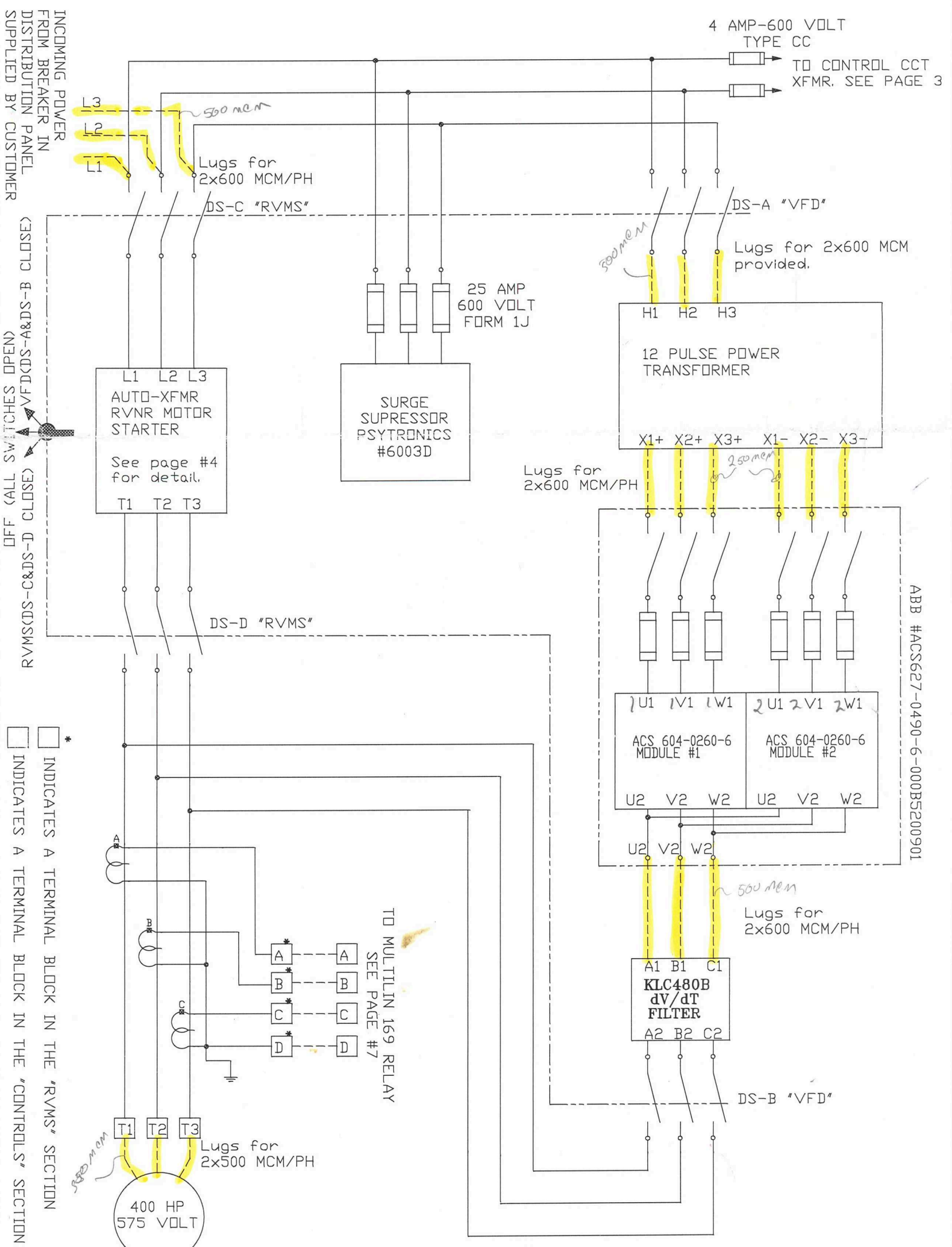


PUMP 1 LOW VOLTAGE STARTER

Reviewed
 Reviewed as Modified
 Revised and Resubmitted
 Responsibility for verification and performance of field
 dimensions, fabrication processes, installation of
 components, installation and operation of all
 parts of the work shall with the Contractor.
 Responsibility for general conformity
 Responsibility for detailed design
 Responsibility for the shop
 drawings shall with the Contractor.

Project #: 60910.07
 Date: Jan 8, 2001 By: *[Signature]*

NOTE: SUGGESTED MAIN BREAKER TO BE 1,000 AMP FRAME
 ADJUSTABLE FROM 400-1,000 AMP, DELAY OF 3-18 SEC.
 INSTANTANEOUS TRIP ADJUSTABLE FROM 1.5-12 x FRAME RATING



NOTE: DASHED LINES ON THIS AND OTHER PAGES INDICATES WIRING SUPPLIED BY THE CUSTOMER

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 633 TWE AVENUE
 WINNIPEG, MB R2L 1J5
 http://www.kings-mb.ca
 PHONE: (204) 663-5332
 FAX: (204) 663-4059

REVISIONS:	REVISION #1	DATE:	DESIGN:	DATE:	TITLE:
		00/12/13	BERNIE DA SILVA	00/11/10	400HP VFD/RVMS STARTER CONNECTIONS
		00/11/10	BERNIE DA SILVA	00/11/10	PERIMETER PUMP STATION
		00/11/22	DON WILSON		00-4383 (page 1 of 11)

PROJECT: PERIMETER PUMP STATION
 CUSTOMER: City of Winnipeg / P.O.:
 DWG. NO: 00-4383 (page 1 of 11)
 SCALE: N.T.S.

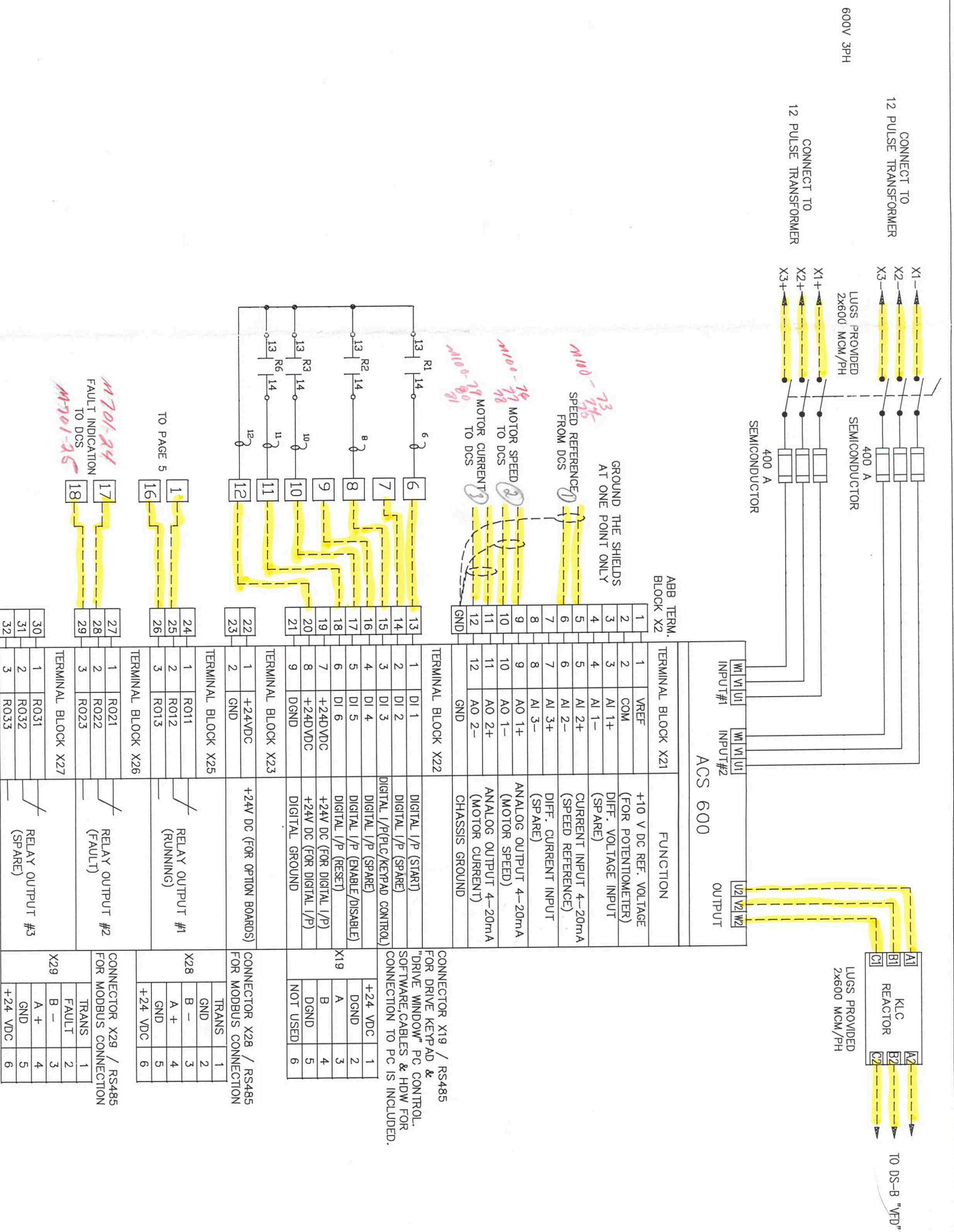
273.75
 2/547.5
 4 1/2
 14 1/2
 273.75
 .05
 273.75
 1368
 58 Rule 264
 or 274

Reviewed for general conformance with design intent. Responsibility for detailed design and work in the shop drawings rests with the Contractor.
Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the work rests with the Contractor.

Reviewed _____
Reviewed as Modified _____
Revise and Resubmit _____

Proj. #: 60910-07
Date: JAN 8, 2001 By: _____

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FAX: (204) 663-4059

REVISIONS:	DATE:	DESIGN:	DATE:	TITLE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10	400HP VFD/RVMS STARTER CONNECTIONS
		BERNIE DA SILVA	00/11/10	PERIMETER PUMP STATION
		DON WILSON	00/11/22	CUSTOMER: City of Winnipeg / P.O.:

DWG. NO: 00-4383 (page 2 of 11)
SCALE: N.T.S.

Reviewed for general conformance with design intent. Responsibility for detailed design remains in the shop drawings rests with the Contractor.

Responsibility for verification and correlation of field dimensions, fabrication processes, lockup of construction, installation and coordination of all parts of the work rests with the Contractor.

Reviewed

Reviewed as Modified

Review and Resubmit

Proj. #: 60910.07

Date: Jan 8, 2001 By: *[Signature]*

[Handwritten signature]

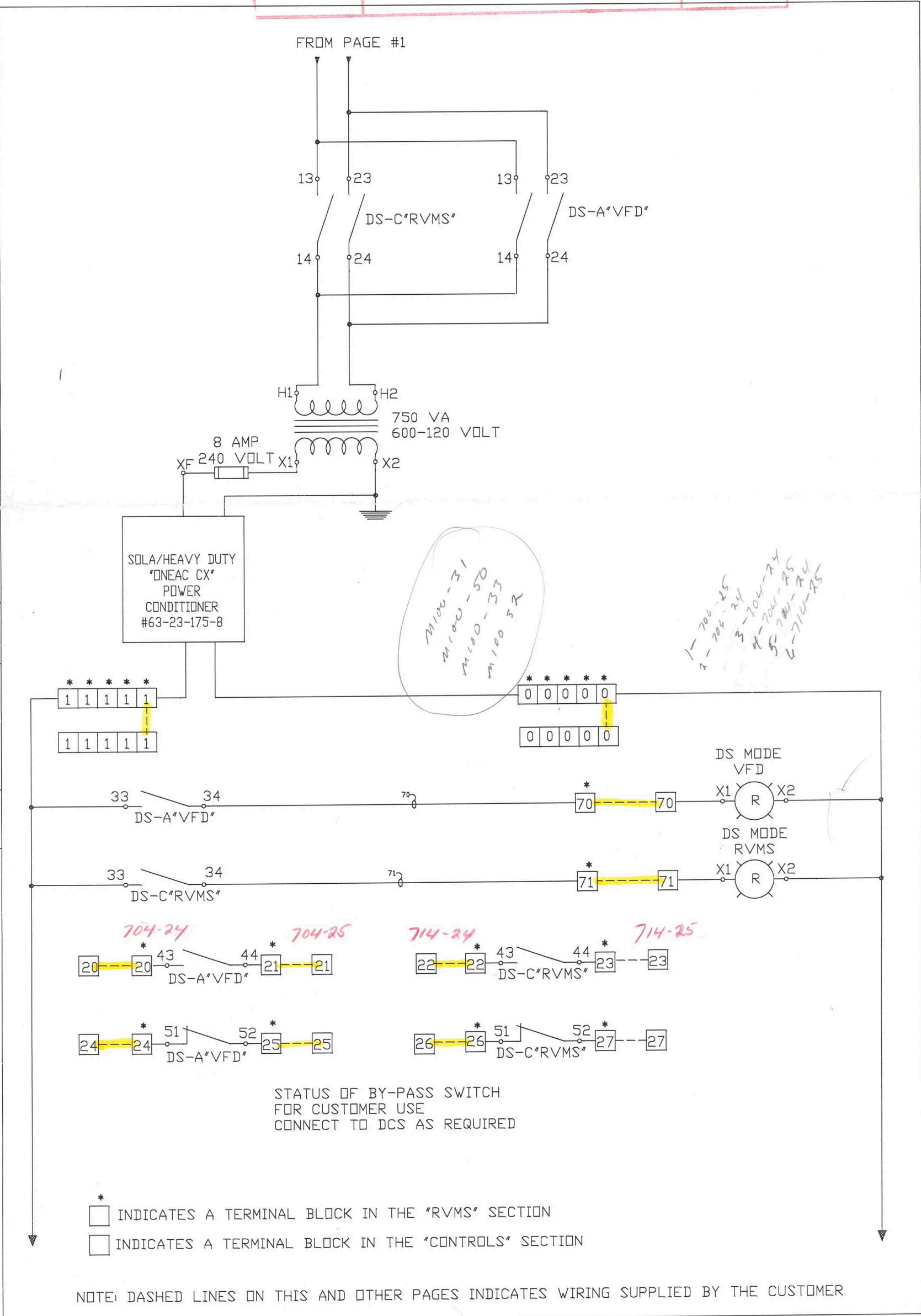
KING'S ELECTRIC MOTORS LTD.
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WINNIPEG, MB R2L 1J5
http://www.kings.mt.ca

PHONE: (204) 663-5332
FAX: (204) 663-4059

REVISIONS:	DATE:	DESIGN:	DATE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10
		BERNIE DA SILVA	00/11/10
		DON WILSON	00/11/22

TITLE: 400HPVFD/RVMS STARTER CONNECTIONS
PROJECT: PERIMETER PUMP STATION
CUSTOMER: City of Winnipeg / P.O.:

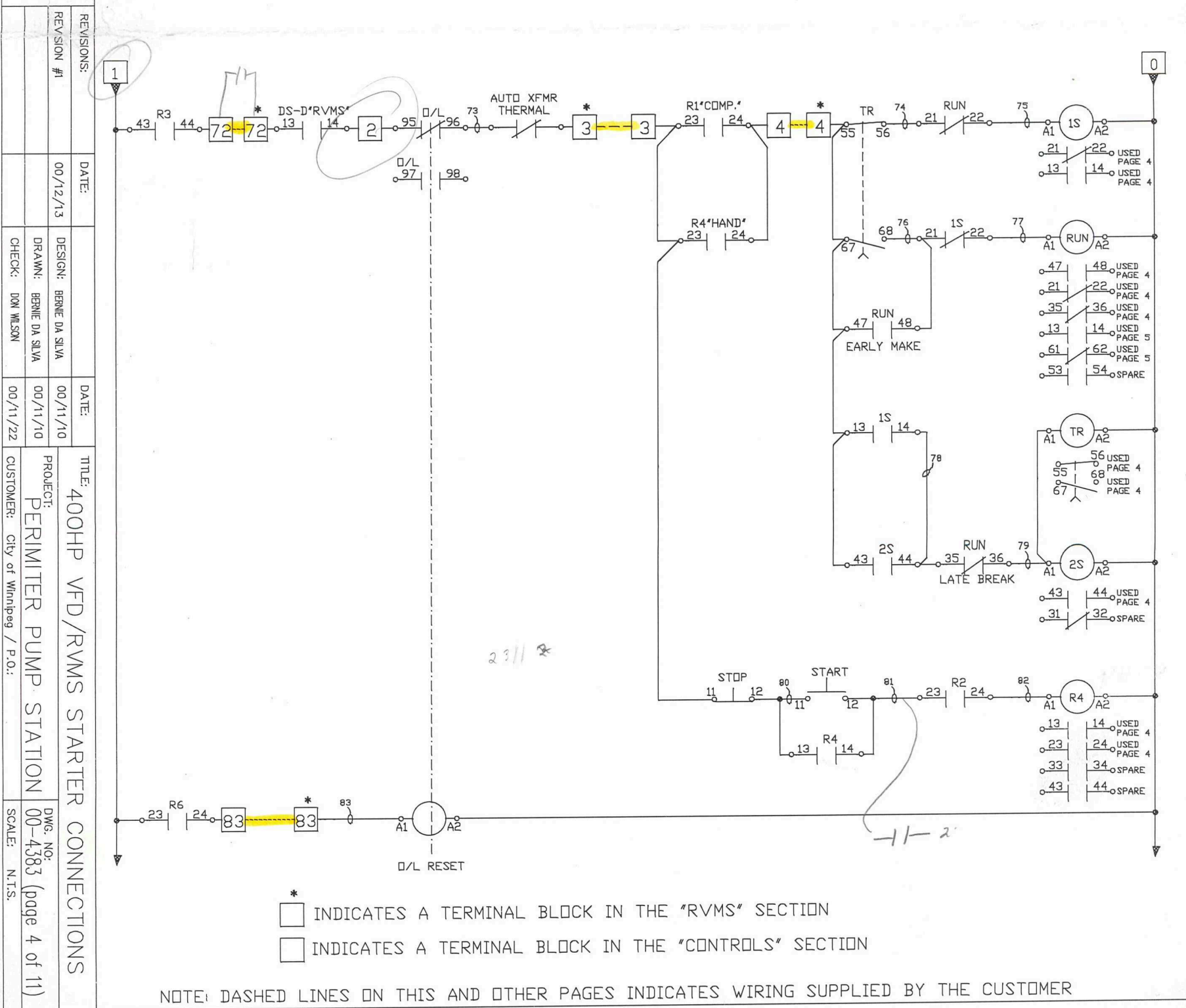
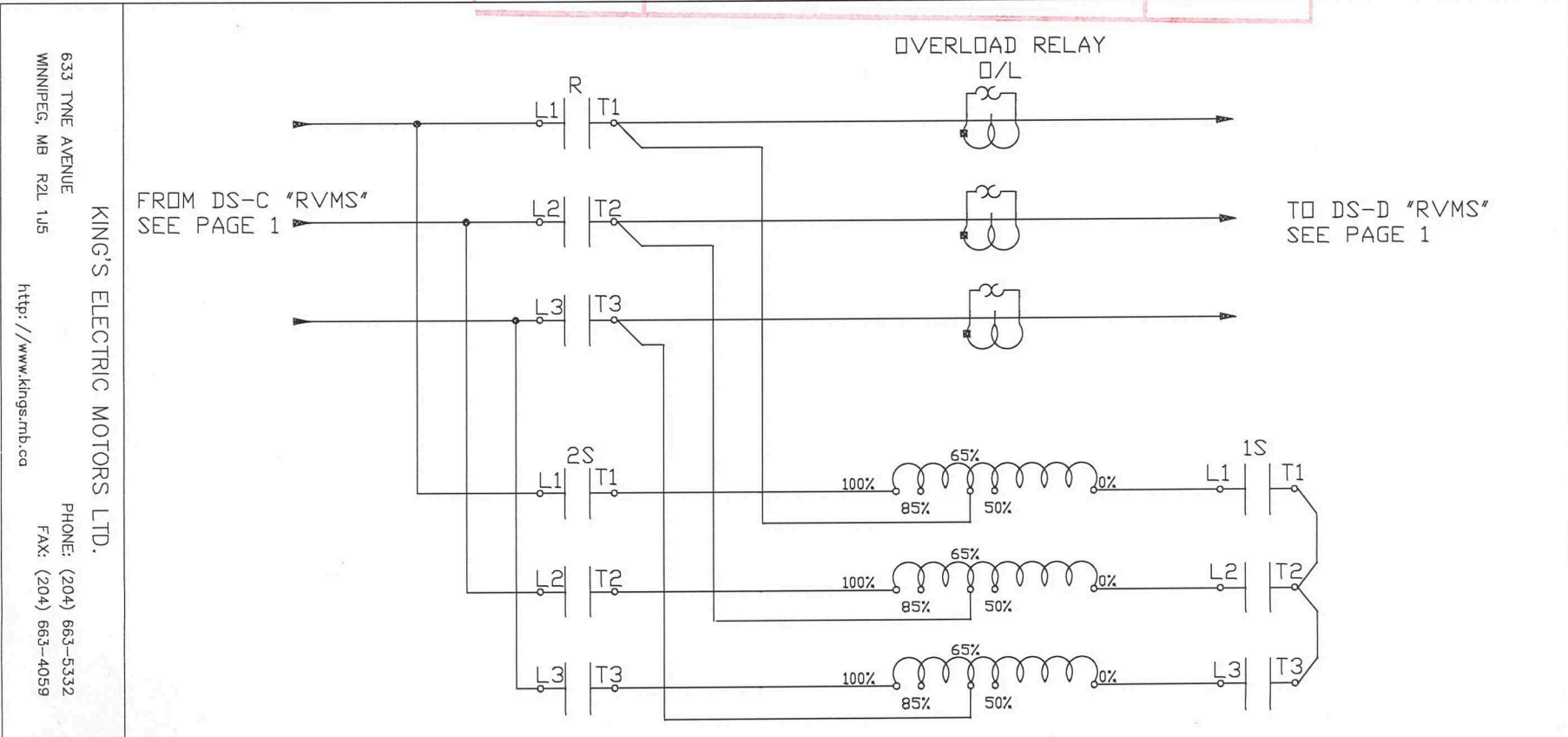
DWG. NO.: 00-4383 (page 3 of 11)
SCALE: N.T.S.



JAR-29

<p>Reviewed for general conformity with the contract. Has responsibility for detailed design. All work to be done in accordance with the Contract.</p>	<p>Responsible for verification and completion of field dimensions, fabrication processes, installation, construction, inspection and testing. All parts of the work must be completed.</p>
<p>Reviewed</p>	<p>Reviewed as identified</p>
<p>Revised and Resubmit</p>	<p>Revised and Resubmit</p>

Date: Jan 8, 2001 By: [Signature]
 Proj #: 60710.07



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 WINNIPEG, MB R2L 1J5
 PHONE: (204) 663-5332
 FAX: (204) 663-4059
 http://www.kings.mbc.ca

REVISIONS:	DATE:	DESIGN:	DATE:	TITLE:
REVISION #1	00/12/13	BERNE DA SILVA	00/11/10	400HP VFD/RVMS STARTER CONNECTIONS
		BERNE DA SILVA	00/11/10	PROJECT: PERIMETER PUMP STATION
		DOM WILSON	00/11/22	CUSTOMER: City of Winnipeg / P.O.:

DWG. NO.: 00-4383 (page 4 of 11)
 SCALE: N.T.S.

* INDICATES A TERMINAL BLOCK IN THE "RVMS" SECTION
 INDICATES A TERMINAL BLOCK IN THE "CONTROLS" SECTION

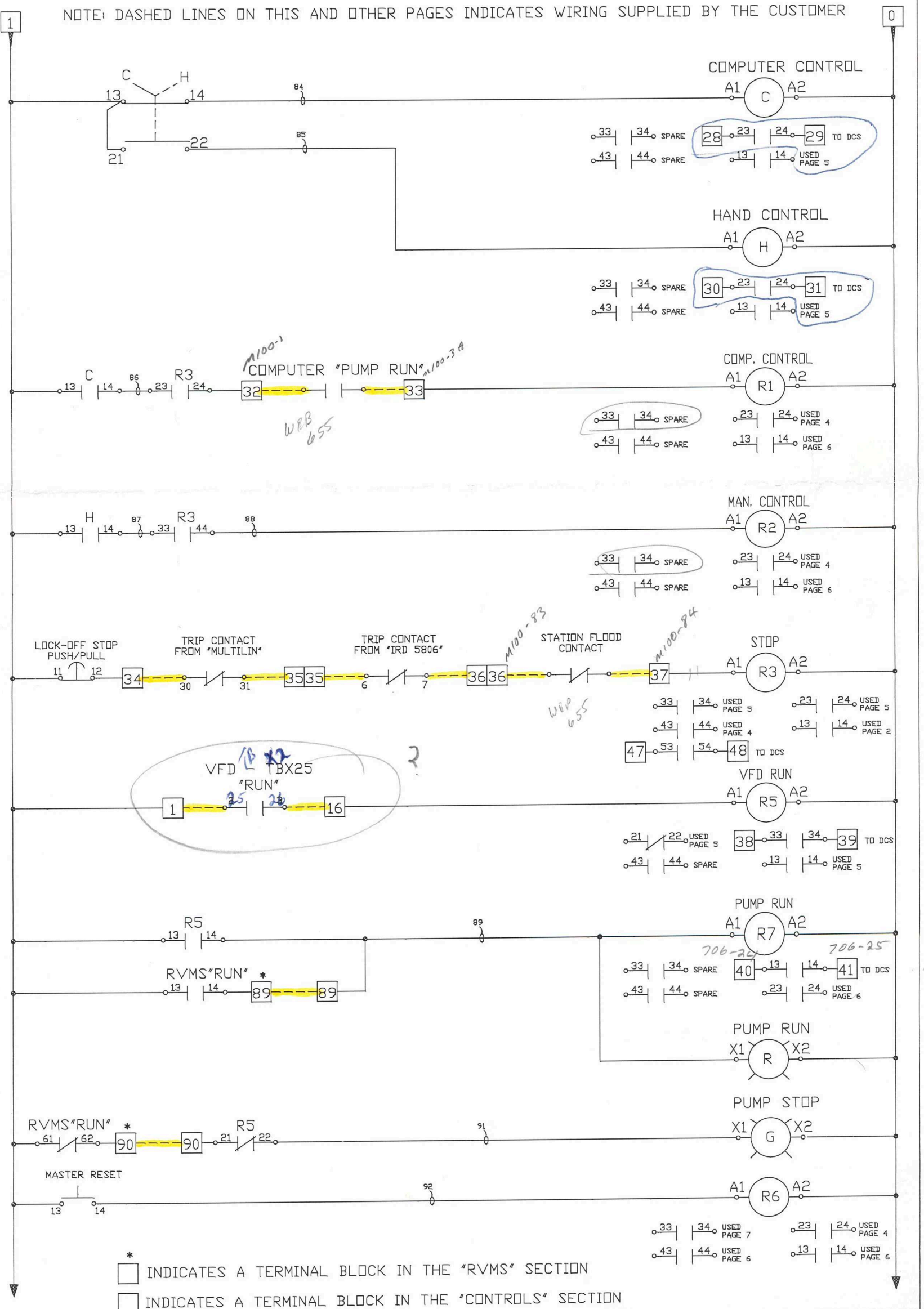
NOTE: DASHED LINES ON THIS AND OTHER PAGES INDICATES WIRING SUPPLIED BY THE CUSTOMER

Reviewed for general conformance with design intent.
Responsibility for detailed design inherent in the shop drawings rests with the Contractor.
Responsibility for verification and correction of field dimensions, fabrication processes, installation of construction, installation and operation of all parts of the work rests with the Contractor.

Reviewed
Reviewed as Modified
Revised and Resubmit

Proj #: 60910.07
Date: Jan 8, 2001 By: *[Signature]*

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http://www.kingsrmb.ca
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FAX: (204) 663-4059

REVISIONS:	DATE:	DESIGN:	DATE:	TITLE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10	400HP VFD/RVMS STARTER CONNECTIONS
		BERNIE DA SILVA	00/11/10	PROJECT: PERIMETER PUMP STATION
		DON WILSON	00/11/22	CUSTOMER: City of Winnipeg / P.O.:
				DWG. NO: 00-4383 (page 5 of 11)
				SCALE: N.T.S.

* INDICATES A TERMINAL BLOCK IN THE "RVMS" SECTION
□ INDICATES A TERMINAL BLOCK IN THE "CONTROLS" SECTION

Reviewed for general conformance with design intent.
Responsibility for detailed design lies with the Contractor.
Drawings rests with the Contractor.

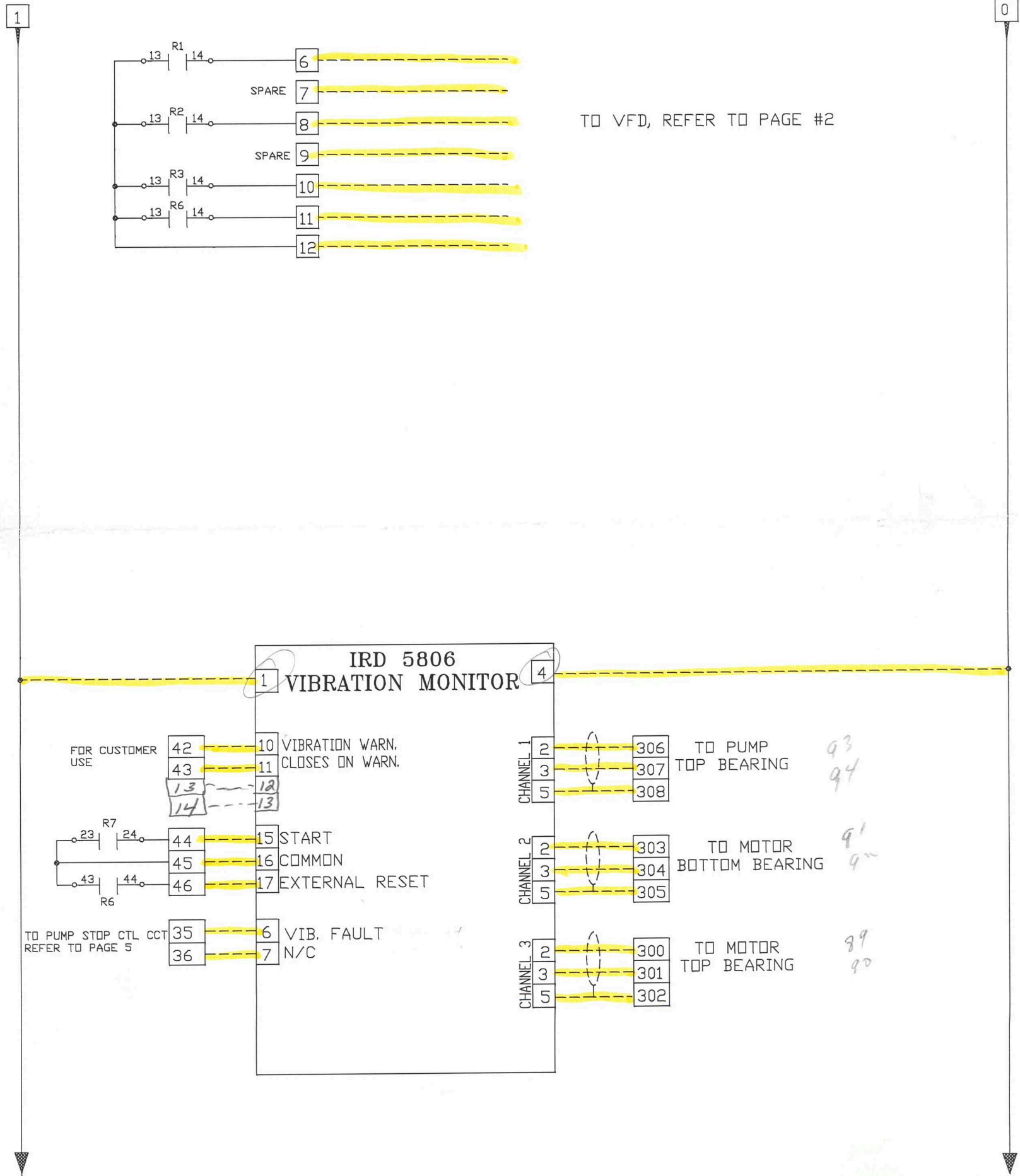
Responsibility for verification and correct fit of field
dimensions, fabrication processes, inspection and
construction, installation and operation of all
parts of the work rests with the Contractor.

Reviewed: _____
Field Notes Modified: _____
Issued and Resubmitted: _____

Proj #: 60910-07
Date: Jan 8, 2001 By: _____

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FAX: (204) 663-4059
<http://www.kings.mt.ca>

REVISIONS:	DATE:	TITLE:
REVISION #1	00/12/13	400HP VFD/RVMS STARTER CONNECTIONS
		DESIGN: BERNIE DA SILVA
		DRAWN: BERNIE DA SILVA
		CHECK: DON WILSON
	00/11/10	PROJECT: PERIMETER PUMP STATION
	00/11/22	CUSTOMER: City of Winnipeg / P.O.:
		DWG. NO: 00-4383 (page 6 of 11)
		SCALE: N.T.S.



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LABOR DA
TRANC

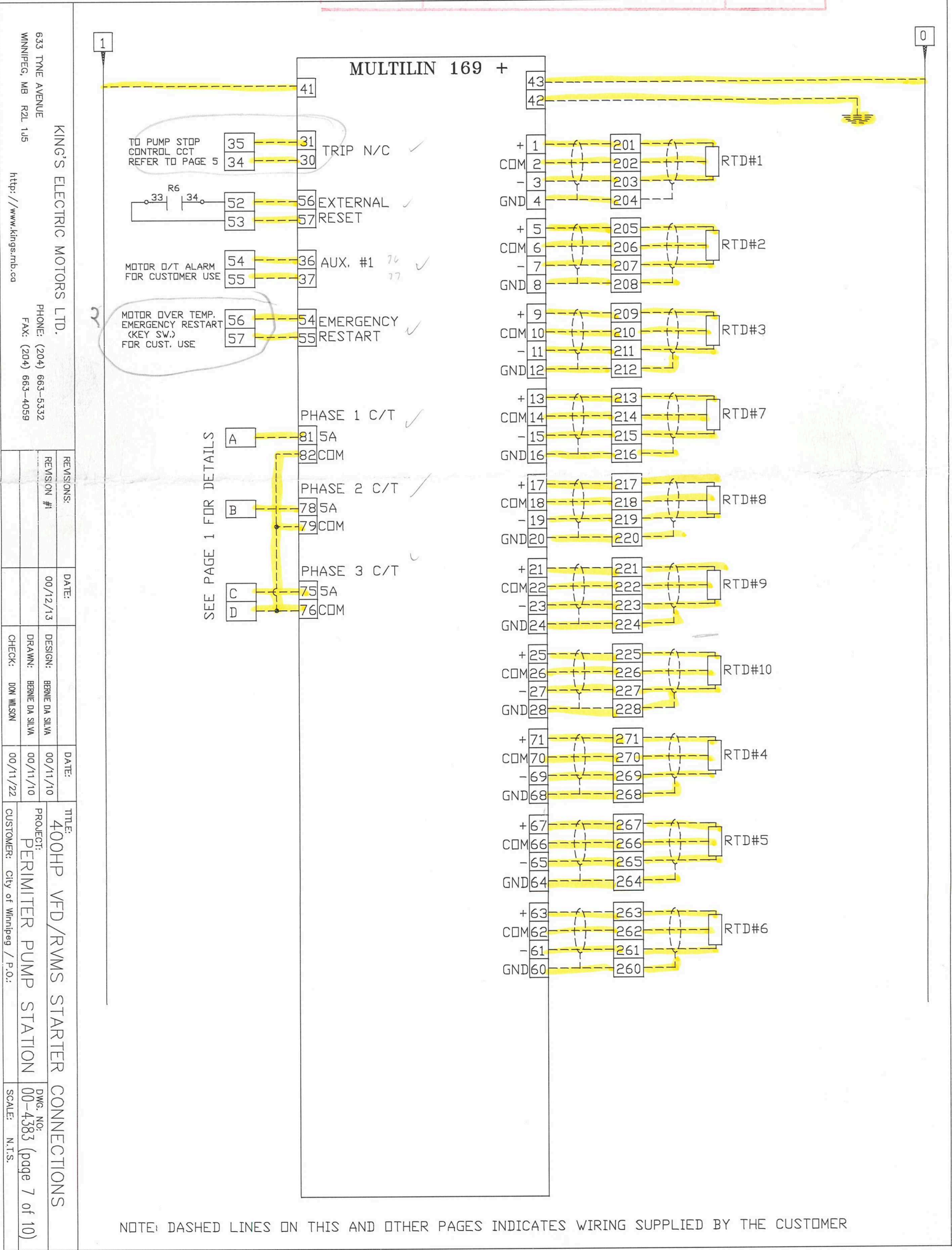
Reid Crowther
Reid Crowther Controls Ltd.
Control Systems

Reviewed for general conformity with relevant
Requirements for detailed design. Liability for the stop
drawing rests with the Contractor.

Responsibility for verification and acceptance of field
installations, fabrication processes, etc. rests with
the Contractor. The Contractor shall ensure that all
parts of the installation comply with the relevant
standards.

Approved: _____
Date: _____

60910.07
Jan 8/2001



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WINNIPEG, MB R2L 1A5
http://www.kings.mb.ca

KING'S ELECTRIC MOTORS LTD.

PHONE: (204) 663-5332
FAX: (204) 663-4059

REVISIONS:	DATE:	DESIGN:	DATE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10
		BERNIE DA SILVA	00/11/10
		DOM MILSON	00/11/22

TITLE: 400HP VFD/RVMS STARTER CONNECTIONS
PROJECT: PERIMETER PUMP STATION
CUSTOMER: City of Winnipeg / P.O.:

DWG. NO.: 00-4383 (page 7 of 10)
SCALE: N.T.S.

Reviewed for general conformance with design intent. Responsibility for detailed design inherent in the shop drawings rests with the Contractor.

Responsibility for verification and correction of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the work rests with the Contractor.

Reviewed

Reviewed as Modified

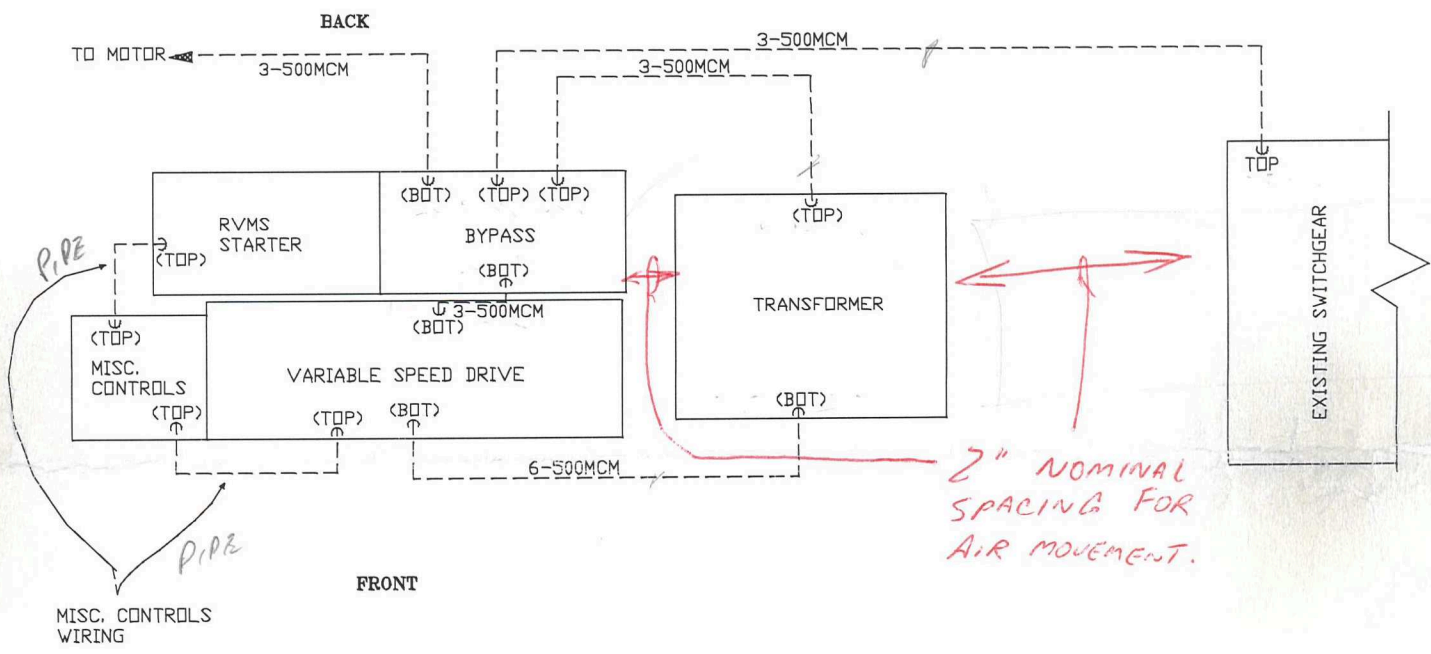
Revise and Resubmit

Proj. #: 60910.07

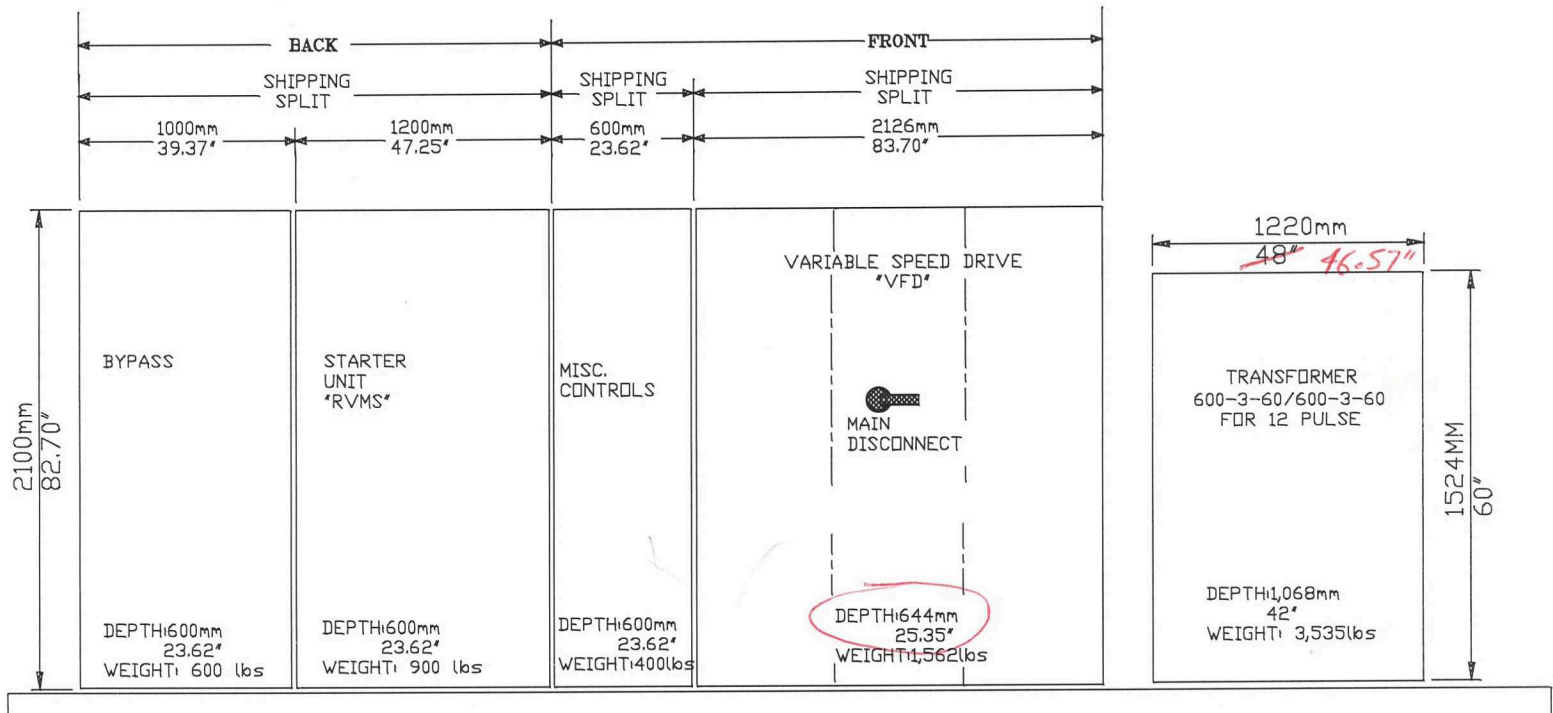
Date: Jan 8, 2001 By: 

NOTE:

BELOW IS THE LAYOUT, CABLE ROUTINGS AND CABLE SIZES AS PER OUR MEETING OF NOVEMBER 28, 2000. THE LAYOUT AND CABLE SIZES ARE AS SUGGESTED BY THE CUSTOMER. THE SELECTION OF EXTERNAL CABLES, SIZING AND ROUTING IS THE RESPONSIBILITY OF THE CUSTOMER.



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REVISIONS:	DATE:	DESIGN:	DATE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10
		BERNIE DA SILVA	00/11/10
		DON WILSON	00/11/22

TITLE: 400HP VFD/RVMS STARTER LAYOUT/DIMENSIONS

PROJECT: PERIMETER PUMP STATION
CUSTOMER: City of Winnipeg / P.O.:
DWG. NO: 00-4383 (page 80 of 11)
SCALE: N.T.S.

Reviewed for general conformance with design intent.
Responsibility for detailed design inherent in the shop
drawings rests with the Contractor.

Responsibility for verification and correlation of field
dimensions, fabrication processes, technical parts of
construction, installation and coordination of all
parts of the work rests with the Contractor.

Reviewed

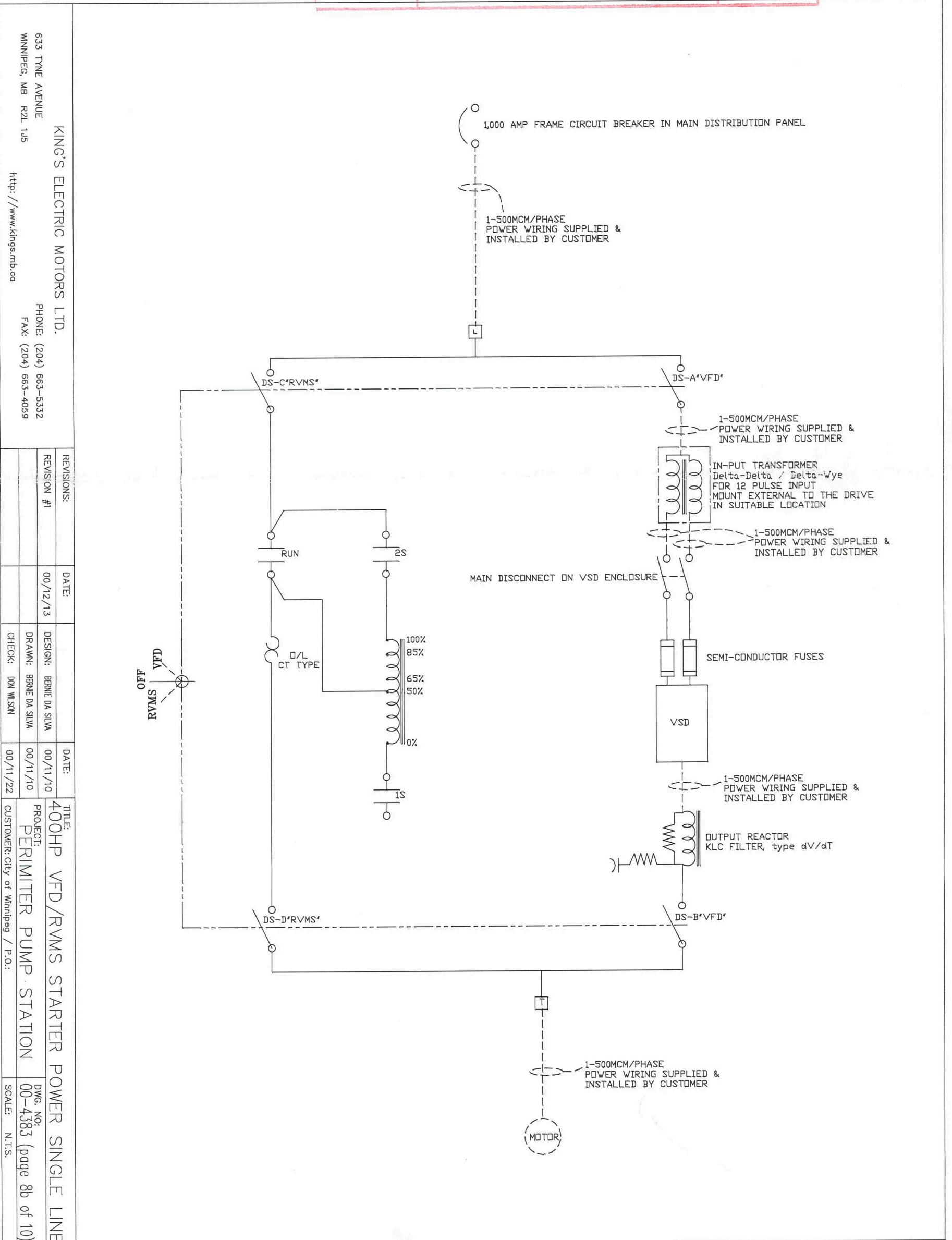
Reviewed as Modified

Revise and Resubmit

Proj. #: 60910.07

Date: Jan 8, 2001 By: [Signature]

[Signature]



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http://www.kings.mtb.ca

REVISIONS:	DATE:	DESIGN:	DATE:
REVISION #1	00/12/13	BERNIE DA SILVA	00/11/10
		DRAWN: BERNIE DA SILVA	00/11/10
		CHECK: DON WILSON	00/11/22

TITLE: 400HP VFD/RVMS STARTER POWER SINGLE LINE
PROJECT: PERIMETER PUMP STATION
CUSTOMER: City of Winnipeg / P.O.:
DWG. NO: 00-4383 (page 8b of 10)
SCALE: N.T.S.

Reid Crowther

Reid Crowther & Partners Ltd.
Consulting Engineers

Reviewed for general conformance with design intent.
Responsibility for detailed design is the responsibility of the design engineer.
Responsibility for verification of the design is the responsibility of the design engineer.


Responsibility for verification of the design is the responsibility of the design engineer.
Responsibility for verification of the design is the responsibility of the design engineer.

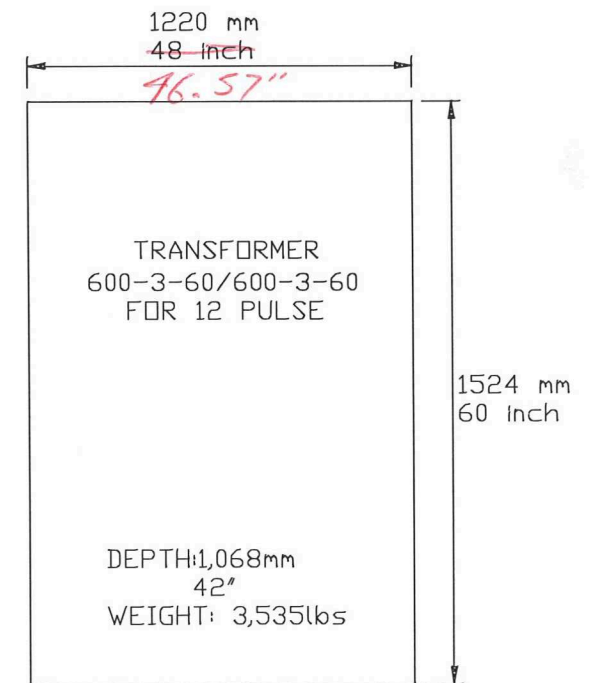
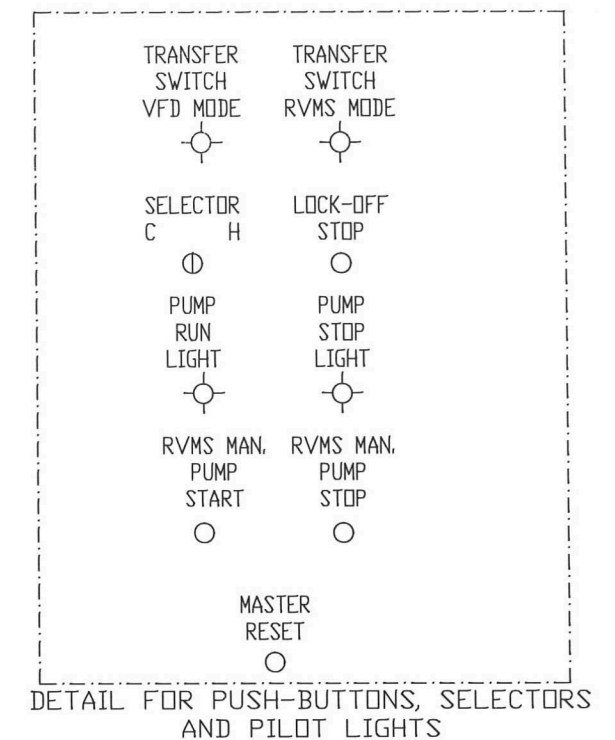
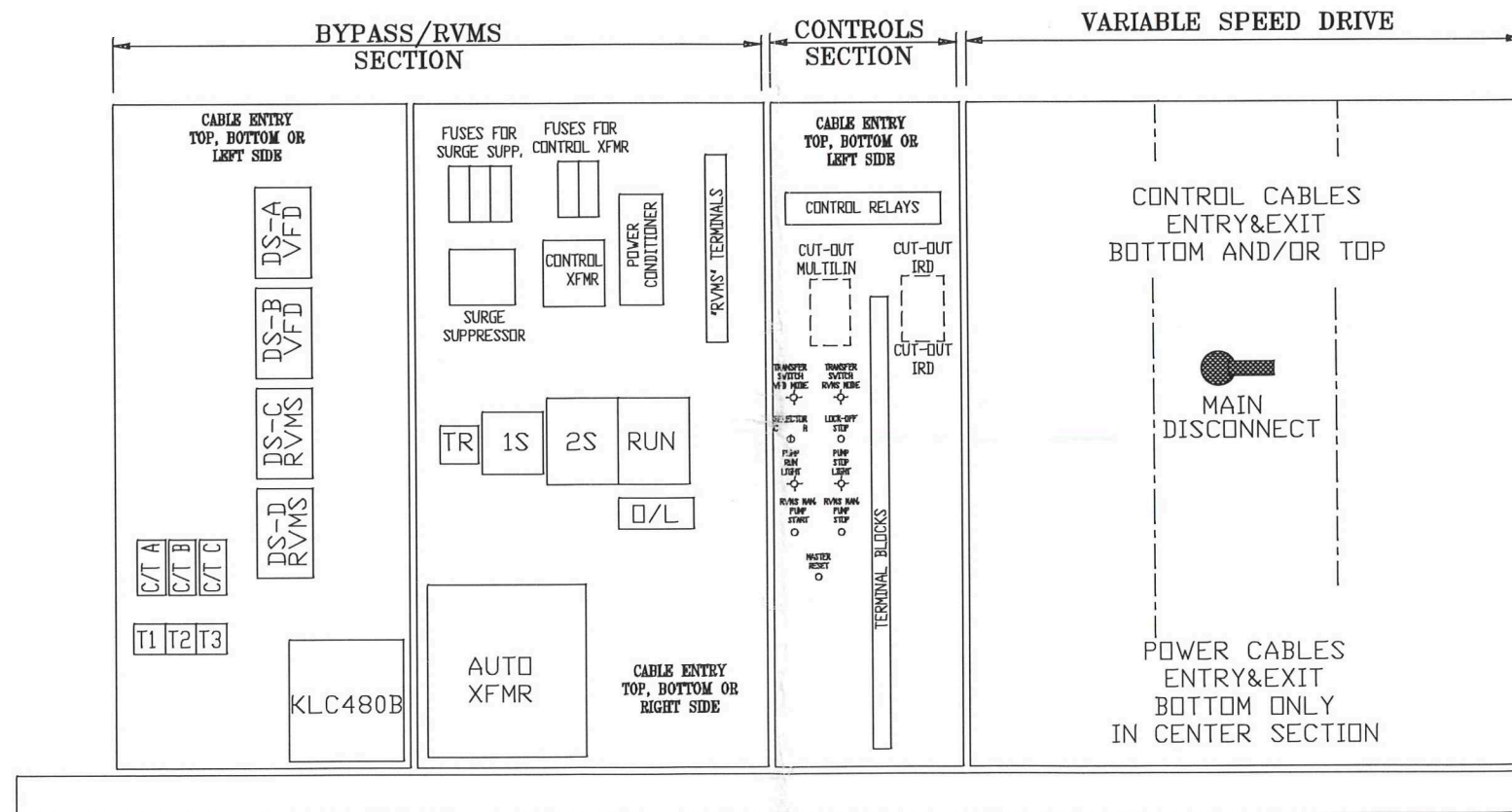
Reviewed

Reviewed as Modified

Review and Resubmit

Proj. #: 60910.07

Date: Jan 8, 2001 By: 



ALL ASSEMBLIES WILL HAVE EITHER CSA APPROVAL/CSA SPECIAL INSPECTION AND/OR ULC APPROVAL

KING'S ELECTRIC MOTORS LTD. 633 TYNE AVENUE WINNIPEG, MB R2L 1J5 PHONE: (204) 663-5332 FAX: (204) 663-4059 http://www.kings.mb.ca	REVISIONS:	DATE:	DATE:	TITLE:	
	REVISION #1	00/12/13	DESIGN: BERNIE DA SILVA DRAWN: BERNIE DA SILVA CHECK: DON WILSON	00/11/10 00/11/10 00/11/22	400HP VFD/RVMS STARTER LAYOUT
			PROJECT:	DWG. NO.:	
		CUSTOMER: City of Winnipeg / P.O.:	00-4383 (page 9 of 11)	SCALE: N.T.S.	

Reviewed for general conformance with design intent.
 Responsibility for detailed design inherent in the shop drawings rests with the Contractor.

Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the work rests with the Contractor.

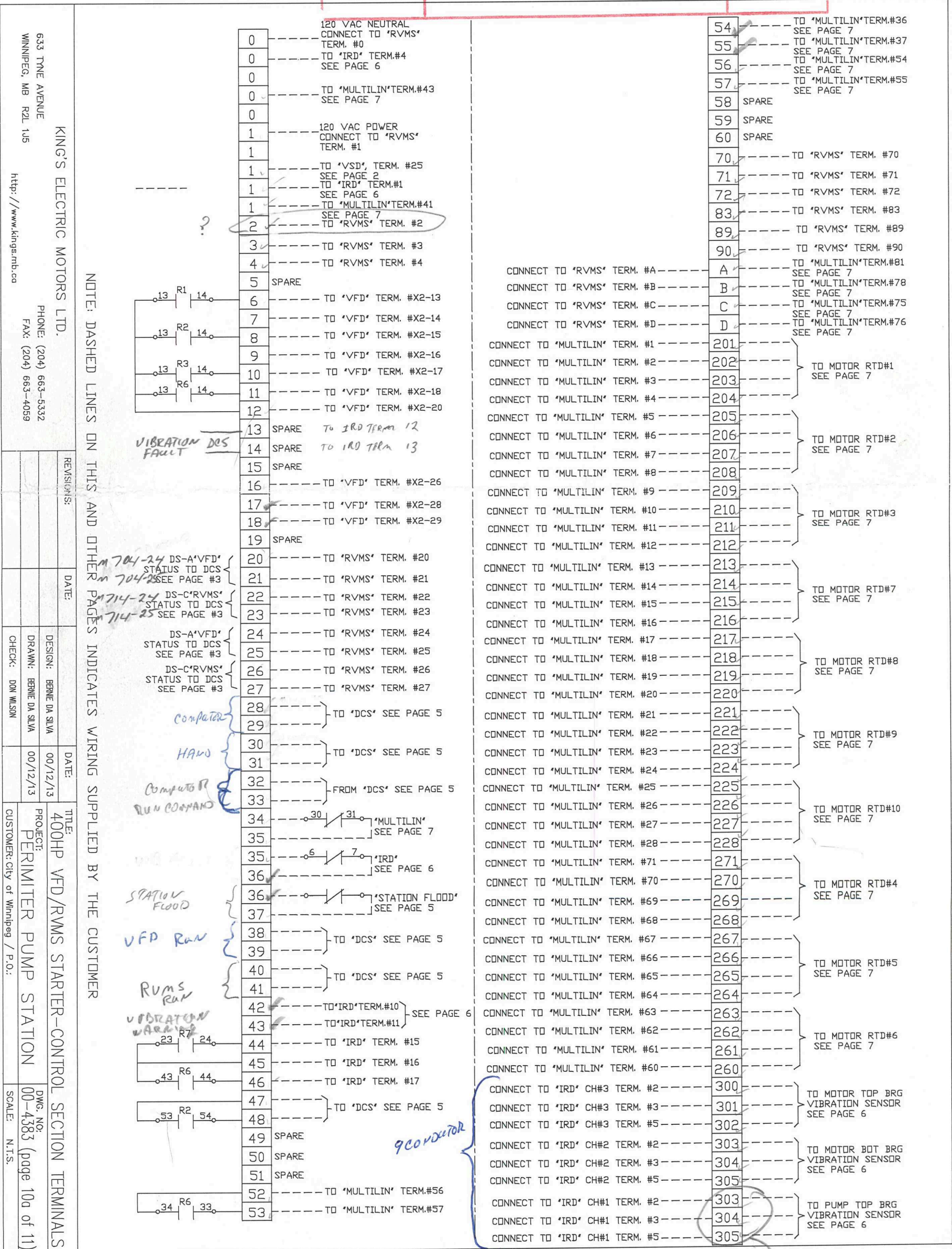
Reviewed

Reviewed as Modified

Revise and Resubmit

Proj. #: 60910.07

Date: Jan 8 2001 By: [Signature]



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REVISIONS:	DATE:	TITLE:
DESIGN: BENNE DA SILVA	00/12/13	400HP VFD/RVMS STARTER-CONTROL SECTION TERMINALS
DRAWN: BENNE DA SILVA	00/12/13	PROJECT: PERMITTER PUMP STATION
CHECK: DON WILSON		CUSTOMER: City of Winnipeg / P.O.:
		DWG. NO: 00-4383 (page 10a of 11)
		SCALE: N.T.S.

306
 307
 308

Reviewed for general conformance with design intent.
 Responsibility for detailed design is from in the shop drawings rests with the Contractor.

Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the work rests with the Contractor.

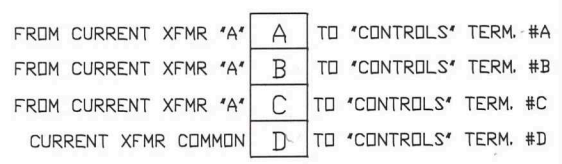
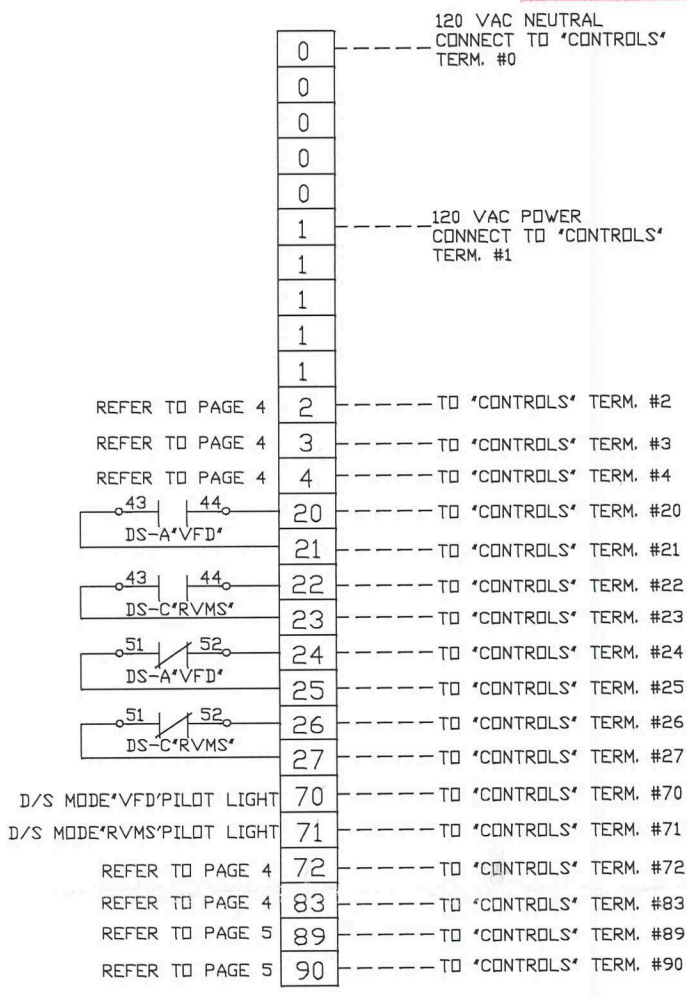
Reviewed

Reviewed as Modified

Revise and Resubmit

Proj. #: 60910.07

Date: Jan 8, 2001 By: 



REFER TO PAGE 1 FOR CURRENT XFMR DETAILS

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REVISIONS:	DATE:	DESIGN: BERNIE DA SILVA
		DRAWN: BERNIE DA SILVA
		CHECK: DON WILSON
	DATE: 00/12/13	
TITLE: 400HP VFD/RVMS STARTER-RVMS SECTION TERMINALS PROJECT: PERIMETER PUMP STATION CUSTOMER: City of Winnipeg / P.O.:		DWG. NO: 00-4383 (page 10b of 11) SCALE: N.T.S.



Reviewed for general conformance with design intent. Responsibility for detailed design inherent in the shop drawings rests with the Contractor.

Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the work rests with the Contractor.

Reviewed

Reviewed as Modified

Revised and Resubmit

Proj. #: 60910.07

Date: Jan 8, 2001 By:

BILL OF MATERIALS

VFD	ABB	#ACS627-490-6-000B5200901
BY-PASS DISCONNECTS	ABB	#DETL-NF600AP+DETL-ZW9+DETL-ZW12 PADLOCKABLE IN ALL POSITIONS
"RVMS" STARTER	ABB	EHN550C-1 "RUN" NEMA RATED @ 400 HP/600 V EHN550C-1 "2S" EHN260C-1 "1S" N22E-84+TP40DA "TR" T900SU500 "D/L"
FUSES FOR SURGE SUPPRESSOR	GOULD	US3J3I HOLDER + A4J30 FUSES
FUSES FOR CONTROL TRANSFORMER	GOULD	USCC3I HOLDER + ATDR4 FUSES
SURGE SUPPRESSOR	PSYTRONICS	#6003D
12 PULSE TRANSFORMER	TRANS-COIL	#KMP12CC550IE
dV/dT OUTPUT FILTER	TRANS-COIL	#KLC480B
CONTROL TRANSFORMER	HAMMOND	PH100AJ
POWER CONDITIONER	SOLA/HEAVY DUTY	#63-23-175-8 750VA RATED
CONTROL RELAYS	ABB	#N40E-84 C,H,R1,R2,R3,R4,R6,R7
CONTROL RELAYS	ABB	#N31E-84 R5
"C - H" SELECTOR SWITCH	ABB	#CBK-C2AMK+CB11
LOCK-OFF STOP	ALLEN BRADLEY	#800T-FX6A+N314 PADLOCKING
PILOT LIGHTS	ABB	#CBK-KLF1R(G) 120 VOLT
STOP BUTTON	ABB	#CBK-CPER+CB01
START BUTTON	ABB	#CBK-CPG+CB10
ENCLOSURE FOR VSD	ABB	NO SPECIFIC NUMBER (CUSTOM MADE FOR ABB)
ENCLOSURE FOR "BYPASS"	EUROBEX	#ETA AR9215
ENCLOSURE FOR "RVMS"	EUROBEX	#ETA AR9219
ENCLOSURE FOR "CONTROLS"	EUROBEX	#ETA AR9207
CONTROL TERMINAL BLOCKS	ACI	#102732 (WIRE SIZE RANGE #20-10 AWG)

WARNING STICKER TO BE PLACED ON THE "BYPASS", "RVMS" & "CONTROLS" SECTIONS. THE COLOUR IS RED WITH WHITE LETTERS AND IS SELF ADHESIVE.

WARNING
MORE THAN ONE SOURCE OF POWER SUPPLY
 600 VOLT FROM MAIN DISTRIBUTION PANEL
 TURN OFF CIRCUIT BREAKER AT MAIN PANEL
 BEFORE OPENING THESE DOORS
 ALWAYS VERIFY THAT POWER IS OFF BEFORE
 WORKING ON ANY EQUIPMENT
 SEE DRAWINGS FOR ADDITIONAL INFORMATION

KING'S ELECTRIC MOTORS LTD.		633 TUNE AVENUE WINNIPEG, MB R2L 1u5 http://www.kings.mb.ca	
PHONE: (204) 663-5332 FAX: (204) 663-4059		REVISIONS:	
REVISION #1	DATE: 00/12/13	DESIGN: BERNIE DA SILVA	DATE: 00/11/10
CHECK: DON WILSON		DRAWN: BERNIE DA SILVA	DATE: 00/11/10
		CHECK: DON WILSON	DATE: 00/11/22
TITLE: 400HP VFD/RVMS BILL OF MATERIALS		PROJECT: PERIMETER PUMP STATION	
CUSTOMER: City of Winnipeg / P.O.:		DWG. NO: 00-4583 (page 11 of 11)	
SCALE: N.T.S.			