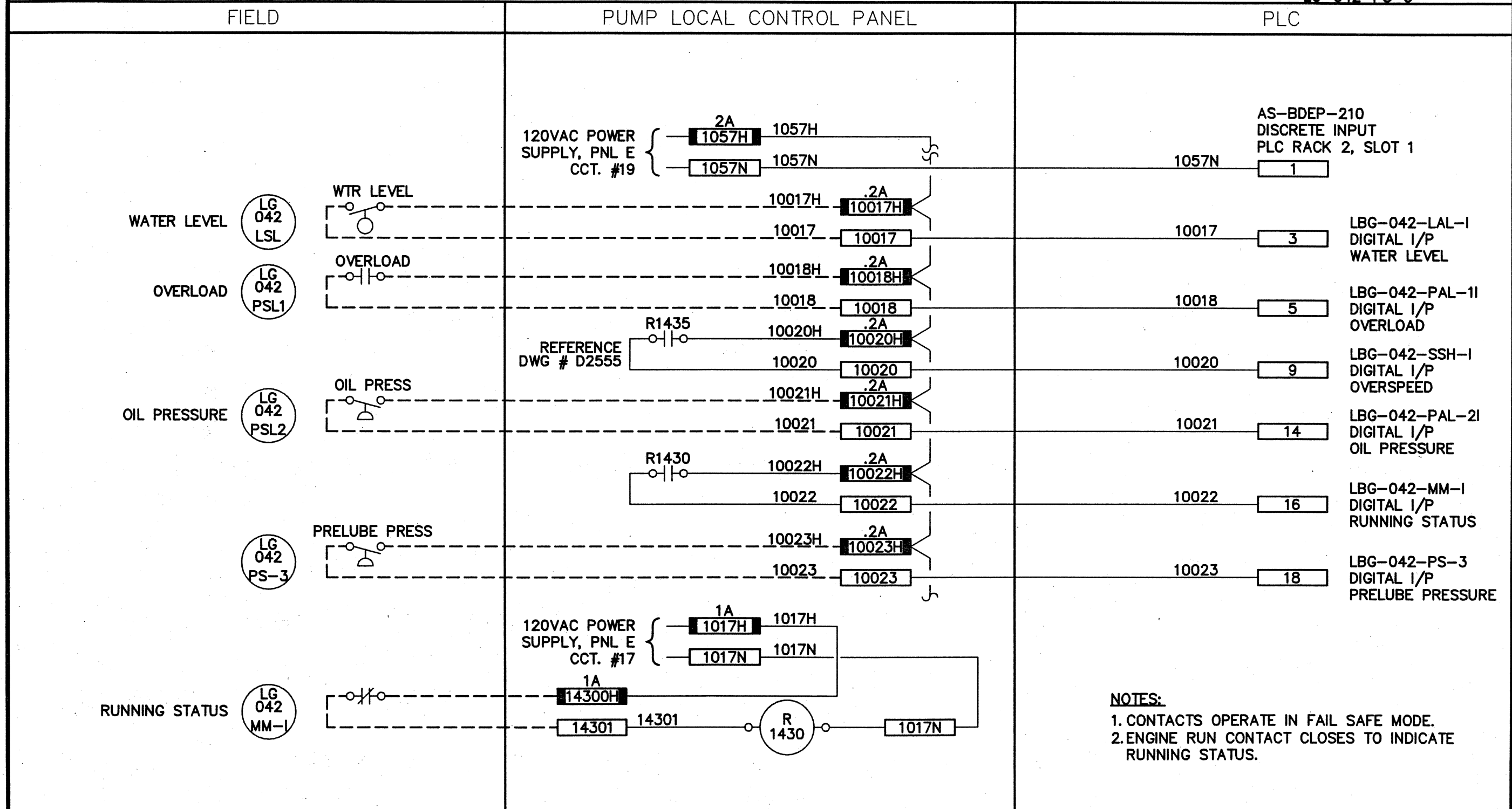





Appendix F

Electrical Reference Drawings

INSTRUMENT LOOP DIAGRAM LOOP NO.

LG-042-LS-1 LG-042-PSL-2
 LG-042-PSL-1 LG-042-MM-1
 LG-042-PS-3



NOTE:			JOB NO. 3153 FILENAME D2552	 THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION	SCALE _____ DATE 94.07.29 DES PL DWN LFB CKD DN APP LK																		
				MacLEAN REGIONAL PUMPING STATION – LCP22 GAS PUMP #22 ENGINE DRIVE (SHT. 2 OF 4)	DRAWING NO. D-2552																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>APP.</th> </tr> </thead> <tbody> <tr> <td>97.02.03</td> <td>2 RCPL RECORD DRAWING</td> <td>PS</td> </tr> </tbody> </table>	DATE	REVISION	APP.	97.02.03	2 RCPL RECORD DRAWING	PS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>APP.</th> </tr> </thead> <tbody> <tr> <td>95.07.11</td> <td>1 AS-BUILT</td> <td>PL</td> </tr> <tr> <td>94.08.12</td> <td>0 ISSUED FOR CONST.</td> <td>PL</td> </tr> <tr> <td>94.07.29</td> <td>A ISSUED FOR APPROVAL</td> <td>PL</td> </tr> </tbody> </table>	DATE	REVISION	APP.	95.07.11	1 AS-BUILT	PL	94.08.12	0 ISSUED FOR CONST.	PL	94.07.29	A ISSUED FOR APPROVAL	PL			
DATE	REVISION	APP.																					
97.02.03	2 RCPL RECORD DRAWING	PS																					
DATE	REVISION	APP.																					
95.07.11	1 AS-BUILT	PL																					
94.08.12	0 ISSUED FOR CONST.	PL																					
94.07.29	A ISSUED FOR APPROVAL	PL																					

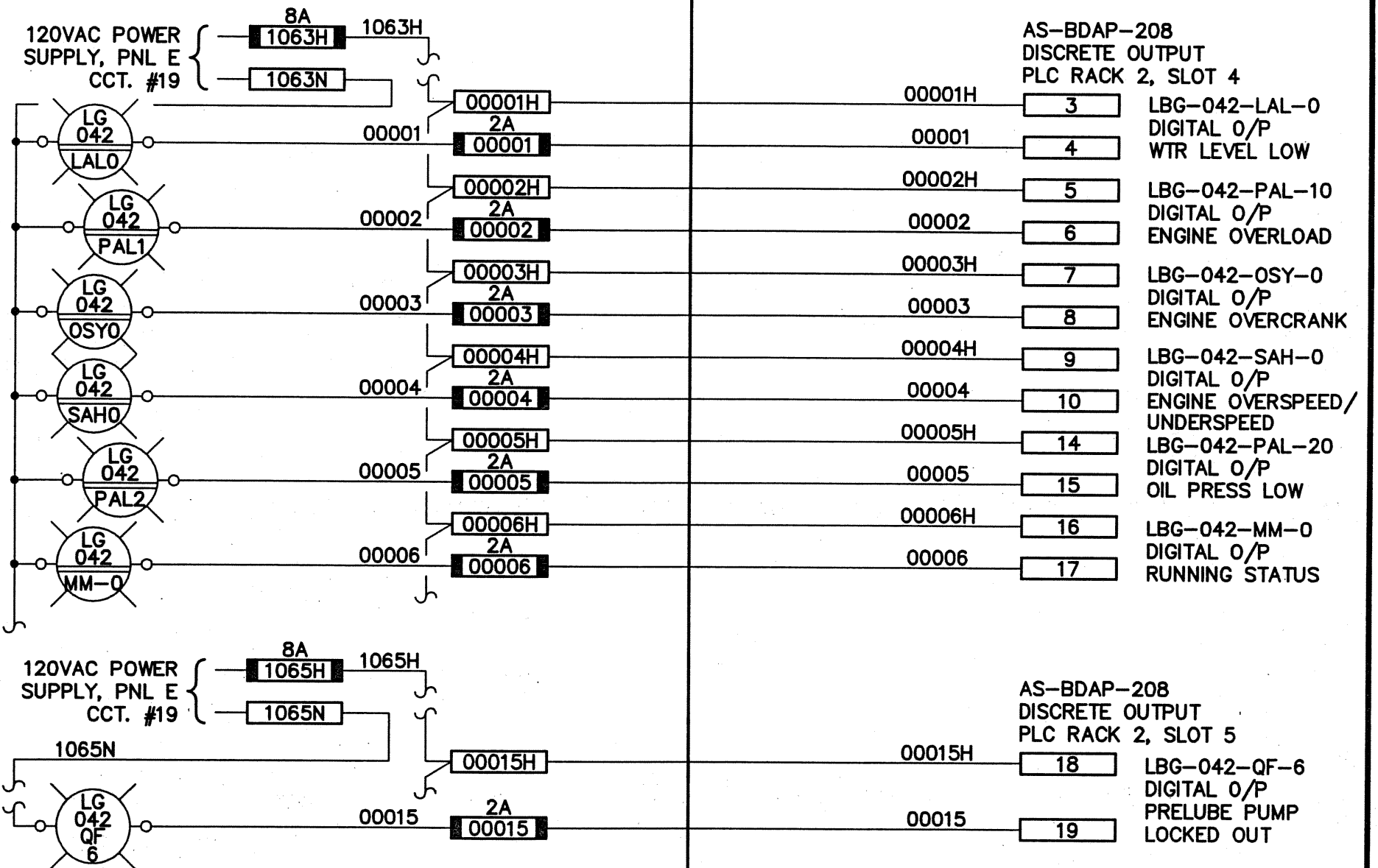
INSTRUMENT LOOP DIAGRAM

LOOP NO. **LG-042-LAL-0** **LG-042-SAH-0** **LG-042-QF-6**
LG-042-PAL1 **LG-042-PAL2**
LG-042-OSY-0 **LG-042-MM-0**

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

1. "ENG RUNNING" STATUS ● MacLEAN IS PROVIDED BY THE "CRANK SPEED SWITCH" (MOMENTARY CONTACT)

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JOB NO. 3153
 FILENAME D2553



THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

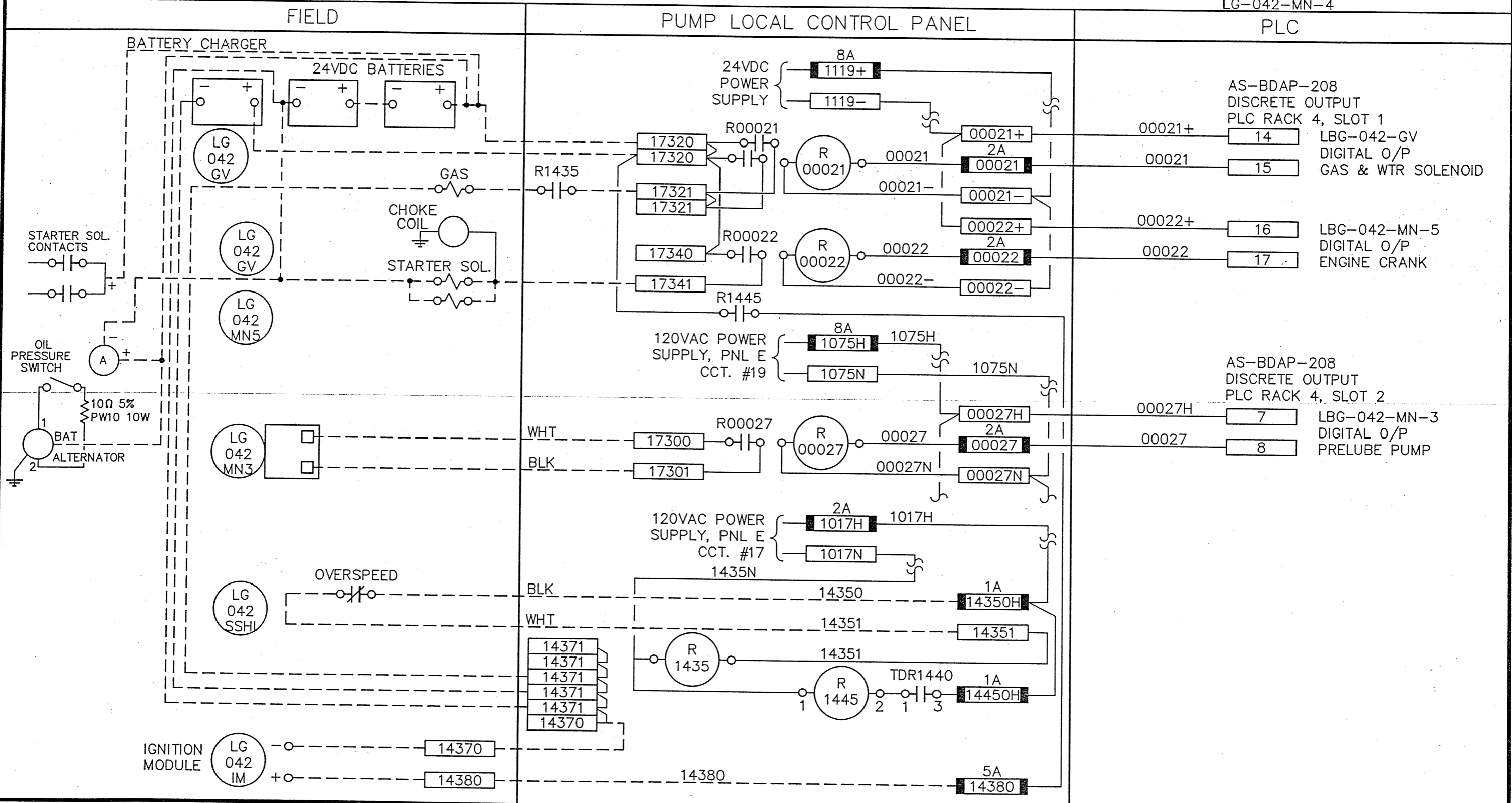
DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1		AS-BUILT		PL
94.08.12	0		ISSUED FOR CONST.		PL
94.07.29	A		ISSUED FOR APPROVAL		PL
97.02.03	2		RCPL RECORD DRAWING		PS

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 ENGINE DRIVE (SHT. 3 OF 4)

DRAWING NO.
D-2553

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-GV LG-042-MN-5
 LG-042-MN-3 LG-042-SSHI
 LG-042-MN-4



NOTE:

- "ENG RUNNING" STATUS @ MacLEAN IS PROVIDED BY THE "CRANK SPEED SWITCH" (MOMENTARY CONTACT)
- TDR1440 - REFER TO DWG. D-2555
- R 1445 - 2 POLE 30AMP 120VAC COIL RELAY

Reid Crowther Consulting Engineers			
00.10.20	3	REVISED TO DATE	WKT
97.02.03	2	RCPL RECORD DRAWING	PS
DATE	REVISION	APP.	

kenonic controls ltd. Calgary, Alberta		JOB NO. 3153
		FILENAME D2554
95.07.11	1	AS-BUILT PL
94.08.12	0	ISSUED FOR CONST. PL
94.07.29	A	ISSUED FOR APPROVAL PL
DATE	REVISION	APP.

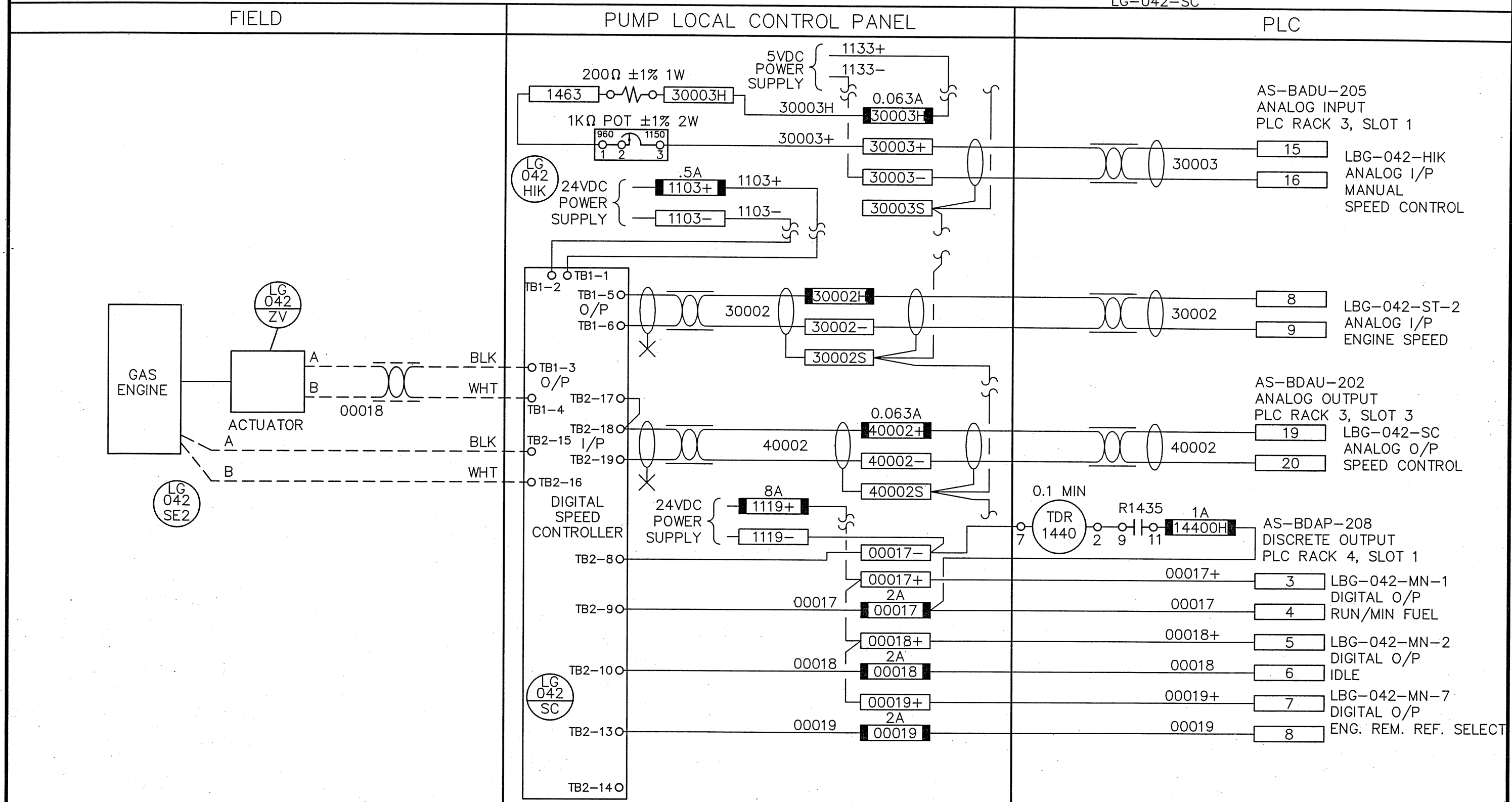
THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

MacLEAN REGIONAL PUMPING STATION - LCP22
 GAS PUMP #22 ENGINE DRIVE (SHT. 4 OF 4)

SCALE	
DATE	94.07.29
DES	PL DWN LFB
CKD	DN APP LK
DRAWING NO.	D-2554

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-HIK LG-042-ZV
LG-042-SE-2
LG-042-SC



NOTE:
1. R1435 - REFER TO DWG. D-2554
2. TDR1440 - OMRON H3CR-H POWER OFF DELAY TIMER

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FILENAME D2555

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REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1	AS-BUILT			PL
00.10.30	3	REVISED TO DATE	94.08.12	0	ISSUED FOR CONST. PL
97.02.03	2	RCPL RECORD DRAWING	94.07.29	A	ISSUED FOR APPROVAL PL

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 DIGITAL SPEED CONTROL
(SHT. 1 OF 2)

DRAWING NO.
D-2555

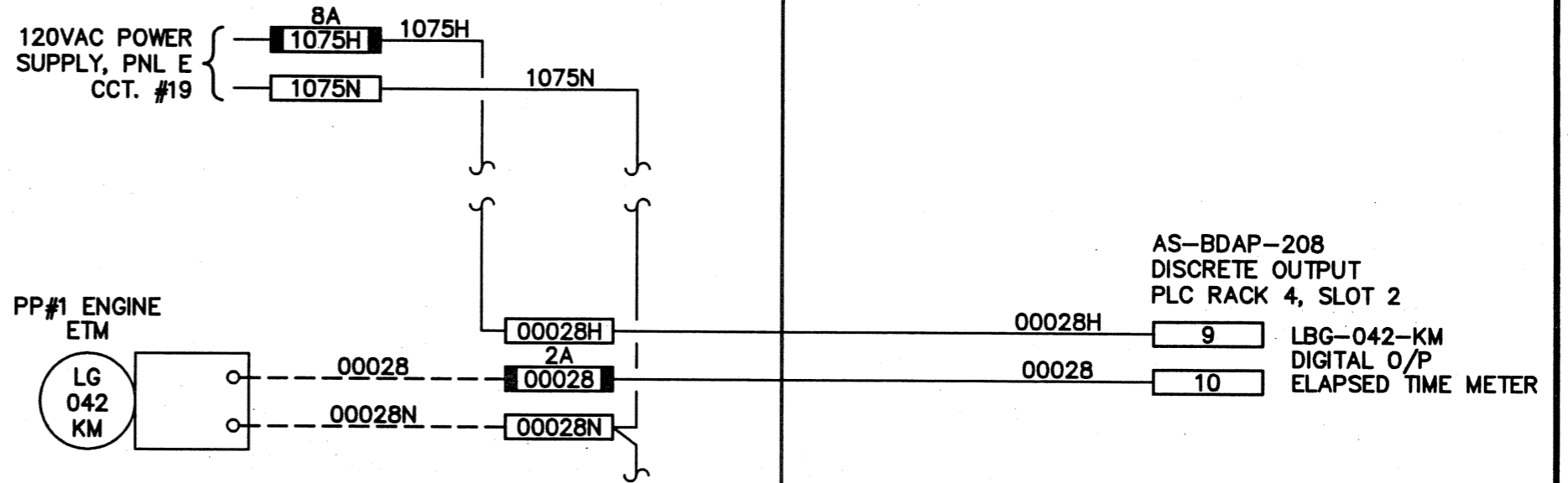
INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-KM

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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JOB NO. 3153
FILENAME D2557



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1			AS-BUILT	PL
94.08.12	0			ISSUED FOR CONST.	PL
97.02.03	2	RCPL RECORD DRAWING	94.07.29	A	ISSUED FOR APPROVAL

MacLEAN REGIONAL PUMPING STATION - LCP22
PUMP #22 ELAPSED TIME METER

DRAWING NO.
D-2557

INSTRUMENT LOOP DIAGRAM

LOOP NO.

LBG-042-QF-2

FIELD

PUMP LOCAL CONTROL PANEL

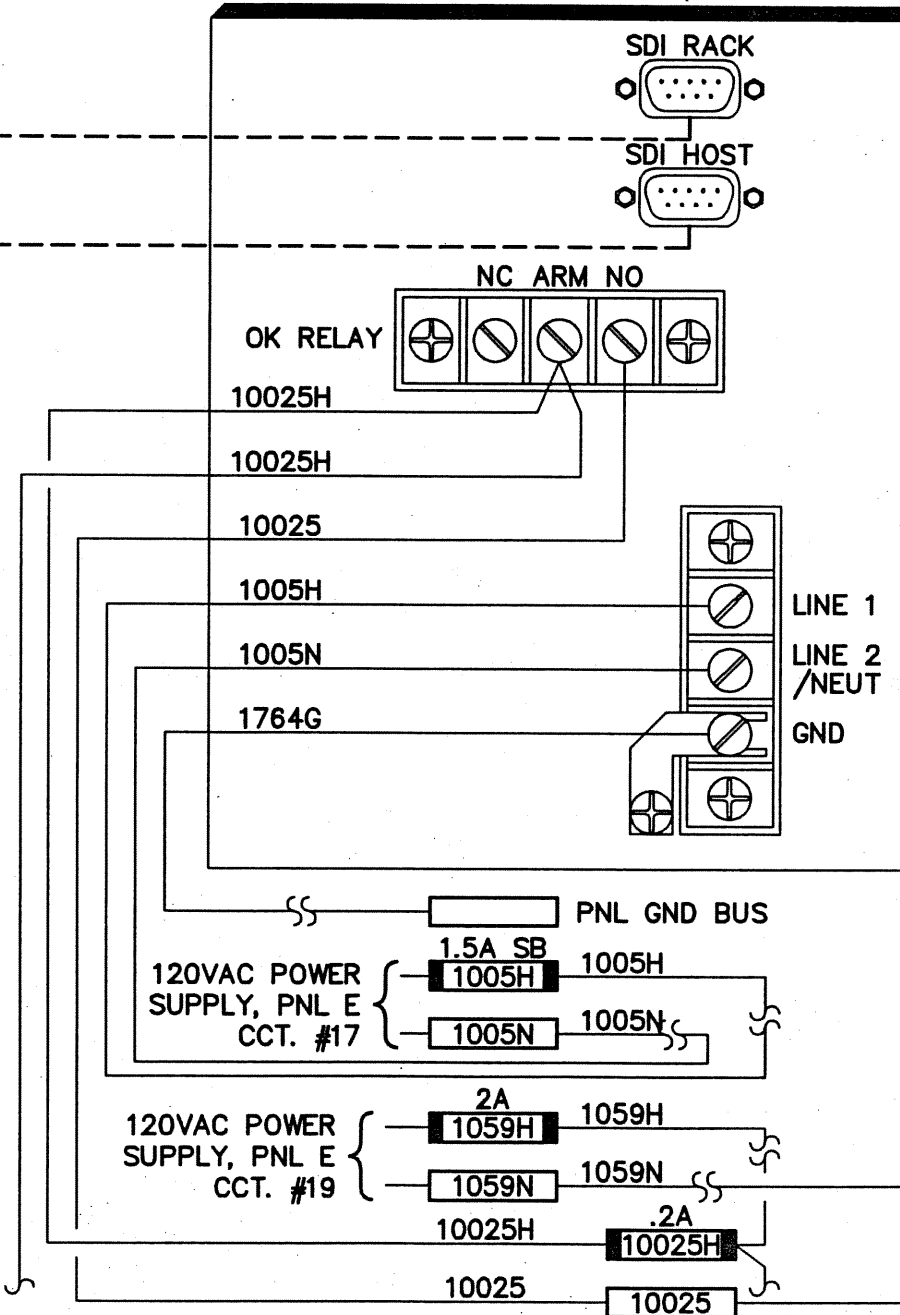
PLC

RS-422
TO NEXT RACK

RS-422
FROM HOST
(OR PREVIOUS RACK)

BENTLY NEVADA
RACK POSITION 1
3300/12

BENTLY NEVADA
RACK POSITION 2
3300/03



AS-BDEP-210
DISCRETE INPUT
PLC RACK 2, SLOT 2

1059N

1

LBG-042-QF-2
DIGITAL I/P
MONITOR FAIL

10025

3

CONT'D ON
D2559

NOTE:

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JOB NO. 3153
FILENAME D2558



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1		AS-BUILT		PL
94.08.12	0		ISSUED FOR CONST.		PL
97.02.03	2	RCPL RECORD DRAWING	PS	94.07.29	A

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 TEMP / VIB MONITOR (SHT 1 OF 6)

DRAWING NO.
D-2558

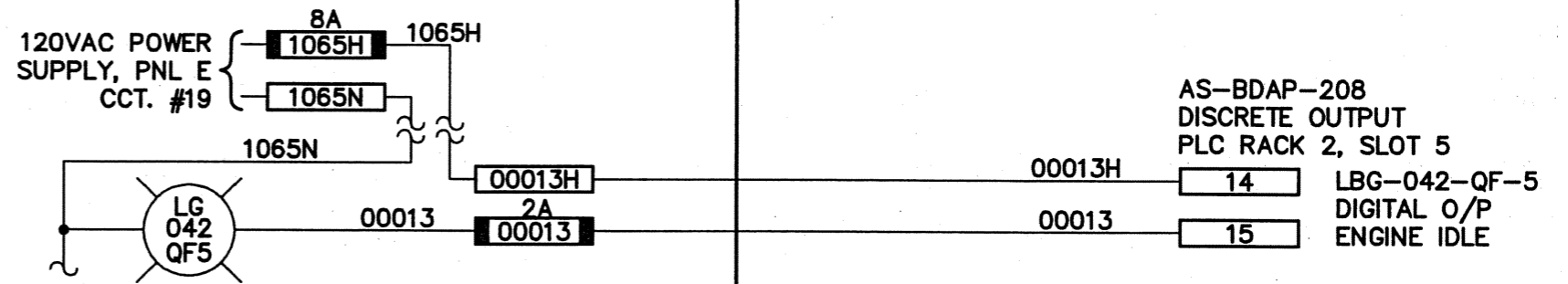
INSTRUMENT LOOP DIAGRAM

LOOP NO. LE-042-SSL-0
LE-042-QF5

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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JOB NO. 3153
FILENAME D2556

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.28
DES PL DWN LFB
CKD DN APP LK

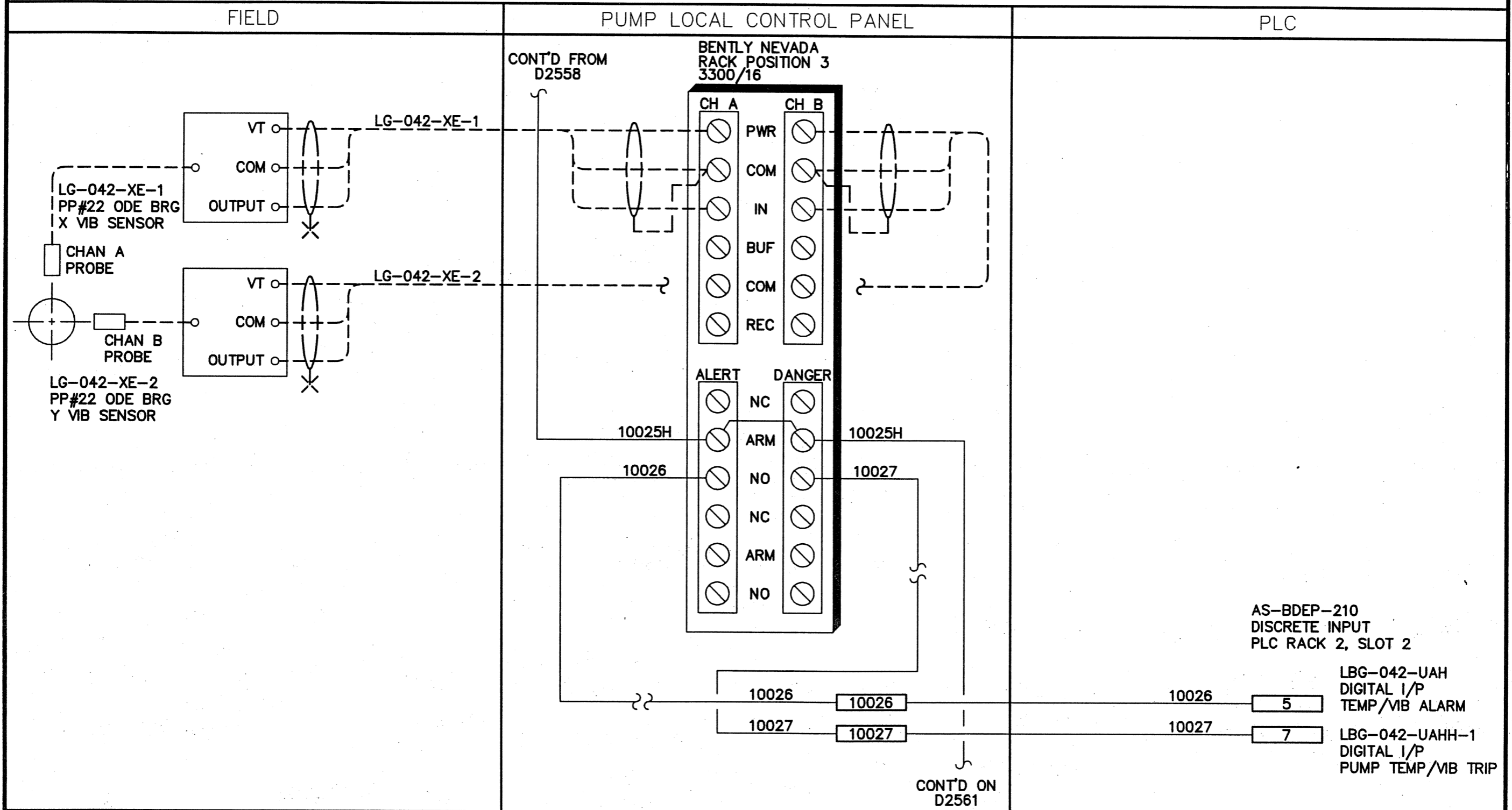
DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1		94.07.28	A	
			94.08.12	0	
97.02.03	2	PS			

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 DIGITAL SPEED CONTROL
(SHEET 2 OF 2)

DRAWING NO.
D-2556

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-XE-1 LAG-042-UAH
LG-042-XE-2 LAG-042-UAHH-1



NOTE:

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JOB NO. 3153
FILENAME D2559



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REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1	AS-BUILT	95.07.11	1	PL
94.08.12	0	ISSUED FOR CONST.	94.08.12	0	PL
97.02.03	2	RCPL RECORD DRAWING PS	94.07.07	2	PL

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 TEMP / VIB MONITOR (SHT. 2 OF 6)

DRAWING NO.
D-2559

INSTRUMENT LOOP DIAGRAM

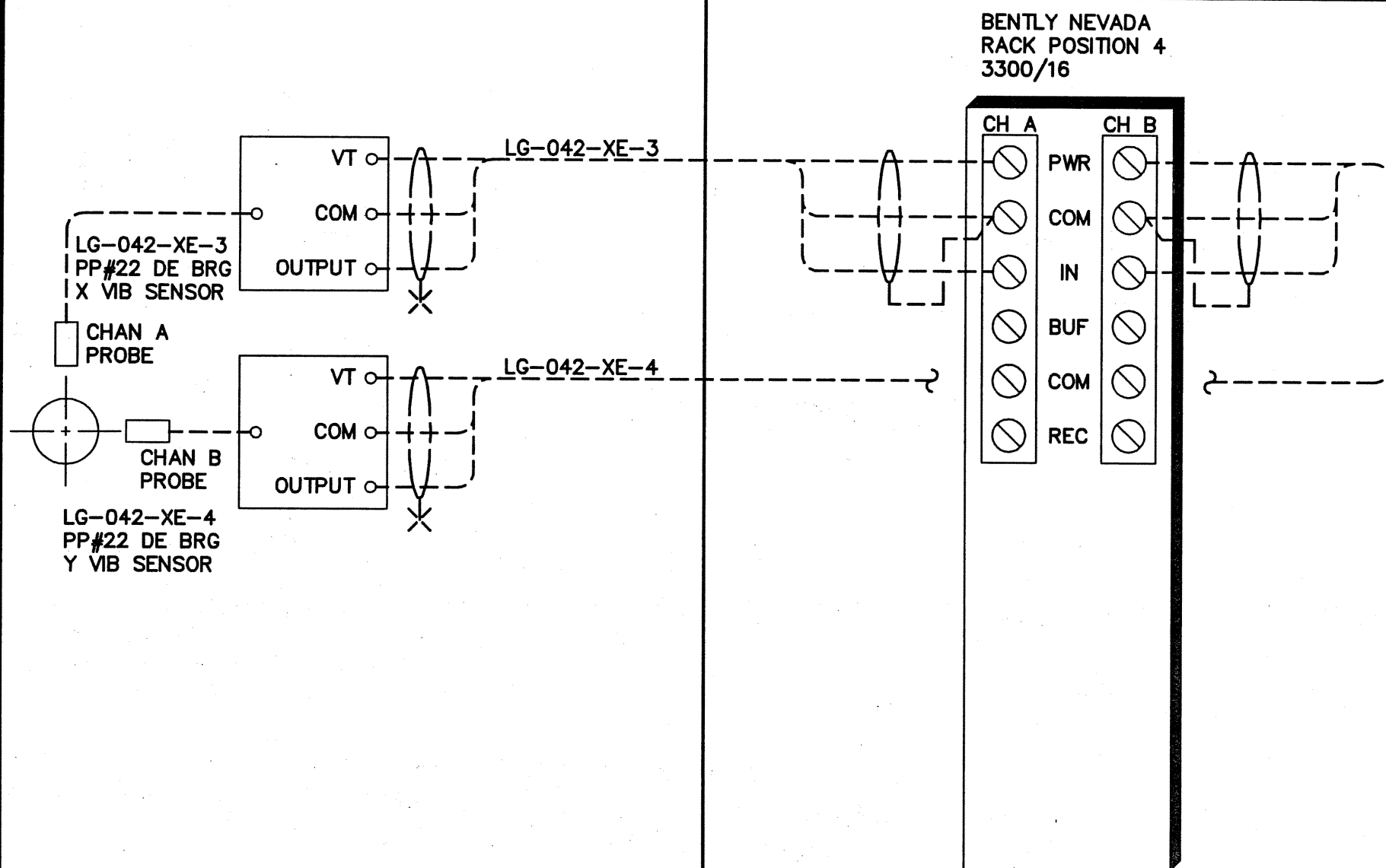
LOOP NO.

LG-042-XE-3
LG-042-XE-4

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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JOB NO. 3153
FILENAME D2560



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
97.02.03	2	RCPL RECORD DRAWING PS	94.07.29	A	ISSUED FOR APPROVAL PL
			94.08.12	0	ISSUED FOR CONST. PL
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MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 TEMP / VIB MONITOR (SHT. 3 OF 6)

DRAWING NO.
D-2560

INSTRUMENT LOOP DIAGRAM

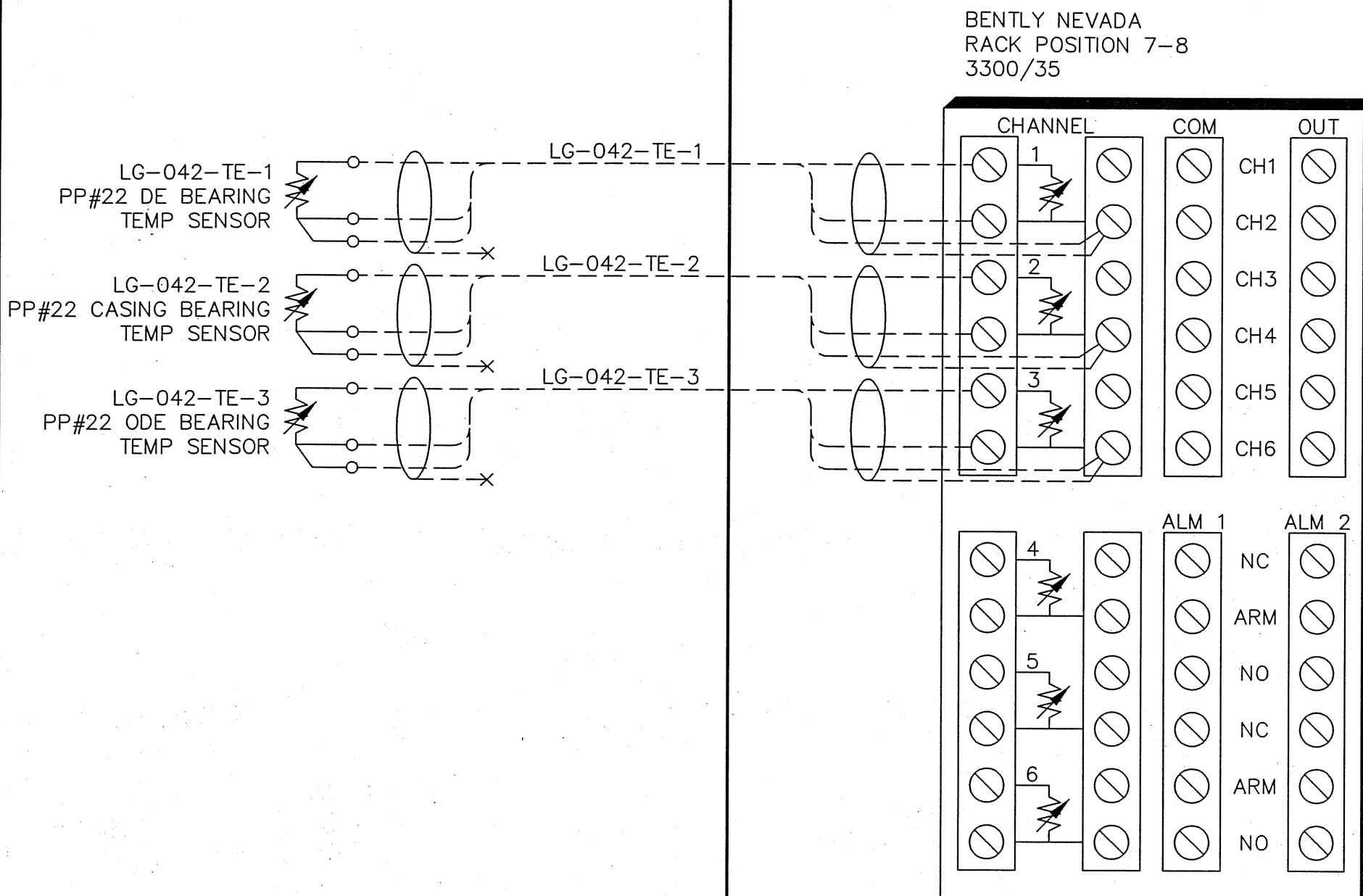
LOOP NO.

LG-042-TE-1
 LG-042-TE-2
 LG-042-TE-3

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:
 1. RED = A
 BLK = B
 WHT = C

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DATE	REVISION	APP.
97.02.03	2 RCPL RECORD DRAWING	PS

kenonic controls ltd.
 Calgary, Alberta

JOB NO. 3153
 FILENAME D2562

DATE	REVISION	APP.
95.07.11	1 AS-BUILT	PL
94.08.12	0 ISSUED FOR CONST.	PL
94.07.29	A ISSUED FOR APPROVAL	PL

THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

MaCLEAN REGIONAL PUMPING STATION - LCP22
 GAS PUMP #22 TEMP / VIB MONITOR (SHT. 5 OF 6)

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DRAWING NO.
 D-2562

INSTRUMENT LOOP DIAGRAM

LOOP NO.

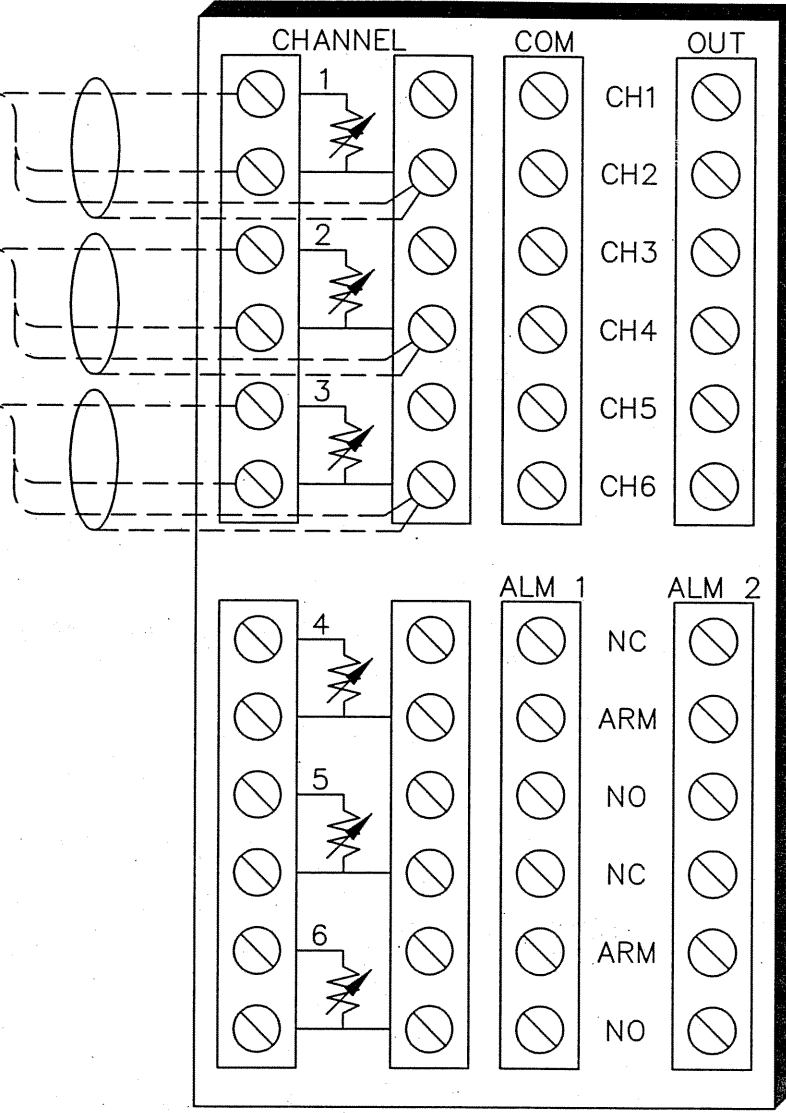
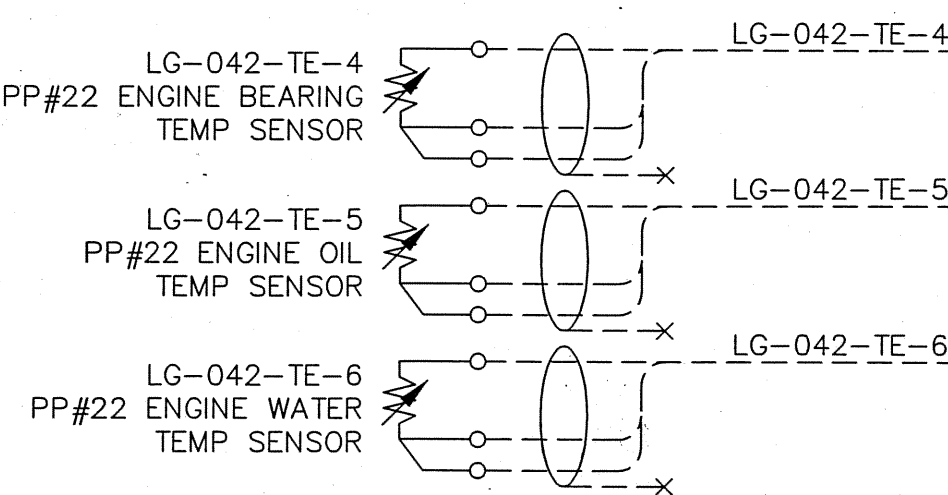
LG-042-TE-4
LG-042-TE-5
LG-042-TE-6

FIELD

PUMP LOCAL CONTROL PANEL

PLC

BENTLY NEVADA
RACK POSITION 9-10
3300/35



NOTE:
1. RED = A
BLK = B
WHT = C

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Consulting Engineers

DATE	REVISION	APP.
97.02.03	2 RCPL RECORD DRAWING	PS

kenonic controls Ltd.
Calgary, Alberta

DATE	REVISION	APP.
95.07.11	1 AS-BUILT	PL
94.08.12	0 ISSUED FOR CONST.	PL
94.07.29	A ISSUED FOR APPROVAL	PL

JOB NO. 3153
FILENAME D2563

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

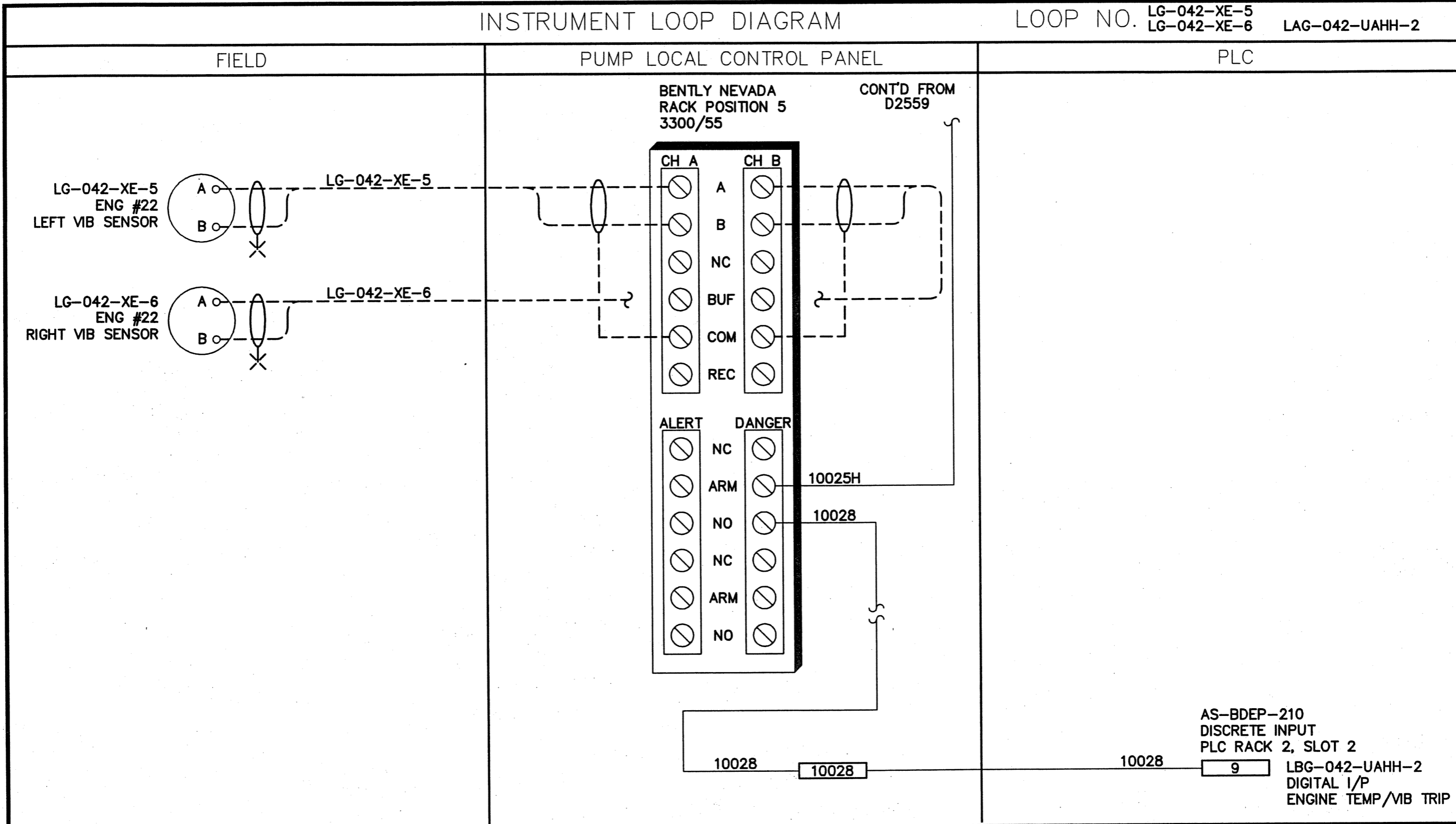
MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 TEMP / VIB MONITOR (SHT. 6 OF 6)

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DRAWING NO.
D-2563

INSTRUMENT LOOP DIAGRAM

LOOP NO. **LG-042-XE-5**
LG-042-XE-6 **LAG-042-UAHH-2**



AS-BDEP-210
DISCRETE INPUT
PLC RACK 2, SLOT 2
LBG-042-UAHH-2
DIGITAL I/P
ENGINE TEMP/VIB TRIP

NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2561

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

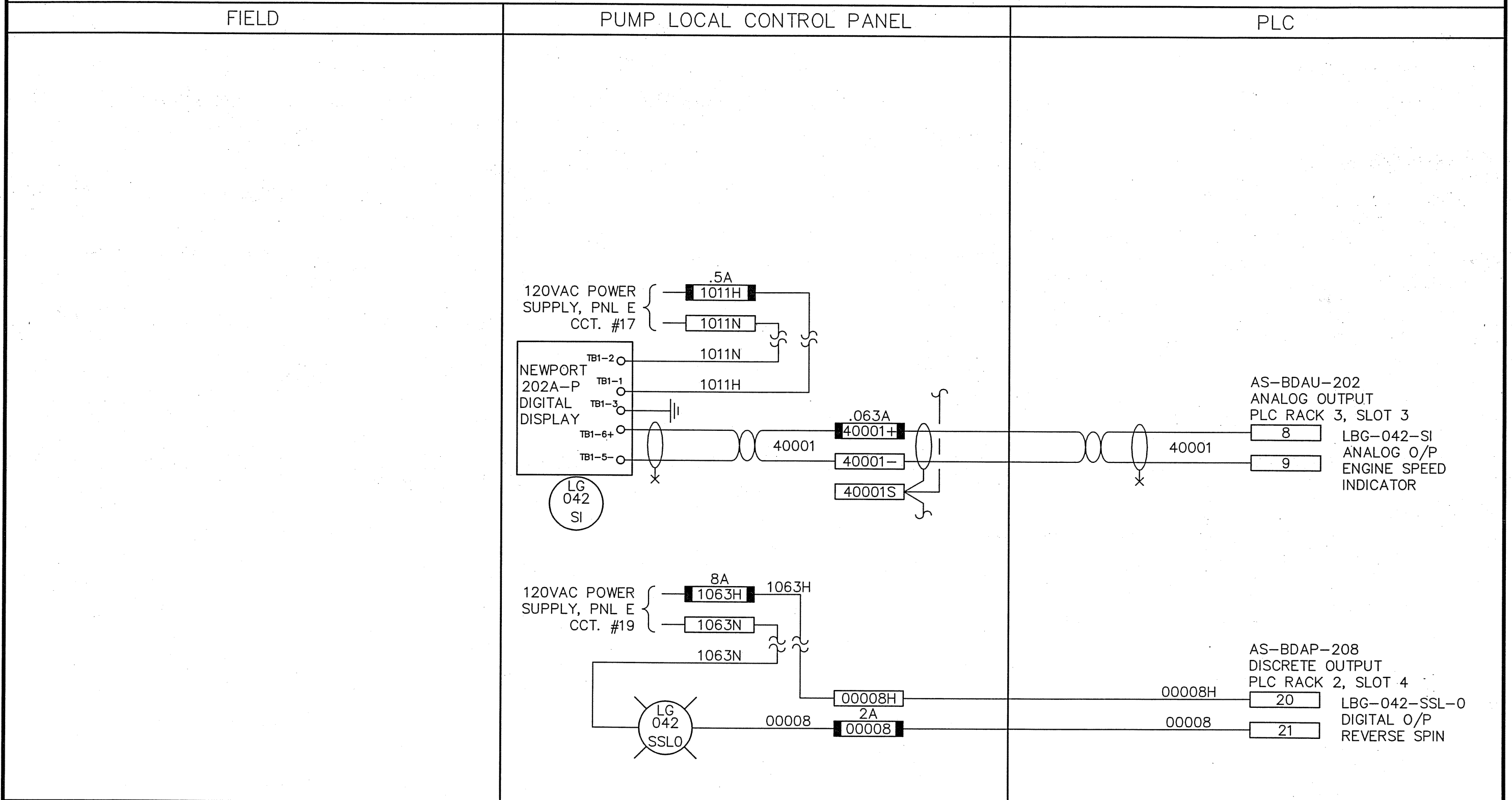
DATE	REVISION	APP.	DATE	REVISION	APP.
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94.08.12	0		94.08.12	0	ISSUED FOR CONST.
97.02.03	2	RCPL RECORD DRAWING	94.07.29	A	ISSUED FOR APPROVAL

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 TEMP / VIB MONITOR (SHT. 4 OF 6)

DRAWING NO.
D-2561

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-SLL-0
LG-042-SI

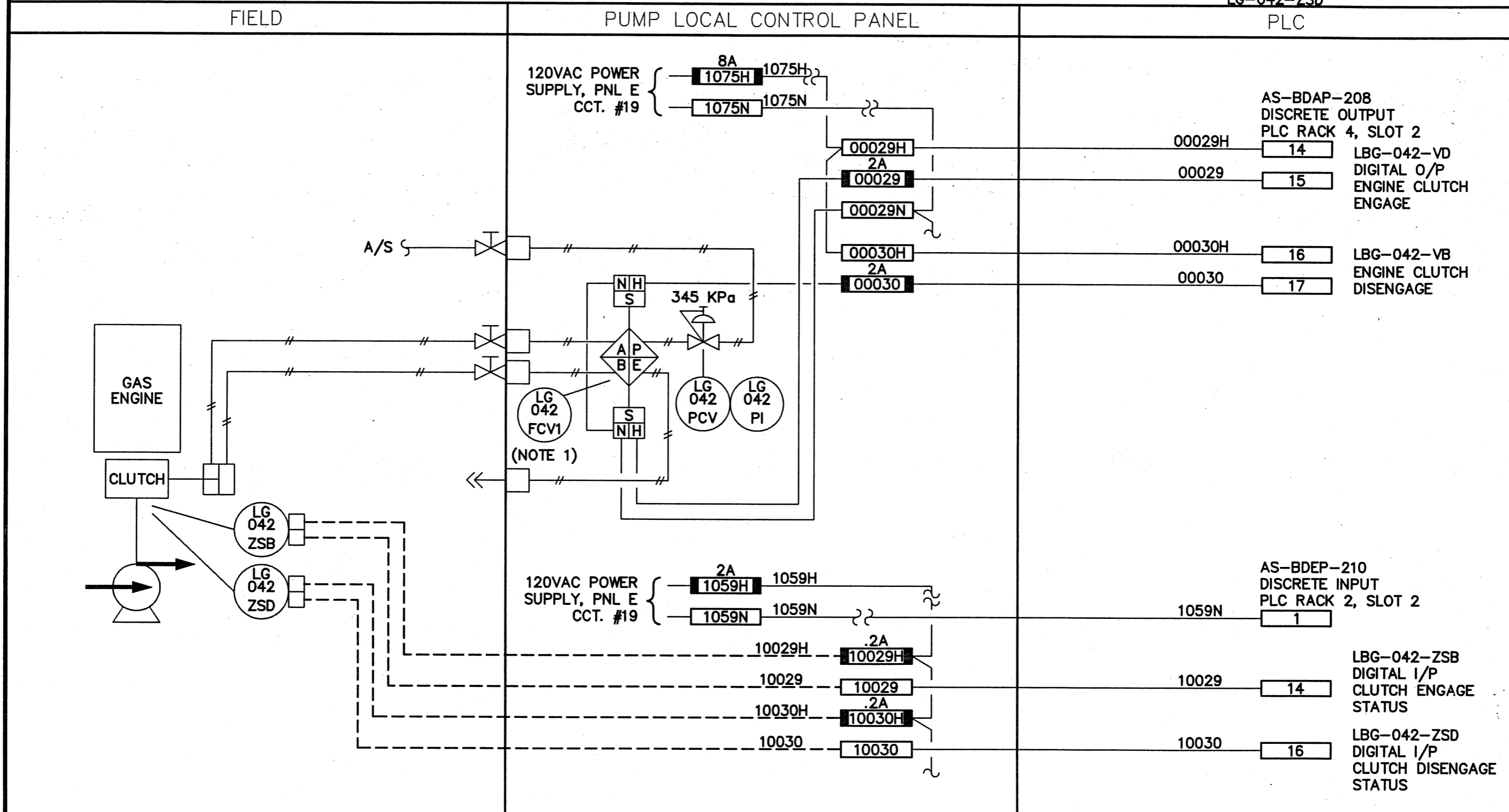


NOTE:	Reid Crowther Consulting Engineers		kenonic controls ltd. Calgary, Alberta		JOB NO. 3153 FILENAME D2565	THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION	SCALE _____		
	00.06.29	3	REVISD TO DATE	GMZ	94.08.12		0	ISSUED FOR CONST.	PL
97.02.03	2	RCPL RECORD DRAWING	PS	94.07.29	A	ISSUED FOR APPROVAL	PL	DES PL DWN LFB CKD DN APP LK	
DATE		REVISION	APP.	DATE		REVISION	APP.		DRAWING NO. D-2565

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 SPEED MONIT. LOOP (SHT. 2 OF 2)

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-PCV LG-042-FCV-1
LG-042-ZSB LG-042-FCV-2
LG-042-ZSD



NOTE:
1. CLUTCH SHALL DISENGAGE WHEN SOLENOID VALVE DE-ENERGIZES.

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THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

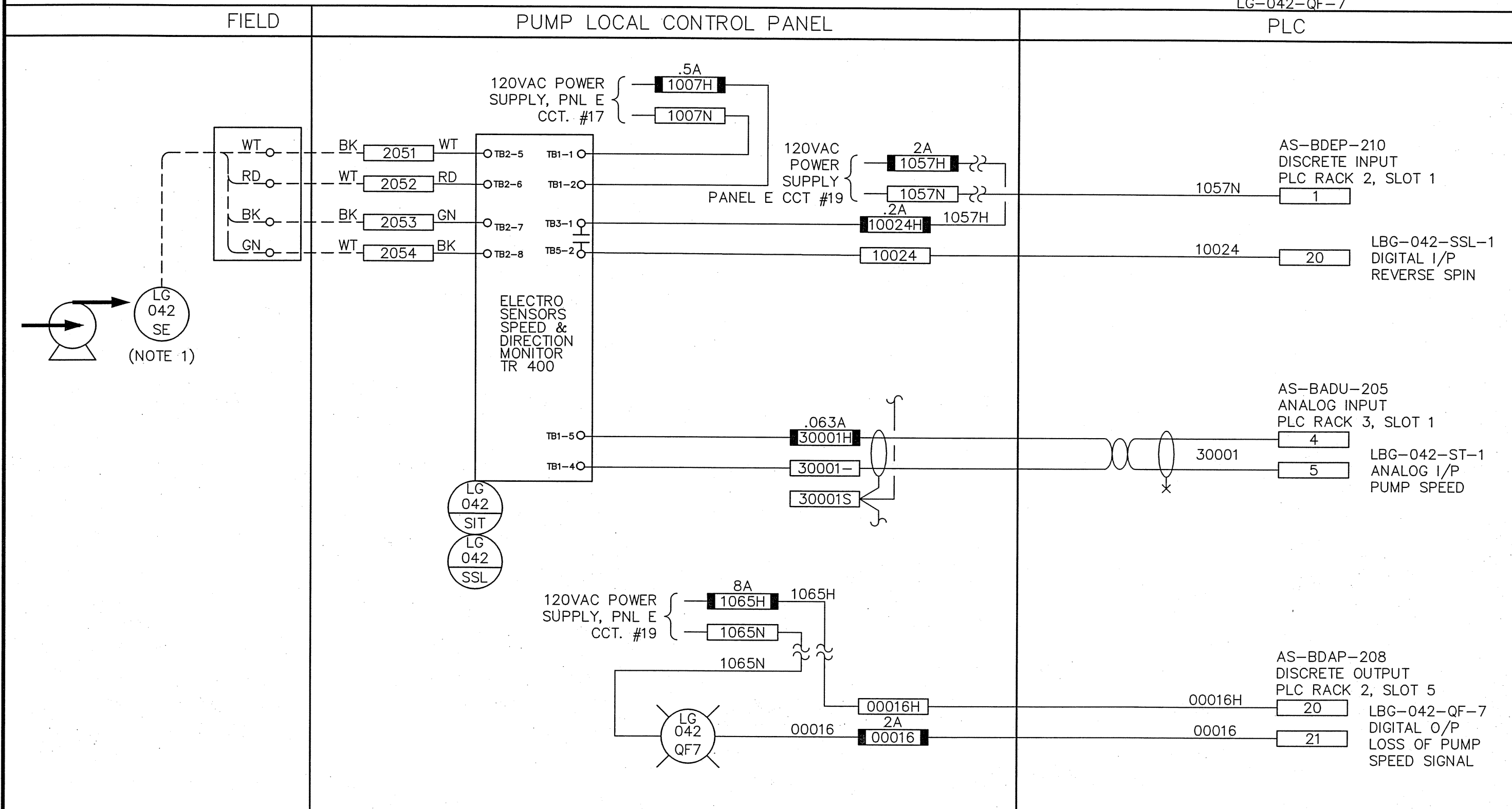
DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1				
94.08.12	0				
97.02.03	2				

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 ENGINE CLUTCH CONTROL

DRAWING NO.
D-2566

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-042-SSL-1 LG-042-SSL
 LG-042-SE LG-042-SIT
 LG-042-QF-7



NOTE:
 1. SPEED ELEMENT CONSISTS OF ONE MAGNETIC DISK AND ONE TRANSDUCER.

				JOB NO. 3153			
				FILENAME D2564			
00.06.29	4	REVISED TO DATE	GMZ	95.07.11	1	AS-BUILT	PL
99.11.22	3	TR-400 MONITOR ADDED	GMZ	94.08.12	0	ISSUED FOR CONST.	PL
97.02.03	2	RCPL RECORD DRAWING	PS	94.07.29	0	ISSUED FOR APPROVAL	PL
DATE		REVISION	APP.	DATE		REVISION	APP.

THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

MacLEAN REGIONAL PUMPING STATION - LCP22
 GAS PUMP #22 SPEED MONIT. LOOP (SHT. 1 OF 2)

SCALE N.T.S.
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DRAWING NO.
 D-2564

INSTRUMENT LOOP DIAGRAM

LOOP NO. _____

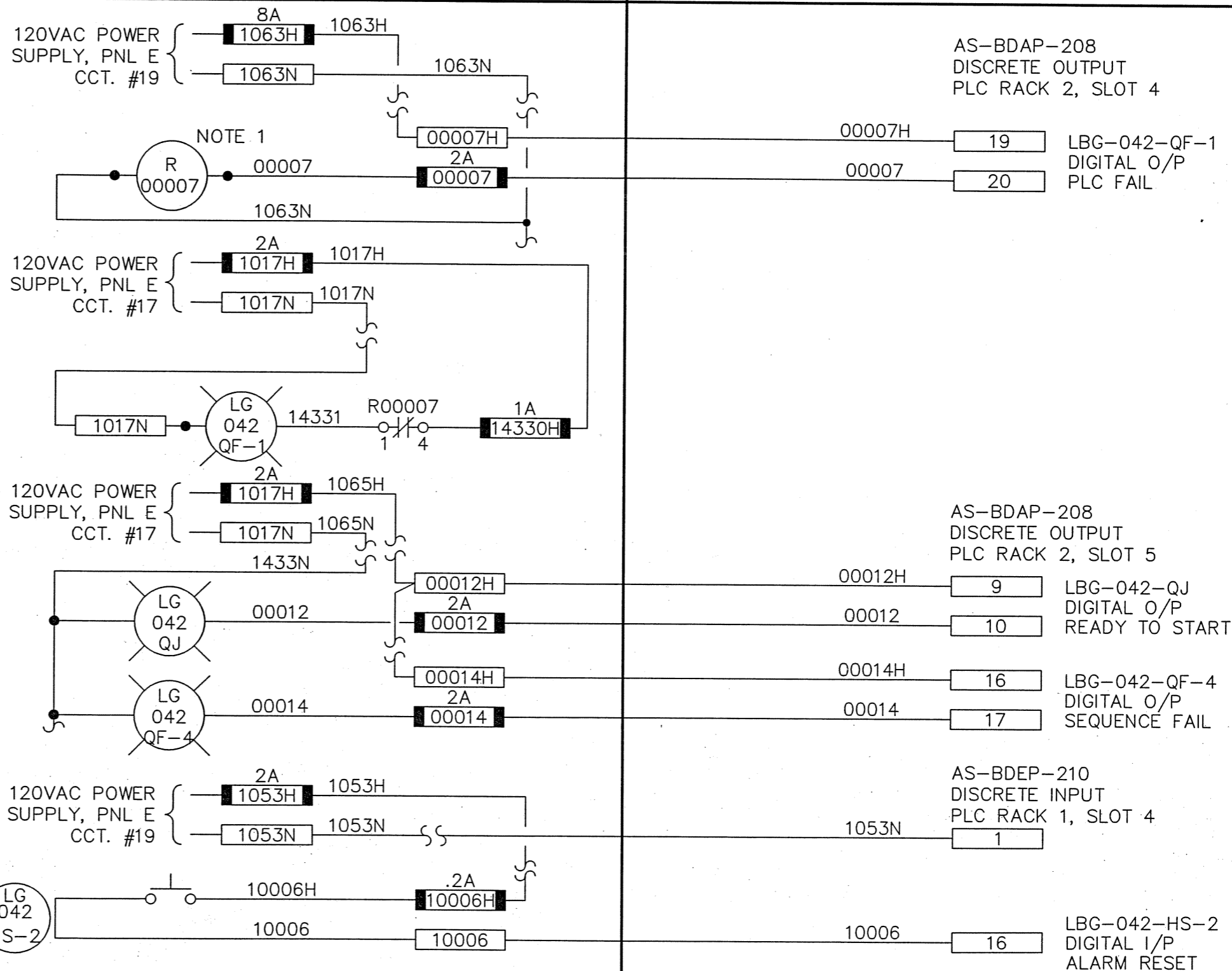
LG-042-HS-2

LG-042-QJ
 LG-042-QF-1
 LG-042-QF-4

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:
 1. PLC FAIL RELAY IS NORMALLY ENERGIZED.

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Calgary, Alberta

JOB NO. 3153
 FILENAME D2567



THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
			95.07.11	1	AS-BUILT PL
			94.08.12	0	ISSUED FOR CONST. PL
97.02.03	2	RCPL RECORD DRAWING PS	94.07.29	A	ISSUED FOR APPROVAL PL

MacLEAN REGIONAL PUMPING STATION - LCP22
 GAS PUMP #22 PLC FAIL / RESET

DRAWING NO.
 D-2567

INSTRUMENT LOOP DIAGRAM

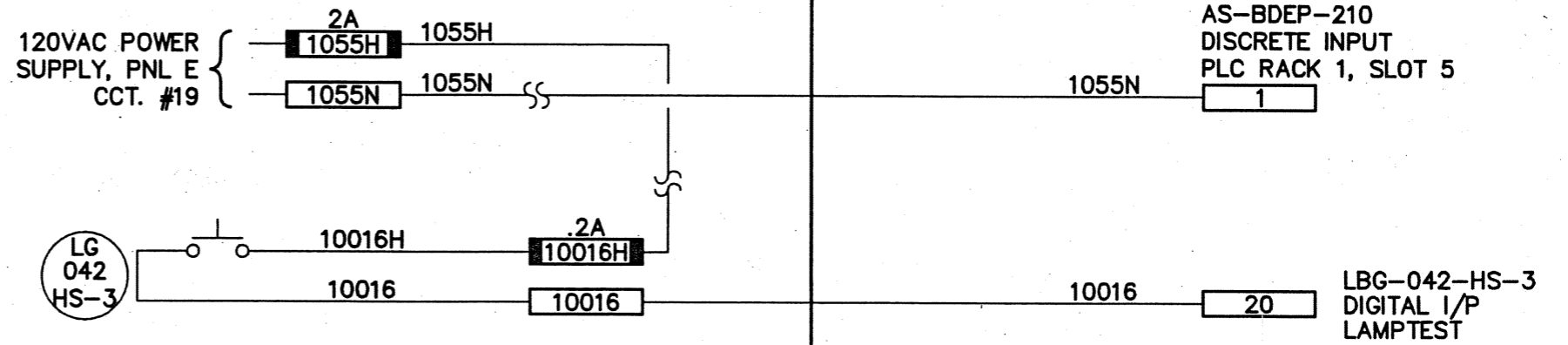
LOOP NO.

LG-042-HS-3

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2568



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

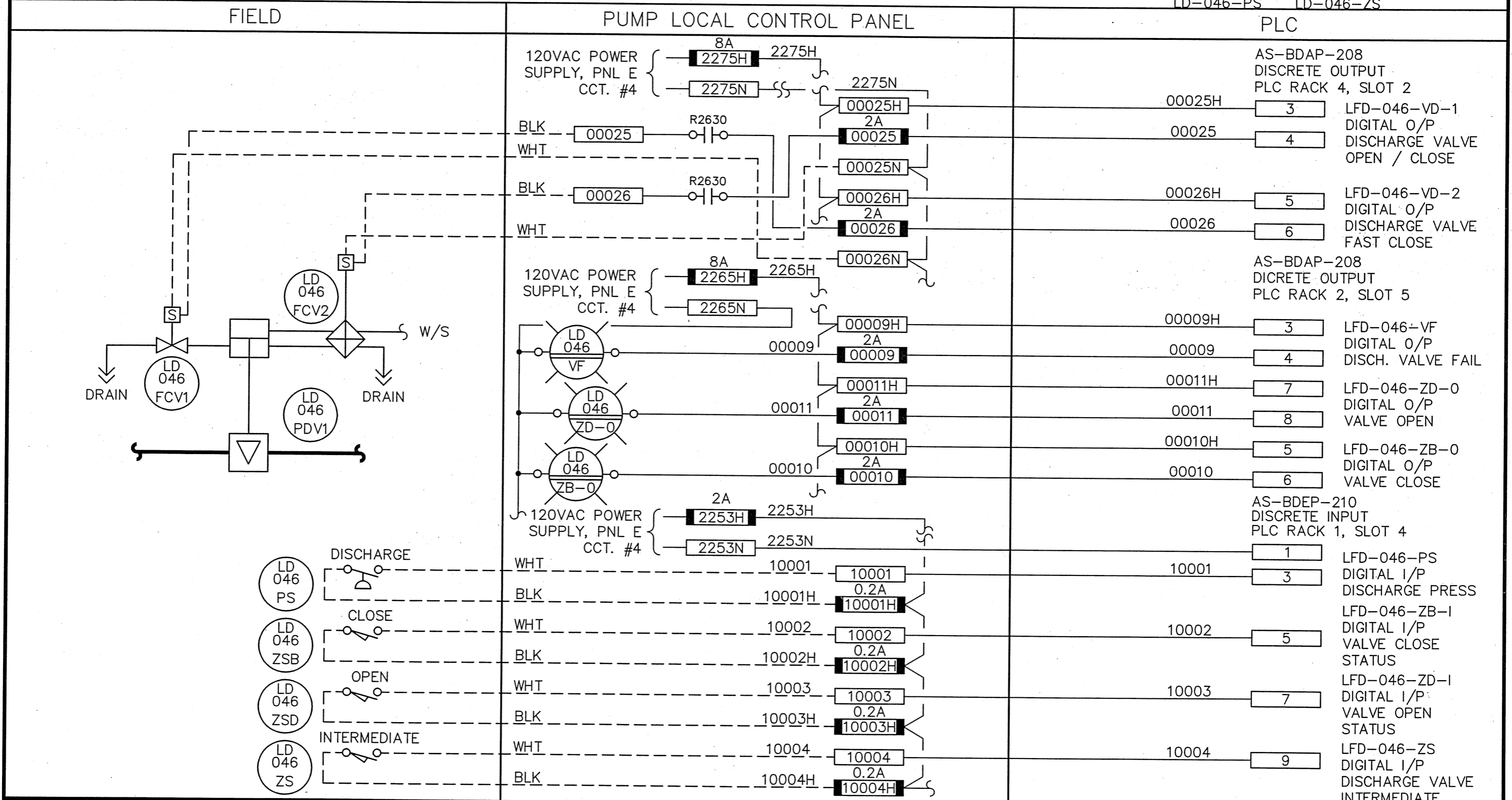
DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1		95.07.11	1	
97.02.03	2	PS	94.07.29	A	PL

MacLEAN REGIONAL PUMPING STATION - LCP22
GAS PUMP #22 LAMPTEST

DRAWING NO.
D-2568

INSTRUMENT LOOP DIAGRAM

LOOP NO. LD-046-FCV-1 LD-046-ZD-0 LD-046-ZSB LD-046-VF
LD-046-FCV-2 LD-046-ZB-0 LD-046-ZSD LD-046-PDV1
LD-046-PS LD-046-ZS



NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2620



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

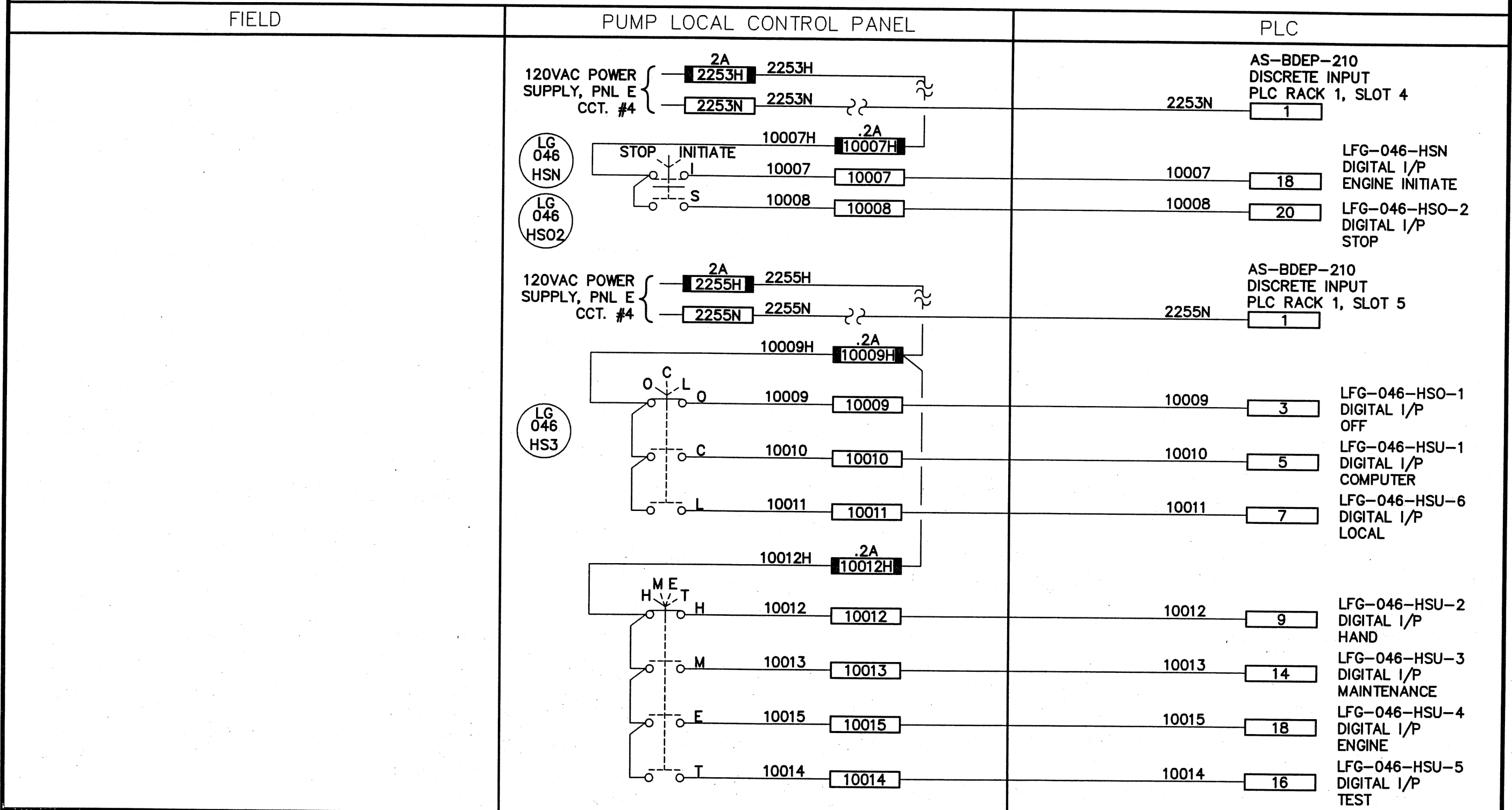
DATE	REVISION	APP.	DATE	REVISION	APP.
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00.06.30	3	GMZ	94.08.12	0	PL
97.02.03	2	PS	94.07.29	A	PL

MacLEAN REGIONAL PUMPING STATION - LCP26
PUMP #26 DISCHARGE VALVE CONTROL/POS. STATUS

DRAWING NO.
D-2620

INSTRUMENT LOOP DIAGRAM

LOOP NO. **LG-046-HSN** **LG-046-HSO-2** **LG-046-HS-3**



NOTE:

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JOB NO. 3153
FILENAME D2621

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

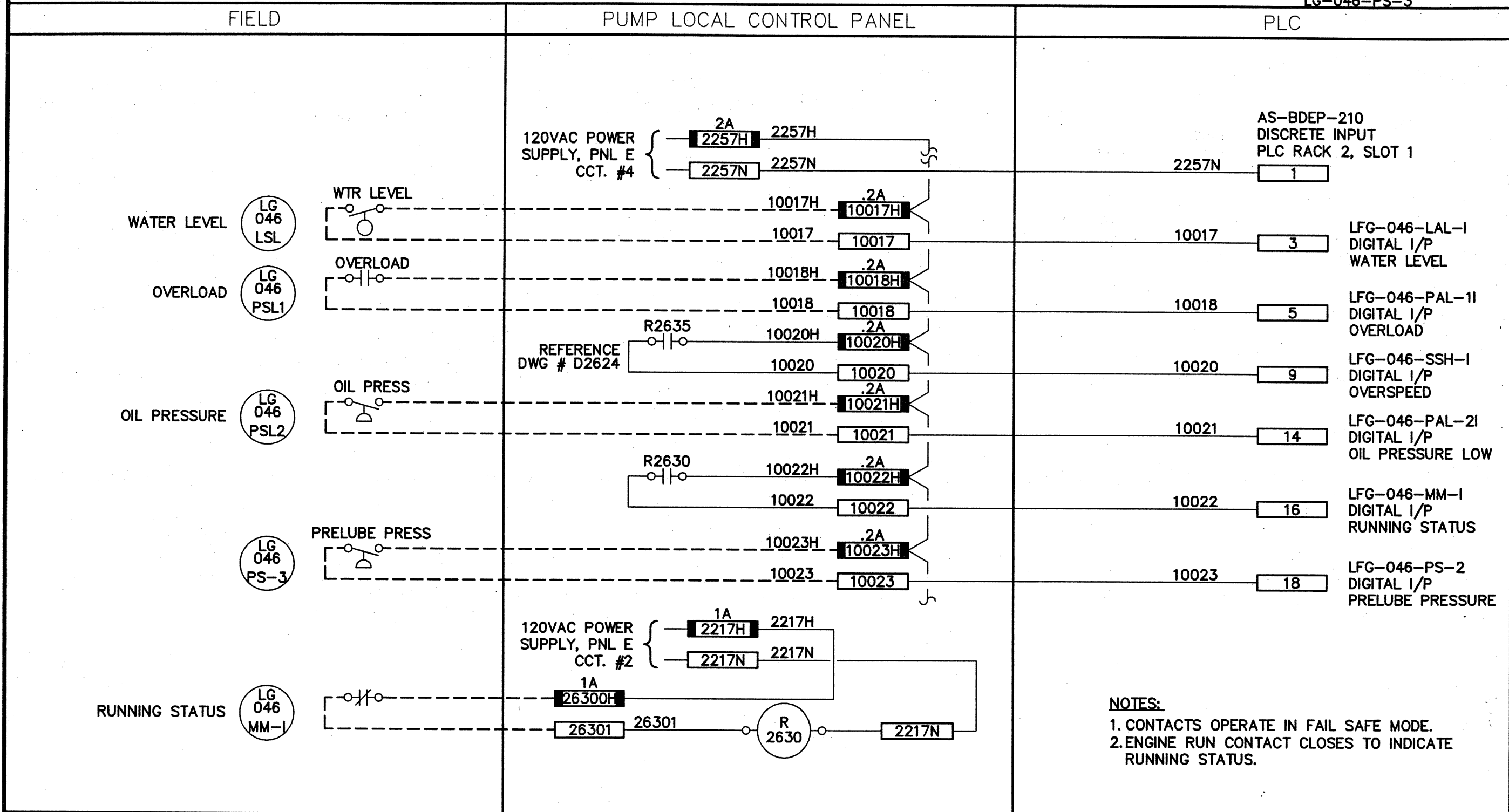
DATE	REVISION	APP.	DATE	REVISION	APP.
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94.08.12	0			ISSUED FOR CONST.	PL
97.02.03	2	RCPL RECORD DRAWING	PS	94.07.29	A
				ISSUED FOR APPROVAL	PL

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 SELECTOR SWITCH (SHT. 1 OF 4)




DRAWING NO.
D-2621

INSTRUMENT LOOP DIAGRAM LOOP NO.

LG-046-LS-1 LG-046-PSL-2
 LG-046-PSL-1 LG-046-MM-1
 LG-046-PS-3

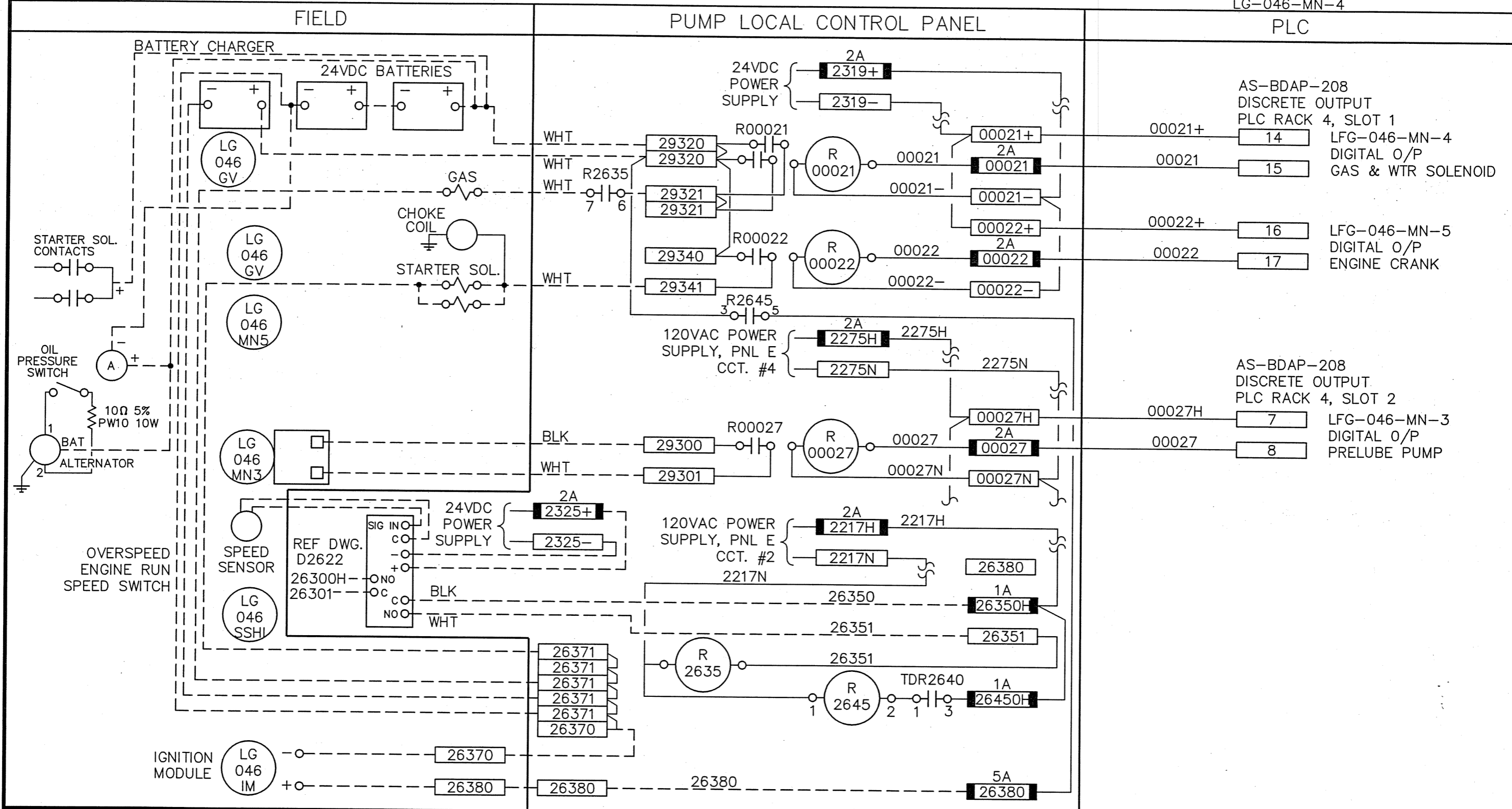


NOTES:
 1. CONTACTS OPERATE IN FAIL SAFE MODE.
 2. ENGINE RUN CONTACT CLOSSES TO INDICATE RUNNING STATUS.

NOTE:			JOB NO. 3153 FILENAME D2622	 THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION	SCALE _____ DATE 94.07.29 DES PL DWN LFB CKD DN APP LK																		
				MacLEAN REGIONAL PUMPING STATION – LCP26 GAS PUMP #26 ENGINE DRIVE (SHT. 2 OF 4)	DRAWING NO. D-2622																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>APP.</th> </tr> </thead> <tbody> <tr> <td>97.02.03</td> <td>2 RCPL RECORD DRAWING</td> <td>PS</td> </tr> </tbody> </table>	DATE	REVISION	APP.	97.02.03	2 RCPL RECORD DRAWING	PS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>APP.</th> </tr> </thead> <tbody> <tr> <td>95.07.11</td> <td>1 AS-BUILT</td> <td>PL</td> </tr> <tr> <td>94.08.12</td> <td>0 ISSUED FOR CONST.</td> <td>PL</td> </tr> <tr> <td>94.07.29</td> <td>A ISSUED FOR APPROVAL</td> <td>PL</td> </tr> </tbody> </table>	DATE	REVISION	APP.	95.07.11	1 AS-BUILT	PL	94.08.12	0 ISSUED FOR CONST.	PL	94.07.29	A ISSUED FOR APPROVAL	PL			
DATE	REVISION	APP.																					
97.02.03	2 RCPL RECORD DRAWING	PS																					
DATE	REVISION	APP.																					
95.07.11	1 AS-BUILT	PL																					
94.08.12	0 ISSUED FOR CONST.	PL																					
94.07.29	A ISSUED FOR APPROVAL	PL																					

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-046-GV LG-046-MN-5
 LG-046-MN-3 LG-046-SSHI
 LG-046-MN-4



NOTE:

1. "ENG RUNNING" STATUS @ MacLEAN IS PROVIDED BY THE "CRANK SPEED SWITCH" (MOMENTARY CONTACT)
2. TDR2640 - REFER TO DWG. D-2625
3. R 2645 - 2 POLE 30AMP 120VAC COIL RELAY

Reid Crowther

Consulting Engineers



Calgary, Alberta

JOB NO. 3153
 FILENAME D2624



THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

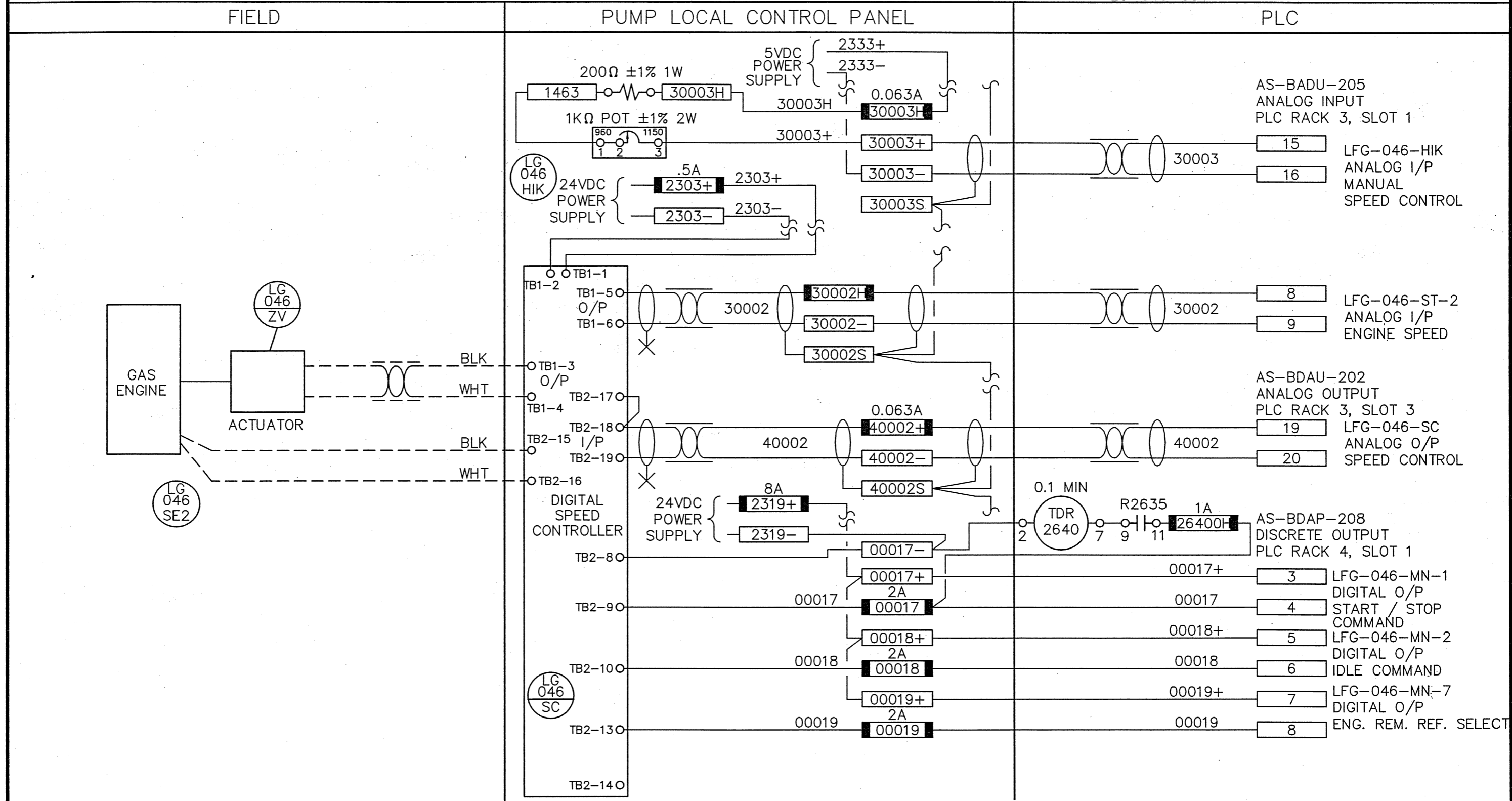
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00.10.30	3	WKT	95.07.11	1	PL
97.02.03	2	PS	94.08.12	0	PL
			94.07.29	A	PL

MacLEAN REGIONAL PUMPING STATION - LCP26
 GAS PUMP #26 ENGINE DRIVE (SHT. 4 OF 4)

DRAWING NO.
 D-2624

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-046-HIK
LG-046-SE-2
LG-046-SC LG-046-ZV



- NOTE:**
- R2635 - REFER TO DWG. D-2624
 - TDR2640 - OMRON H3CR-H POWER OFF DELAY TIMER

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Calgary, Alberta

JOB NO. 3153
FILENAME D2625



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1	AS-BUILT	94.08.12	0	ISSUED FOR CONST.
97.02.03	2	RCPL RECORD DRAWING	94.07.29	A	ISSUED FOR APPROVAL
00.10.30	3	REVISED TO DATE			

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 DIGITAL SPEED CONTROL
(SHT. 1 OF 2)

DRAWING NO.
D-2625

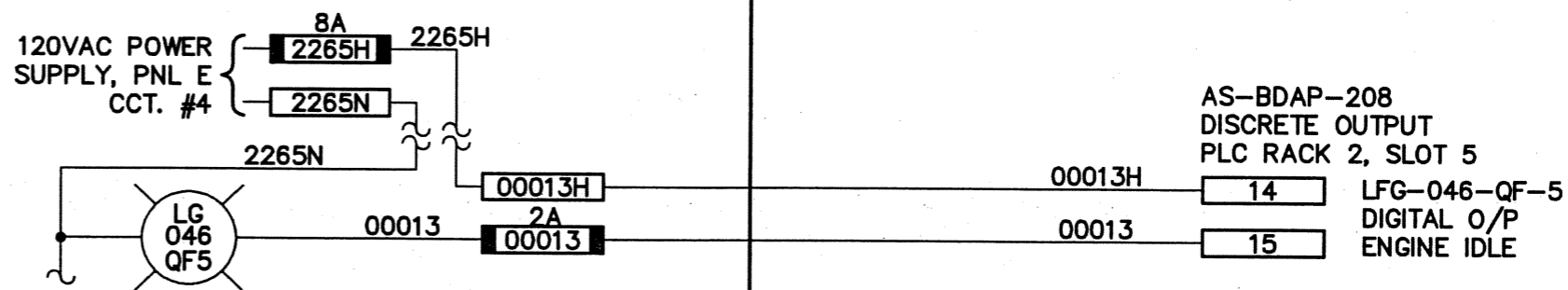
INSTRUMENT LOOP DIAGRAM

LOOP NO. LE-046-SSL-0
LE-046-QF5

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2626



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.28
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
97.02.03	2	RCPL RECORD DRAWING PS	94.07.28	A	ISSUED FOR APPROVAL PL
			94.08.12	0	ISSUED FOR CONST. PL
			95.07.11	1	AS-BUILT PL

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 DIGITAL SPEED CONTROL
(SHEET 2 OF 2)

DRAWING NO.
D-2626

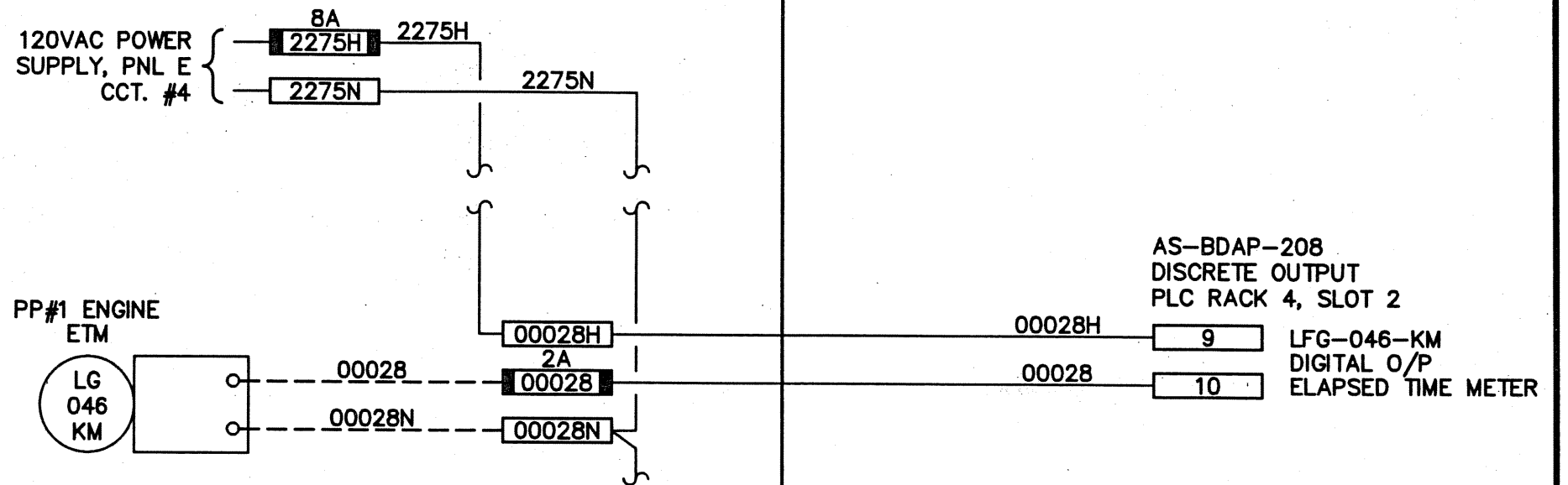
INSTRUMENT LOOP DIAGRAM

LOOP NO. **LG-046-KM**

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2627



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1		94.07.29	A	
97.02.03	2	PS			

MacLEAN REGIONAL PUMPING STATION - LCP22
PUMP #22 ELAPSED TIME METER

DRAWING NO.
D-2627

INSTRUMENT LOOP DIAGRAM

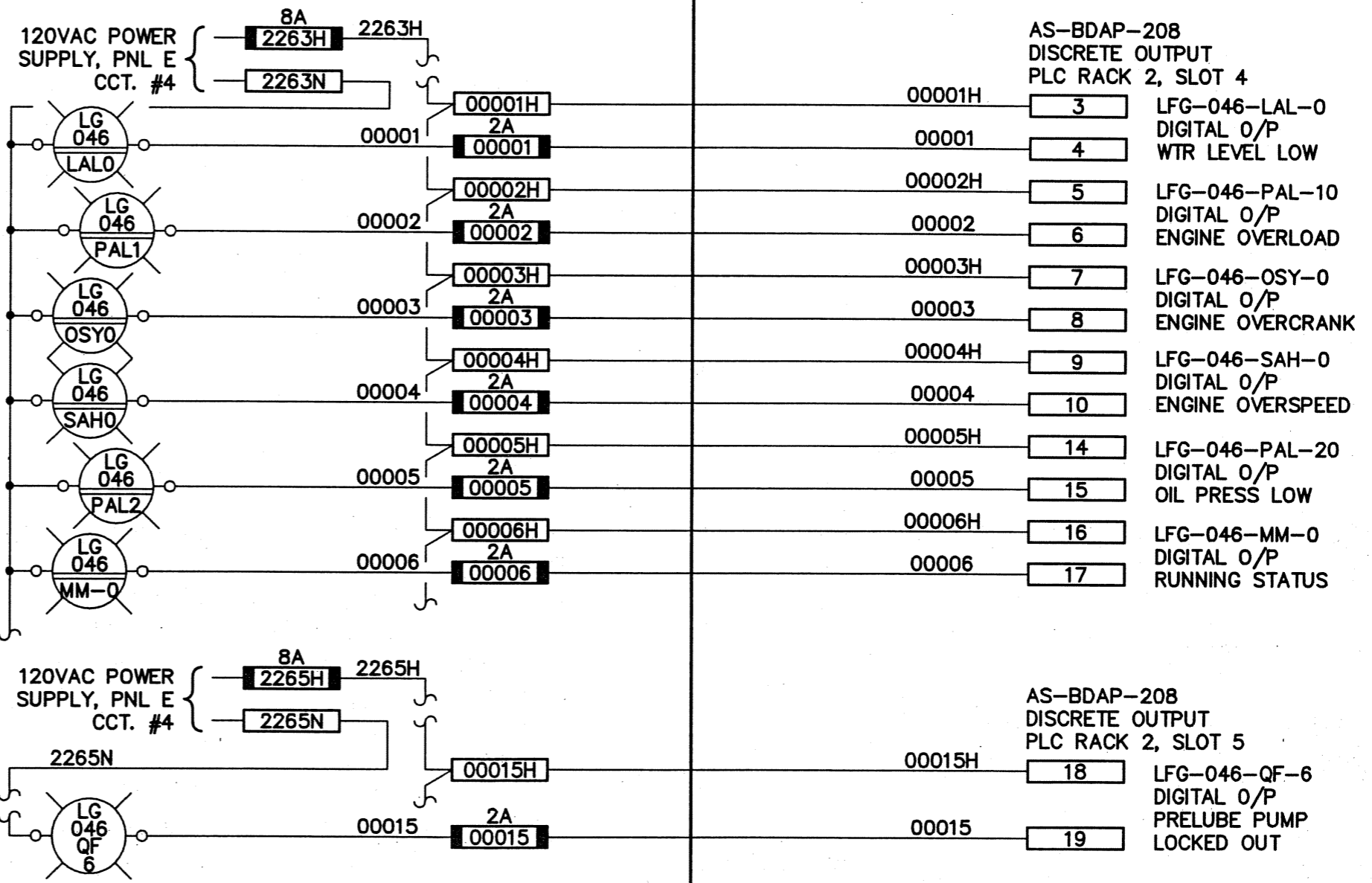
LOOP NO.

LG-046-LAL-0 LG-046-SAH-0 LG-046-QF-6
 LG-046-PAL1 LG-046-PAL2
 LG-046-OSY-0 LG-046-MM-0

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

1. "ENG RUNNING" STATUS • MacLEAN IS PROVIDED BY THE "CRANK SPEED SWITCH" (MOMENTARY CONTACT)

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 Calgary, Alberta

JOB NO. 3153
 FILENAME D2623



THE CITY OF WINNIPEG
 REGIONAL WATER SUPPLY SYSTEM
 SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1			AS-BUILT	PL
94.08.12	0			ISSUED FOR CONST.	PL
97.02.03	2	PS	94.07.29	A	PL
				ISSUED FOR APPROVAL	PL

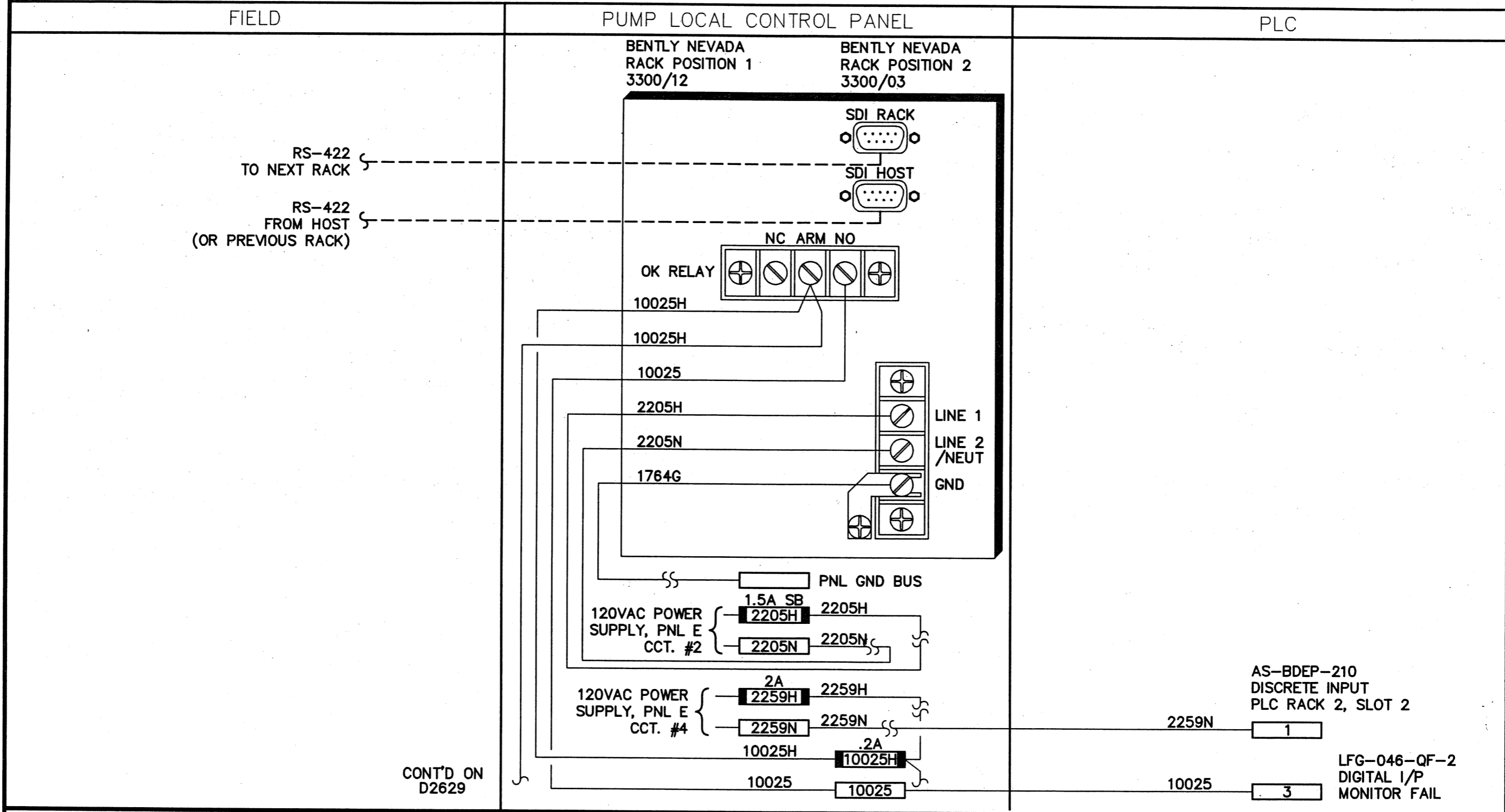
MacLEAN REGIONAL PUMPING STATION - LCP26
 GAS PUMP #26 ENGINE DRIVE (SHT. 3 OF 4)

DRAWING NO.
 D-2623

INSTRUMENT LOOP DIAGRAM

LOOP NO.

LBG-046-QF-2



CONT'D ON D2629

NOTE:	<p style="font-size: small;">Consulting Engineers</p>	<p style="font-size: x-small;">Calgary, Alberta</p>	JOB NO. 3153 FILENAME D2628	<p style="font-weight: bold;">THE CITY OF WINNIPEG</p> <p style="font-size: small;">REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION</p>	SCALE _____ DATE 94.07.29 DES PL DWN LFB CKD DN APP LK																							
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">97.02.03</td> <td style="width: 10%;">2</td> <td style="width: 30%;">RCPL RECORD DRAWING</td> <td style="width: 10%;">PS</td> </tr> <tr> <td>DATE</td> <td>REVISION</td> <td>APP.</td> <td></td> </tr> </table>	97.02.03	2	RCPL RECORD DRAWING	PS	DATE	REVISION	APP.		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">95.07.11</td> <td style="width: 10%;">1</td> <td style="width: 30%;">AS-BUILT</td> <td style="width: 10%;">PL</td> </tr> <tr> <td>94.08.12</td> <td>0</td> <td>ISSUED FOR CONST.</td> <td>PL</td> </tr> <tr> <td>94.07.29</td> <td>A</td> <td>ISSUED FOR APPROVAL</td> <td>PL</td> </tr> <tr> <td>DATE</td> <td>REVISION</td> <td>APP.</td> <td></td> </tr> </table>	95.07.11	1	AS-BUILT	PL	94.08.12	0	ISSUED FOR CONST.	PL	94.07.29	A	ISSUED FOR APPROVAL	PL	DATE	REVISION	APP.		MacLEAN REGIONAL PUMPING STATION - LCP26 GAS PUMP #26 TEMP / VIB MONITOR (SHT 1 OF 6)	DRAWING NO. D-2628
	97.02.03	2	RCPL RECORD DRAWING	PS																								
DATE	REVISION	APP.																										
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94.08.12	0	ISSUED FOR CONST.	PL																									
94.07.29	A	ISSUED FOR APPROVAL	PL																									
DATE	REVISION	APP.																										

INSTRUMENT LOOP DIAGRAM

LOOP NO.

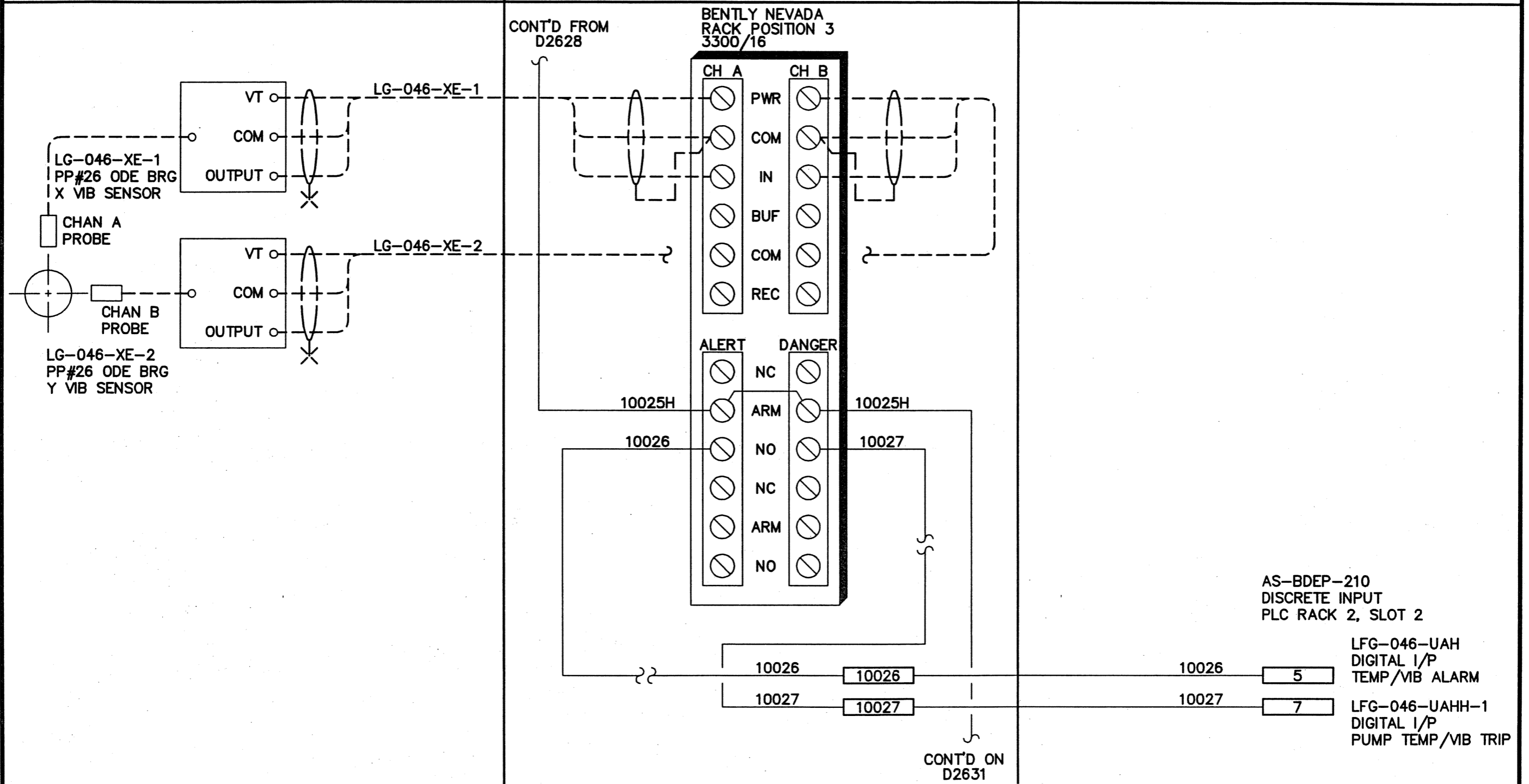
LG-046-XE-1
LG-046-XE-2

LAG-046-UAH
LAG-046-UAHH-1

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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Consulting Engineers

kenonic controls ltd.
Calgary, Alberta

JOB NO. 3153
FILENAME D2629



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1	AS-BUILT			PL
94.08.12	0	ISSUED FOR CONST.			PL
97.02.03	2	RCPL RECORD DRAWING	94.07.07	2	AS BUILT

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 TEMP / VIB MONITOR (SHT. 2 OF 6)

DRAWING NO.
D-2629

INSTRUMENT LOOP DIAGRAM

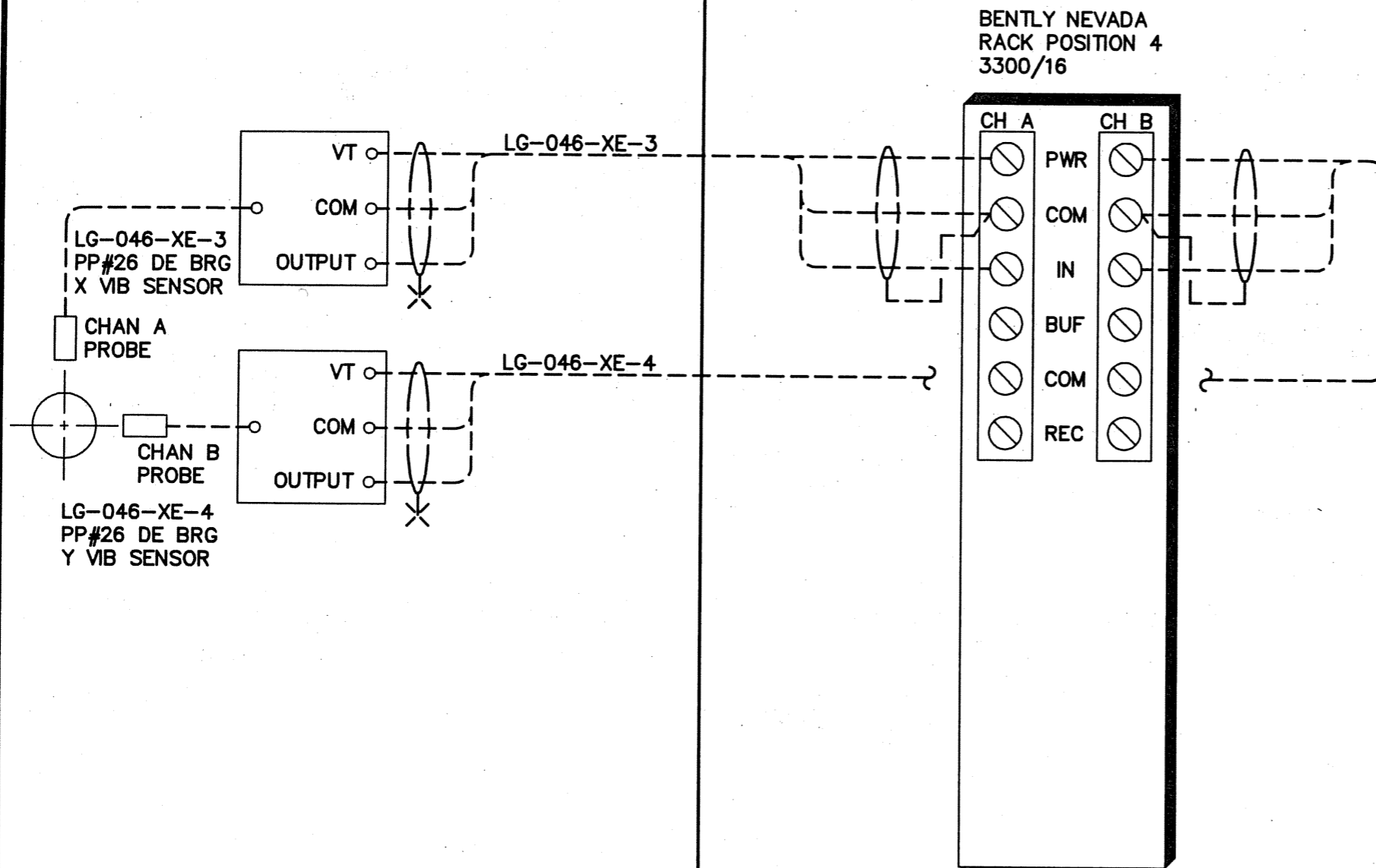
LOOP NO.

LG-046-XE-3
LG-046-XE-4

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

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Calgary, Alberta

JOB NO. 3153
FILENAME D2630



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

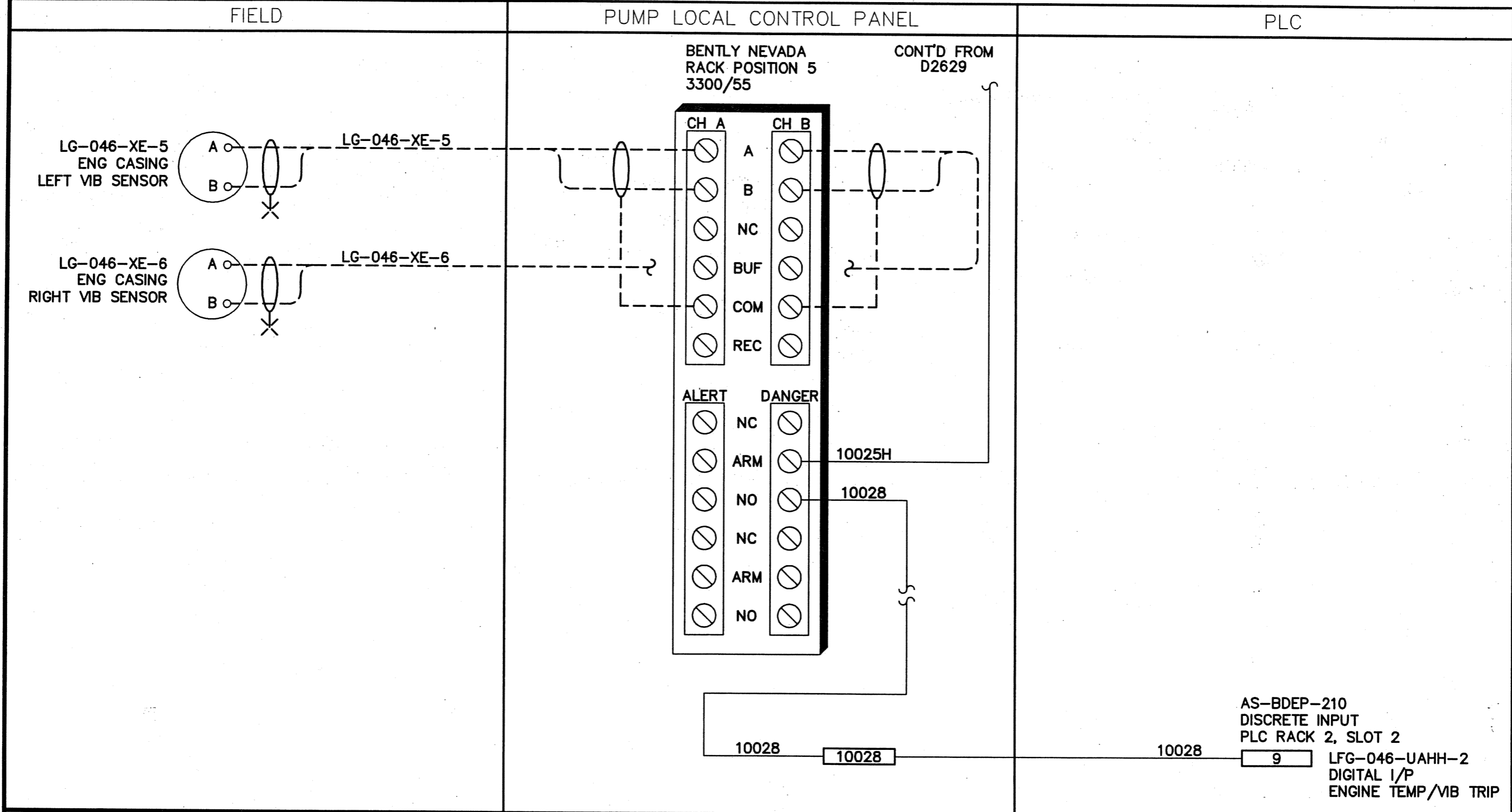
DATE	REVISION	APP.	DATE	REVISION	APP.
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94.08.12	0		ISSUED FOR CONST.		PL
97.02.03	2	PS	RCPL RECORD DRAWING		
94.07.29	A		ISSUED FOR APPROVAL		PL

MacLEAN REGIONAL PUMPING STATION – LCP26
GAS PUMP #26 TEMP / VIB MONITOR (SHT. 3 OF 6)

DRAWING NO.
D-2630

INSTRUMENT LOOP DIAGRAM

LOOP NO. **LG-046-XE-5**
LG-046-XE-6 **LAG-046-UAHH-2**



NOTE:	 Consulting Engineers	 Calgary, Alberta	JOB NO. 3153	THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION	SCALE _____	
					FILENAME D2631	DATE 94.07.29
					95.07.11 1 AS-BUILT PL	DES PL DWN LFB
					94.08.12 0 ISSUED FOR CONST. PL	CKD DN APP LK
			97.02.03 2 RCPL RECORD DRAWING PS			
			94.07.29 A ISSUED FOR APPROVAL PL			
DATE	REVISION	APP.	DATE	REVISION	APP.	
MacLEAN REGIONAL PUMPING STATION - LCP26 GAS PUMP #26 TEMP / VIB MONITOR (SHT. 4 OF 6)				DRAWING NO. D-2631		

INSTRUMENT LOOP DIAGRAM

LOOP NO.

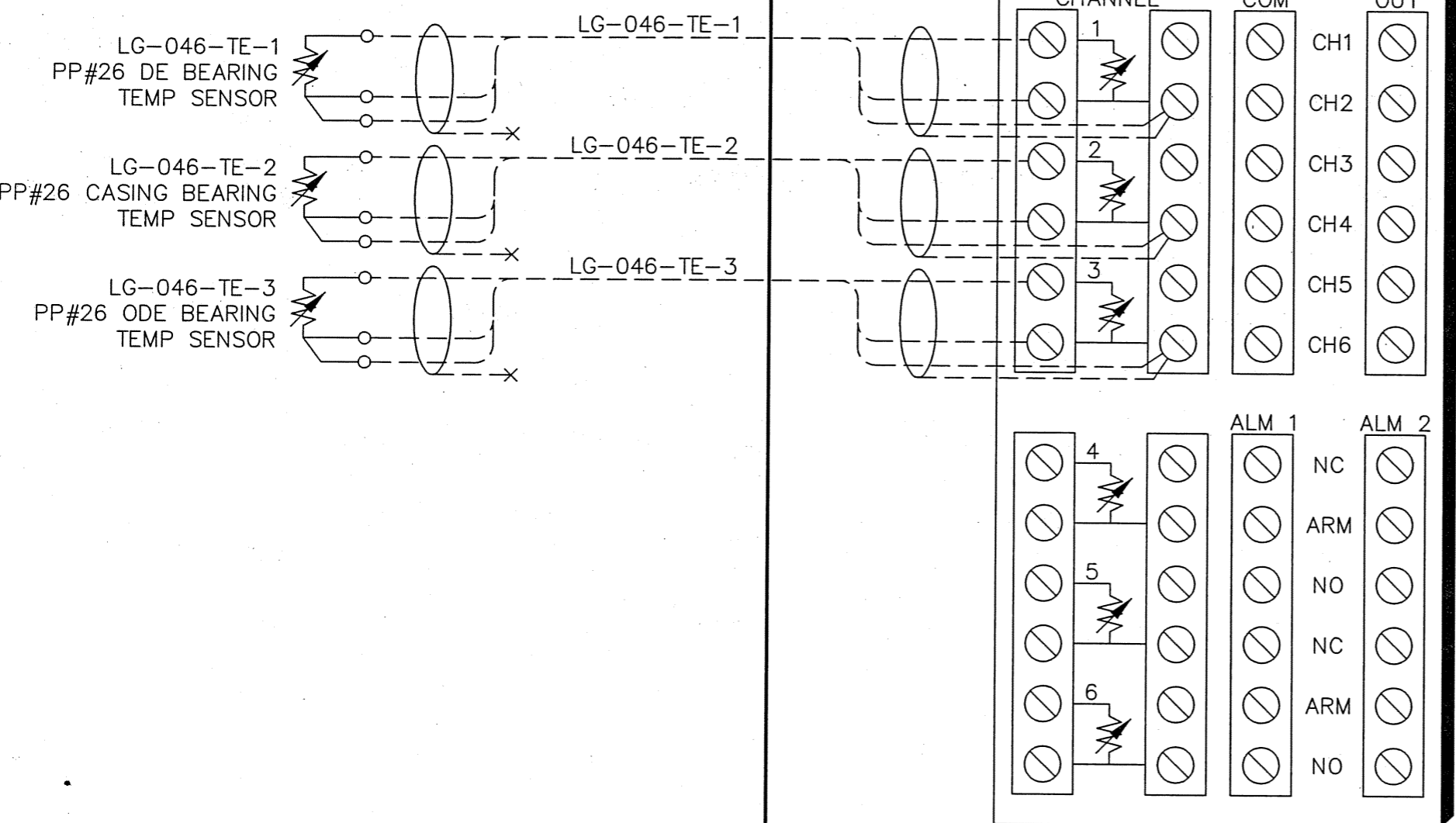
LG-046-TE-1
LG-046-TE-2
LG-046-TE-3

FIELD

PUMP LOCAL CONTROL PANEL

PLC

BENTLY NEVADA
RACK POSITION 7-8
3300/35



NOTE:
1. RED = A
BLK = B
WHT = C

Reid Crowther
Consulting Engineers

DATE	REVISION	APP.
97.02.03	2 RCPL RECORD DRAWING	PS

kenonic controls ltd.
Calgary, Alberta

DATE	REVISION	APP.
95.07.11	1 AS-BUILT	PL
94.08.12	0 ISSUED FOR CONST.	PL
94.07.29	A ISSUED FOR APPROVAL	PL

JOB NO. 3153
FILENAME D2632

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

MaCLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 TEMP / VIB MONITOR (SHT. 5 OF 6)

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DRAWING NO.
D-2632

INSTRUMENT LOOP DIAGRAM

LOOP NO.

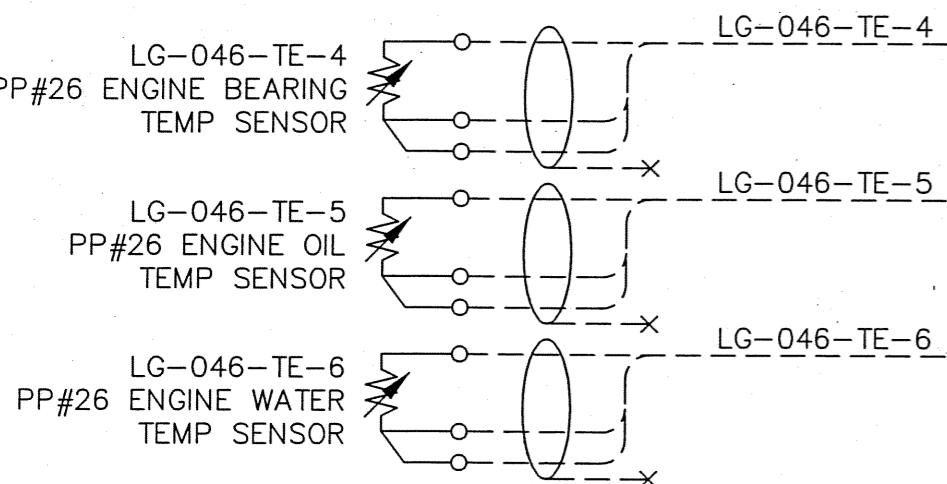
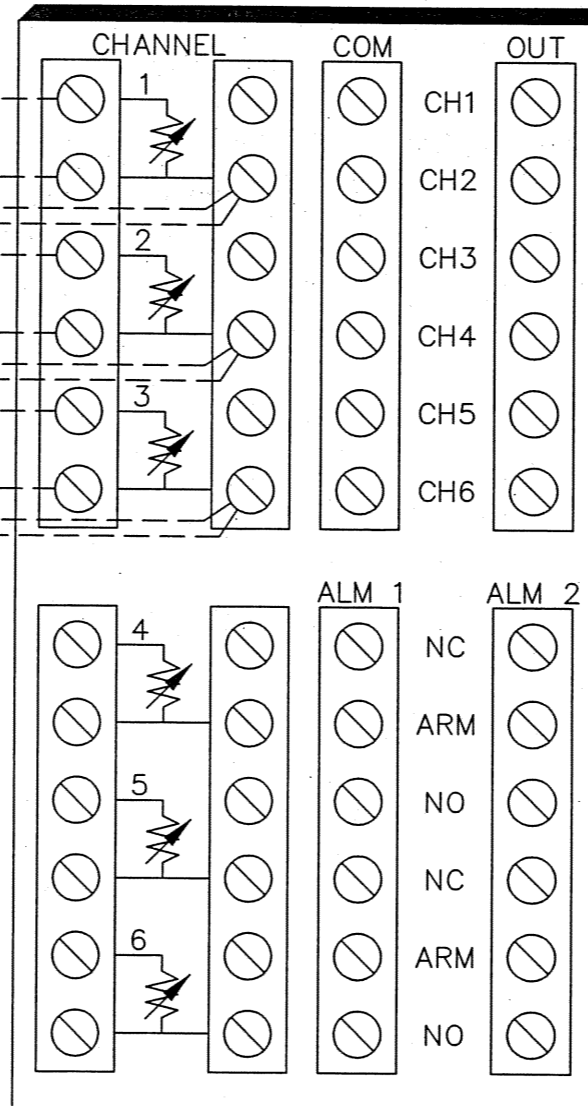
LG-046-TE-4
LG-046-TE-5
LG-046-TE-6

FIELD

PUMP LOCAL CONTROL PANEL

PLC

BENTLY NEVADA
RACK POSITION 9-10
3300/35



NOTE:
1. RED = A
BLK = B
WHT = C

Reid Crowther
Consulting Engineers

DATE	REVISION	APP.
97.02.03	2 RCPL RECORD DRAWING	PS

kenonic controls ltd.
Calgary, Alberta

DATE	REVISION	APP.
95.07.11	1 AS-BUILT	PL
94.08.12	0 ISSUED FOR CONST.	PL
94.07.29	A ISSUED FOR APPROVAL	PL

JOB NO. 3153
FILENAME D2633

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 TEMP / VIB MONITOR (SHT. 6 OF 6)

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DRAWING NO.
D-2633

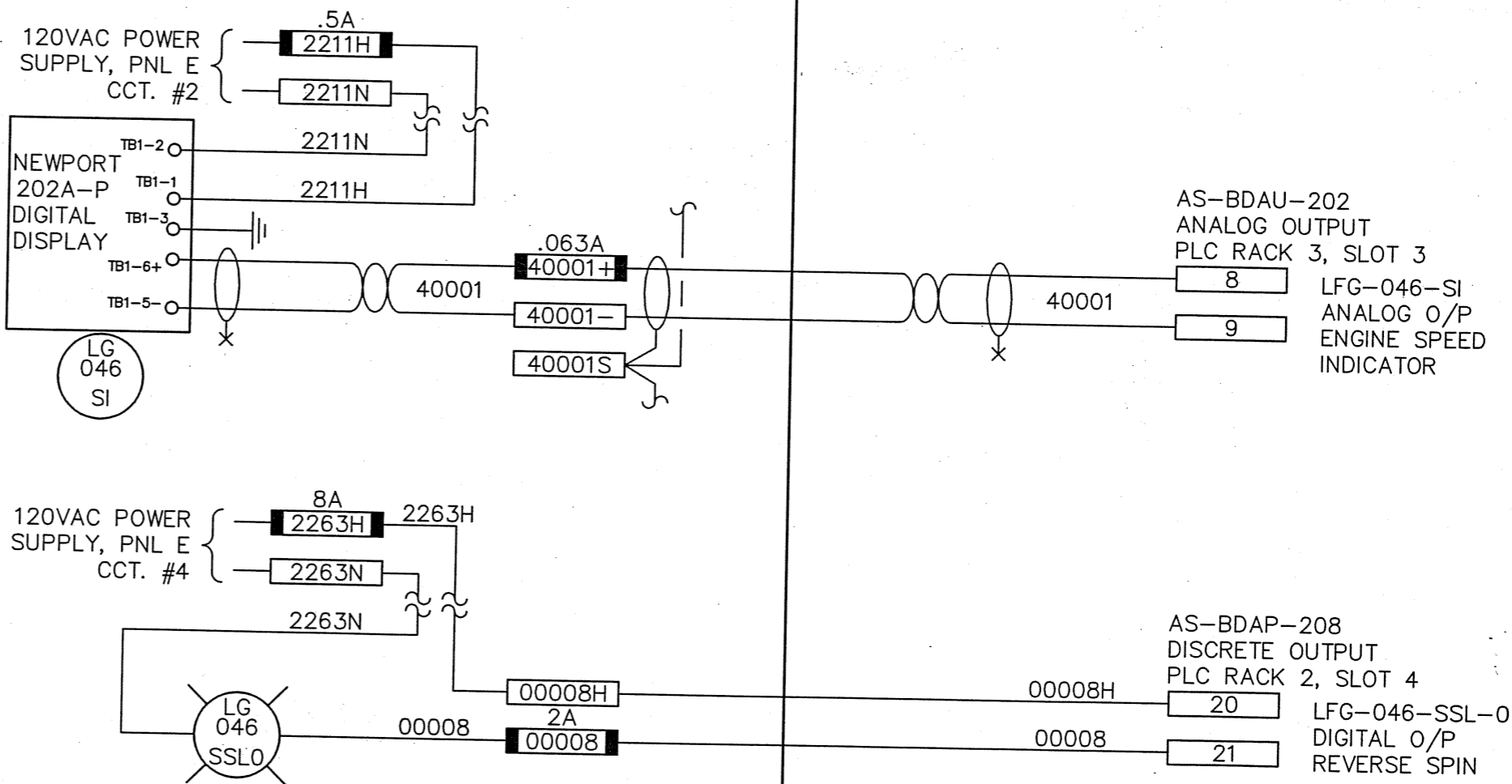
INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-046-SLL-0
LG-046-SI

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

Reid Crowther

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kenonic controls Ltd.
Calgary, Alberta

JOB NO. 3153
FILENAME D2635



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1			AS-BUILT	PL
94.08.12	0			ISSUED FOR CONST.	PL
94.07.29	A			ISSUED FOR APPROVAL	PL
00.06.30	3	GMZ		REVISED TO DATE	
97.02.03	2	PS		RCPL RECORD DRAWING	

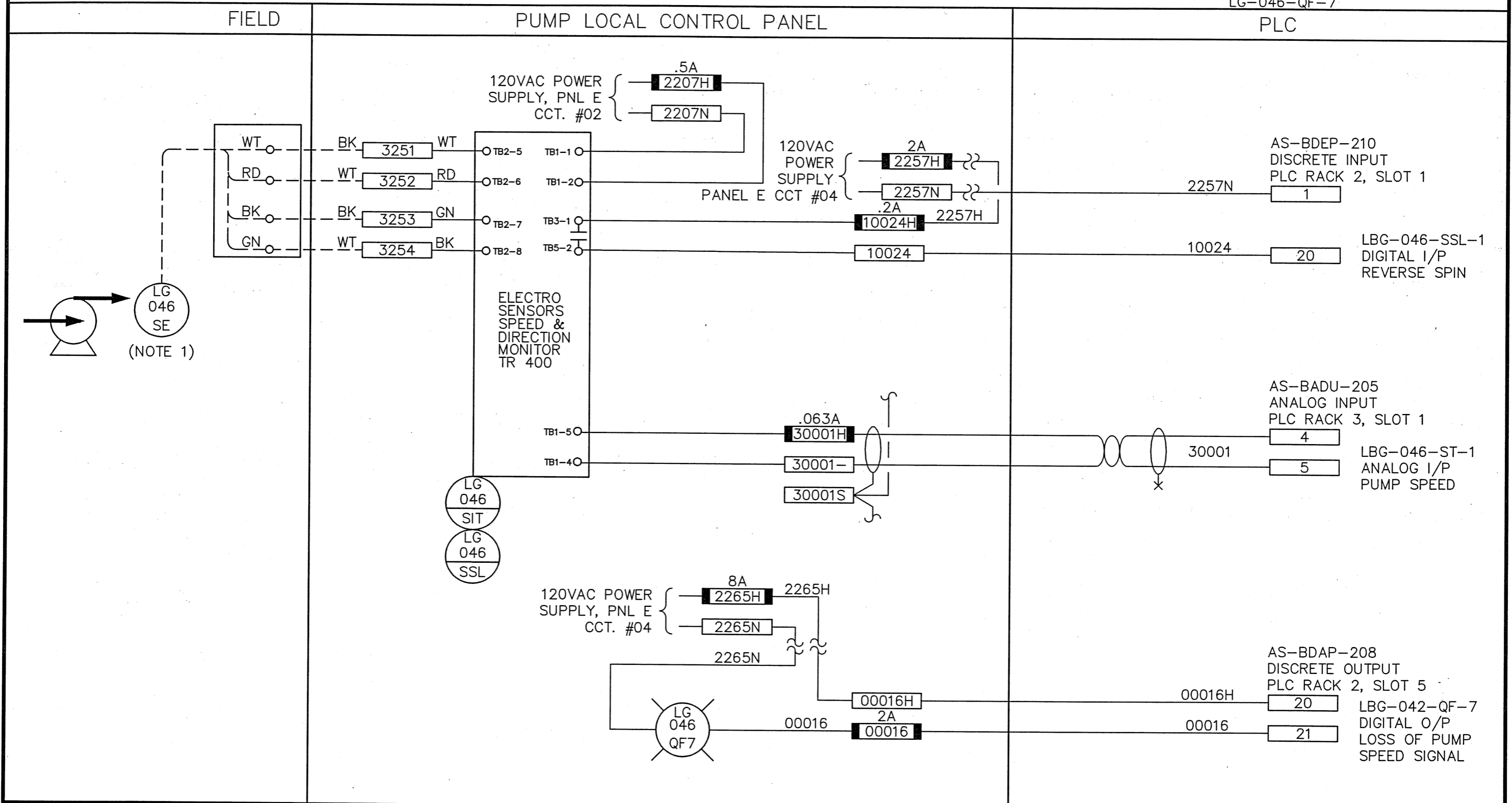
MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 SPEED MONIT. LOOP (SHT. 2 OF 2)

DRAWING NO.
D-2635

INSTRUMENT LOOP DIAGRAM

LOOP NO.

LG-046-SSL-1 LG-046-SSL
 LG-046-SE LG-046-SIT
 LG-046-QF-7



NOTE:
 1. SPEED ELEMENT CONSISTS OF ONE MAGNETIC DISK AND ONE TRANSDUCER.

Reid Crowther Consulting Engineers			kenonic controls ltd. Calgary, Alberta			JOB NO. 3153	THE CITY OF WINNIPEG REGIONAL WATER SUPPLY SYSTEM SUPERVISORY CONTROL AND DATA ACQUISITION
						FILENAME D2564	
00.06.30	4	REVISED TO DATE	GMZ	95.07.11	1	AS-BUILT	PL
99.11.22	3	TR-400 MONITOR ADDED	GMZ	94.08.12	0	ISSUED FOR CONST.	PL
97.02.03	2	RCPL RECORD DRAWING	PS	94.07.29	0	ISSUED FOR APPROVAL	PL
DATE		REVISION	APP.	DATE		REVISION	APP.

MacLEAN REGIONAL PUMPING STATION - LCP26
 GAS PUMP #26 SPEED MONIT. LOOP (SHT. 1 OF 2)

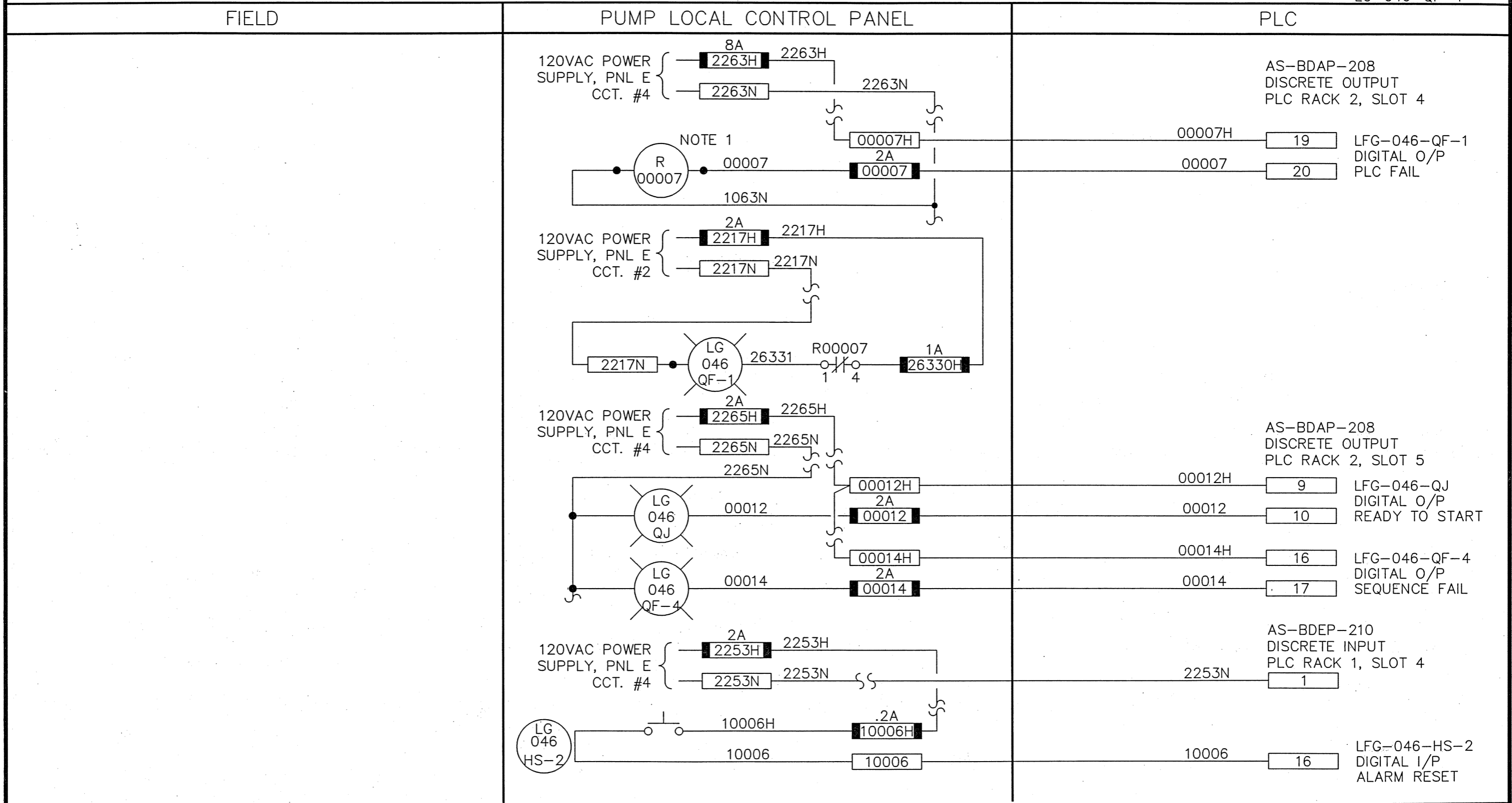
SCALE N.T.S.
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DRAWING NO.
 D-2634

INSTRUMENT LOOP DIAGRAM

LOOP NO. _____

LG-046-HS-2 LG-046-QJ
 LG-046-QF-1
 LG-046-QF-4



NOTE:
1. PLC FAIL RELAY IS NORMALLY ENERGIZED.

Reid Crowther

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Calgary, Alberta

JOB NO. 3153
FILENAME D2637



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
 DATE 94.07.29
 DES PL DWN LFB
 CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1	AS-BUILT			PL
94.08.12	0	ISSUED FOR CONST.			PL
94.07.29	A	ISSUED FOR APPROVAL			PL
97.02.03	2	RCPL RECORD DRAWING			PS

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 PLC FAIL / RESET

DRAWING NO.
D-2637

INSTRUMENT LOOP DIAGRAM

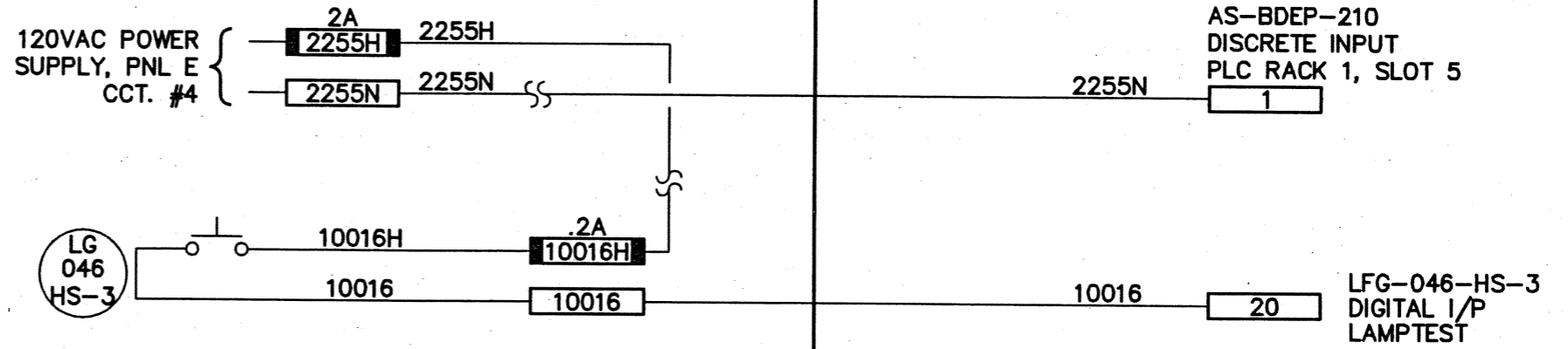
LOOP NO.

LG-046-HS-3

FIELD

PUMP LOCAL CONTROL PANEL

PLC



NOTE:

Reid Crowther

Consulting Engineers



JOB NO. 3153
FILENAME D2638



THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

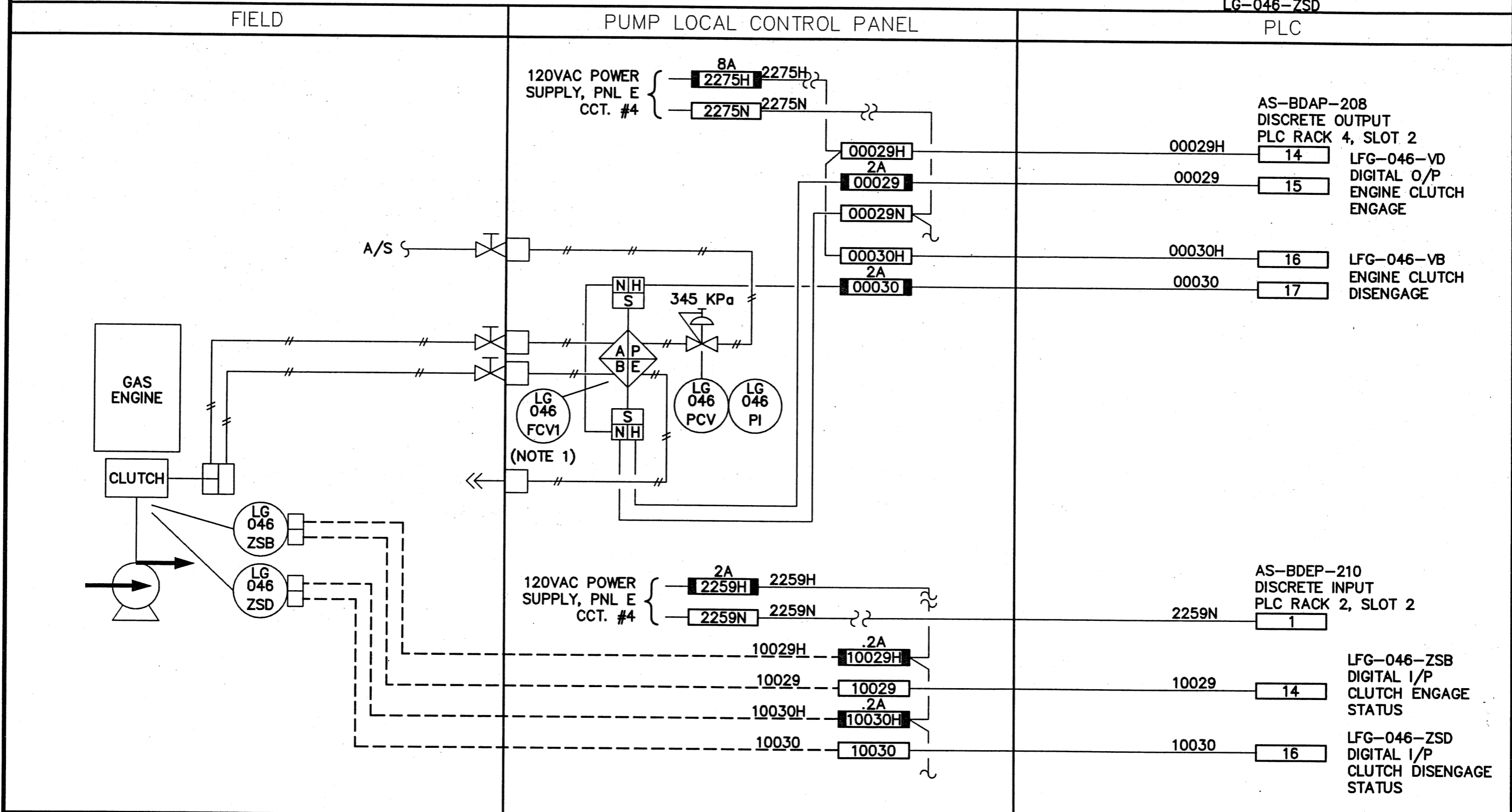
DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1			AS-BUILT	PL
94.08.12	0			ISSUED FOR CONST.	PL
97.02.03	2	PS	94.07.29	A	PL
				ISSUED FOR APPROVAL	

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 LAMPTTEST

DRAWING NO.
D-2638

INSTRUMENT LOOP DIAGRAM

LOOP NO. LG-046-PCV LG-046-FCV-1
LG-046-ZSB LG-046-FCV-2
LG-046-ZSD



NOTE:
1. CLUTCH SHALL DISENGAGE WHEN SOLENOID VALVE DE-ENERGIZES.

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Calgary, Alberta

JOB NO. 3153
FILENAME D2636

THE CITY OF WINNIPEG
REGIONAL WATER SUPPLY SYSTEM
SUPERVISORY CONTROL AND DATA ACQUISITION

SCALE _____
DATE 94.07.29
DES PL DWN LFB
CKD DN APP LK

DATE	REVISION	APP.	DATE	REVISION	APP.
95.07.11	1				
94.08.12	0				
97.02.03	2				

MacLEAN REGIONAL PUMPING STATION - LCP26
GAS PUMP #26 ENGINE CLUTCH CONTROL

DRAWING NO.
D-2636