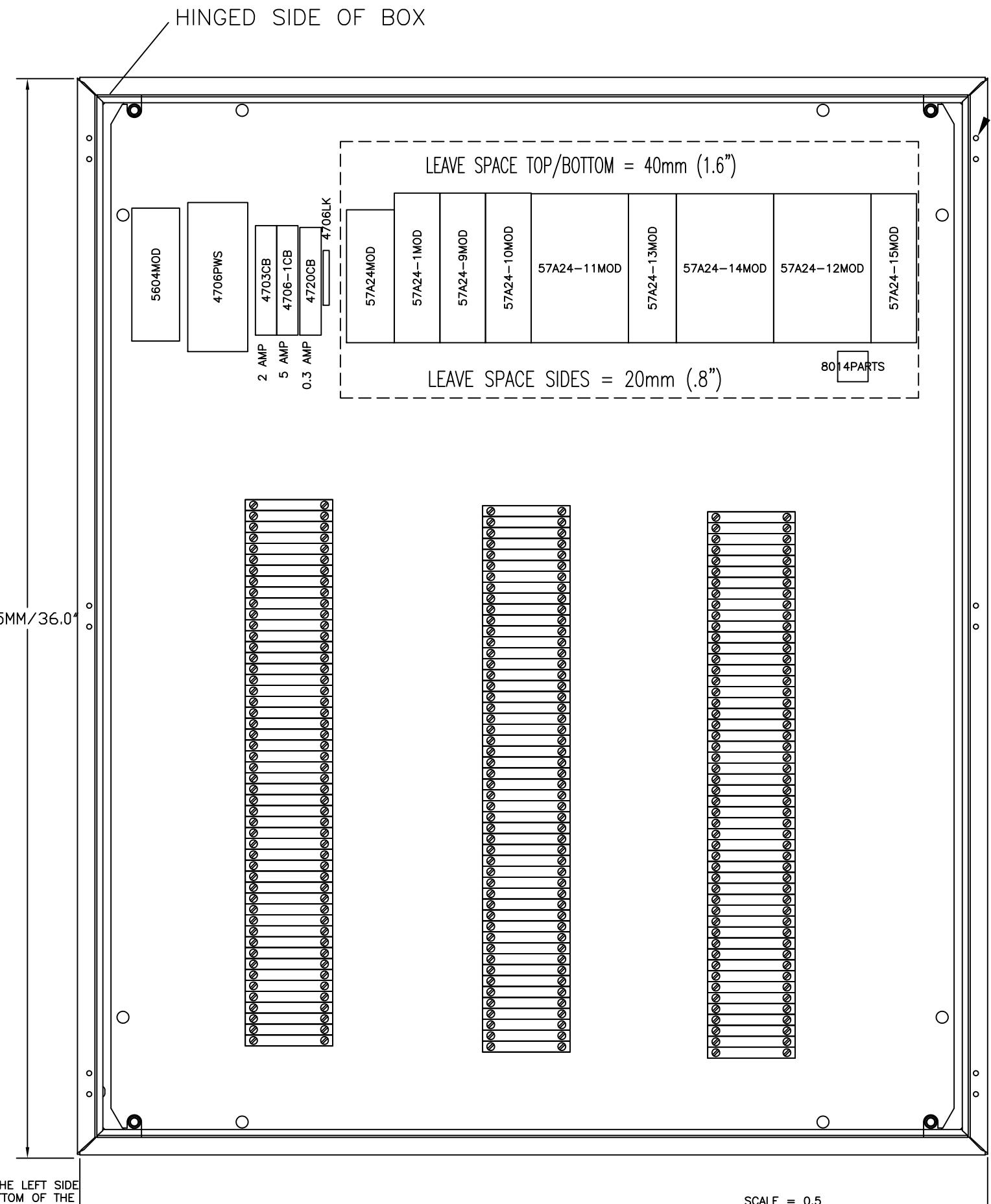
150 TERMINALS

135 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
15 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

(C-B□ X) 1	(C-B□ X) 2	(C-B□ X) 3
Number	Number	Number
P24-C1	C24-C1	I082-6
P24-C1	C24-C1	I082-7
P24-C1	C24-C1	I082-71
P24-C1	C24-C1	I083-5
P24-C1	C24-C1	I083-6
P24-C1	SPARE	I084-0
P24-C1	SPARE	I084-1
P24-C1	SPARE	I084-7
P24-C1	SPARE	I085-0
P24-C1	C24-A1	I085-1
P24-C1	SPARE	I085-2
P24-C1	C24-BRK	I085-3
P24-C1	C24-BRK	I085-4
P24-C1	C24-BRK	I085-5
P24-C1	SPARE	I086-0
P24-C1	SPARE	I086-1
P24-C1	SPARE	I086-2
P24-C1	SPARE	I086-3
P24-C1	SPARE	I086-4
P24-C1	43A091	I086-5
P24-C1	43A171	I086-6
P24-C1	43A191	I086-7
P24-C1	79C071	I087-3
SPARE	43112	I087-4
SPARE	43221	I087-5
SPARE	43222	SPARE
P24-A1	46051	SPARE
SPARE	46202	SPARE
SPARE	46221	SPARE
C24-C1	46241	SPARE
C24-C1	46261	Q082-0
C24-C1	47221	Q082-2
C24-C1	54041	Q082-3
C24-C1	54061	Q082-4
C24-C1	55121	Q082-5
C24-C1	55131	Q082-6
C24-C1	SPARE	Q082-6
C24-C1	SPARE	Q082-6
C24-C1	SPARE	Q082-7
C24-C1	SPARE	Q083-0
C24-C1	GND	GND
C24-C1	I081-0	GND
C24-C1	I081-1	GND
C24-C1	I081-2	GRN
C24-C1	I081-3	GRN
C24-C1	I081-4	GRN
C24-C1	I082-0	GRN
C24-C1	I082-1	GRN
C24-C1	I082-2	GRN
C24-C1	I082-3	GRN

30639 WIRING NOTES:

WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.



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ONE TEAM ALCOA Ma'aden  
Ma'aden Aluminum Project  
Ma'aden P.O. Number INGERSOLL Project Number  
A6RM-4-1001-00/A6RM100003 2N00084  
Client Drawing Number EDN CODE Equipment Tag Number  
N00084-E2-651 D-13 6130-SCA-001

BOX C (RIGHT COLUMN)

LETTER	CHANGE	BY	DATE	CHK
M/F				
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084 SHOP ORDER E2 DATE 05/07/11				
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER 306	DRAWING NUMBER N00084-E2-651			

**HINGED SIDE OF BOX**

The diagram shows the layout of components on the hinged side of a box. The top section contains a dashed rectangular frame with a height of 40mm. Inside this frame, there are six slots labeled from left to right: 5801MOD, 5801-1MOD, 5801-2MOD, 5801-3MOD, 5801-4MOD, 5801-9MOD, 5801-10MOD, and 5801-11MOD. To the left of this frame, there is a vertical stack of components labeled 4929PWS, 2 AMP 4928CB, and 5 AMP 4931LK. Below the dashed frame, there is a horizontal line with a gap, labeled "LEAVE SPACE SIDES = 20mm". The bottom section features three vertical stacks of circular components, each containing 26 circles. A dimension line at the bottom indicates a total width of 30.0 units.

**WIRING NOTES:**  
WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

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The image shows two logos side-by-side. On the left is the ALCOA logo, which consists of a stylized 'A' inside a square frame with the word 'ALCOA' in a bold, sans-serif font below it. To its right is the Ma'aden Aluminum Project logo, featuring a sun-like icon above the word 'Ma'aden' and the words 'South African Alcoa Company' below it.

**BOX J FLUID PANEL (SKID #1)**

ET ER	CHANGE	BY	DATE
			CHK BY
			M/F

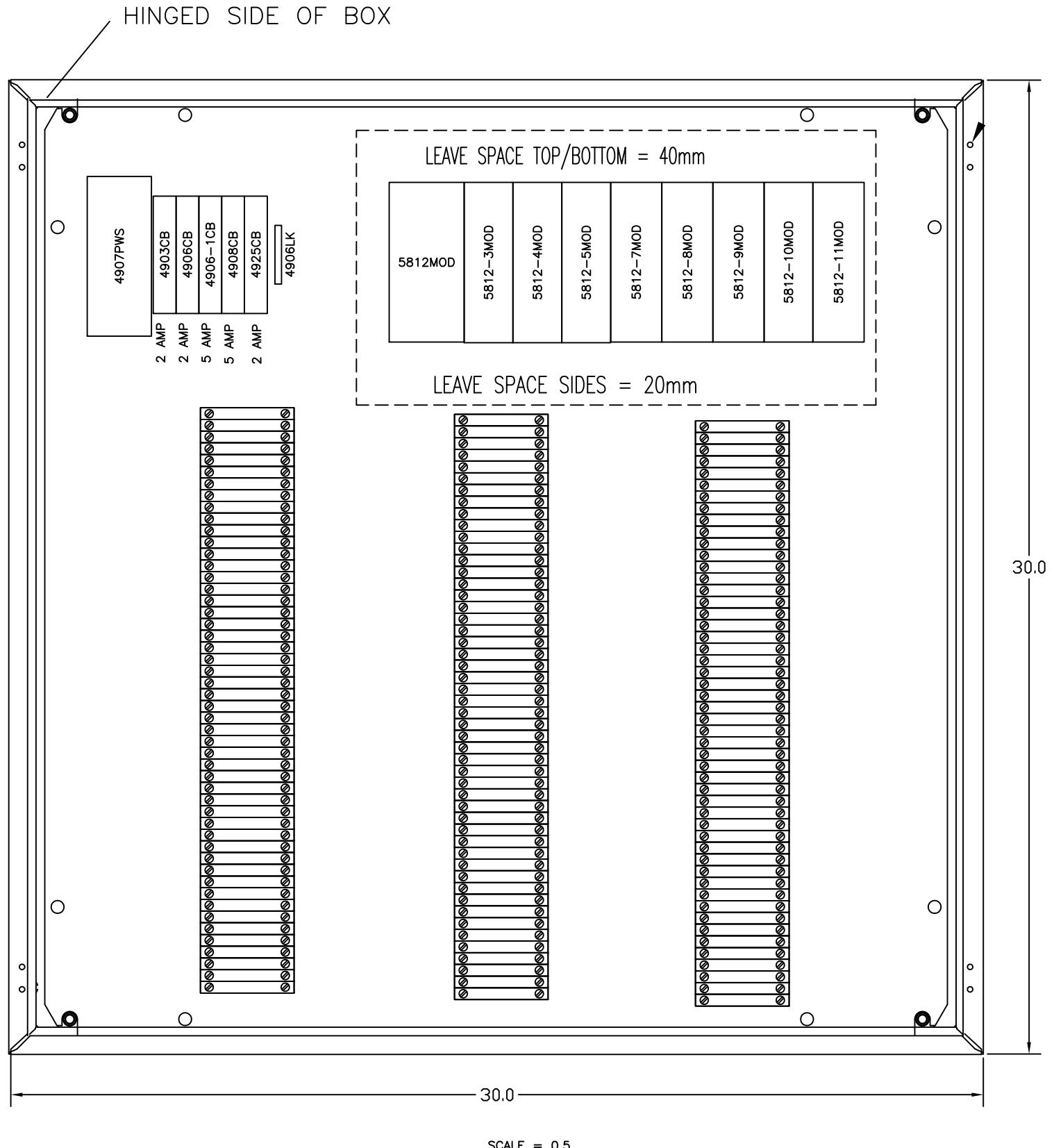
<b>ELECTRICAL SCHEMATICS</b>		
DATE 05/07/11	SHOP ORDER E2	MACHINE 2N00084
DESIGNED BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	RAWN BY WAYNE LANGDON
INGERSOLL MACHINE TOOLS, INC.		

ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
307	N00084-E2-651

30801 30801PARTS TERMINALS  
 30802 150 TERMINALS  
 30803 30803PARTS K-BOX ENCLOSURE  
 30804 145 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
 5 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

(K-B)	(K-B)	(K-B)
X) 1	X) 2	X) 3
Number	Number	Number
P24-K1	SPARE	I111-3
P24-K1	SPARE	I111-4
P24-K1	SPARE	I111-5
P24-K1	SPARE	I112-0
P24-K1	SPARE	I112-1
P24-K1	C24-K1	I112-2
P24-K1	C24-K1	I112-7
P24-K1	C24-K1	I113-0
P24-K1	C24-K1	I113-1
P24-K1	C24-K1	I114-0
P24-K1	C24-K1	I114-1
P24-K1	C24-K1	I114-2
P24-K1	C24-K1	I114-3
P24-K1	C24-K1	I114-4
P24-K1	C24-K1	I114-5
P24-K1	C24-K1	I114-6
P24-K1	C24-K1	I115-0
P24-K1	C24-K1	I115-1
P24-K1	C24-K1	I116-0
P24-K1	C24-K1	I116-1
P24-K1	C24-K1	I116-2
P24-K1	C24-K1	I116-3
P24-K1	C24-K1	I116-5
P24-K1	C24-K1	I116-6
P24-K1	C24-K1	I117-0
P24-K1	C24-K1	I117-1
P24-K1	C24-K1	I117-2
P24-K1	SPARE	
P24-K1	SPARE	
P24-K1	Q110-0	
P24-K1	SPARE	
P24-K1	Q110-1	
P24-K1	72B081	
P24-K1	72B161	
P24-K1	Q111-0	
P24-K1	43301	
P24-K1	Q111-1	
P24-K1	43302	
P24-K1	Q111-2	
P24-K1	SPARE	
P24-K1	Q111-3	
P24-K1	SPARE	
P24-K1	Q111-4	
P24-K1	SPARE	
P24-K1	Q111-5	
P24-K1	SPARE	
P24-K1	Q111-6	
P24-K1	SPARE	
P24-K1	Q111-7	
P24-K1	SPARE	
P24-K1	I110-0	
P24-K1	SPARE	
P24-K1	I110-1	
P24-K1	SPARE	
P24-K1	I110-2	
P24-K1	SPARE	
P24-K1	I110-4	
P24-K1	GRN	
P24-K1	I110-5	
P24-K1	GRN	
P24-K1	I110-6	
P24-K1	GRN	
P24-K1	I111-0	
P24-K1	GRN	
P24-K1	I111-1	
P24-K1	GRN	



WIRING NOTES:  
 WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

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LETTER	CHANGE	BY	DATE	CHK
M/F				
TITLE ELECTRICAL SCHEMATICS				
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		

SHEET NUMBER	DRAWING NUMBER
308	N00084-E2-651

30901

30901PARTS  
BOX Q  
TERMINALS

30902

30903PARTS  
BOX Q  
ENCLOSURE

150 TERMINALS

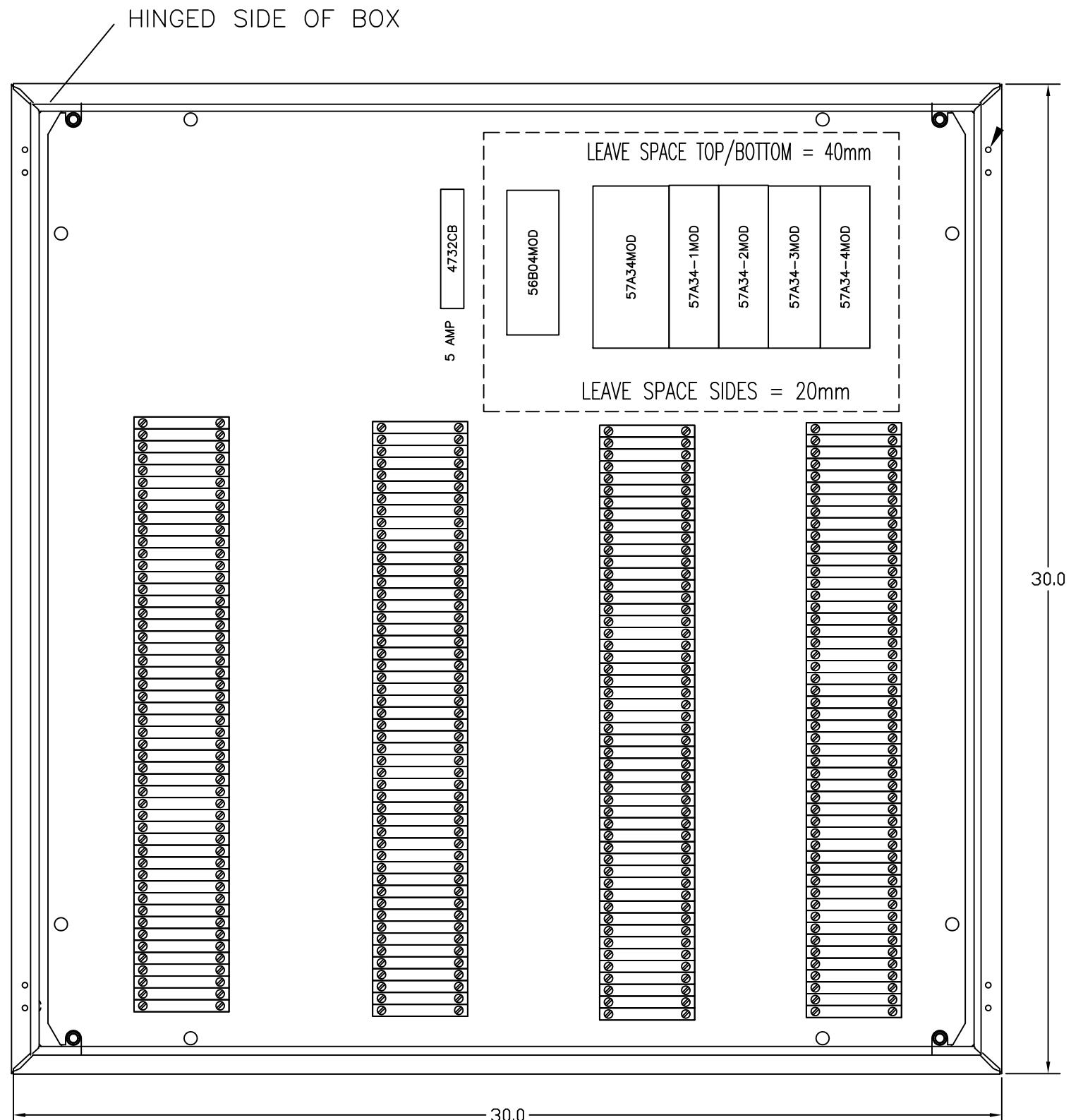
30905

145 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
5 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

30906

30907

	Q-BOX 1	Q-BOX 2	Q-BOX 3	Q-BOX 4
Number	P24-Q1	P24-Q1	81C101	1097-5
P24-Q1	SPARE	81C111	I097-6	
P24-Q1	SPARE	81C231	I097-7	
P24-Q1	SPARE	81C241	SPARE	
P24-G1	43341	43342	SPARE	
P24-Q1	SPARE	47261	SPARE	
P24-Q1	SPARE	47261	SPARE	
P24-Q1	C24-Q1	SPARE	Q085-0	
P24-Q1	C24-Q1	SPARE	Q085-1	
P24-Q1	C24-Q1	SPARE	Q085-2	
P24-Q1	C24-Q1	I094-0	Q085-3	
P24-Q1	C24-Q1	I094-1	Q085-4	
P24-Q1	C24-Q1	I094-2	Q085-5	
P24-Q1	C24-Q1	I094-3	Q085-6	
P24-Q1	C24-Q1	I094-4	Q085-7	
P24-Q1	C24-Q1	I094-5	Q086-0	
P24-Q1	C24-Q1	I094-6	Q086-1	
P24-Q1	C24-Q1	I094-7	Q086-2	
P24-Q1	C24-Q1	I095-0	Q086-3	
P24-Q1	C24-Q1	I095-1	Q086-4	
P24-Q1	C24-Q1	I095-2	Q086-5	
P24-Q1	C24-Q1	I095-3	Q086-5	
P24-Q1	C24-Q1	I095-4	Q086-6	
P24-Q1	C24-Q1	I095-5	Q086-7	
P24-Q1	C24-Q1	I095-6	SPARE	
P24-Q1	C24-Q1	I095-7	SPARE	
P24-Q1	C24-Q1	I096-0	SPARE	
P24-Q1	C24-Q1	I096-1	GRN	
P24-Q1	C24-Q1	I096-2	GRN	
P24-Q1	C24-Q1	I096-3	GRN	
P24-Q1	C24-Q1	I096-4	GRN	
P24-Q1	C24-Q1	I096-5	GRN	
P24-Q1	P24-Q1	SPARE	I096-6	
P24-Q1	P24-Q1	SPARE	I096-7	
P24-Q1	P24-Q1	I097-0	I097-0	
P24-Q1	P24-Q1	I097-1	I097-1	
P24-Q1	P24-Q1	I097-2	I097-2	
P24-Q1	72B081	I097-3		
P24-Q1	72B161	I097-4		



30939

WIRING NOTES:  
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30940

30941

30942

30943

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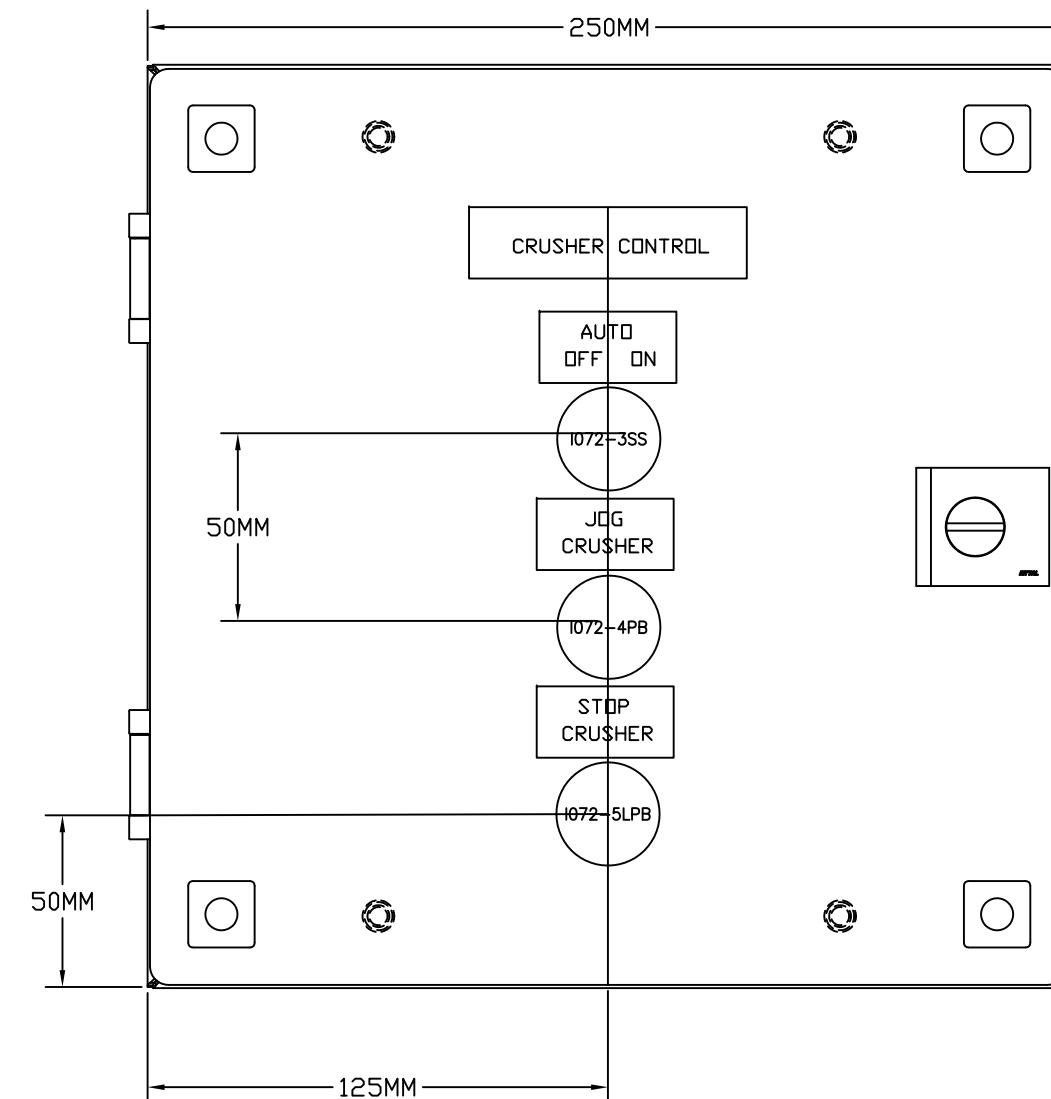
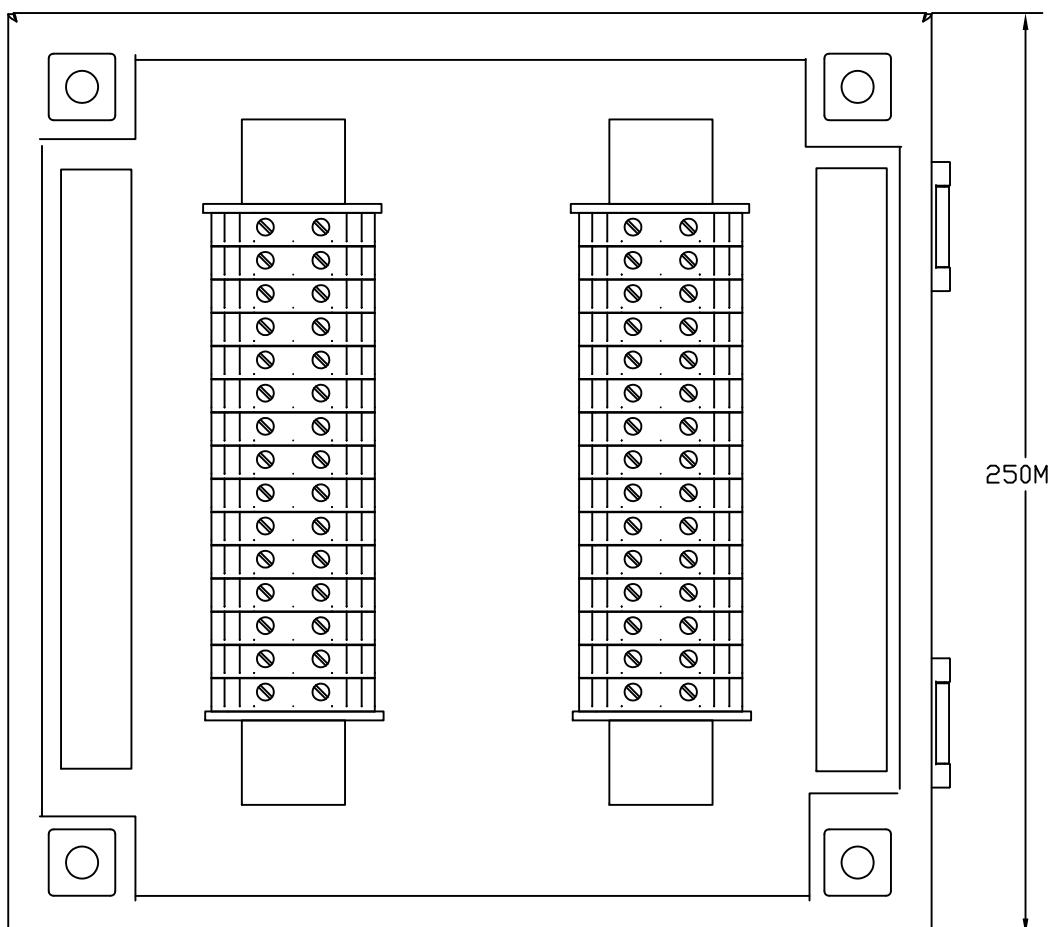
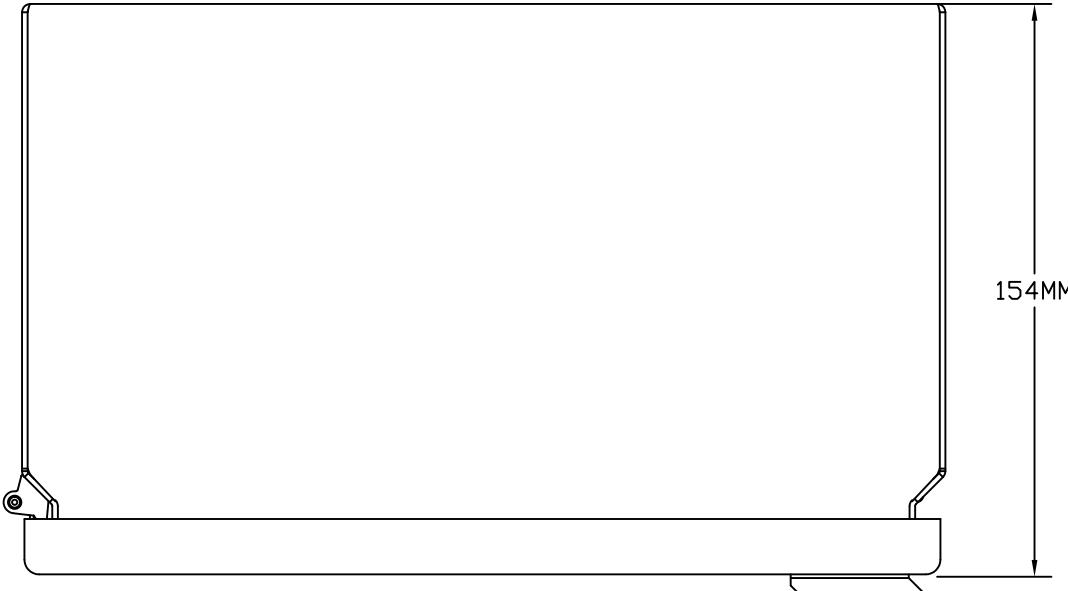
**ONE TEAM** **ALCOA** **MA'ADEN** **Global**  
Ma'aden Aluminum Project

Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084
Client Drawing Number N00084-E2-651	EDN CODE Equipment Tag Number D-13 6130-SCA-001

BOX Q CHIP SYSTEM (CHIP VENDOR)

LET TER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE 2N00084	SHOP ORDER E2	DATE	05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER 309	DRAWING NUMBER N00084-E2-651				

31001 31001PARTS  
 31002 BOX S  
 TERMINALS  
 31003 31003PARTS  
 MTG. RAIL  
 & MARK STRIP  
 31004  
 31005 31005PARTS  
 BOX S ENCLOSURE  
 & PANEL



LETTERS WITH CIRCLES IDENTIFY WHERE TAGS GO ON ENCLOSURE.

PLASTIC TAG  
 BLACK LETTERS WITH WHITE BACKGROUND  
 HEIGHT = 1.0"  
 WIDTH = 3.0"



25 - PHOENIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
 5 - PHOENIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

S-BOX	
1	
Number	
P24-A1	
P24-A1	
SPARE	
SPARE	
C24-A1	
SPARE	
SPARE	
I072-3	
I072-4	
I072-5	
12221	
12231	
12232	
Q073-1	
Q073-1	
12241	
12242	
12251	
12261	
12262	
12263	
12321	
GND	

S-BOX	
2	
Number	
12331	
12332	
SPARE	
SPARE	
C24-A1	
SPARE	
SPARE	
I072-3	
I072-4	
I072-5	
12221	
12231	
12232	
Q073-1	
Q073-1	
12241	
12242	
12251	
12261	
12262	
12263	
12321	
GND	

Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	
Client Drawing Number N00084-E2-651	EDN CODE D-13	Equipment Tag Number 6130-SCA-001

### BOX S (CRUSHER)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
 ROCKFORD, ILLINOIS USA

SHEET NUMBER	DRAWING NUMBER
310	N00084-E2-651

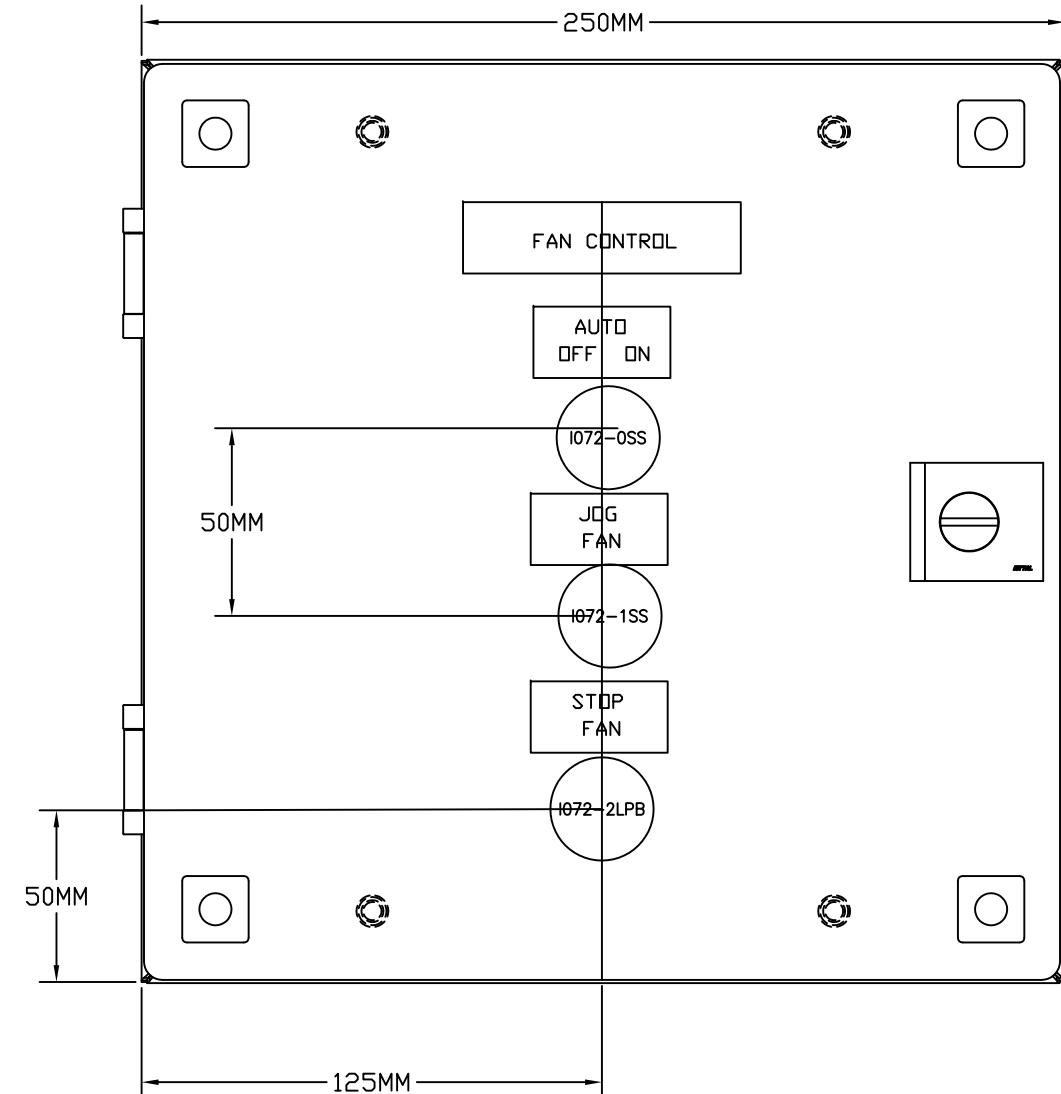
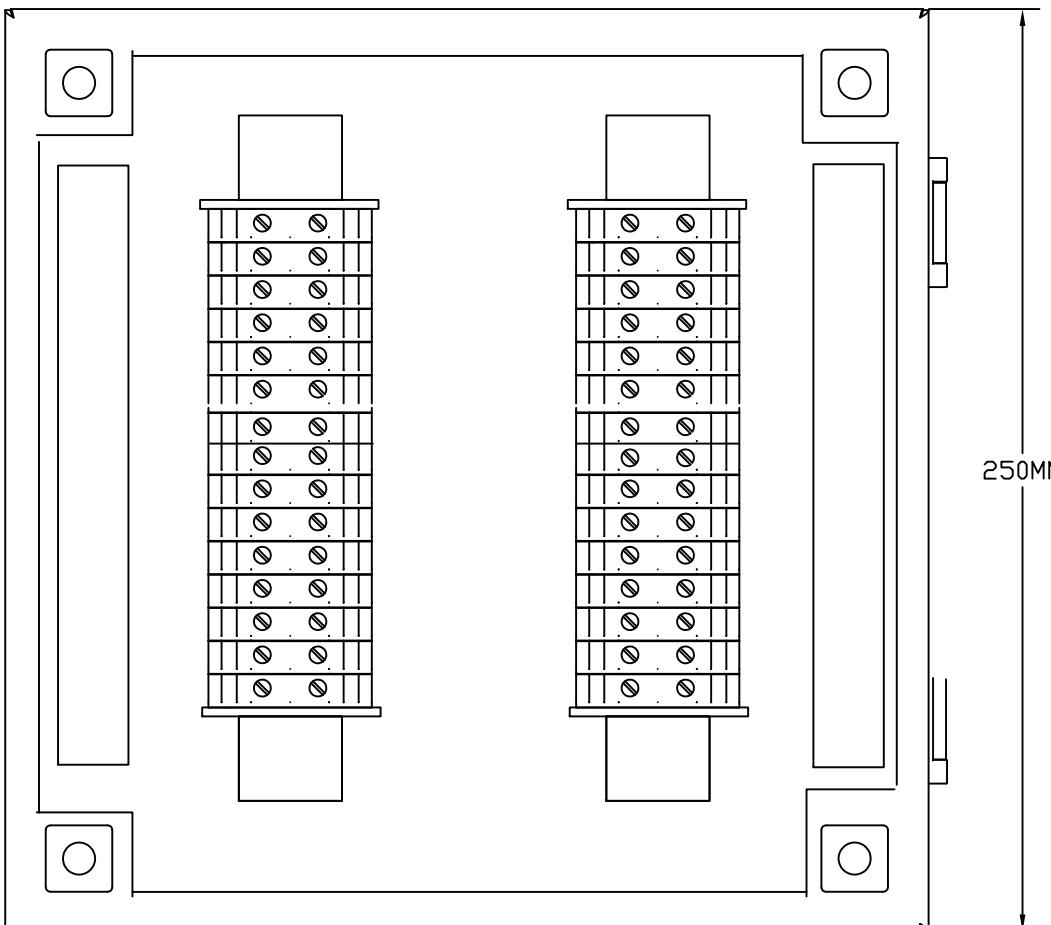
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310 N00084-E2-651

31101 31101PARTS  
 BOX T  
 TERMINALS  
 31102 31103PARTS  
 MTG. RAIL  
 & MARK STRIP  
 31103 31105PARTS  
 BOX T ENCLOSURE  
 & PANEL



27 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
 3 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

T-B <sup>OX</sup> 1	T-B <sup>OX</sup> 2
Number	Number
P24-A1	13232
P24-A1	13242
SPARE	13251
C24-A1	13252
SPARE	13261
I072-0	13271
I072-1	13272
I072-2	13331
SPARE	13332
Q073-0	13341
Q073-0	GND
SPARE	GND
13231	GND
13241	

LETTERS WITH CIRCLES IDENTIFY WHERE TAGS GO ON ENCLOSURE.

PLASTIC TAG  
 BLACK LETTERS WITH WHITE BACKGROUND  
 HEIGHT = 1.0"  
 WIDTH = 3.0"



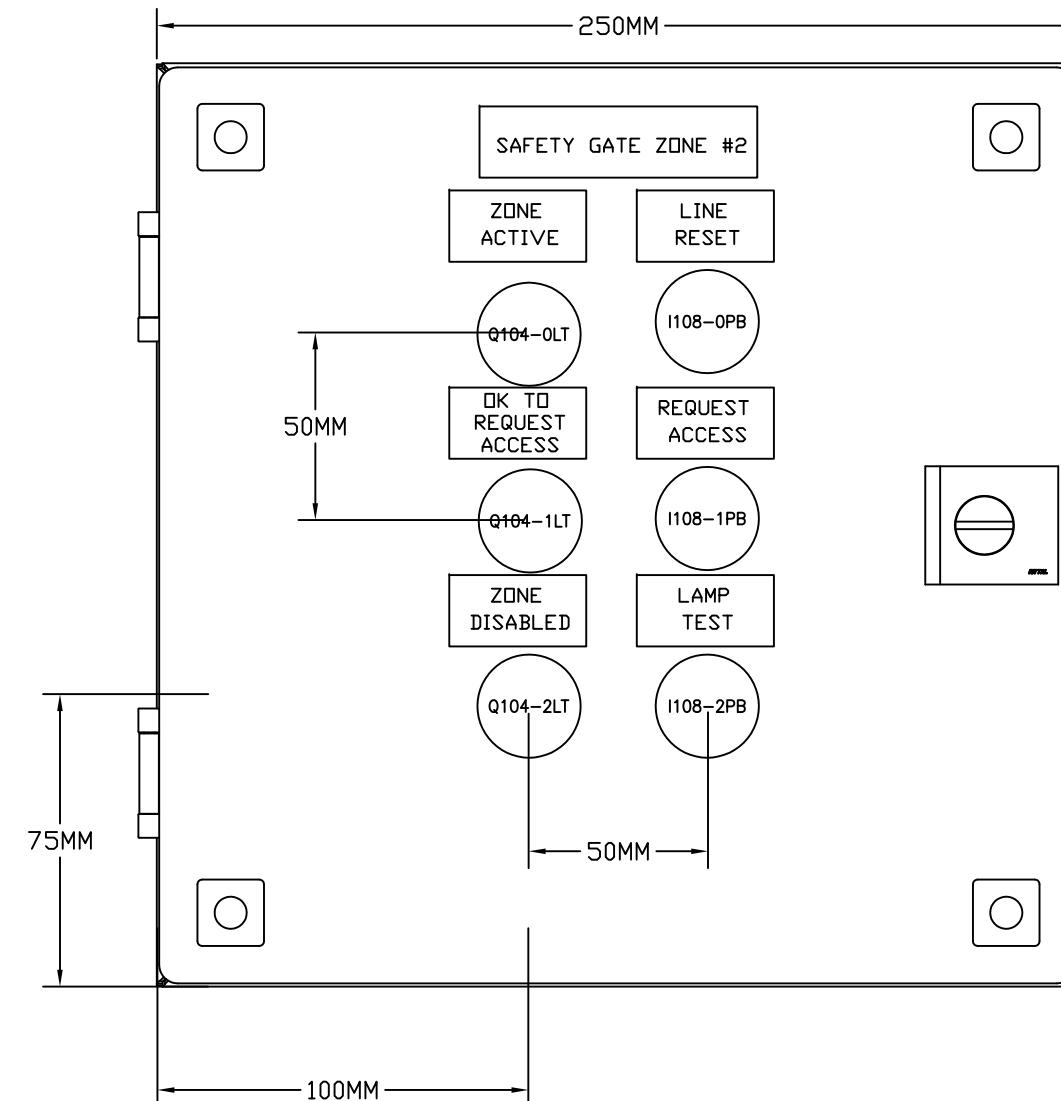
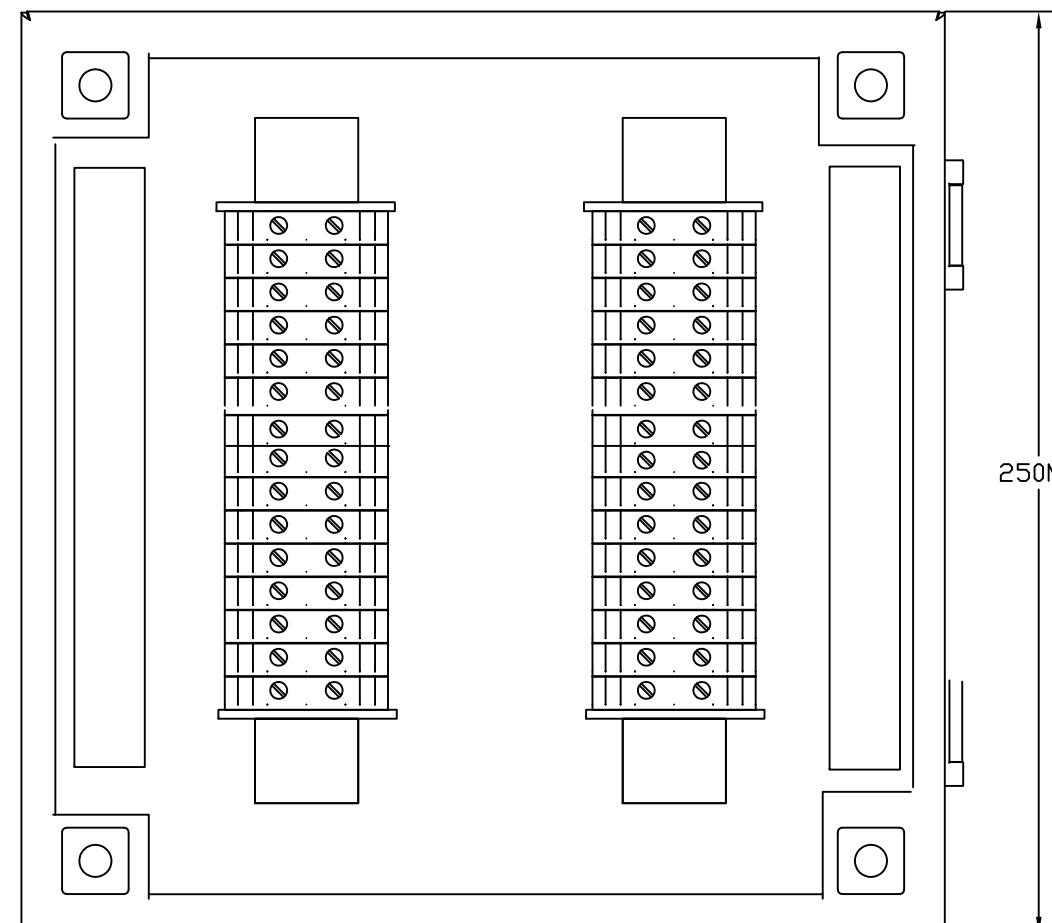
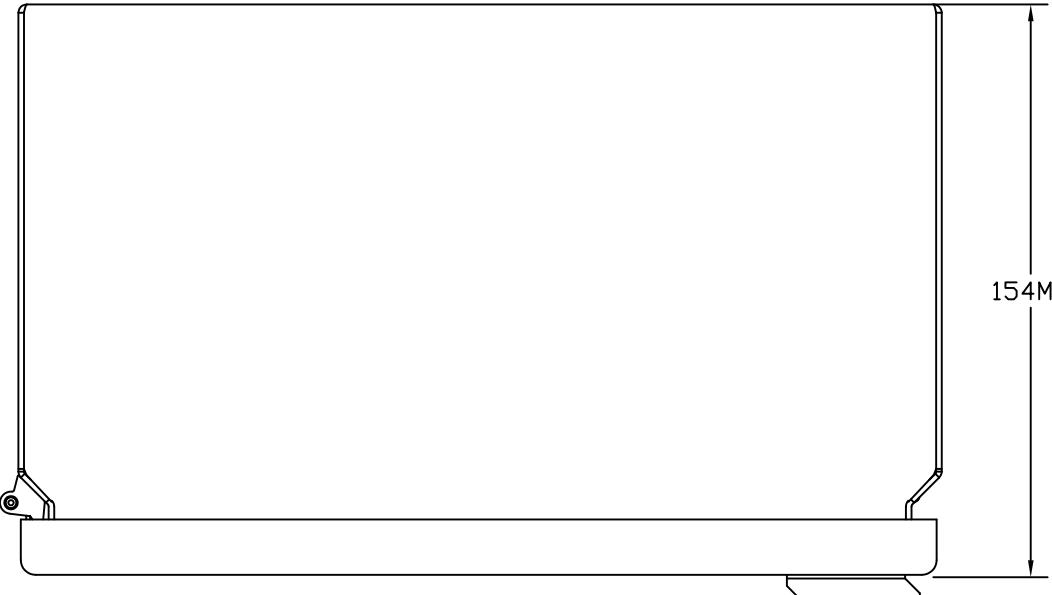
Ma'aden Aluminum Project	INGERSOLL Project Number	
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	2N00084	
Client Drawing Number N00084-E2-651	EDN CODE	Equipment Tag Number D-13 6130-SCA-001

BOX T (FAN)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER	E2	DATE	05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON			
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SHEET NUMBER	DRAWING NUMBER				
311	N00084-E2-651				

WIRING NOTES:  
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31201 31201PARTS  
 31202 SGZN2  
 TERMINALS  
 31203 31203PARTS  
 MTG. RAIL  
 & MARK STRIP  
 31204  
 31205 31205PARTS  
 SGZN2 ENCLOSURE  
 & PANEL  
 31206



26 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
 4 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

SGZN2-BOX 1	SGZN2-BOX 2
Number	Number
P24-J1	Q104-0
SPARE	Q104-1
C24-J1	Q104-2
SPARE	SPARE
90A061	GND
90A101	GND
90A141	GND
90C091	GND
90C131	
90C171	
SPARE	
I104-0	
I104-1	
I104-2	
SPARE	

LETTERS WITH CIRCLES IDENTIFY WHERE TAGS GO ON ENCLOSURE.

PLASTIC TAG  
 BLACK LETTERS WITH WHITE BACKGROUND  
 HEIGHT = 1.0"  
 WIDTH = 3.0"

SAFETY GATE  
ZONE #2

A

ALCOA		Ma'aden	
ONETEAM		Ma'aden	
Ma'aden P.O. Number	A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number	2N00084
Client Drawing Number	N00084-E2-651	EDN CODE	Equipment Tag Number
		D-13	6130-SCA-001

BOX SGZN2 (ZONE 2 SAFETY GATE BOX)

LETTER	CHANGE	BY	DATE	CHK BY
M/F				

TITLE ELECTRICAL SCHEMATICS

MACHINE	SHOP ORDER	DATE
2N00084	E2	05/07/11

DRAWN BY	CHECKED BY	DESIGNED BY
WAYNE LANGDON	WAYNE LANGDON	WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.

ROCKFORD, ILLINOIS USA

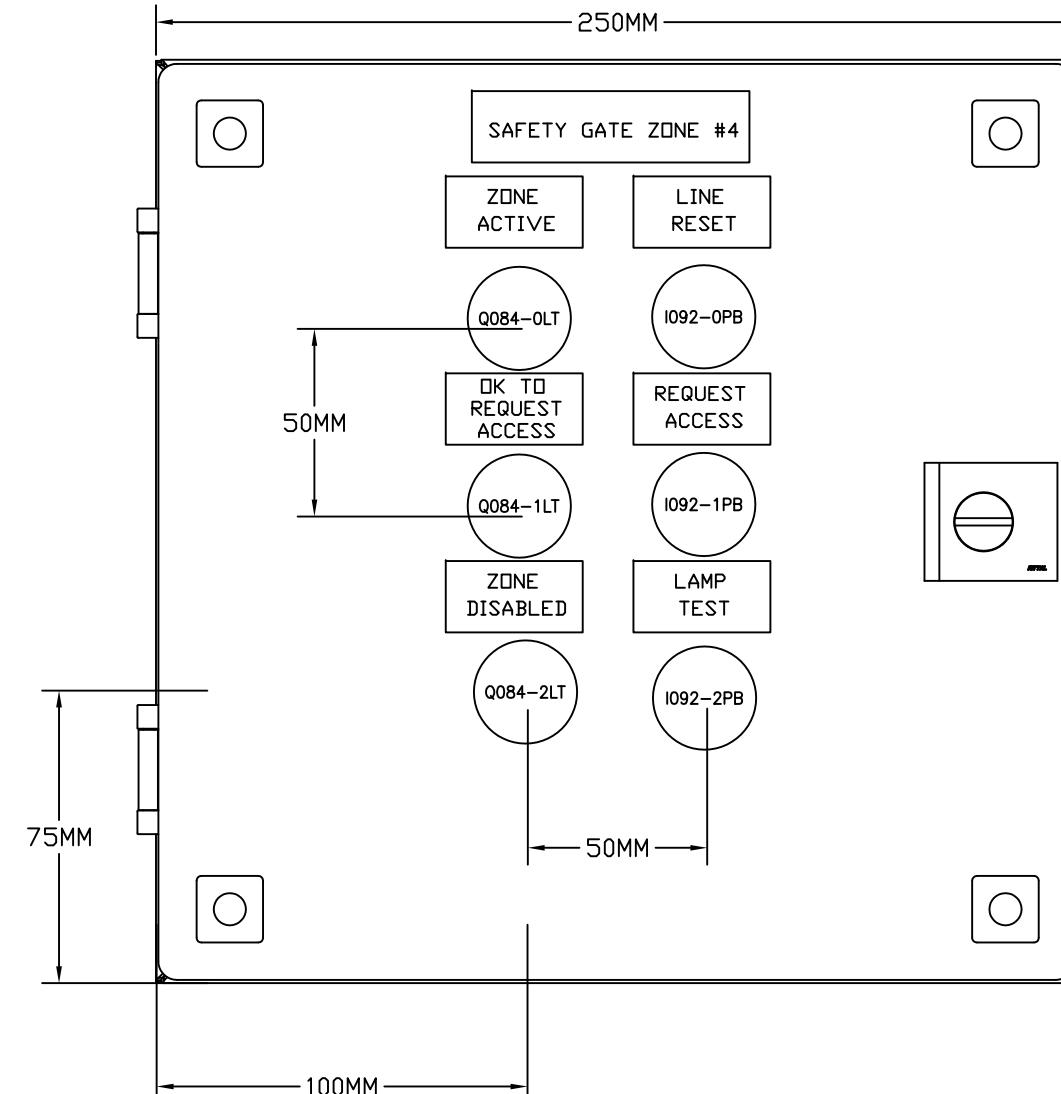
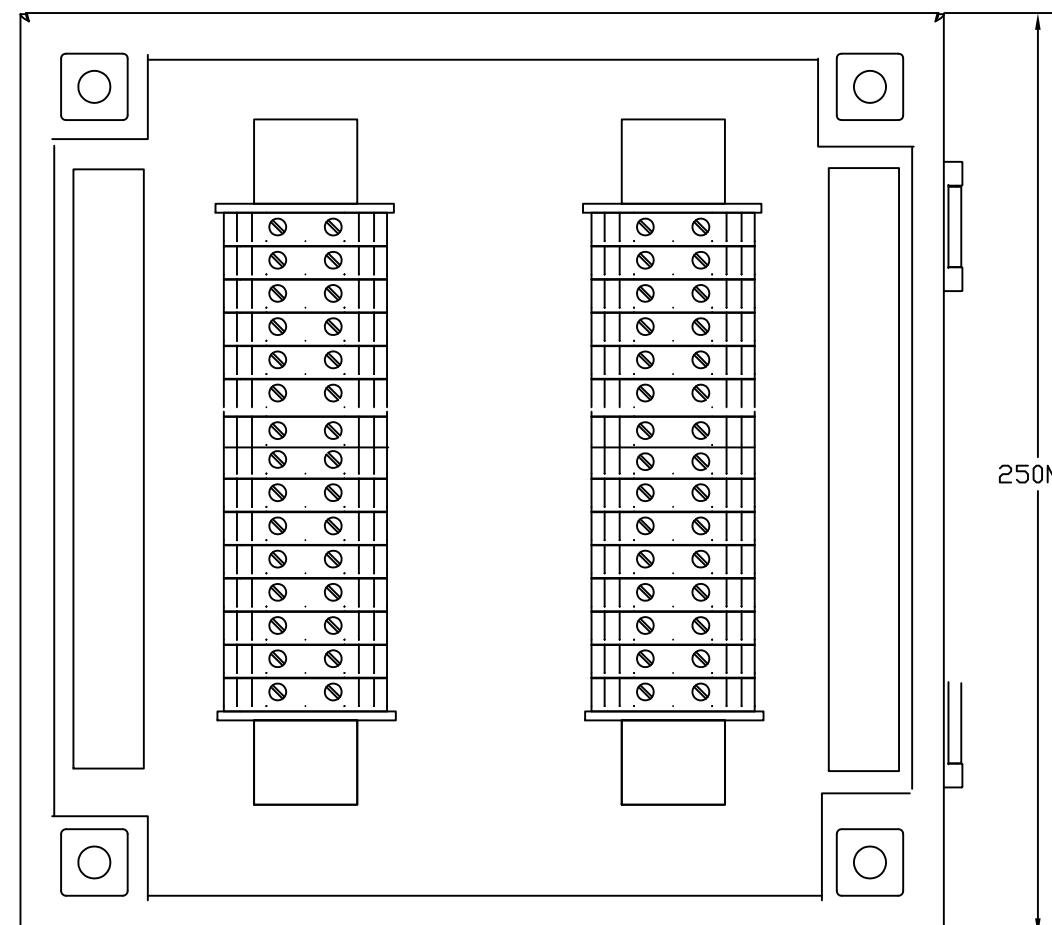
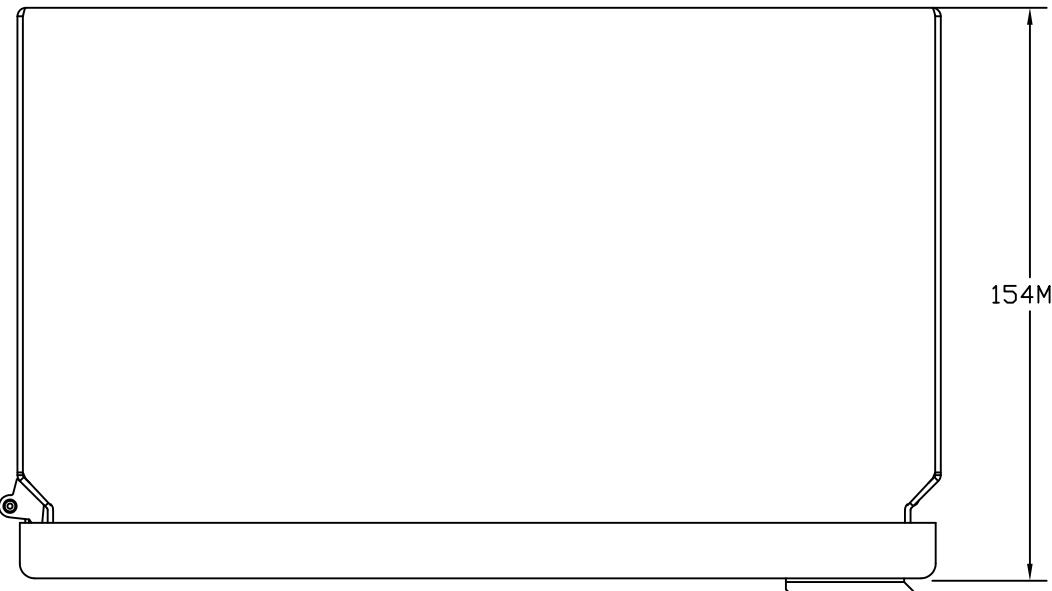
SHEET NUMBER	DRAWING NUMBER
312	N00084-E2-651

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31301 31301PARTS  
 SCZN4  
 TERMINALS  
 31302 31303PARTS  
 MTG. RAIL  
 & MARK STRIP  
 31304  
 31305 31305PARTS  
 SGZN4 ENCLOSURE  
 & PANEL  
 31306  
 31307  
 31308  
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 31341  
 31342  
 31343



16 - PHEONIX 0790530 OTTA 2,5 TERMINAL BLOCKS GRY(14-26 AWG)  
 1 - PHEONIX 0790556 OTTA 2,5 P.E. TERMINAL BLOCKS GRN(14-26 AWG)

**SGZN4 - BOX 1**  
 Number  
 P24-C1  
 SPARE  
 C24-C1  
 SPARE  
 78G061  
 78G101  
 78G141  
 79D091  
 79D131  
 79D171  
 SPARE  
 I092-0  
 I092-1  
 I092-2  
 SPARE

**SGZN4 - BOX 2**  
 Number  
 Q104-0  
 Q104-1  
 Q104-2  
 SPARE  
 GND  
 GND  
 GND  
 GND

LETTERS WITH CIRCLES IDENTIFY WHERE TAGS GO ON ENCLOSURE.

PLASTIC TAG  
 BLACK LETTERS WITH WHITE BACKGROUND  
 HEIGHT = 1.0"  
 WIDTH = 3.0"



Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM100003	INGERSOLL Project Number 2N00084	

Client Drawing Number N00084-E2-651 EDN CODE D-13 Equipment Tag Number 6130-SCA-001

BOX SGZN4 (ZONE 4 SAFETY GATE BOX)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
TITLE ELECTRICAL SCHEMATICS					

MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON

INGERSOLL MACHINE TOOLS, INC.  
ROCKFORD, ILLINOIS USA

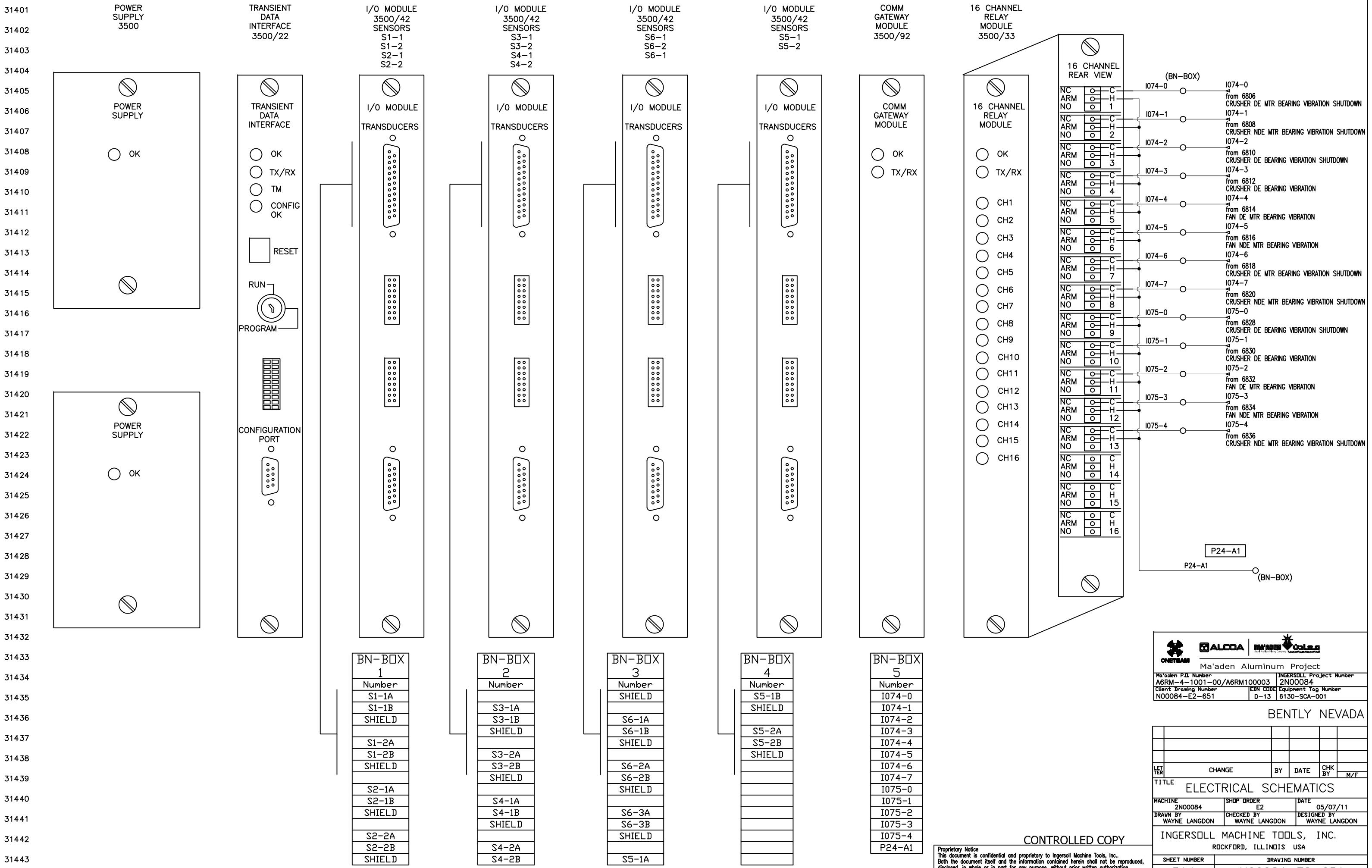
SHEET NUMBER DRAWING NUMBER

313 N00084-E2-651

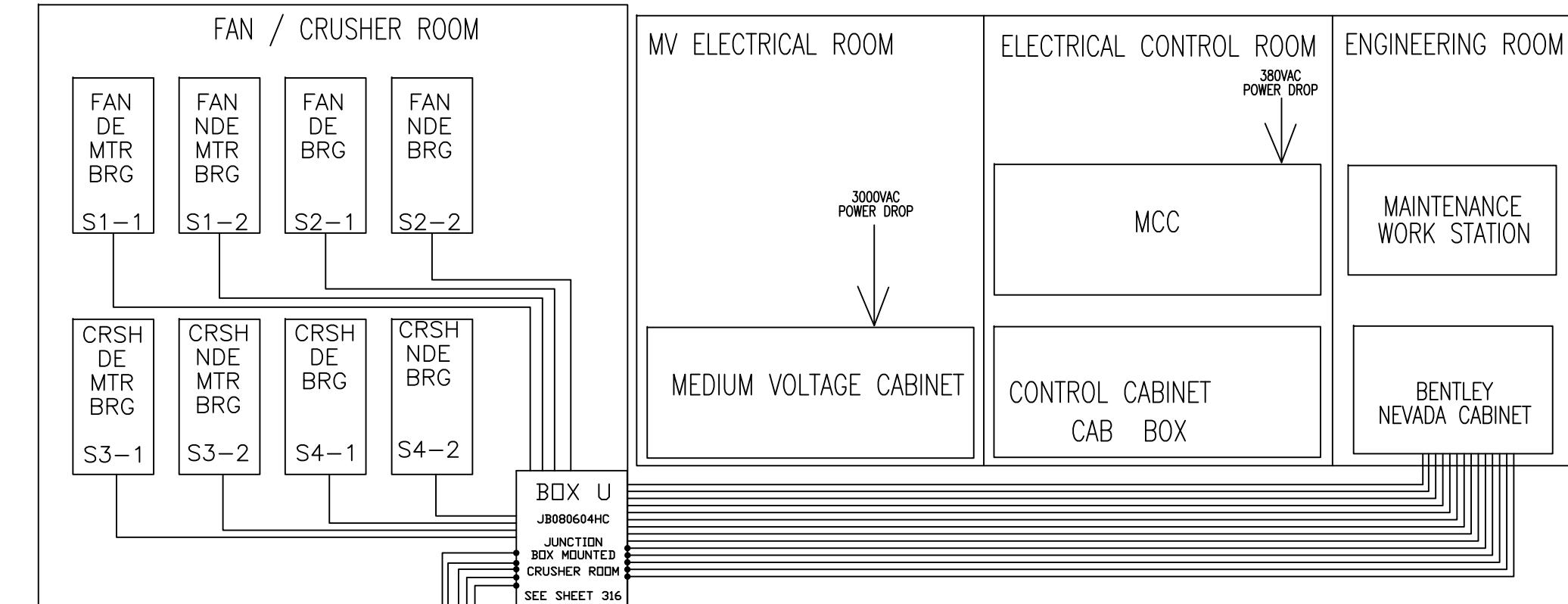
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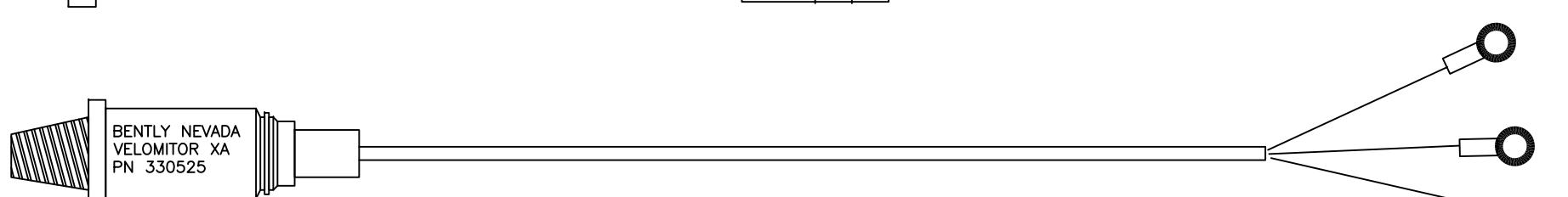
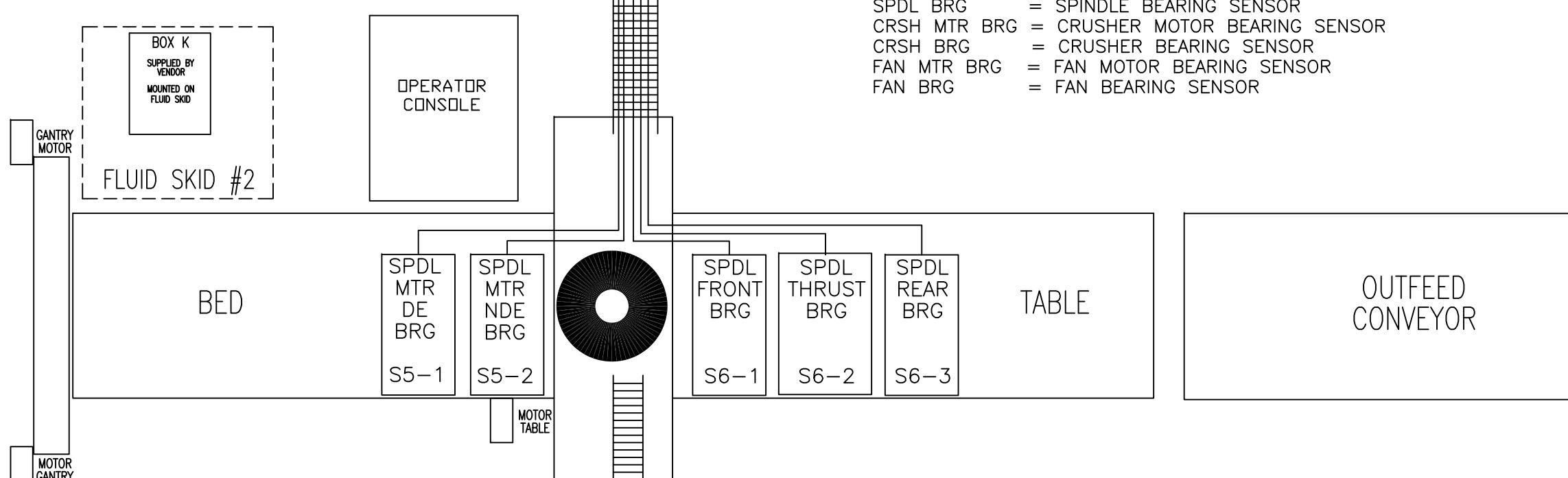
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THIS SYMBOL DENOTES  
OVERHEAD WIREWAY  
  
NOTE:  
ALL OVERHEAD WIREWAY  
SUPPLIED BY CUSTOMER



SPDL MTR BRG = SPINDLE MOTOR BEARING SENSOR  
 SPDL BRG = SPINDLE BEARING SENSOR  
 CRSH MTR BRG = CRUSHER MOTOR BEARING SENSOR  
 CRSH BRG = CRUSHER BEARING SENSOR  
 FAN MTR BRG = FAN MOTOR BEARING SENSOR  
 FAN BRG = FAN BEARING SENSOR

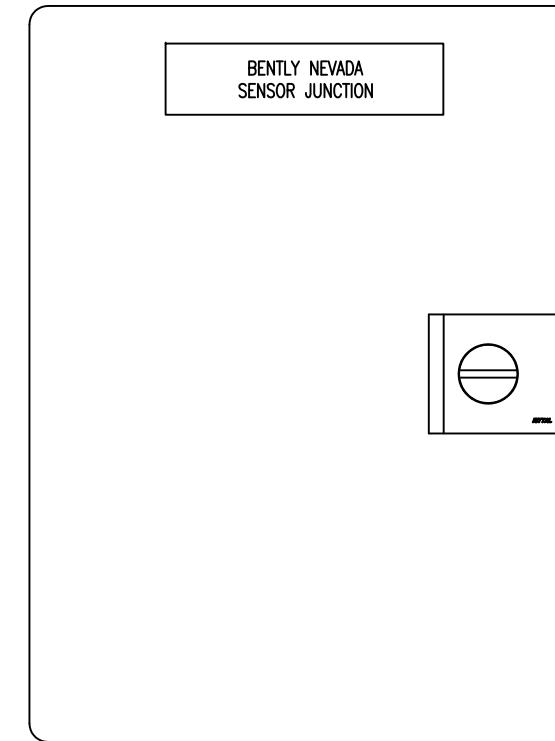
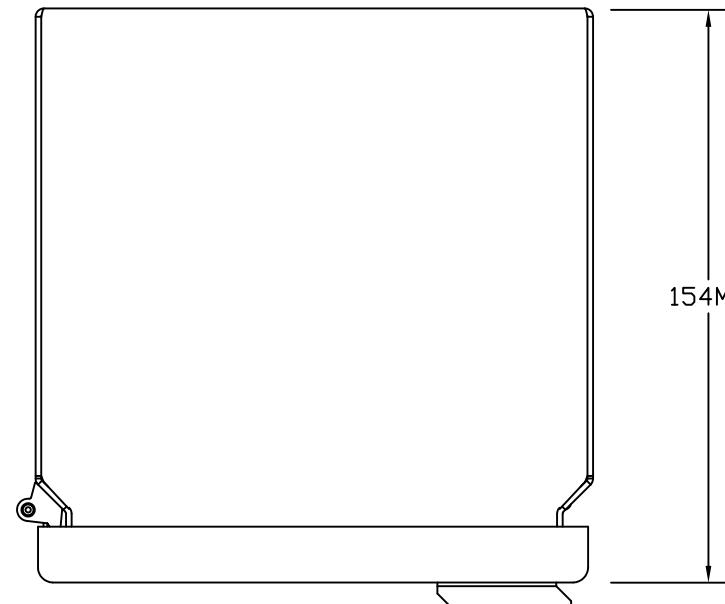


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ELECTRICAL SCHEMATICS				
MACHINE	SHOP ORDER	DATE	CHK BY	
2N00084	E2	05/07/11		
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA				
SHEET NUMBER	DRAWING NUMBER			
315	N00084-E2-651			

31601 31601PARTS  
 U BOX  
 TERMINALS  
 31602 31603PARTS  
 MTG. RAIL  
 & MARK STRIP  
 31603 31605PARTS  
 U-BOX ENCLOSURE  
 & PANEL  
 31604  
 31605  
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 WIRING NOTES:  
 WIRES COMING FROM A DEVICE (LIMIT SWITCH, PROX SWITCH, SOLENOID, ETC.) SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND BE ROUTED TOWARD THE BOTTOM OF THE TERMINAL STRIP. WIRES LEAVING THE BOX AND HEADING BACK TOWARD THE CONTROL CABINET SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. THESE WIRES SHALL BE TIE-WRAPPED NEATLY AND ROUTED TOWARD THE TOP OF THE TERMINAL STRIP. WIRES FROM DEVICES ON OR INSIDE JUNCTION BOXES THAT MUST LEAVE THE BOX SHALL BE TERMINATED ON THE LEFT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM AN I/O RACK MOUNTED INSIDE AN ENCLOSURE SHALL BE TERMINATED ON THE RIGHT SIDE OF THE TERMINAL BLOCK. WIRES THAT RUN FROM ONE DEVICE IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.

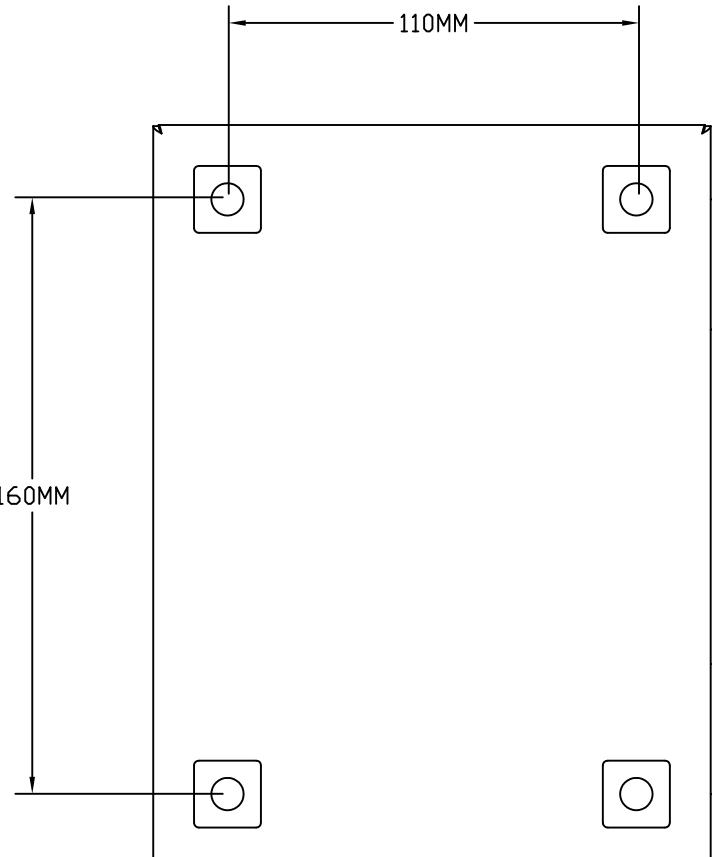


LETTERS WITH CIRCLES IDENTIFY WHERE TAGS GO ON ENCLOSURE.

PLASTIC TAG  
 BLACK LETTERS WITH WHITE BACKGROUND  
 HEIGHT = 1.0"  
 WIDTH = 3.0"



15 - PHEONIX 0790530 OTTA 2.5 TERMINAL BLOCKS GRY(14-26 AWG)



U-BOX  
 S5-1A  
 S5-1B  
 SHIELD  
 S5-2A  
 S5-2B  
 SHIELD  
 S6-1A  
 S6-1B  
 SHIELD  
 S6-2A  
 S6-2B  
 SHIELD  
 S6-3A  
 S6-3B  
 SHIELD

<b>ONE TEAM</b>	<b>ALCOA</b>	<b>MA'ADEN</b>
Ma'aden Aluminum Project		
Ingersoll Project Number	Ingersoll Project Number	
A6RM-4-1001-00/A6RM100003	2N00084	
Client Drawing Number	EDN CODE	Equipment Tag Number
N00084-E2-651	D-13	6130-SCA-001

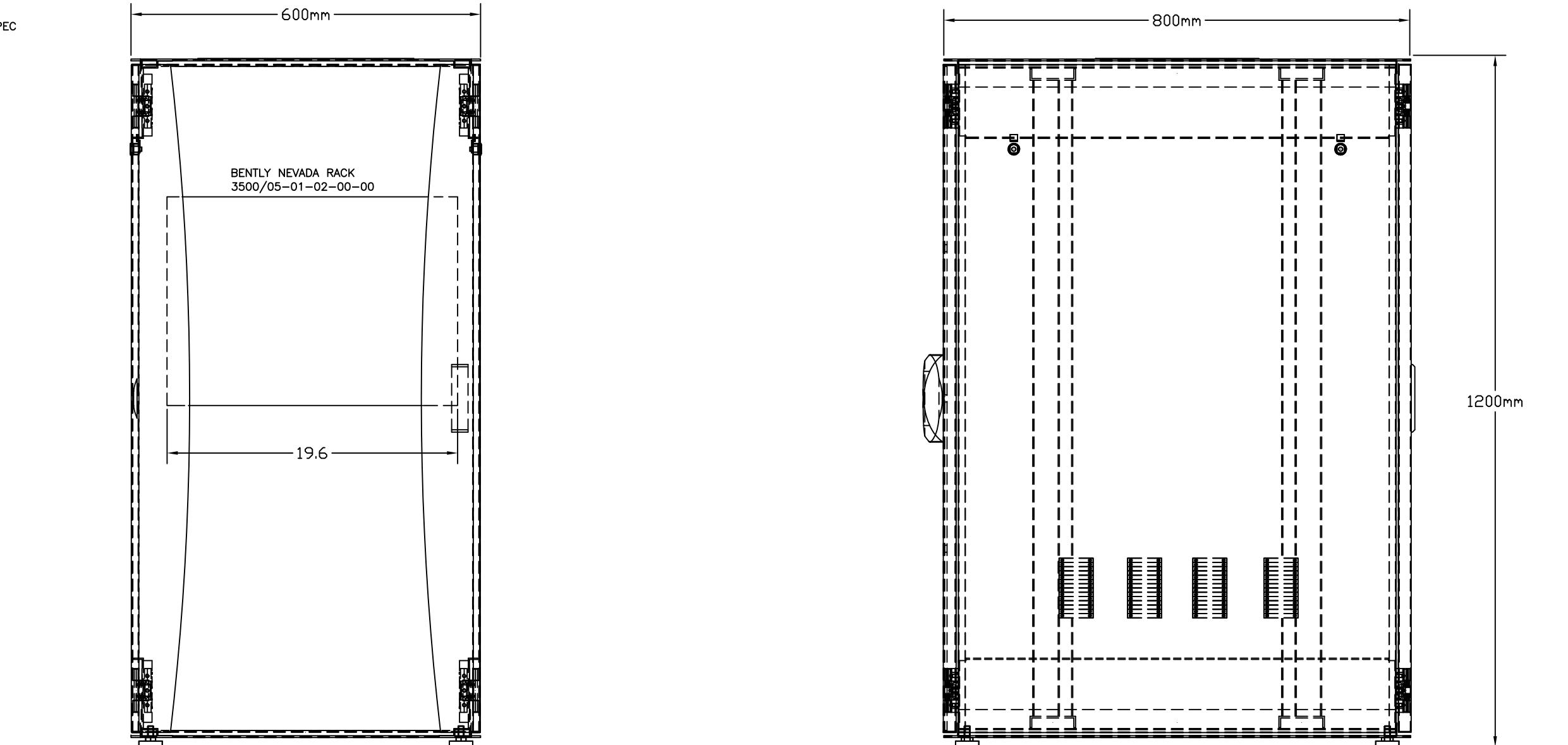
BOX U (BENTLY NEVADA JUNCTION)

LETTER	CHANGE	BY	DATE	CHK BY	M/F
<b>TITLE</b> ELECTRICAL SCHEMATICS					
MACHINE	SHOP ORDER		DATE		
2N00084	E2		05/07/11		
DRAWN BY	CHECKED BY		DESIGNED BY		
WAYNE LANGDON	WAYNE LANGDON		WAYNE LANGDON		
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA					
SHEET NUMBER	DRAWING NUMBER				
316	N00084-E2-651				

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31701 31701PARTS  
 BENTLY NEVADA  
 TERMINALS  
 31702  
 31703 31703PARTS  
 BENTLY NEVADA  
 ENCLOSURE  
 31704  
 31705 31705PARTS  
 BENTLY NEVADA SPEC  
 31706  
 31707  
 31708  
 31709  
 31710 BENTLY NEVADA RACK  
 3500/05-01-02-00-00  
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 IN THE BOX TO ANOTHER DEVICE IN THE BOX SHALL NOT BE TERMINATED ON THE TERMINAL BLOCKS.  
 31741  
 31742  
 31743



Ma'aden Aluminum Project		
Ma'aden P.O. Number A6RM-4-1001-00/A6RM10003	INGERSOLL Project Number 2N00084	

### BENTLY NEVADA CABINET

LET TER	CHANGE	BY	DATE
			CHK BY
TITLE			
ELECTRICAL SCHEMATICS			
MACHINE 2N00084	SHOP ORDER E2	DATE 05/07/11	
DRAWN BY WAYNE LANGDON	CHECKED BY WAYNE LANGDON	DESIGNED BY WAYNE LANGDON	
INGERSOLL MACHINE TOOLS, INC. ROCKFORD, ILLINOIS USA			
SHEET NUMBER 317	DRAWING NUMBER N00084-E2-651		

SCALE: .25

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