



REQUEST FOR TENDERS No. 21-058

Chase River Pump Station Electrical, Instrumentation and Controls Upgrades

ISSUED: 21 JUNE 2021

CLOSING DATE AND TIME:

Tenders must be received on or before:
3:00pm (15:00 hrs) Pacific Time on 15 JULY, 2021

Submissions and Questions are to be directed to:

Duncan Taylor
250-390-6583
dtaylor@rdn.bc.ca

Questions, or requested revisions to the form of contract, must be received at least five (5) business days before the closing date.

Mandatory Proponent's Site Information Meeting:

10:30 am July 7, 2021

Duncan Taylor (dtaylor@rdn.bc.ca)
Chase River Pump Station
1174 Island Highway South
Nanaimo, BC

RSVP requested. Site visit attendees are required to wear steel-toed footwear, high visibility vest and a face mask.

Instructions to Bidders

ARTICLE 1. Closing Date/Time/Location and Submission Requirements

Bidders must submit their TENDER on or before 3:00pm (15:00 hrs), Pacific Time, **15 July 2021**.

Submission Requirements:

Bidders must, at minimum, submit:

1. a completed Tender Form;
2. a draft Work schedule;
3. a list of applicable labour, supervision, material and equipment charge-out rates for Extra Work

along with any supporting information to facilitate Regional District of Nanaimo (RDN) tender evaluation, with reference to Article 11 “Award” below.

Tenders will be accepted by Email only: In PDF format with “CRPS Electrical Upgrades Tender Submission” as the subject line to this electronic address: dtaylor@rdn.bc.ca

The RDN will not be held responsible for any technological delays.

Tenders received by any other manner will not be accepted. Tenders will not be opened in public.

ARTICLE 2. Scope of Work

Tenders are invited from qualified and experienced firms to renew the electrical, instrumentation and controls systems at the Chase River Pump Station at 1174 South Island Highway, Nanaimo, BC (the delivery point), all as more fully described in the Tender Documents.

The Tender Documents identify work as Pre-shutdown work and Shutdown work. The Shutdown work must take place between September 20, 2021 and October 1, 2021. Pre-shutdown work will take place prior to the Shutdown and be of a duration agreed upon between the Tenderer and the RDN. During the Shutdown period the RDN’s Mechanical contractor will also be performing work in the Wet Well. Within this allowance, bidders may choose the number of work shifts per day and hours per shift to suit their own envisioned construction workflow, with due consideration to the City of Nanaimo’s noise bylaw.

The Work will take place in an area requiring special attention to environmental protection. Refer to the RDN’s Wastewater Services Environmental Management System Contractor-Supplier Package for detail. A representative of the successful bidder will be required to undergo approximately 30 minutes of environmental training provided by the RDN. The successful bidder is then required to train all site construction workers under their supervision.



NOTE: The successful bidder will be expected to provide their own crew facilities, including but not limited to lunch trailer and washroom, along with water and electrical services for same.

ARTICLE 3. Tender Documents

The Tender Documents referred to in this tender package include the following:

- (1) Request for Tenders, including the Tenderer's "Tender Form";
- (2) RDN Standard Form Construction Contract Form of Agreement*;
- (3) RDN Standard Form General Conditions of Contract
- (4) RDN Wastewater Services Environmental Management System Contractor-Supplier Package

* Includes the description of work, the drawings, the specifications, and other reference documents.

The Tenderer must carefully examine the Tender Documents. Should a Tenderer find discrepancies in, or omissions from the Tender Documents, or should they be in doubt as to their meaning, they should, prior to submitting their tender, notify the RDN contact person in writing. The Tenderer may not claim, after the submission of a tender, that there was any misunderstanding with respect to the conditions imposed by the documents.

No verbal agreement or conversation made or had at any time with any officer, agency, or employee of the RDN shall affect or modify any of the terms or obligations herein stated or deemed to be any representation of warranty.

ARTICLE 4. Addenda

If the RDN determines that an amendment is required to this TENDER, the RDN will post an addendum on the RDN (www.rdn.bc.ca) and BC Bid websites (www.bcbid.gov.bc.ca). Each addendum will be incorporated into and become part of the TENDER. No amendment of any kind to the TENDER is effective unless it is contained in a written addendum issued by the RDN. It is the sole responsibility of the Proponent to check and ensure all addendums are included prior to submitting their final Tender submission.

ARTICLE 5. Tender Price

All pricing is to be in Canadian Dollars and is to include all transportation costs to the delivery point. Prices shall be filled in where indicated on the Tender Form. In the event of a price extension discrepancy when calculating the total contract value, the RDN reserves the right to correct the totals.

ARTICLE 6. Federal Sales Tax

Where indicated, GST shall be shown separately on the Tender Form based on the total contract value.

ARTICLE 7. Tender Signing

The TENDER must be executed by an authorized signatory in a position to legally bind their Company to the information contained in the Tender Form.

ARTICLE 8. Revisions to Tenders

Any revision to the tender by the Tenderer must be in writing properly executed and received on or before the posted closing date and time as per the submission instructions outlined in Article 1.

ARTICLE 9. Tender Withdrawal

A Tenderer may, without prejudice to themselves, withdraw their TENDER on written request received on or before the posted closing date and time as per the submission instructions outlined in Article 1.

ARTICLE 10. Tender Rejection

- .1 The RDN reserves the right to reject any or all tenders or accept other than the lowest tender and to accept the tender which it deems most advantageous.
- .2 The RDN may reject a tender if:
 - a) After investigation and consideration, the RDN concludes that the Tenderer is not qualified to do the work and/or cannot do the work and perform the Contract in a manner satisfactory to the RDN.
 - b) A tender contains qualifying conditions or otherwise fails to conform to these Instructions to Tenderers.
 - c) A tender is incomplete, is considered incomplete in the Instructions to Tenderers, is obscure or irregular, which has erasures or corrections in the Tender Form or in which prices are omitted.
 - d) The RDN may, in its absolute discretion, reject a Tender submitted by Tenderer if the Tenderer, or any officer or director of the Tenderer is or has been engaged either directly or indirectly through another corporation in a legal action against the RDN, its elected or appointed officers and employees in relation to:
 - any other contract for works or services; or
 - any matter arising from the RDN's exercise of its powers, duties, or functions under the Local Government Act or another enactment within five years of the date of this Call for Tenders.

In determining whether to reject a tender under this clause, the RDN will consider whether the litigation is likely to affect the Tenderer's ability to work with the RDN, its consultants and representatives and whether the RDN's experience with the Tenderer indicates that the RDN is likely to incur increased staff and legal costs in the administration of this contract if it is awarded to the Tenderer.

- .3 The RDN may reject all tenders if for any reason the RDN considers to be in its best interest to do so, including without limitation for any of the following reasons;
 - a) the lowest tender that the RDN considers otherwise acceptable is higher than the funds budgeted or otherwise available for the project;
 - b) the RDN decides not to proceed with the project or to defer the project;
 - c) if only one bid is received, then the tender may be reissued unless a financial analysis indicates that the sole bid represents a good value for the taxpayers ; or
 - d) the RDN is delayed in obtaining, or is unable to obtain, all approvals or consents it considers necessary, whether required by law or otherwise.
- .4 The RDN reserves the right to consider and to reject any tender or all tenders without notice to a Tenderer or Tenderers and without permitting a Tenderer to provide additional information.



.5 In no event will the RDN be responsible for a Tenderer's costs of preparing or submitting a tender.

ARTICLE 11. Award

An award shall be made on the tender that will give the greatest value to the RDN based on price, quality, warranty, and schedule/completion time. The RDN shall be free to assess these criteria based solely on the information provided with tenders. The lowest, or any tender may not necessarily be accepted. The RDN will, following receipt of an acceptable tender, issue in writing a Notice of Intent to Award to the successful Tenderer. Notice of Intent to Award is anticipated to be made within 14 days of tender closing.

ARTICLE 12. Form of Contract

The supply Agreement and General Conditions of the Contract are enclosed at the end of this document. Tenderers should carefully review this form of Contract. Tenderers may (but are not required to) request that RDN consider revisions to the form of Contract, including the scope of supply. Tenderers should submit such requests to the RDN well before the Closing Date and Time. If the RDN agrees to a request received prior to the Time, then RDN will issue an Addendum to modify the Contract. Failure to do so by the Tenderer means acceptance of the RDN form of Contract as presented.

ARTICLE 13. No Claim for Compensation

Except as expressly and specifically permitted in these Instructions to Tenderers, no Tenderer shall have any claim for any compensation of any kind whatsoever, because of participating in the tender, and by submitting a bid each Tenderer shall be deemed to have agreed that it has no claim.

ARTICLE 14. Solicitation of Board Members

"If a member of the Board, or a person who was a member of the Board in the previous six months has a direct or indirect interest in the contract, then the Tenderer shall report this to the RDN in accordance with Section 107 of the *Community Charter* upon being notified of the award of the contract.

The Tenderer warrants and represents that it has not received any information or a record from any Board member or former Board member contrary to Section 108 of the *Community Charter*." The successful Tenderer will be required to direct all communications related to their contract through the staff members responsible for the project.

ARTICLE 15. Freedom of Information and Protection of Privacy Act

All documents submitted to the RDN will be held in confidence by the RDN, subject to the provisions of the Province of British Columbia's *Freedom of Information and Protection of Privacy Act*. All tenders become the property of the RDN. The successful vendor and value of the award is routinely released.

ARTICLE 16. Conflict of Interest

The Tenderer declares that it has no financial interest, directly or indirectly in the business of any third party that would be or be seen to be a conflict of interest in carrying out the services. It warrants that neither it nor any of its officers or directors, or any employee with authority to bind the Tenderer, has any financial or personal relationship or affiliation with any elected official or employee of the RDN or their immediate families which might in any way be seen to create a conflict.



ARTICLE 17. Collusion

The Tenderer shall not engage in collusion of any sort and shall ensure that no person or other legal entity, other than the Tenderer has an interest in the TENDER. Tenderers shall prepare their TENDER without any knowledge of, comparison of figures with, or arrangement with any other person or firm preparing a tender for the same work.

ARTICLE 18. Bonding

A Bid Bond is not required for this project. Upon Notice of Intent to Award, the successful Tenderer is required to provide a Performance Bond and a Labour and Material Payment Bond, **each** in the amount of 50% of the total stipulated contract price. All bonds must be original documents and must be issued by a surety company licensed to conduct business in the Province of British Columbia.



TENDER FORM
21-058 Chase River Pump Station Upgrades
Page 1 of 2

Date: _____

Company Name: _____

Address: _____

Telephone: _____ Email: _____

To: Regional District of Nanaimo
 Duncan Taylor
 dtaylor@rdn.bc.ca

Having examined the Tender Documents, including any addenda, having viewed the work site, and having reviewed and complied with the Instructions to Bidders, we hereby offer to supply the Goods set forth in the aforesaid documents for the Stipulated Contract Price. Prices include the Tenderer's labour, supervision, material, equipment, material costs, transportation costs, overhead and profit and shall represent the cost to the Regional District of Nanaimo (RDN) of such charges excluding taxes which shall be shown separately.

Lump Sum Total Price \$ _____

GST (5%) \$ _____

Total Stipulated Contract Price \$ _____

PROPOSED SUBCONTRACTORS, IF ANY (list applicable work scope)

PROPOSED CONSTRUCTION START DATE

PROPOSED CONSTRUCTION END DATE



SHIFT LENGTH AND NUMBER OF SHIFTS PER DAY FOR EACH TRADE

TOTAL ESTIMATED CONSTRUCTION LABOUR AND SUPERVISION HOURS

DRAFT CONTRACTOR SCHEDULE (Gantt/Bar Chart)

Attach to Tender Form

LIST OF TIME AND MATERIAL CHARGE OUT RATES FOR EXTRA WORK

Attach to Tender Form


ACCEPTANCE

- .1 The tender is open to acceptance for a period of sixty (60) calendar days from the date of bid closing.
- .2 We understand that the lowest or any Bid will not necessarily be accepted. The Owner may also elect not to proceed with the Project.
- .3 The RDN reserves the right to waive minor defects or irregularities in tenders.

Company: _____

Signature: _____
(Authorized Officer)

Printed: _____
(Authorized Officer)

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1. The site of the Work is the Regional District of Nanaimo's (RDN's) Chase River Pump Station (CRPS) at 1174 Island Highway South, Nanaimo, BC.

2. General Description

In general, the Work shall consist of renewing electrical, instrumentation and control systems at the RDN's CRPS.

3. Definition of the Work

The Work shall consist of supplying all materials, equipment, temporary facilities, tools, labour, supervision, overhead, and everything required to accomplish the Work described and called for in the Contract Documents.

Refer to the Allnorth E&I Work Package 2003251-000-1604-001 (EWP) for further definition of the Work. This document is intended to act as a supplement to the EWP.


4. Cooperation and Coordination

A project for the refurbishment of the mechanical and structural aspects of the wet well will be run in parallel to the Work, to be performed by others under a different contract.


5. Included in the Work

The Work shall include the supply of all materials, labour, supervision, plant equipment, and tools necessary to complete the Work described herein and shown on the drawings and standards. It shall generally consist of, but not specifically be limited to the following:

- 5.1. Supply all equipment, materials and consumables required to accomplish the Work, unless noted otherwise.
- 5.2. Supply skilled labour and supervision with the proper qualifications to accomplish the Work in a thoroughly substantial and workmanlike manner.
- 5.3. Issue of submittals, including but not limited to equipment and prefabricated materials, to the RDN for review and approval well in advance of construction.
- 5.4. Conduct all work at the CRPS site in accordance with RDN policies and procedures, City of Nanaimo bylaws, the BC Occupational Health and Safety Regulation and other applicable provincial and federal regulations, including but not limited to:
 - 5.4.1. WorkSafe BC personal protective clothing and equipment procedures;
 - 5.4.2. WorkSafe BC confined space entry procedures to address gas and other hazards;
 - 5.4.3. WorkSafe BC fall protection procedures;
 - 5.4.4. WorkSafe BC ladders, scaffolds and temporary work platforms procedures;
 - 5.4.5. WorkSafe BC cranes and hoists procedures;
 - 5.4.6. WorkSafe BC rigging procedures;

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- 5.4.7. RDN Wastewater Services Environmental Management System contractor-supplier package, including training in situations where the Work could have a significant impact on the environment.
- 5.5. Clean up all debris on a daily basis and leave the job site in a clean manner, prior to leaving the site.
- 5.6. Secure the construction site from access by the public and take precautions to prevent theft.
- 5.7. If necessary, coordinate the Work with the RDN's mechanical contractor, who may be working in and about the pump station buildings on related tasks while the Work is being conducted.
- 5.8. Provide temporary single and multi-phase electrical power supplies for all of the site work (RDN can only provide limited 110VAC single phase power).
- 5.9. Receive and keep secure Owner-supplied materials. Inspect all Owner-supplied materials to verify that they are not damaged and are complete and suitable for the intended purpose. Notify the RDN if any issues are found.
- 5.10. The Contractor shall pick up all Owner-supplied materials (including panels and MCCs) at the RDN's GNPCC facility (4800 McGuffie Rd, Nanaimo, BC V9T 5B3). RDN will load the materials at the GNPCC. The Contractor shall unload at CRPS.
- 5.11. Perform and document quality assurance inspection and testing on the completed Work in accordance with the Contractor's standards. Provide an Inspection and Test Plan with procedures prior to use for review and approval by the RDN. Testing shall include, but not be limited to:
 - 5.11.1. Point-to-point testing
 - 5.11.2. Insulation resistance testing
 - 5.11.3. Phasing
 - 5.11.4. Torque testing
- 5.12. Perform setup, calibration, and function testing for all new instruments.
- 5.13. Install equipment in accordance with the manufacturer's recommendations and requirements. Where manuals are not provided with Owner-supplied equipment, request copies from the RDN.
- 5.14. Provide an experienced electrician at the CRPS site, along with their tools, equipment, and consumables, during a three-day commissioning period, to work with RDN operations to support troubleshooting or any other issues that may arise.
- 5.15. Provide permanent engraved labels electrical equipment, junction boxes, and new and existing field instrumentation.

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5.16. Provision of red-lined project Drawings indicating as-built details, for preparation of record drawings by the Engineer.

5.17. Electrical lockout of new equipment for safe work, where required.

6. Not Included in the Work

6.1. Electrical lockout of existing equipment for safe work.

6.2. Refer to the Allnorth EWP for further details.

7. Project Schedule

7.1. The following Owner-performed preparation work will be completed by August 13, 2021:

7.1.1. Extend concrete pad for larger control panel;

7.1.2. Relocate the Gate UPS to the lunch room;

7.1.3. Ready system for Pump 5 only operation.

7.2. All Owner-supplied materials are expected to be available to the Contractor for pickup at the GNPCC on or before August 30, 2021.

7.3. Pre-shutdown work while the station is in normal operation can commence in accordance with the Contractor's proposed schedule.

7.4. Pre-shutdown work with station operation on Pump 5 only should be limited to 5 days and is planned for September 13, 2021 to September 17, 2021. Work can extend into the weekend if necessary. Power to Lighting Panel 'A' must be re-established within 24 hours of powering down. Plant cannot be left unattended until this is complete.

7.5. The Mechanical installation contractor is scheduled to perform the structural and mechanical re-fit work in the wet well from September 20, 2021 to October 1, 2021. Access to the wet well for electrical work during this time may be limited and must be coordinated with Others.

7.6. The work must be completed by October 1, 2021. The energization and system commissioning period are planned to take place from October 2, 2021 to October 4, 2021. The plant is intended to be returned to full Operation on October 5, 2021.

7.7. The RDN retains the right to re-schedule this work dependent on unplanned operational requirements.

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMP STATION UPGRADES RFT 21-058

BETWEEN: _____ (the "Contractor")

AND: The Regional District of Nanaimo (the "REGIONAL DISTRICT")

THIS AGREEMENT WITNESSES that the Contractor and the REGIONAL DISTRICT agree as follows:

1. The Contractor shall provide all labour, Contractor's Plant and Equipment and materials required to perform the Work within the required time, as required by the Contract Documents, including:
 - (a) this executed Agreement;
 - (b) the General Conditions of Contract;
 - (c) any Addenda (attached Schedule 1);
 - (d) the Contractor Tender Form (attached Schedule 2);
 - (e) the original Contractor Supporting Information, if any (attached Schedule 3)
 - (f) the Contractor Work Schedule (attached Schedule 4)
 - (g) the Description of Work (attached Schedule 5);
 - (h) the Project Lists & Drawings (attached Schedule 6);
 - (i) the Specifications (attached Schedule 7);
 - (j) Other relevant documents such as but not limited to letters of clarification and reports or the like included by reference (attached Schedule 8).
2. Upon Substantial Completion, the REGIONAL DISTRICT shall pay the Contractor the Contract Price, as required by the Contract Documents, less an amount estimated by the REGIONAL DISTRICT to complete any Work on the Deficiency List prepared by the REGIONAL DISTRICT and less any holdback amounts required under the BC Builder's Lien Act.
3. The Contract Price shall be the sum in Canadian Dollars of the following:
 - (a) Up to the Tender Price set out in the accepted Tender Form and;
 - (b) Payments made on account of change orders, as may be required by the Contract Documents.

The Contract Price shall be the entire compensation owing to the Contractor by the REGIONAL DISTRICT for the Work and shall cover and include all supervision, labour, materials, Contractor's Plant and Equipment, overhead, profit, financing costs and all other costs and expenses whatsoever incurred in performing the Work.

Except for the amounts which the REGIONAL DISTRICT in good faith is disputing and except for any set off which the REGIONAL DISTRICT may claim and except for invoices (or portions of invoices) in respect of which the REGIONAL DISTRICT has requested and

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMP STATION UPGRADES RFT 21-058

- not received supporting evidence, the REGIONAL DISTRICT shall pay invoices submitted to it for the Services within 30 days' receipt thereof.
4. The Contractor shall commence the Work within 7 Days after issuance of the Notice to Proceed from the REGIONAL DISTRICT, unless the Notice to Proceed states otherwise, and shall attain completion of the Work by [].
 5. The Contract Documents shall form a part of this Agreement as though recited in full.
 6. The Contract supersedes all prior negotiations, representations or agreements, whether written or oral and is the entire agreement between REGIONAL DISTRICT and the Contractor with respect to the subject matter of this Agreement.
 7. Defined terms in this Agreement shall have the same meanings as set out in the General Conditions, except where the contrary is expressed.
 8. In entering into and executing this Agreement, the Contractor has relied on its own examination of the Site, access to the Site, and on all other data, matters and things requisite to the fulfilment of the Work, and on its own knowledge of existing services or utilities along or crossing or in the vicinity of the route or facility to be installed or constructed under this Contract, and not on any representation or warranty of the REGIONAL DISTRICT.
 9. The Contractor shall not assign the Contract, or any portion of the Contract, or any payments due or to become due under the Contract, without the express written consent of the REGIONAL DISTRICT.
 10. No action or failure to act by the REGIONAL DISTRICT or an authorized agent of the REGIONAL DISTRICT shall constitute a waiver of any right or duty afforded any of them under the Contract, or constitute an approval or acquiescence in any breach thereunder, except as may be specifically agreed in writing.
 11. This Agreement shall enure to the benefit of and be binding upon the REGIONAL DISTRICT and the Contractor and their respective heirs, executors, legal representatives, successors and permitted assigns. In the event of more than one person being the Contractor, the grants, covenants, provisos and claims, rights, powers, privileges and liabilities shall be construed and held to be several as well as joint.
 12. Time shall be of the essence of this Agreement.
 13. This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same instrument. Delivery by electronic transmission in portable document format (PDF) of an executed counterpart of this Agreement is as effective as delivery of an originally executed counterpart of this Agreement.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as follows:

The Regional District of Nanaimo by its authorized signatory on _____ day of _____, 2021 (the date of Agreement):

SIGNED on behalf of the REGIONAL DISTRICT by:

Signature: _____

Name: _____

Title: _____

[CONTRACTOR'S NAME]

by its authorized signatory on _____ day of _____, 20__ :

SIGNED on behalf of the Contractor by:

Signature: _____

Name: _____

Title: _____

SCHEDULE 1 – ADDENDA

SAMPLE

SCHEDULE 2 – SUPPLY CONTRACTOR TENDER FORM

SAMPLE

SCHEDULE 3 – SUPPLY CONTRACTOR SUPPORTING INFORMATION

SAMPLE

SCHEDULE 4 – CONTRACTOR WORK SCHEDULE

SAMPLE

SCHEDULE 5 – DESCRIPTION OF WORK

SAMPLE

SCHEDULE 6 – PROJECT LISTS & DRAWINGS

Title	Dwg.No.	Date	Rev
LOAD LIST	2003251-000-1618-001	21/03/08	0
CABLE SCHEDULE	2003251-000-1618-002	21/03/08	0
MATERIAL TAKE-OFF (MTO)	2003251-000-1618-003	21/03/08	0
P-101 SCHEMATIC DIAGRAM	CRPS-E-011	21/03/08	0
P-102 SCHEMATIC DIAGRAM	CRPS-E-012	21/03/08	0
P-103 SCHEMATIC DIAGRAM	CRPS-E-013	21/03/08	0
P-104 SCHEMATIC DIAGRAM	CRPS-E-014	21/03/08	0
P-105 SCHEMATIC DIAGRAM	CRPS-E-015	21/03/08	0
SINGLE LINE DIAGRAM	CRPS-E-105	21/03/08	6
MCC LAYOUTS, SCHEDULES AND DETAILS	CRPS-E-106	21/03/08	7
ELECTRICAL CONTROL SCHEMATICS	CRPS-E-107	21/03/08	4
CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM	CRPS-E-110	21/03/08	7
ELECTRICAL POWER, CONTROL AND INSTRUMENT LAYOUTS	CRPS-E-111	21/03/08	5
LIGHTING LAYOUTS	CRPS-E-112	21/03/08	4
WET WELL LAYOUTS	CRPS-E-203	21/03/08	4
CP-100 PANEL LAYOUT	CRPS-I-101	21/03/08	0
CP-100 BILL OF MATERIAL	CRPS-I-102	21/03/08	0
CP-100 POWER DISTRIBUTION	CRPS-I-103	21/03/08	0
CP-100 GENERAL SCHEMATICS	CRPS-I-104	21/03/08	0
CP-100 SLOT 1 ANALOG INPUT	CRPS-I-105	21/03/08	0
CP-100 SLOT 2&3 ANALOG&RTD INPUT	CRPS-I-106	21/03/08	0

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CP-100 SLOT 5&6 ANALOG OUTPUT&DISCRETE INPUT	CRPS-I-107	21/03/08	0
CP-100 SLOT 7&8 DISCRETE INPUT	CRPS-I-108	21/03/08	0
CP-100 SLOT 9&10 DISCRETE INPUT	CRPS-I-109	21/03/08	0
CP-100 SLOT 11&12 DISCRETE&RELAY OUTPUT	CRPS-I-110	21/03/08	0
CP-100 BACK-UP CONTROLER SCHEMATIC DIAGRAM	CRPS-I-111	21/03/08	0
SEPTAGE RECEIVING AND GATE CONTROL WIRING DETAIL	CRPS-I-112	21/03/08	0
HMI-100 PANEL LAYOUT	CRPS-I-121	21/03/08	0
HMI-100 BILL OF MATERIAL	CRPS-I-122	21/03/08	0
HMI-100 PANEL SCHEMATICS	CRPS-I-123	21/03/08	0
ELECTRICAL CONTROL SCHEMATICS (DEMO DRAWING)	CH2-607-DEMO	NA	NA
ELECTRICAL CONTROL SCHEMATICS (DEMO DRAWING)	CH2-608-DEMO	NA	NA
CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM (DEMO DRAWING)	CH-04-609-DEMO	NA	NA
CP-100 PANEL LAYOUT (DEMO DRAWING)	CH3-701-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-702-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-703-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-704-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-705-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-706-DEMO	NA	NA
CP-100 WIRING (DEMO DRAWING)	CH3-707-DEMO	NA	NA
SEPTAGE RECEIVING AND GATE CONTROL WIRING DETAIL (OBSOLETE DRAWING)	CH3-708-DEMO	NA	NA

SCHEDULE 7 – SPECIFICATIONS

Title	Document No.	Date	Rev
RDN – Chase River Pump Station Upgrade E&I Engineering Work Package	2003251-000-1601-001-CRPS E&I EWP	2021/03/08	0

SCHEDULE 8 – OTHER RELEVANT DOCUMENTS

Title	Ref. No.	Date	Rev
Contractor \$5MM CGL insurance certificate – to come			
Contractor \$2MM pollution liability insurance certificate – to come			
Contractor performance bond – to come			
Contractor labour and material bond – to come			
Contractor Worksafe BC clearance letter – to come			

GENERAL TERMS & CONDITIONS OF CONTRACT

CHASE RIVER PUMP STATION ELECTRICAL INSTRUMENTATION AND CONTROLS UPGRADES 21-058

PART 1 LAW APPLICABLE

This Contract shall be construed under and according to the laws of the Province of British Columbia, Canada.

PART 2 PRIME CONTRACTOR DESIGNATION

The Contractor must be registered with WorkSafe BC and be in good standing with remittance up to date throughout the agreement and is designated as the Prime Contractor and shall fulfill the Prime Contractor responsibilities as defined in:

- a) *WorkSafeBC Occupational Health and Safety Regulation*, Notice of Project, Section 20.2, and Coordination of multiple employer workplaces, Section 20.3;
- b) *Workers Compensation Act (BC)*, Coordination at multiple-employer workplaces, Part 2, Division 1, Sections 13 and 24; and
- c) General Requirements, Section 3.10 WorkSafe BC.

PART 3 QUALITY OF WORK AND MATERIALS

The whole of the materials and/or the Work, whether or not so stated herein, shall be done in the most substantial and professional manner with new materials, articles, equipment and work of the best quality and description and by employment of properly skilled trades and in strict conformity with and as required by this contract to the satisfaction of the REGIONAL DISTRICT whether or not so stated herein. Materials and equipment shall be the products of suppliers or manufacturers of established reputation engaged in the supply or manufacture of such materials or equipment.

Materials are to be installed or incorporated into the Work applied in accordance with the manufacturer's directions. Use the techniques and application best suited for the type of material being used.

PART 4 JUDGE OF WORK AND MATERIALS

The REGIONAL DISTRICT shall be the final judge of all work, materials, and plants in respect of both quality and quantity and their decisions of all questions in dispute with regard thereto will be final.

All materials shall be subject to inspection and test by and shall meet the approval of the REGIONAL DISTRICT.

In case any materials, equipment and supplies are defective in material or quality or otherwise not in conformity with the specifications of the contract, the REGIONAL DISTRICT shall have the right either to reject them or to require their correction.

Acceptance or rejection of the materials, equipment, supplies, etc. shall be made as promptly as practicable after delivery, but failure to inspect and accept or reject supplies shall not relieve the contractor from responsibility for such supplies as are not in accordance with the specifications.

PART 5 RECTIFICATION OF DAMAGE AND DEFECTS

The Contractor shall rectify any loss or damage for which, in the opinion of the REGIONAL DISTRICT, the Contractor is responsible, at no charge to the REGIONAL DISTRICT and to the satisfaction of the REGIONAL DISTRICT. In the alternative, the REGIONAL DISTRICT may repair the loss or damage and the Contractor shall pay to the REGIONAL DISTRICT the costs of repairing the loss or damage forthwith upon demand from the REGIONAL DISTRICT. Where, in the opinion of the REGIONAL DISTRICT, it is not practical or desirable to repair the loss or damage, the REGIONAL DISTRICT may estimate the cost of the loss or damage and deduct such estimated amount from the amount owing to the Contractor hereunder.

PART 6 WARRANTY AND GUARANTEE

The Work shall be warranted to be free of defects and shall be guaranteed by the Contractor for a period of one (1) year from the date of acceptance. On receipt of notice from the REGIONAL DISTRICT the Contractor shall promptly make all repairs arising out of defective work or any equipment or materials supplied by him.

The REGIONAL DISTRICT is hereby authorized to make such repairs if, ten (10) days after the giving of such notice to the Contract, the Contractor has failed to make or undertake with due diligence said repairs; provided, however, that in the case of an emergency, where, in the opinion of the REGIONAL DISTRICT delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor, and all expense in connection therewith shall be charged to the Contractor.

PART 7 ASSIGNMENT

The Contractor shall not assign, sub-contract or let out as task work any part of the Work, and shall not assign any interest herein or any right to payment hereunder without first having had and obtained the consent in writing of the REGIONAL DISTRICT; which consent the REGIONAL DISTRICT may withhold in its absolute discretion. If the REGIONAL DISTRICT should consent to any such assignment, sub-contracting or letting out as task work of all or any part of the Work, the Contractor shall by reason thereof be in no ways relieved from his responsibility for the fulfillment of the Work but shall continue to be responsible for the same in the same manner as if all the Work had been performed by the Contractor himself.

PART 8 TERMINATION

The REGIONAL DISTRICT may by written notice to the Contractor terminate the whole or any part of this contract in any one of the following circumstances:

- a) If the Contractor fails to perform the Work within the time specified herein or any extension thereof.
- b) If the Contractor fails to perform any of the other provisions of this contract, or so fails to make progress as to endanger performance of this contract in accordance with its terms and in any of these circumstances, does not cure such failure within a period of ten (10) days, or such longer period as the REGIONAL DISTRICT may authorize, in writing, after receipt of notice from the REGIONAL DISTRICT specifying any such failure.
- d) In the event that the Contractor performs any act or does anything by which the REGIONAL DISTRICT shall incur any liability whatsoever.
- e) The REGIONAL DISTRICT may terminate the Agreement, without any cost or penalty or consequence whatsoever, if it concludes, acting reasonably on the information available to it, that the Contractor is in material non-compliance with, or has been convicted of a material offence or violation of, health, safety, labour or environmental laws.
- f) In the event that any creditor of the Contractor causes a writ of execution or similar writ or court order to be served upon the REGIONAL DISTRICT requiring the REGIONAL DISTRICT to pay to such creditor or to a sheriff or other public official or to the Court any portion of the consideration due to the Contractor under this Contract.
- g) In the event that the Contractor shall be adjudged bankrupt or if it should make a general assignment for the benefit of creditors or if it becomes insolvent or is appointed by a creditor or if it should take the benefit of any Act that may be in force for bankrupt or insolvent debtors.

Upon termination of the Contract as aforesaid, the REGIONAL DISTRICT shall have no obligation to the Contractor except for such labour and materials as have been supplied or performed up to the date of the termination of the Contract.

PART 9 STATUTES, MUNICIPAL BY-LAWS AND PERMITS

Unless otherwise noted, the Contractor shall take out all necessary permits and licenses required to permit the Contractor to perform its obligations under the Contract. The Contractor shall give all notices and comply with all REGIONAL DISTRICT regulations, all laws, by-laws, ordinances, rules and regulations, whether federal, provincial or municipal, relating to the business it carries on and the services provided pursuant to the Contract, including the Workers' Compensation Act and the Employment Standards Act.

PART 10 SITE INSPECTION

The Contractor shall make site inspections of all appropriate areas to determine their general condition and to ensure the fulfillment of the contract requirements.

PART 11 USE OF PREMISES

The Contractor shall abide by, and shall ensure its employees abide by, all appropriate regulations, including but not limited to regulations relating to fire, safety, parking, traffic control and health. The Contractor will ensure that all of its employees are aware of the applicable regulations.

PART 12 DAMAGE TO PERSON AND PROPERTY

The Contractor shall use due care that no persons are injured, no property damaged or lost, and no rights are infringed in the performance of the Work, and the Contractor shall be solely responsible for all loss, damages, costs, and expenses in respect of any injury to persons, damage of property, or infringement of the rights of others incurred in the performance of the Work or caused in any other manner whatsoever by the Contractor, or its employees.

PART 13 CLEAN UP

The Contractor shall at all times conduct the work in an orderly and reasonably tidy manner and shall at suitable intervals remove any accumulation of rubbish or refuse materials. At no time shall any person employed by the Contractor or by any of his Subcontractors discard any litter or garbage on or adjacent to the site, except into a suitable container. Upon completion and before final acceptance of the work, the Contractor shall remove all rubbish, surplus, or discarded materials and equipment and shall leave the site in a clean and neat condition.

PART 14 CURRENCY OF PAYMENT

All reference to money in this Contract shall refer to and mean lawful money of Canada.

PART 15 DAMAGES FOR DELAY

If the work is not completed and/or the materials delivered before or upon the expiration of the time limited therefore all costs which the REGIONAL DISTRICT shall be put to by reason thereof shall be charged to the Contractor.

PART 16 PAYMENTS

The Contractor will be solely responsible for invoicing the REGIONAL DISTRICT ensuring to include the REGIONAL DISTRICT's Purchase Order number on all invoices to assure timely payment.

All invoices are subject to prior review and approval by the REGIONAL DISTRICT and approved invoices will be paid on a net 30 day basis unless otherwise negotiated and agreed to in writing.

If the REGIONAL DISTRICT does not approve of the services or part of them which are the subject of the invoice, the REGIONAL DISTRICT shall advise the Contractor in writing of the reasons for non-approval and the Contractor shall remedy at no additional cost to the REGIONAL DISTRICT before the REGIONAL DISTRICT shall be obliged to pay the invoice or any part of it, as the case may be.

PART 17 CHANGE ORDERS

If for any reason it may become desirable during the course of the work to change the alignment, dimensions, or design, or to add to or to omit portions thereof, the REGIONAL DISTRICT reserves the right to issue change orders to give effect to such changes as may, in the opinion of the REGIONAL DISTRICT be necessary or desirable.

The change may or may not result in a change in the amount of the work. If the changes do, in the opinion of the REGIONAL DISTRICT, change the amount of the work, the contract price shall be adjusted as mutually agreed between the Contractor and the REGIONAL DISTRICT.

PART 18 PROTECTION OF REGIONAL DISTRICT AGAINST CLAIMS

The Contractor shall assume the defense of and indemnify and hold harmless the REGIONAL DISTRICT and its officers, employees, and agents, from and against all claims relating to materials furnished and to inventions, copyrights, trademarks, or patents and rights thereto used by the Contractor in the execution of this contract and in subsequent use and/or operation by the REGIONAL DISTRICT.

PART 19 INSURANCE

Insurance Obtained by Contractor

General

The Contractor shall itself and cause each subcontractor to obtain and maintain, at its own expense, the insurance set out below until all conditions of the Contract have been fully complied with.

Commercial General Liability Insurance

Commercial General Liability Insurance providing third party bodily injury, death, and property damage coverage in an amount of not less than \$5,000,000 per occurrence, indicating that the REGIONAL DISTRICT is added as Additional Insureds. The policy shall include Premises and Operations Liability; Contractor's Protective Liability with respect to the Operations of subcontractors; Completed Operations Liability; Contractual Liability; Non-Owned Automobile Liability; and a Cross Liability and/or Severability of Interest clause protecting each insured to the same extent as if they separately insured.

The policy shall also contain a clause providing that the REGIONAL DISTRICT will receive 30 days' notice of cancellation or of any material change in coverage which will reduce the extent of coverage provided to the REGIONAL DISTRICT.

The Contractor shall file with the REGIONAL DISTRICT, prior to the commencement of work, a certificate of insurance in a form acceptable to the REGIONAL DISTRICT evidencing this policy. The Contractor shall also file with the REGIONAL DISTRICT evidence of the renewal on this policy. The Contractor is responsible for paying all deductibles.

Pollution/Environmental Impairment Liability Insurance

\$2,000,000 per occurrence/\$5,000,000 aggregate

Automobile Third Party Liability Insurance

A Standard Owner's Form Automobile Policy for each vehicle used in the performance of the Contract and regulated by the Insurance (Motor Vehicle) Act or similar legislation. The Third-Party Legal Liability Limits are to be in an amount not less than \$2,000,000 per occurrence.

Contractor's Equipment Insurance

The Contractor shall maintain an All-Risk insurance policy covering all construction equipment, mobile equipment, miscellaneous equipment, tools, office contents and other miscellaneous property whether owned, leased or rented or for which the Contractor may be responsible, that is used in any way in connection with this Contract.

Other Insurance

The Contractor and subcontractors shall provide at their own cost any additional insurance including but not limited to equipment breakdown insurance which they are required by law to provide or which they consider necessary.

Waiver of Subrogation

Each insurance policy obtained by the Contractor or any subcontractor shall include the following clause:

“Waiver of Subrogation

It is understood and agreed that in the event of a loss and upon payment of any claim hereunder, the insurer will waive its right of subrogation against the REGIONAL DISTRICT and any of their servants, agents, employees, parent, subsidiary, affiliated or related firms.”

PART 20 FORCE MAJEURE

Neither party shall be responsible for any delay or failure to perform its obligations under this agreement where such a delay or failure is due to fire, flood, explosion, war, embargo, governmental action, pandemic, epidemic, act of public authority, act of god or to any other cause beyond its control, except labour disruption. In the event force majeure occurs, the party who is delayed or fails to perform shall give prompt notice to the other party and shall take all reasonable steps to eliminate the cause. Should the force majeure event last longer than 30 calendar days, the REGIONAL DISTRICT may terminate this agreement immediately by written notice to the contractor without further liability, expense, or cost of any kind.

PART 21 DISPUTE RESOLUTION

21.1 If the parties to this Agreement are unable to agree on the interpretation or application of any provision in the Agreement, or are unable to resolve any other issue relating to this Agreement, the parties agree to the following process in the order it is set out:

- (a) the party initiating the process will send written notice to the other party (the “Dispute Notice”); and
- (b) the parties will promptly, diligently and in good faith, including the senior management of both parties, take all reasonable measures to negotiate an acceptable resolution to the disagreement or dispute.

21.2 If the parties are unable to negotiate a resolution within 30 days of the Dispute Notice, the parties may request the assistance of a mediator agreed to by the parties within 30 days written notice of a request to appoint a mediator by any party, failing which the mediator will be appointed by the B.C. International Commercial Arbitration Centre (BCICAC), and unless the parties agree otherwise, this mediation will follow BCICAC rules and will terminate 60 days after the appointment of the mediator.

21.3 The parties will be responsible for their own costs under the dispute resolution process set out in this part 21.0.

PART 22 INDEPENDENT CONTRACTOR

The Contractor shall be, and in all respects be deemed to be, an independent contractor and nothing in this *Agreement* shall be construed to mean that the Contractor is an employee of the REGIONAL DISTRICT or that any agency, joint venture or partnership exists between the *Contractor* and the *REGIONAL DISTRICT*.



Chase River Pump Station Upgrade E&I Engineering Work Package 2003251-000-1604-001

Prepared For: Regional District of Nanaimo

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APPENDICES

Appendix A Project Lists and Drawings



1 OBJECTIVE

The objective of EWP 2003251-000-1604-001 is to define the technical requirements for the installation of the electrical and instrumentation (E&I) equipment and associated materials for the Chase River Pump Station Upgrade project at the Regional District of Nanaimo's Chase River Pump Station. This EWP provides a description of the E&I demolition and construction work to be completed by the Electrical Contractor.

2 SCOPE OF WORK

2.1 Overview

The Regional District of Nanaimo's Chase River Pump Station Upgrade project is installing new VFDs, new PLC cabinet and associated equipment at the Chase River Pump Station facility.

This EWP will detail the electrical, instrumentation and controls work associated with the following major equipment in general terms:

- Partial removal of existing MCC-200 and disconnection of all associated cabling;
- Removal of existing CP-100 cabinet and disconnection of all cabling;
- Removal of cabling no longer required, as identified in this document and drawings;
- Removal of some instrumentation, as identified in this document and drawings;
- Installation of new MCC-300 and associated cables;
- Installation of new CP-100 PLC cabinet, including re-termination of existing device cables, and termination of new cables;
- Installation of new HMI-100 panel;
- Installation of new gas detectors, level switches, level sensor and horn/beacon devices;
- Installation and termination of all new cables identified on the cable schedule and drawings;
- Replacement of existing wet well pump junction boxes with new, separate power and instrument junction boxes;
- Programming and configuration (PLC, HMIs, Back-Up Controller) is by others.

A more detailed description of the scope of work and the referenced documentation is included the sections that follow.

All work outlined in the following sections shall be completed by the Electrical Contractor unless otherwise stated.

All material and equipment for the work outlined in the following sections shall be provided by the Electrical Contractor unless otherwise stated. Refer to E&I Material Take-Off (MTO) 2003251-000-1618-003 for a list of required material.

2.2 Work Included in EWP – By Area

A description of the work by area is listed in the following sections. The information presented here should be read in conjunction with the documents listed in Appendix A.



2.2.1 Electrical Room

The Electrical Contractor is responsible to ensure that any temporary penetrations or openings that occur during demolition and construction work between the Electrical Room and the hazardous area (Wet Well) must be sealed with temporary means to avoid extension of the hazardous area into the general area.

2.2.1.1 Pre-Shutdown

1. Extend existing concrete curb to the right of CP-100 by approximately 12 inches to accommodate the new CP-100 cabinet width of 60 inches. Concrete curb extension by RDN.
2. Install new MCC-300 feeder cables from MCC-100 with sufficient length available to reach the intended connections. Cables to be routed in existing tray.
3. Contractor shall coordinate with the RDN for pump station operation with Pump #5 only (located in MCC-100) to facilitate the removal of MCC-200 prior to shutdown.
4. Prior to commencing Pump #5 only operation, the Contractor shall provide a suitable, temporary connection outside of MCC-200 for the Pump #5 HSV-605, ZSC-605 and ZSO-605 signals currently located within the MCC-200 wiring section. These signals must maintain operation with the PLC during the following pre-shutdown work. – HOLD RDN to confirm if required. If valve can be manually operated this may not be required.

With the pump station in Pump #5 only operation, the following work can be completed before shutdown:

5. Isolate and disconnect pumps and equipment connections within MCC-200.
6. Re-route and temporarily terminate one of the existing P-200 250kCM cables, with lug adapter kit, to the MCC-200 Panel 'A' transformer section. Isolate or disconnect the other P-200 250kCM cable. During shutdown the new breaker bucket and feeder for MCC-200 Panel 'A' will be installed in MCC-100.
7. Disconnect and remove MCC-200 as per the MCC-200 demolition plan on drawing CRPS-E-106. The lighting panel 'A' in section 1 of MCC-200 shall remain in place and shall not be removed.
8. Install new MCC-300 and terminate new feeder cables to incoming section. Connect new #1 AWG grounding conductor from MCC-300 to Electrical ground.
9. Install, route, tag and terminate new pump cables from MCC-300 to Wet Well, CP-100 and HMI-100 as per cable schedule. Label and coil destination ends of cables if terminations cannot be completed at this stage. Cables from MCC-300 to Wet Well shall be routed through the bottom of MCC-300.
10. Install, route, tag and terminate new cables from CP-100 as per cable schedule. Label and coil cables if terminations cannot be completed at this stage. Cables from CP-100 to the Wet Well shall be routed in the existing overhead tray toward MCC-300 section 8 and enter into the Wet Well via the floor space between the new MCC-300 section 8 and wall.



11. Install new wall-mount level transmitters LIT-201/202/205. Install, label and terminate new associated cables. Existing conduits for LE-201 and LE-202 cables will require re-routing from CP-100 to new wall-mount transmitters (LIT-201/202). A new ACIC cable will be installed for LE-205 from JB-205 to LIT-205.

2.2.1.2 Shutdown - Demolition

1. Disconnect all field cables and remove CP-100 cabinet.
 - a. During disconnect ensure all conductors are identified with existing termination numbers. This will be used as the cross-reference to identify the conductors for the new tags and marshalling locations in the new CP-100 cabinet.
 - b. The HMI currently installed in the CP-100 shall be removed from the cabinet door and kept for re-installation in the new CP-100 cabinet.
2. Disconnect and remove flow meters FIT-211 and FIT-212 and associated cables.
3. Disconnect and remove Pump #5 soft start from MCC-100.

2.2.1.3 Shutdown - Construction

1. Install new CP-100 cabinet:
 - a. Before making any cable cut-outs on the top of the cabinet, the Electrical Contractor shall provide a plastic covering secured over the PLC components to ensure metal shavings from cut-outs do not land in the cabinet or on components.
 - b. Re-install, re-tag and re-terminate existing power and ground connections.
 - c. Re-install, re-tag and re-terminate existing field cables as per construction PLC wiring drawings.
 - d. Install, tag and terminate new cables in CP-100 as per construction PLC wiring drawings.
 - e. Re-install existing HMI panel to door of new CP-100 panel. Connect panel wiring and network cable to HMI as per drawings.
 - f. Install new PLC UPS. By RDN.
2. Complete modifications in MCC-100:
 - a. Replace existing trip unit (500A, LT3500T) in MCC-200, Section 5, 600A breaker frame with new trip unit (600A, LT3600T). Terminate new MCC-300 feeder cables. Re-tag MCC cubicle door to 'MCC-300 FEEDER 600A 600V'.
 - b. Install new aftermarket bucket complete with dual 20A circuit breaker to MCC-100 section 3. Install, tag and terminate new feeder cable to existing MCC-200 Lighting Panel 'A'. Tag new MCC cubicle door.
 - c. Install two (2) new, blank cubicle doors to MCC-100 section 3.



3. Replace existing 15A circuit breaker with new 20A circuit breaker in Lighting Panel 'B' to feed new CP-100 cabinet.

2.2.2 Wet Well

The hazardous location rating of the Wet Well area is under review by others. It is expected the Wet Well area will be rated as Class 1 Division 2. The technical content of this EWP package follows Class 1 Division 2 ratings for this area. The Electrical Contractor shall ensure all installations within the Wet Well conform to Class 1 Division 2 requirements. The RDN shall advise Allnorth and the Electrical Contractor if the hazardous area rating is modified to any other rating.

Refer to Wet Well layout drawing CRPS-E-203 for approximate locations of new junction boxes and instrumentation.

2.2.2.1 Pre-Shutdown

1. Install ten (10) new/replacement pump junction boxes located on Wet Well upper wall for connections of existing pump submersible cables, new pump power cables to new VFDs, and new pump sensor instrumentation cables to CP-100.
 - a. Five (5) pump power junction boxes, labelled as follows:
 - i. JB-101/102/103/104/105A
 - b. Five (5) pump sensor junction boxes, labelled as follows:
 - i. JB-101/102/103/104/105B
2. Tag and re-terminate Pump #1-4 existing submersible power and instrumentation cables to the new junction boxes in item #1 above. Disconnect and remove the no longer required Pump #1-4 existing junction boxes.
3. Install conduit and new junction boxes, JB-205 and JB-206, for new level devices.
4. Install, tag and terminate new instrumentation. Installation shall follow manufacturer's installation instructions.
 - a. Gas Detectors: AIT-300A and AIT-300B with remote mount sensors.
 - b. Air Flow Switch: FSL-700 (location to be confirmed by RDN).
 - c. Horn/Strobe: YA-301A (inside Wet Well) and YA-301B (outside Wet Well). Refer to Instrumentation layout drawing CRPS-E-111.

2.2.2.2 Shutdown - Demolition

1. Disconnect and remove Pump #5 existing pump junction box located on the Wet Well upper wall.
2. Remove existing instrumentation as follows:
 - a. Level sensor: LE-205
 - b. Level float switches: LSLL-206, LSHH-206/206A/206B



2.2.2.3 Shutdown - Construction

1. Tag and re-terminate the existing submersible power and instrumentation cable for Pump #5 to the new junction boxes listed in item 2.2.2.1 above.
2. Install, tag and terminate new instrumentation. Installation shall follow manufacturer's installation instructions.
 - a. Level sensor: LE-205
 - b. Level float switches: LSSL-206, LSHH-206/206A/206B. Float installation heights to be confirmed by RDN.

2.2.3 Lunch Room

2.2.3.1 Pre-Shutdown

1. RDN to relocate gate UPS from the Electrical Room to the lunch room.
2. Install new HMI-100 panel.
3. Install, tag and terminate new cables to HMI-100.

2.3 Work Included in EWP – By Equipment

A description of the work by equipment is listed in the following sections. The information presented here should be read in conjunction with the documents listed in Appendix A.

2.3.1 Cable Tray

There is no new cable tray required for this project.

The Contractor shall field run any necessary cable channels to the required equipment. Cables routed outside of trays shall be securely clamped and supported.

2.3.2 Cables

The Contractor shall install, and terminate new cables in compliance with RDN Standards per the cable block diagram and cable schedule. The Contractor shall provide all cables required to make the final installation electrically complete and functionally operable. Cables are to be installed in existing cable trays per the cable schedule, secured and identified at both ends as per the cable tag listed in the Cable Schedule. Conductors to be identified at both ends of the cable using printed sleeves as per the drawings.

The cable schedule provides an estimated length for each cable, however, the Contractor shall field verify all cable runs and lengths prior to procurement and installation of cable.

As listed in the cable schedule, all cables located within the Wet Well shall be terminated using hazardous rated connectors.



2.3.3 Motors

There are no new motors required for this project.

The Contractor shall terminate, and ground motors in compliance with RDN Equipment Installation Standards. Refer to motor schematics.

2.3.4 Motor Control Centers (MCC)

The Contractor shall install, terminate, and ground LV MCCs in compliance with RDN Equipment Installation Standards.

The Contractor shall modify buckets in MCC-100 as detailed on the drawings.

Refer to single line diagram and MCC layout drawings.

2.3.5 Variable Frequency Drives (VFDs)

The Contractor shall install, terminate, and ground LV VFDs in compliance with RDN Equipment Installation Standards and manufacturer installation requirements. Refer to single line diagram, motor schematics and MCC layout drawings.

Five (5) new VFDs for the existing pumps will be installed within a new, single MCC enclosure (MCC-300).

2.3.6 Power Distribution

The RDN will install the PLC UPS within CP-100.

2.3.7 Lighting

N/A

2.3.8 Grounding

The Contractor shall install ground conductors per drawings. Existing ground conductors shall be reconnected to replaced equipment including to the new CP-100 panel. The isolated instrument ground shall be tied to the power system ground in only one location in the Electrical Room.

2.3.9 Electrical Heat Trace

N/A

2.3.10 Control System Cabinets

The CP-100 PLC cabinet and HMI-100 panel will be fabricated offsite by a panel builder and will be free-issued to the Contractor by the RDN.

The CP-100 cabinet is to be secured, bolted to the floor in the Electrical Room with top entry cables.

The HMI-100 panel is to be secured to the wall in the lunch room with top entry cables.

All field wire terminations are to be completed according to code requirements. Individual conductors in homerun multi-conductor or multi-pair cables are to have sufficient spare length to allow future



modification while maintaining a clean installation. All conductors and cables are to be labeled using machine printed labels.

2.3.11 Junction Boxes

The Electrical Contractor is responsible to provide, fabricate and install the required junction boxes. All junction boxes shall have a machine printed nameplate on the front door.

2.3.12 Instrumentation and Valves

The new instrumentation will be provided by the RDN. The Electrical Contractor is responsible for the installation and connection of all instrumentation unless otherwise specified.

Heights of the Wet Well level float switches to be confirmed by the RDN.

Installation shall be completed in accordance with manufacturer’s instructions and industry standard practices with a high level of craftsmanship.

Valves and inline elements installed by the Piping contractor are to be checked for correct installation and terminated. Valve instrument air is to be field run from air headers and supported.

Magnetic flow meter elements are to be grounded according to manufacturer’s recommendations.

2.4 Work Not Included in the EWP

The work not included in this EWP includes, but is not limited to:

- Civil/structural work;
- Mechanical work;
- Piping work;

3 CODES, STANDARDS, REGULATIONS & SPECIFICATIONS

3.1 Codes, Standards & Regulations

Document No.	Title
CSA 22.1 (2015)	Canadian Electrical Code

3.2 Client Specifications

Client specifications to be provided by RDN to the Contractor as required.

3.3 Conflicts Between Codes, Standards & Regulations

Any conflict between the requirements of this EWP, the applicable codes, standards and regulations shall be reported to RDN and Allnorth for clarification. Nothing contained in this EWP shall be interpreted as relieving the Contractor of any responsibility to supply the materials, equipment, tools, consumables and workmanship of high enough quality in order to meet all of the design requirements.



Should a conflict arise between documents, the following order of precedence shall govern:

1. Codes, standards, regulations;
2. P&ID and isometric drawings;
3. Suppliers' drawings;
4. The EWP document;
5. RDN specifications.

4 DESIGN CHANGES DURING CONSTRUCTION

All changes to the design drawings proposed during construction due to design alternatives, specification deviations, material substitutions, drawing errors or omissions, unforeseen conditions or for any other reason shall be brought to the attention of the RDN and Allnorth for review and approval prior to commencing with the proposed work. All approved design changes need to be included in the Record drawing documentation package as described in section 6.2

5 SPECIFICATION DEVIATIONS

In the event that a specification is deviated from during the course of design, the specification deviation will be documented on the applicable design drawing and/or project list included with this EWP.

6 ELECTRICAL CONSTRUCTION DRAWINGS

6.1 Construction Drawing List

Refer to Section 7 for a listing of all electrical construction drawings and reference drawings.

6.1.1 Drawing Holds

Hold clouds may be included on some drawings referenced in this EWP for reasons including, but not limited to:

- Vendor equipment selection not complete;
- Incomplete design;
- Client requested holds.

All holds must be removed by RDN representatives prior to commencing any work indicated as on hold.

6.2 Record Drawings

To assist in documenting the design during the course of construction, one full set of Record drawings are requested to be kept up to date by the Contractor during the course of construction. The Record drawings should be marked in red to show any changes to the original design. The Record drawings will be provided to the RDN and Allnorth at the end of the project for verification/record. Even if a particular drawing in a set of drawings has not been modified, it is requested that it also be included in the Record drawings mark-up documentation package.



If the Contractor performs rework on the equipment after the Record drawings are sent, an updated set of Record drawings marked in red are requested to be sent to both the RDN and Allnorth.

7 REFERENCE DOCUMENTS

7.1 Project Lists & Drawings

Refer to Appendix A.

2003251-000-1618-001	LOAD LIST
2003251-000-1618-002	CABLE SCHEDULE
2003251-000-1618-003	MATERIAL TAKE-OFF (MTO)
CRPS-E-011	P-101 SCHEMATIC DIAGRAM
CRPS-E-012	P-102 SHCEMATIC DIAGRAM
CRPS-E-013	P-103 SCHEMATIC DIAGRAM
CRPS-E-014	P-104 SHCEMATIC DIAGRAM
CRPS-E-015	P-105 SHCEMATIC DIAGRAM
CRPS-E-105	SINGLE LINE DIAGRAM
CRPS-E-106	MCC LAYOUTS, SCHEDULES AND DETAILS
CRPS-E-107	ELECTRICAL CONTROL SCHEMATICS
CRPS-E-110	CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM
CRPS-E-111	ELECTRICAL POWER, CONTROL AND INSTRUMENT LAYOUTS
CRPS-E-112	LIGHTING LAYOUTS
CRPS-E-203	WET WELL LAYOUTS
CRPS-I-101	CP-100 PANEL LAYOUT
CRPS-I-102	CP-100 BILL OF MATERIAL
CRPS-I-103	CP-100 POWER DISTRIBUTION
CRPS-I-104	CP-100 GENERAL SCHEMATICS
CRPS-I-105	CP-100 SLOT 1 ANALOG INPUT
CRPS-I-106	CP-100 SLOT 2&3 ANALOG&RTD INPUT
CRPS-I-107	CP-100 SLOT 5&6 ANALOG OUTPUT& DISCRETE INPUT
CRPS-I-108	CP-100 SLOT 7&8 DISCRETE INPUT
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPU
CRPS-I-110	CP-100 SLOT 11&12 DISCRETE&RELAY OUTPUT
CRPS-I-111	CP-100 BACK-UP CONTROLLER SCHEMATIC DIAGRAM
CRPS-I-112	SEPTAGE RECEIVING AND GATE CONTROL WIRING DETAIL
CRPS-I-121	HMI-100 PANEL LAYOUT
CRPS-I-122	HMI-100 BILL OF MATERIAL
CRPS-I-123	HMI-100 PANEL SCHEMATICS
CH2-607-DEMO	ELECTRICAL CONTROL SCHEMATICS
CH2-608-DEMO	ELECTRICAL CONTROL SCHEMATICS
CH-04-609-DEMO	CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM
CH3-701-DEMO	CP-100 PANEL LAYOUT
CH3-702-DEMO	CP-100 WIRING
CH3-703-DEMO	CP-100 WIRING
CH2-704-DEMO	CP-100 WIRING
CH2-705-DEMO	CP-100 WIRING
CH3-706-DEMO	CP-100 WIRING
CH3-707-DEMO	CP-100 WIRING
CH3-708-OBSOLETE	SEPTAGE RECEIVING AND GATE CONTROL WIRING DETAIL



7.2 Other Documents

7.2.1 Process

N/A	
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7.2.2 Mechanical

N/A	
-----	--

7.2.3 Civil/Structural

N/A	
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7.2.4 Piping

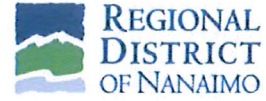
N/A – By Others	
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7.2.5 Vendor

MCC-300 MANUFACTURER DRAWINGS	By Vendor - HOLD for vendor drawings.
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Appendix A Project Lists and Drawings



REV	ISSUED FOR	DATE	BY	CHK	APR	CLIENT:	RDN	REV
0	ISSUED FOR CONSTRUCTION	21/03/08	BDH	JAK	BDH	PROJECT TITLE:	CHASE RIVER PUMP STATION UPGRADE	0
						PROJECT No:	2003251	
						DOCUMENT No:	2003251-000-1618-001	
						CLIENT PROJECT No:		

ELECTRICAL LOAD LIST

EQUIPMENT TAG	DESCRIPTION	MOTOR / LOAD DETAILS											MCC / PANEL		STARTER DETAILS			REFERENCE		NOTES	REV	
		HP	KVA	KW	LOAD FACTOR	RUNNING LOAD (HP)	VOLTS	FLA	RPM	PF	EFF	FRAME	TAG	SECTION / CCT	TYPE	SIZE	PROTECTIVE DEVICE RATING	PROTECTIVE DEVICE SETTING	OVERLOAD			E-ROOM
MCC-300	MCC-300	440	413.8	331.0	-	330.0	600	451.6	-	-	-	-	-	-	CB	600A	600A	-		CRPS-E-105	MCC-300 SUB-FED FROM MCC-100. MCC-300 LOAD CALCULATIONS AND CIRCUIT BREAKER PROTECTION SIZED FOR OPERATION OF 4 MOTORS (ONE PUMP STANDBY) AS PER BC HYDRO SERVICE SIZING NOTED ON SINGLE LINE DIAGRAM CRPS-E-105 NOTE 1. FOR OPERATING 5TH MOTOR SPEED REDUCTION IS REQUIRED VIA PLC/VFD CONTROLS.	0
P-101	WET WELL PUMP #1	110	103	82.0	0.75	83	600	112.0	1185	-	-	-	-	-	CB	200A	200A	VFD		CRPS-E-105	EXISTING PUMP. NEW VFD.	0
P-102	WET WELL PUMP #2	110	103	82.0	0.75	83	600	112.0	1185	-	-	-	-	-	CB	200A	200A	VFD		CRPS-E-105	EXISTING PUMP. NEW VFD.	0
P-103	WET WELL PUMP #3	110	103	82.0	0.75	83	600	112.0	1185	-	-	-	-	-	CB	200A	200A	VFD		CRPS-E-105	EXISTING PUMP. NEW VFD.	0
P-104	WET WELL PUMP #4	110	103	82.0	0.75	83	600	112.0	1185	-	-	-	-	-	CB	200A	200A	VFD		CRPS-E-105	EXISTING PUMP. NEW VFD.	0
P-105	WET WELL PUMP #5	110	103	82.0	0.75	83	600	112.0	1185	-	-	-	-	-	CB	200A	200A	VFD		CRPS-E-105	EXISTING PUMP. NEW VFD.	0
	COMSYS HARMONIC FILTER	-	4	3.0			600	3.6	-	-	-	-	-	-	CB	200A	200A	-		CRPS-E-105	NEW	0
MCC-200																				CRPS-E-105		0
	PANEL A TRANSFORMER	-	15	-	0.80	12	600	14.4	-	-	-	-	-	-	CB		20A	-		CRPS-E-105	EXISTING. NEW MCC-100 CIRCUIT BREAKER BUCKET AND FEEDER.	0
MCC-100																				CRPS-E-105		0
XXXXX	WET WELL SUPPLY FAN	2			0.80	2	600													CRPS-E-105	HOLD-FUTURE SUPPLY FAN INSTALLED BY RDN.	0

PROFESSIONAL ENGINEER

 PROVINCE OF BRITISH COLUMBIA

 B. D. HEISTERMAN

 # 45995

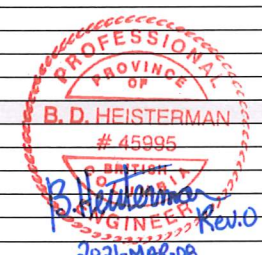
 2021-MAR-08



REV	ISSUED FOR	DATE	BY	CHK	APR	CLIENT:	RDN	REV
0	ISSUED FOR CONSTRUCTION	21/03/08	AF	BDH	BDH	PROJECT TITLE:	CHASE RIVER PUMP STATION UPGRADE	0
						PROJECT No:	2003251	
						DOCUMENT No:	2003251-000-1618-002	
						CLIENT PROJECT No:		

CABLE SCHEDULE

CABLE NUMBER	SERVICE	CABLE FROM	CABLE TO	CABLE						LOAD			DRAWING REFERENCE	COMMENT	REV	
				LENGTH m	COND. #	RUNS #	AWG #	RATING V	TYPE	POWER kVA	VOLTAGE V	CURRENT A				
MCC-100																
P-300A/B/C/D	MCC-300 POWER FEED	MCC-100	MCC-300	30	3C	4	350	600	TECK90	541	600	588	CRPS-E-105	CABLE RUN IN TRAY - DERATED 50%	0	
P-200	PANEL 'A' POWER FEED	MCC-100	PANEL A	30	3C	1	#8	600	TECK90	15	600	14	CRPS-E-105	CABLE RUN IN TRAY - DERATED 50%	0	
P-XXX	NEW SUPPLY FAN	MCC-100	SF-XXX		3C	1	#12	600	TECK90	x	600	x	CRPS-E-105	HOLD - CABLE DETAILS BY RDN. FAN SIZE TBC.	0	
MCC-300 PUMP CABLES																
P-101-P	PUMP MOTOR #1	VFD-101	JB-101A	25	3C	1	#1/0	600	TECK90	103	600	112	CRPS-E-011	100% SPACED CABLE. HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
VFD-101-C1	VFD-101 RUN STATUS TO BUC-100	CP-100	VFD-101	25	2C	1	#14	600	TECK90		120		CRPS-E-011		0	
VFD-101-C2	VFD-101 HIGH TEMP & BUC-100 RUN	CP-100	VFD-101	25	4C	1	#14	600	TECK90		24		CRPS-E-011		0	
HS-101-C	HOA SWITCH CONTROL CABLE	VFD-101	HMI-100/HS-101	25	8C	1	#14	600	TECK90		24		CRPS-E-011		0	
JB-101B-A	CAS & RTD	CP-100	JB-101B	25	2PR	1	#16	600	ACIC		24		CRPS-E-011	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
P-102-P	PUMP MOTOR #2	VFD-102	JB-102A	25	3C	1	#1/0	600	TECK90	103	600	112	CRPS-E-012	100% SPACED CABLE. HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
VFD-102-C1	VFD-102 RUN STATUS TO BUC-100	CP-100	VFD-102	25	2C	1	#14	600	TECK90		120		CRPS-E-012		0	
VFD-102-C2	VFD-102 HIGH TEMP & BUC-100 RUN	CP-100	VFD-102	25	4C	1	#14	600	TECK90		24		CRPS-E-012		0	
HS-102-C	HOA SWITCH CONTROL CABLE	VFD-102	HMI-100/HS-102	25	8C	1	#14	600	TECK90		24		CRPS-E-012		0	
JB-102B-A	CAS & RTD	CP-100	JB-102B	25	2PR	1	#16	600	ACIC		24		CRPS-E-012	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
P-103-P	PUMP MOTOR #3	VFD-103	JB-103A	25	3C	1	#1/0	600	TECK90	103	600	112	CRPS-E-013	100% SPACED CABLE. HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
VFD-103-C1	VFD-103 RUN STATUS TO BUC-100	CP-100	VFD-103	25	2C	1	#14	600	TECK90		120		CRPS-E-013		0	
VFD-103-C2	VFD-103 HIGH TEMP & BUC-100 RUN	CP-100	VFD-103	25	4C	1	#14	600	TECK90		24		CRPS-E-013		0	
HS-103-C	HOA SWITCH CONTROL CABLE	VFD-103	HMI-100/HS-103	25	8C	1	#14	600	TECK90		24		CRPS-E-013		0	
JB-103B-A	CAS & RTD	CP-100	JB-103B	25	2PR	1	#16	600	ACIC		24		CRPS-E-013	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
P-104-P	PUMP MOTOR #4	VFD-104	JB-104A	25	3C	1	#1/0	600	TECK90	103	600	112	CRPS-E-014	100% SPACED CABLE. HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
VFD-104-C1	VFD-104 RUN STATUS TO BUC-100	CP-100	VFD-104	25	2C	1	#14	600	TECK90		120		CRPS-E-014		0	
VFD-104-C2	VFD-104 HIGH TEMP & BUC-100 RUN	CP-100	VFD-104	25	4C	1	#14	600	TECK90		24		CRPS-E-014		0	
HS-104-C	HOA SWITCH CONTROL CABLE	VFD-104	HMI-100/HS-104	25	8C	1	#14	600	TECK90		24		CRPS-E-014		0	
JB-104B-A	CAS & RTD	CP-100	JB-104B	25	2PR	1	#16	600	ACIC		24		CRPS-E-014	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
P-105-P	PUMP MOTOR #5	VFD-105	JB-105A	25	3C	1	#1/0	600	TECK90	103	600	112	CRPS-E-015	100% SPACED CABLE. HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
VFD-105-C1	VFD-105 RUN STATUS TO BUC-100	CP-100	VFD-105	25	2C	1	#14	600	TECK90		120		CRPS-E-015		0	
VFD-105-C2	VFD-105 HIGH TEMP & BUC-100 RUN	CP-100	VFD-105	25	4C	1	#14	600	TECK90		24		CRPS-E-015		0	
HS-105-C	HOA SWITCH CONTROL CABLE	VFD-105	HMI-100/HS-105	25	8C	1	#14	600	TECK90		24		CRPS-E-015		0	
JB-105B-A	CAS & RTD	CP-100	JB-105B	25	2PR	1	#16	600	ACIC		24		CRPS-E-015	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
INSTRUMENTATION & CONTROL CABLES																
HMI-100																
HMI-100-P	PANELVIEW 1500 POWER	CP-100	HMI-100	10	3C	1	#12	600	TECK90		120		CRPS-I-123		0	
HMI-100-C1	ZIO,ZIC-120	CP-100	HMI-100	10	4C	1	#14	600	TECK90		120		CRPS-I-123		0	
HMI-100-C2	HMI-100 LIGHTS	CP-100	HMI-100	10	8C	1	#14	600	TECK90		120		CRPS-I-123		0	
HMI-100-C3	HS-206 ALARM RESET	CP-100	HMI-100	10	2C	1	#14	600	TECK90		120		CRPS-I-123		0	
HMI-100-C4	HS-601, 602, 603,604, 605	CP-100	HMI-100	10	16C	1	#14	600	TECK90		120		CRPS-I-123		0	
HMI-100-C5	HS-120A GATE CONTROL	CP-100	HMI-100	10	8C	1	#14	600	TECK90		120		CRPS-I-123		0	
SLOT #1																
LIT-201-A	TANK #1 LEVEL CONTROL	CP-100	LIT-201	10	1PR	1	#16	600	ACIC		24		CRPS-I-105		0	
LIT-201-C	TANK #1 LEVEL CONTROL	CP-100	LIT-201	10	2C	1	#14	600	TECK90		120		CRPS-I-105		0	
LIT-202-A	TANK #2 LEVEL CONTROL	CP-100	LIT-202	10	1PR	1	#16	600	ACIC		24		CRPS-I-105		0	
LIT-202-C	TANK #2 LEVEL CONTROL	CP-100	LIT-202	10	2C	1	#14	600	TECK90		120		CRPS-I-105		0	
LIT-205-A	WET WELL LEVEL CONTROL	CP-100	LIT-205	10	2PR	1	#16	600	ACIC		24		CRPS-I-105		0	
LIT-205-C	WET WELL LEVEL CONTROL	CP-100	LIT-205	10	2C	1	#14	600	TECK90		120		CRPS-I-105		0	
JB-205-A	WET WELL LEVEL CONTROL	LIT-205	JB-205	20	1PR	1	#16	600	ACIC		24		CRPS-I-105		0	
LE-205-A	WET WELL LEVEL CONTROL	JB-205	LE-205	10	1PR	1	#18	-	-		24		CRPS-I-105	VENDOR SUPPLIED CABLE. ROUTE CABLE IN METAL CONDUIT COMPLETE WITH HAZARDOUS SEAL.	0	
FIT-210-A	CHAMBER #1 FLOW	CP-100	FIT-210	HOLD	2PR	1	#16	600	ACIC		24		CRPS-I-105	CABLE SUPPLIED AND INSTALLED BY RDN	0	
FIT-210-C	CHAMBER #1 FLOW	CP-100	FIT-210	HOLD	2C	1	#14	600	TECK90		120		CRPS-I-105	CABLE SUPPLIED AND INSTALLED BY RDN	0	
PIT-210-A	VALVE STATION PRESSURE CONTROL	CP-100	PIT-210	HOLD	1PR	1	#16	600	ACIC		24		CRPS-I-105	CABLE SUPPLIED AND INSTALLED BY RDN	0	
SLOT #2																
AIT-300A-A	GAS DETECTOR H2S	CP-100	AIT-300A	25	2PR	1	#16	600	ACIC		24		CRPS-I-106	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
AE-300A-A	GAS DETECTOR H2S	AIT-300A	AE-300A	5	1PR	1	#16	600	ACIC		24		CRPS-I-106	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
AIT-300B-A	GAS DETECTOR LEL	CP-100	AIT-300B	25	2PR	1	#16	600	ACIC		24		CRPS-I-106	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
AE-300B-A	GAS DETECTOR LEL	AIT-300B	AE-300B	5	2PR	1	#16	600	ACIC		24		CRPS-I-106	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
SLOT #6																
ZS-601-C	ZSO/ZSC-601	CP-100	ZSO/ZSC-601	25	4C	1	#14	600	TECK90		120		CRPS-I-107	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
ZS-602-C	ZSO/ZSC-602	CP-100	ZSO/ZSC-602	25	4C	1	#14	600	TECK90		120		CRPS-I-107	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
ZS-603-C	ZSO/ZSC-603	CP-100	ZSO/ZSC-603	25	4C	1	#14	600	TECK90		120		CRPS-I-107	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
ZS-604-C	ZSO/ZSC-604	CP-100	ZSO/ZSC-604	25	4C	1	#14	600	TECK90		120		CRPS-I-107	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
ZS-605-C	ZSO/ZSC-605	CP-100	ZSO/ZSC-605	25	4C	1	#14	600	TECK90		120		CRPS-I-107	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0	
SLOT #7																
JB-206-C	WET WELL LEVEL SWITCHES	CP-100	JB-206	25	8C	1	#14	600	TECK90		120		CRPS-I-108	INTRINSICALLY SAFE CIRCUIT, HAZARDOUS CABLE GLANDS NOT REQUIRED.	0	
LSHH-206-C	WET WELL LEVEL SWITCH	JB-206	LSHH-206	13	3C	1	-	-	-		120		CRPS-I-108	VENDOR SUPPLIED CABLE. ROUTE CABLE IN PVC CONDUIT. INTRINSICALLY SAFE CIRCUIT.	0	
LSLL-206-C	WET WELL LEVEL SWITCH	JB-206	LSLL-206	13	3C	1	-	-	-		120		CRPS-I-108	VENDOR SUPPLIED CABLE. ROUTE CABLE IN PVC CONDUIT. INTRINSICALLY SAFE CIRCUIT.	0	





REV	ISSUED FOR	DATE	BY	CHK	APR	CLIENT:	RDN	REV
0	ISSUED FOR CONSTRUCTION	21/03/08	AF	BDH	BDH	PROJECT TITLE:	CHASE RIVER PUMP STATION UPGRADE	0
						PROJECT No:	2003251	
						DOCUMENT No:	2003251-000-1618-002	
						CLIENT PROJECT No:		

CABLE SCHEDULE

CABLE NUMBER	SERVICE	CABLE FROM	CABLE TO	CABLE						LOAD			DRAWING REFERENCE	COMMENT	REV
				LENGTH m	COND. #	RUNS #	AWG #	RATING V	TYPE	POWER kVA	VOLTAGE V	CURRENT A			
LSHH-206B-C	WET WELL LEVEL SWITCH	JB-206	LSHH-206B	13	3C	1	-	-	-			120	CRPS-I-108	VENDOR SUPPLIED CABLE. ROUTE CABLE IN PVC CONDUIT. INSTRINSICALLY SAFE CIRCUIT.	0
LSHH-206A-C	WET WELL LEVEL SWITCH	JB-206	LSHH-206A	13	3C	1	-	-	-			120	CRPS-I-108	VENDOR SUPPLIED CABLE. ROUTE CABLE IN PVC CONDUIT. INSTRINSICALLY SAFE CIRCUIT.	0
SLOT #10															
FSL-700-C	WET WELL AIR FLOW SWITCH	CP-100	FSL-700	25	4C	1	#14	600	TECK90			24	CRPS-I-109	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
XS-120-C	GATE UPS OK	CP-100	XS-120	10	2C	1	#14	600	TECK90			24	CRPS-I-109		0
XS-330-C	MCC-300 HARMONIC FILTER ALARM	CP-100	XS-330	20	2C	1	#14	600	TECK90			24	CRPS-I-109		0
SLOT #11															
HSV-601-C	PUMP ACTUATOR CONTROL	CP-100	HSV-601	25	2C	1	#14	600	TECK90			120	CRPS-I-110	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
HSV-602-C	PUMP ACTUATOR CONTROL	CP-100	HSV-602	25	2C	1	#14	600	TECK90			120	CRPS-I-110	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
HSV-603-C	PUMP ACTUATOR CONTROL	CP-100	HSV-603	25	2C	1	#14	600	TECK90			120	CRPS-I-110	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
SLOT #12															
YA-301A-C	HORN/BEACON INSIDE	CP-100	YA-301A	25	2C	1	#14	600	TECK90			120	CRPS-I-110		0
YA-301B-C	HORN/BEACON OUTSIDE	CP-100	YA-301B	25	2C	1	#14	600	TECK90			120	CRPS-I-110		0
HSV-604-C	PUMP ACTUATOR CONTROL	CP-100	HSV-604	25	2C	1	#14	600	TECK90			120	CRPS-I-110	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
HSV-605-C	PUMP ACTUATOR CONTROL	CP-100	HSV-605	25	2C	1	#14	600	TECK90			120	CRPS-I-110	HAZARDOUS RATED CABLE GLAND REQUIRED IN WET WELL.	0
NETWORK															
HMI-100-E	NETWORK COMMUNICATION	CP-100	HMI-100	10	CAT6								CRPS-I-104		0
MCC-300-E	NETWORK COMMUNICATION	CP-100	MCC-300	25	CAT6								CRPS-I-104		0

- NOTE:
1. CONTRACTOR TO FIELD VERIFY CABLE LENGTHS PRIOR TO PROCUREMENT AND INSTALLATION.
 2. ONLY NEW CABLES ARE LISTED ON THE CABLE SCHEDULE.





REV	ISSUED FOR	DATE	BY	CHK	APR	CLIENT:	RDN	REV
0	ISSUED FOR CONSTRUCTION	21/03/08	BDH	JAK	BDH	PROJECT TITLE:	CHASE RIVER PUMP STATION UPGRADE	0
						PROJECT No:	2003251	
						DOCUMENT No:	2003251-000-1618-003	
						CLIENT PROJECT No:		

E&I MATERIAL TAKE-OFF (MTO)

REFERENCE NUMBER	DESCRIPTION	QUANTITY	UNIT	MODEL NUMBER	SUGGESTED MANUFACTURER	SUPPLIED BY	REFERENCE	COMMENTS	REV
CABLES									
1	3 CONDUCTOR SIZE 350 MCM, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured POWER CABLE	144	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
2	3 CONDUCTOR SIZE #1/0 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured POWER CABLE	150	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
3	3 CONDUCTOR SIZE #8 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured POWER CABLE	36	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
4	3 CONDUCTOR SIZE #12 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured POWER CABLE	12	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
5	2 CONDUCTOR SIZE #14 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured CONTROL CABLE	444	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
6	4 CONDUCTOR SIZE #14 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured CONTROL CABLE	342	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
7	8 CONDUCTOR SIZE #14 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured CONTROL CABLE	204	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
8	16 CONDUCTOR SIZE #14 AWG, C/W GROUND, LV TECK-90, INSULATION RATED 600 V, ARMoured CONTROL CABLE	12	m	TECK-90	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
9	1 PAIR SIZE #16 AWG SHEILDDED, C/W OVERALL SHIELD, ACIC, INSULATION RATED 600 V, ARMoured INSTRUMENTATION CABLE	54	m	ACIC	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
10	2 PAIR SIZE #16 AWG SHEILDDED, C/W OVERALL SHIELD, ACIC, INSULATION RATED 600 V, ARMoured INSTRUMENTATION CABLE	228	m	ACIC	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
11	CAT 6 CABLE	42	m	-	BY CONTRACTOR	CONTRACTOR	2003251-000-1618-002	NOTE 1, 2, 3.	0
12	CABLE CONNECTORS, GLANDS, CABLE TAGS, ETC.	1	LOT	-	-	CONTRACTOR	-	HAZARDOUS CABLE GLANDS REQUIRED FOR WET WELL.	0
CONDUIT									
13	3/4" RIGID METAL CONDUIT	10	m	-	-	CONTRACTOR	2003251-000-1618-002	LEVEL SENSOR (LE-205) MANUFACTURER CABLE TO BE ROUTED IN CONDUIT. HAZARDOUS SEALS REQUIRED IN WET WELL.	0
14	3/4" PVC CONDUIT SLEEVE	40	m	-	-	CONTRACTOR	2003251-000-1618-002	LEVEL SWITCH MANUFACTURER CABLES TO BE ROUTED IN CONDUIT SLEEVE.	0
GROUNDING									
15	#1 AWG GROUND CONDUCTOR	10	m	-	-	CONTRACTOR	-	MCC-300 GROUND	0
VARIABLE FREQUENCY DRIVES (MOUNTED IN MCC ENCLOSURE)									
16	FIVE (5) 125A, 600V, HEAVY DUTY VFD WITH 3% LINE REACTOR AND DV/DT OUTPUT FILTER COMPLETE IN STANDALONE MCC ENCLOSURE WITH INTEGRATED ACTIVE 90A HARMONIC FILTER AND ETHERNET SWITCH (8 SECTIONS, NEMA 1A)	1	EA	DG1-CT / PPM300	EATON	RDN	CRPS-E-011/012/013/014/015 EATON PROPOSAL MU791126X0K1	MCC-300 VFDs FOR OPERATION WITH EXISTING PUMPS	0
MOTOR CONTROL CENTERS									
17	600A THERMAL MAGNETIC TRIP UNIT	1	EA	LT3600T	EATON	CONTRACTOR	CRPS-E-105	FOR INSTALLATION IN MCC-100 IN EXISTING HLD3600F FRAME (SECTION 5, FEEDER FOR MCC-300).	0
18	600V THERMAL MAGNETIC CIRCUIT DUAL BREAKER FEEDER BUCKET AND DOOR: 20 AT FDC3020 (2 SPACE FACTOR)	1	EA	BDAHFDL18-A	EATON	CONTRACTOR	CRPS-E-105	FOR INSTALLATION IN MCC-100 (SECTION 3). NEW FEEDER TO MCC-200.	0
19	MOTOR CIRCUIT PROTECTOR (MCP), FVNR: 20 AT (XX SPACE FACTOR)	1	EA		EATON	RDN		FOR INSTALLATION IN MCC-100 (XXX). HOLD-FUTURE SUPPLY FAN INSTALLED BY RDN.	0
20	CUBICLE DOOR, 6" H x 16" W, BLANK DOOR C/W MOUNTING HARDWARE (1X SPACE FACTOR)	1	EA	5711A01G01	EATON	CONTRACTOR	CRPS-E-106	FOR INSTALLATION IN MCC-100 (SECTION 3).	0
21	CUBICLE DOOR, 18" H x 16" W, BLANK DOOR C/W MOUNTING HARDWAR (3X SPACE FACTOR)	1	EA	5711A03G01	EATON	CONTRACTOR	CRPS-E-106	FOR INSTALLATION IN MCC-100 (SECTION 3).	0
JUNCTION BOXES									
22	WALL-MOUNT JUNCTION BOX, CLASS 1 DIVISION 2 RATED	5	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	CRPS-E-011/012/013/014/015	JB COMPLETE WITH TERMINAL STRIP, TERMINALS AND NAMEPLATE. WET WELL PUMP POWER JB: JB-101/102/103/104/105A	0
23	WALL-MOUNT JUNCTION BOX, CLASS 1 DIVISION 2 RATED	5	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	CRPS-E-011/012/013/014/015	JB COMPLETE WITH TERMINAL STRIP, TERMINALS AND NAMEPLATE. WET WELL PUMP SENSOR JB: JB-101/102/103/104/105B	0
24	WALL-MOUNT JUNCTION BOX, CLASS 1 DIVISION 2 RATED	1	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	CRPS-I-105	COMPLETE WITH TERMINAL STRIP, TERMINALS (QTY 3) AND NAMEPLATE. JB-205	0
25	WALL-MOUNT JUNCTION BOX, CLASS 1 DIVISION 2 RATED	1	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	CRPS-I-108	COMPLETE WITH TERMINAL STRIP, TERMINALS (QTY 8) AND NAMEPLATE. JB-206	0
INSTRUMENTATION AND CONTROL									
26	CP-100	1	EA	SEE REFERENCE	SEE REFERENCE	RDN	CRPS-I-101 TO 112	FABRICATED BY PANEL SHOP. SEE REFERENCE DRAWING FOR COMPLETE DETAILS.	0





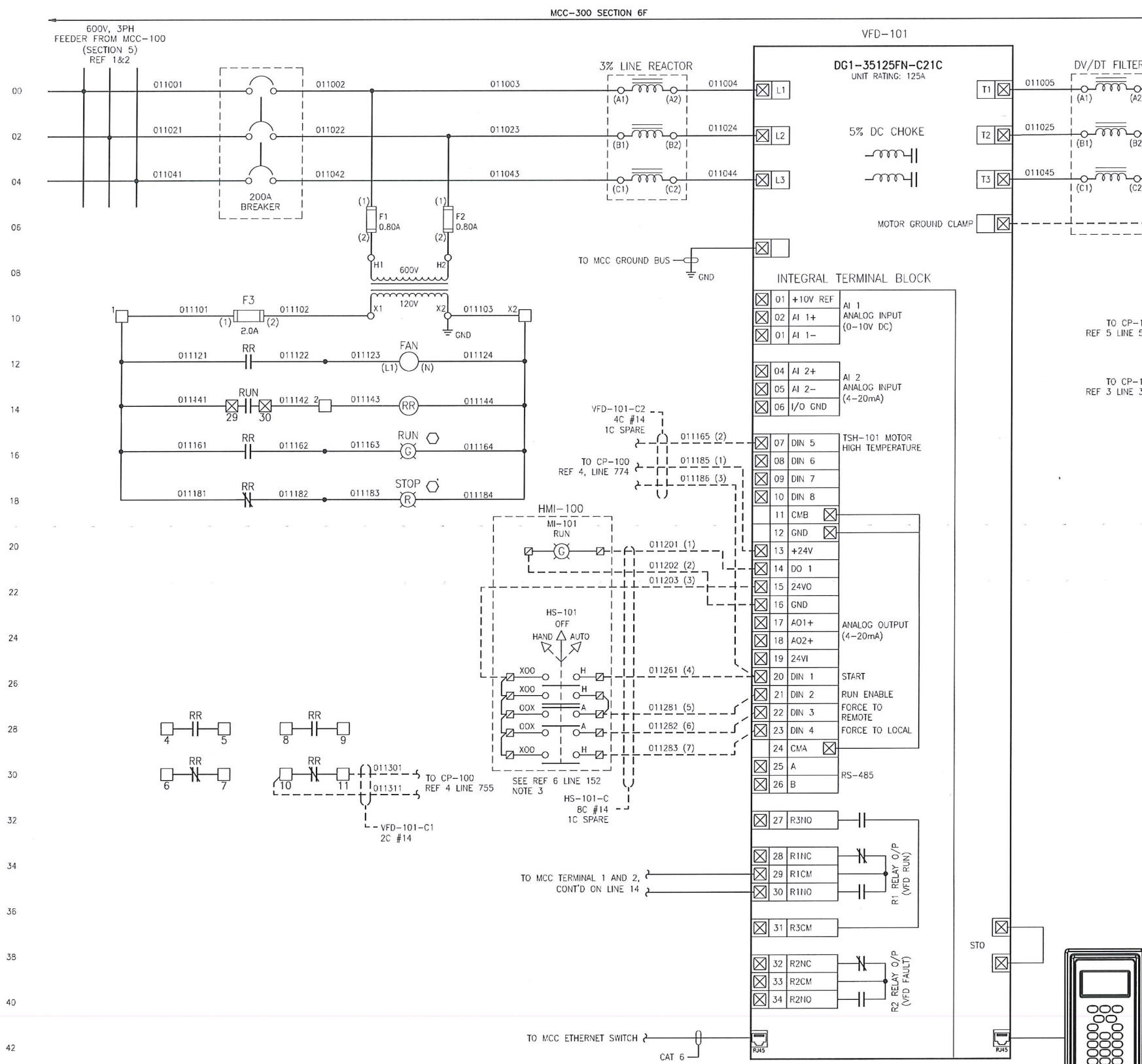
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						PROJECT No:	2003251	
						DOCUMENT No:	2003251-000-1618-003	
						CLIENT PROJECT No:		

E&I MATERIAL TAKE-OFF (MTO)

REFERENCE NUMBER	DESCRIPTION	QUANTITY	UNIT	MODEL NUMBER	SUGGESTED MANUFACTURER	SUPPLIED BY	REFERENCE	COMMENTS	REV
27	HMI-100	1	EA	SEE REFERENCE	SEE REFERENCE	RDN	CRPS-I-121 TO 123	FABRICATED BY PANEL SHOP. SEE REFERENCE DRAWING FOR COMPLETE DETAILS.	0
28	LEVEL FLOAT SWITCH (LSLL-206, LSHH-206/206A/206B), CLASS 1 DIV 2 RATED	4	EA	ENM 10 (5828812)	FLYGT	RDN	CRPS-E-203	REPLACEMENT FOR EXISTING LEVEL SWITCHES. FLOAT INSTALLATION HEIGHTS TO BE CONFIRMED BY RDN. COMPLETE WITH 13m CABLE.	0
29	ULTRASONIC LEVEL SENSOR (LE-205), CLASS 1 DIV 2 RATED	1	EA	XPS-10 (7ML1115-0CA40)	SIEMENS	RDN	CRPS-E-203	REPLACEMENT FOR EXISTING LE-205 SENSOR. COMPLETE WITH 10m CABLE.	0
30	LEVEL TRANSMITTER, 120VAC (LIT-201/202/205)	3	EA	MULTIRANGER 200 HMI (7ML5033-2DA00-2A)	SIEMENS	RDN	CRPS-E-111	REPLACEMENT FOR EXISTING LIT-201/202/205 MOUNTED ON CP-100 DOOR. NEW TRANSMITTERS TO BE WALL-MOUNT IN ELECTRICAL ROOM.	0
31	GAS DETECTOR AND SENSOR, H2S (AE/AIT-300A), C/W SENSOR JB, 24VDC, CLASS 1 DIV 2 RATED	1	EA	SENSEPOINT XCD RTD (SPXCDULNH2R)	HONEYWELL	RDN	CRPS-E-203		0
32	GAS DETECTOR AND SENSOR, LEL METHANE (AE/AIT-300B), 705 SENSOR C/W SENSOR JB, 24VDC, CLASS 1 DIV 2 RATED	1	EA	SENSEPOINT XCD RFD (XCDFDL)	HONEYWELL	RDN	CRPS-E-203		0
33	GAS TEST KIT	1	EA	SEE REFERENCE	HONEYWELL	RDN	HONEYWELL QUOTE Q2101E679335 Rev 2		0
34	HORN/STROBE UNIT (YA-301A/B), 120VAC, AMBER STROBE, CLASS 1 DIV 2 RATED	2	EA	855XM-CGMA10DA5	ALLEN-BRADLEY	RDN	CRPS-E-111		0
35	FLOW SWITCH (FSL-700), CLASS 1 DIV 2 RATED	1	EA	FLT93S-4B-1A104C-4A000-00	FCI	RDN	CRPS-E-203		0
36	FLOW METER (FIT-210)	1	EA	BY OTHERS	BY OTHERS	BY OTHERS	BY OTHERS	PROVIDED AND INSTALLED BY OTHERS	0
37	PRESSURE TRANSMITTER (PIT-210)	1	EA	BY OTHERS	BY OTHERS	BY OTHERS	BY OTHERS	PROVIDED AND INSTALLED BY OTHERS	0
38	INSTRUMENT TAG NAMEPLATE	14	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	-	NAMEPLATE FOR ITEMS 28-35 IF NOT PROVIDED BY MANUFACTURER WITH DEVICE.	0
SERVICES									
39	20A BREAKER	1	EA	BY CONTRACTOR	BY CONTRACTOR	CONTRACTOR	CRPS-E-106	FOR INSTALLATION IN LIGHTING PANEL 'B'	0
OTHER									

- NOTES:**
- CONTRACTOR TO FIELD VERIFY CABLE LENGTHS PRIOR TO PROCUREMENT AND INSTALLATION.
 - REFER TO ELECTRICAL CABLE LIST 2003251-000-1618-002 FOR CABLE DETAILS.
 - TOTAL LENGTH AND QUANTITY ESTIMATED +20%.





VFD PARAMETER SETTINGS	
PARAMETER/INPUT	SETTING
DIN1 [START]	ID 190/X
DIN2 [RUN ENABLE]	ID 194/X
DIN3 [REMOTE CONTROL]	ID 196/X
DIN4 [LOCAL CONTROL]	ID 197/X
DIN5 [THERMISTOR INPUT DI]	ID 881/0
DO1 [RUN]	ID 151/2

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2
CRPS-I-106	CP-100 ANALOG & RTD INPUT	3
CRPS-I-111	BUK-100 SCHEMATIC DIAGRAM	4
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUTS	5
CRPS-I-123	HMI-100 PANEL SCHEMATICS	6

- NOTES:
- INTERNAL WIRING OF THE DG1 IS NOT SHOWN. REFER TO MANUFACTURER'S DOCUMENTATION FOR DETAILED WIRING.
 - SEE 'VFD PARAMETER SETTINGS' TABLE ON THIS DRAWING FOR THE REQUIRED PARAMETER SET UP AND INPUT CONFIGURATION.
 - HAND-OFF-AUTO SWITCH IS MOUNTED ON THE DOOR OF HMI-100 IN THE LUNCHROOM.
 - EXISTING WET WELL WALL MOUNT JUNCTION BOX TO BE REPLACED WITH NEW HAZARDOUS RATED JUNCTION BOX. ALL CABLE CONNECTIONS REQUIRE HAZARDOUS RATED CABLE GLANDS. JUNCTION BOX TERMINATION DETAILS BY CONTRACTOR. NEW JB TAGS ARE JB-101A FOR MOTOR FEEDER AND NEW JB-101B FOR PUMP PROTECTION SIGNALS.
 - EXISTING SUBMERSIBLE CABLE FROM JB TO MOTOR TO BE RE-USED.

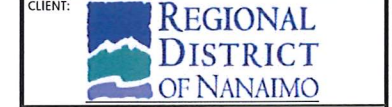
- LEGEND:
- MCC CUBICLE INTERNAL TERMINATIONS
 - MCC CUBICLE TERMINAL BLOCKS
 - ⊗ HMI-100 TERMINALS
 - ⊗ VFD TERMINALS
 - LOCATED ON MCC CUBICLE DOOR

ISSUED FOR CONSTRUCTION
Date: 2021/03/08



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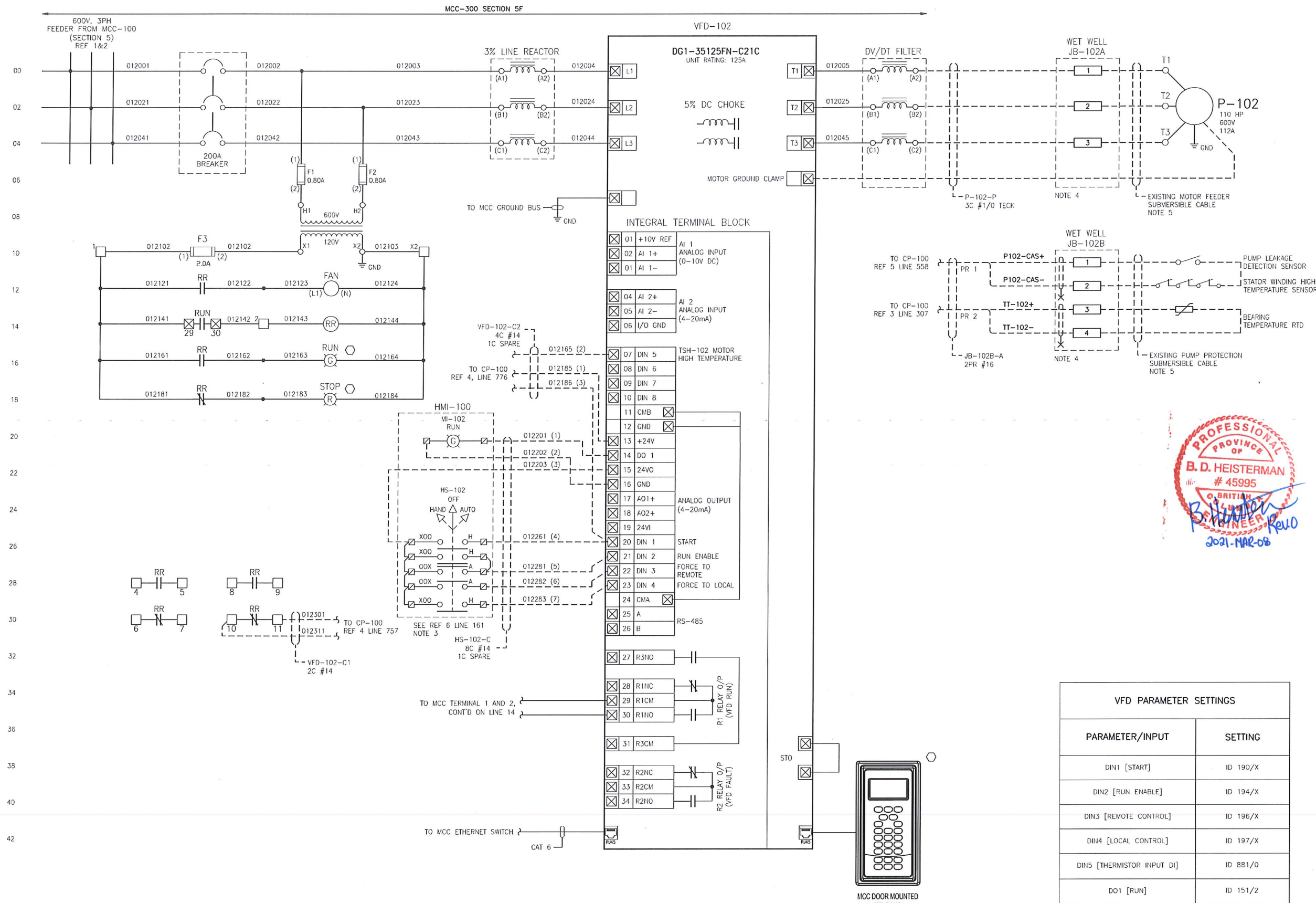
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SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
P-101 SCHEMATIC DIAGRAM

DWG NO:	CRPS-E-011	REV:	0
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Date: 2021/03/07 10:44 PM | User: Ava Fu | File: P:\NA\2020\030251 RDN-Chase River Pump Stn Upgrades\1000-Dwg\1016-Elc\01-Production\CRPS-E-012 | Layout: REV 0 | Paper Size: 863.6mm x 598.8mm



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2
CRPS-I-106	CP-100 ANALOG & RTD INPUT	3
CRPS-I-111	BU-100 SCHEMATIC DIAGRAM	4
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUTS	5
CRPS-I-123	HMI-100 PANEL SCHEMATICS	6

- NOTES:**
- INTERNAL WIRING OF THE DG1 IS NOT SHOWN. REFER TO MANUFACTURER'S DOCUMENTATION FOR DETAILED WIRING.
 - SEE "VFD PARAMETER SETTINGS" TABLE ON THIS DRAWING FOR THE REQUIRED PARAMETER SET UP AND INPUT CONFIGURATION.
 - HAND-OFF-AUTO SWITCH IS MOUNTED ON THE DOOR OF HMI-100 IN THE LUNCHROOM.
 - EXISTING WET WELL WALL MOUNT JUNCTION BOX TO BE REPLACED WITH NEW HAZARDOUS RATED JUNCTION BOX. ALL CABLE CONNECTIONS REQUIRE HAZARDOUS RATED CABLE GLANDS. JUNCTION BOX TERMINATION DETAILS BY CONTRACTOR. NEW JB TAGS ARE JB-102A FOR MOTOR FEEDER AND NEW JB-102B FOR PUMP PROTECTION SIGNALS.
 - EXISTING SUBMERSIBLE CABLE FROM JB TO MOTOR TO BE RE-USED.

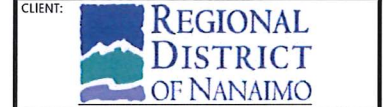
- LEGEND:**
- MCC CUBICLE INTERNAL TERMINATIONS
 - MCC CUBICLE TERMINAL BLOCKS
 - ⊗ HMI-100 TERMINALS
 - ⊗ VFD TERMINALS
 - ⊗ LOCATED ON MCC CUBICLE DOOR

ISSUED FOR CONSTRUCTION
Date: 2021/03/08



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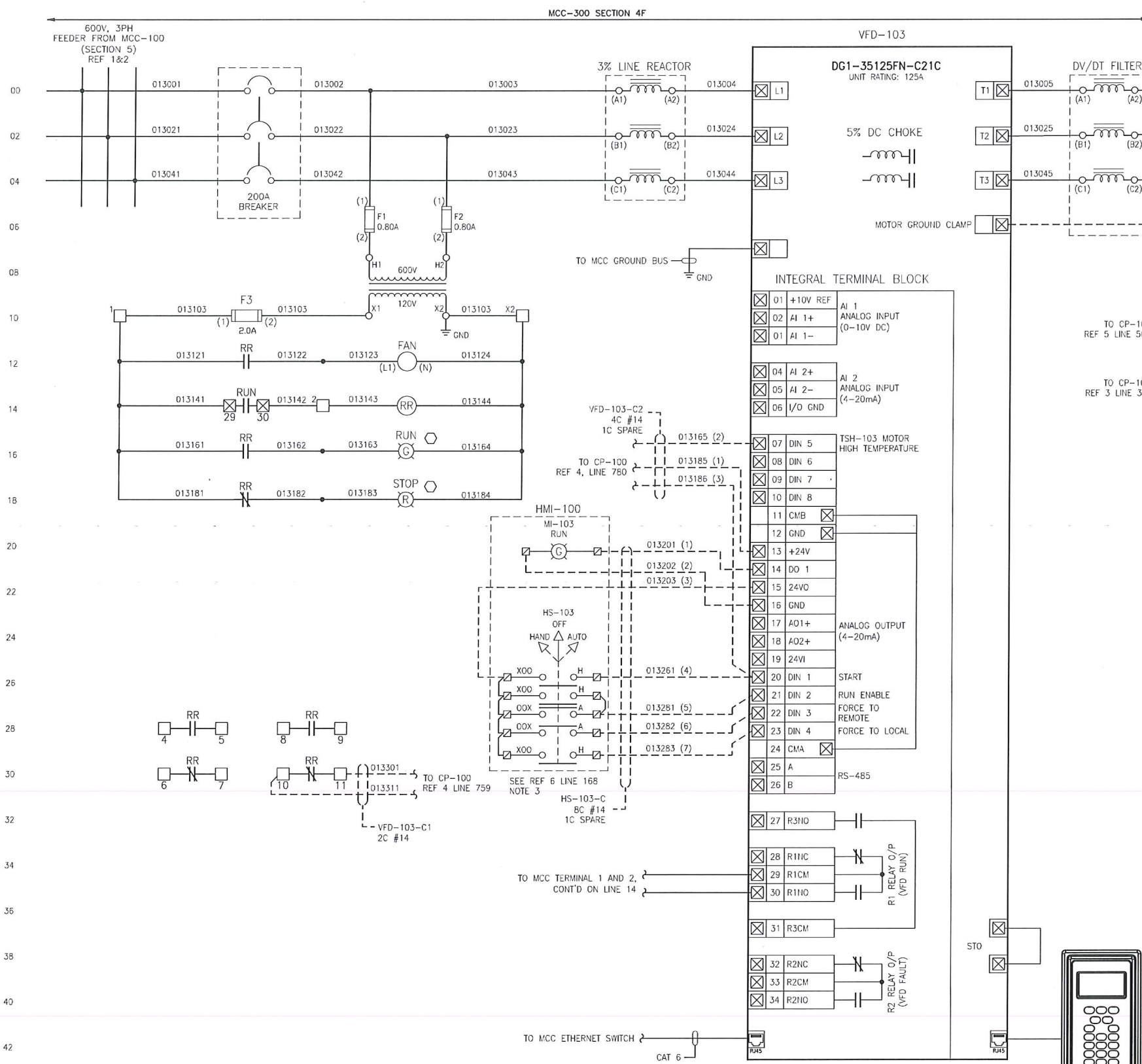
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DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

P-102 SCHEMATIC DIAGRAM

DWG NO: **CRPS-E-012** REV: **0**

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VFD PARAMETER SETTINGS	
PARAMETER/INPUT	SETTING
DIN1 [START]	ID 190/X
DIN2 [RUN ENABLE]	ID 194/X
DIN3 [REMOTE CONTROL]	ID 196/X
DIN4 [LOCAL CONTROL]	ID 197/X
DIN5 [THERMISTOR INPUT DI]	ID 881/0
DO1 [RUN]	ID 151/2

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2
CRPS-I-106	CP-100 ANALOG & RTD INPUT	3
CRPS-I-111	BUK-100 SCHEMATIC DIAGRAM	4
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUTS	5
CRPS-I-123	HMI-100 PANEL SCHEMATICS	6

- NOTES:
- INTERNAL WIRING OF THE DG1 IS NOT SHOWN. REFER TO MANUFACTURER'S DOCUMENTATION FOR DETAILED WIRING.
 - SEE 'VFD PARAMETER SETTINGS' TABLE ON THIS DRAWING FOR THE REQUIRED PARAMETER SET UP AND INPUT CONFIGURATION.
 - HAND-OFF-AUTO SWITCH IS MOUNTED ON THE DOOR OF HMI-100 IN THE LUNCHROOM.
 - EXISTING WET WELL WALL MOUNT JUNCTION BOX TO BE REPLACED WITH NEW HAZARDOUS RATED JUNCTION BOX. ALL CABLE CONNECTIONS REQUIRE HAZARDOUS RATED DETAILS. JUNCTION BOX TERMINATION DETAILS BY CONTRACTOR. NEW JB TAGS ARE JB-103A FOR MOTOR FEEDER AND NEW JB-103B FOR PUMP PROTECTION SIGNALS.
 - EXISTING SUBMERSIBLE CABLE FROM JB TO MOTOR TO BE RE-USED.

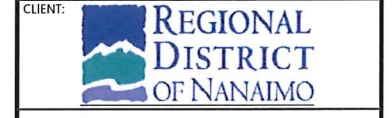
- LEGEND:
- MCC CUBICLE INTERNAL TERMINATIONS
 - MCC CUBICLE TERMINAL BLOCKS
 - ⊗ HMI-100 TERMINALS
 - ⊗ VFD TERMINALS
 - LOCATED ON MCC CUBICLE DOOR

ISSUED FOR CONSTRUCTION
Date: 2021/03/08



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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD



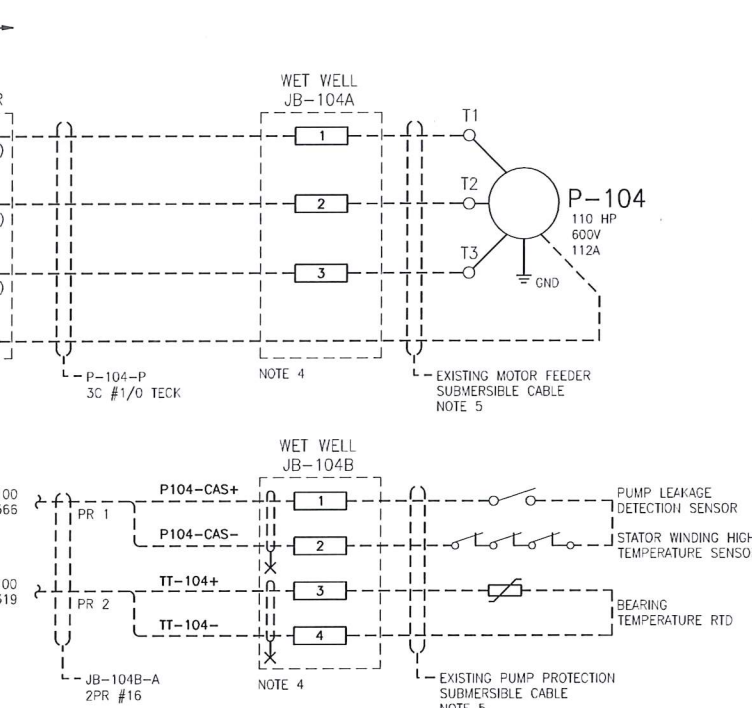
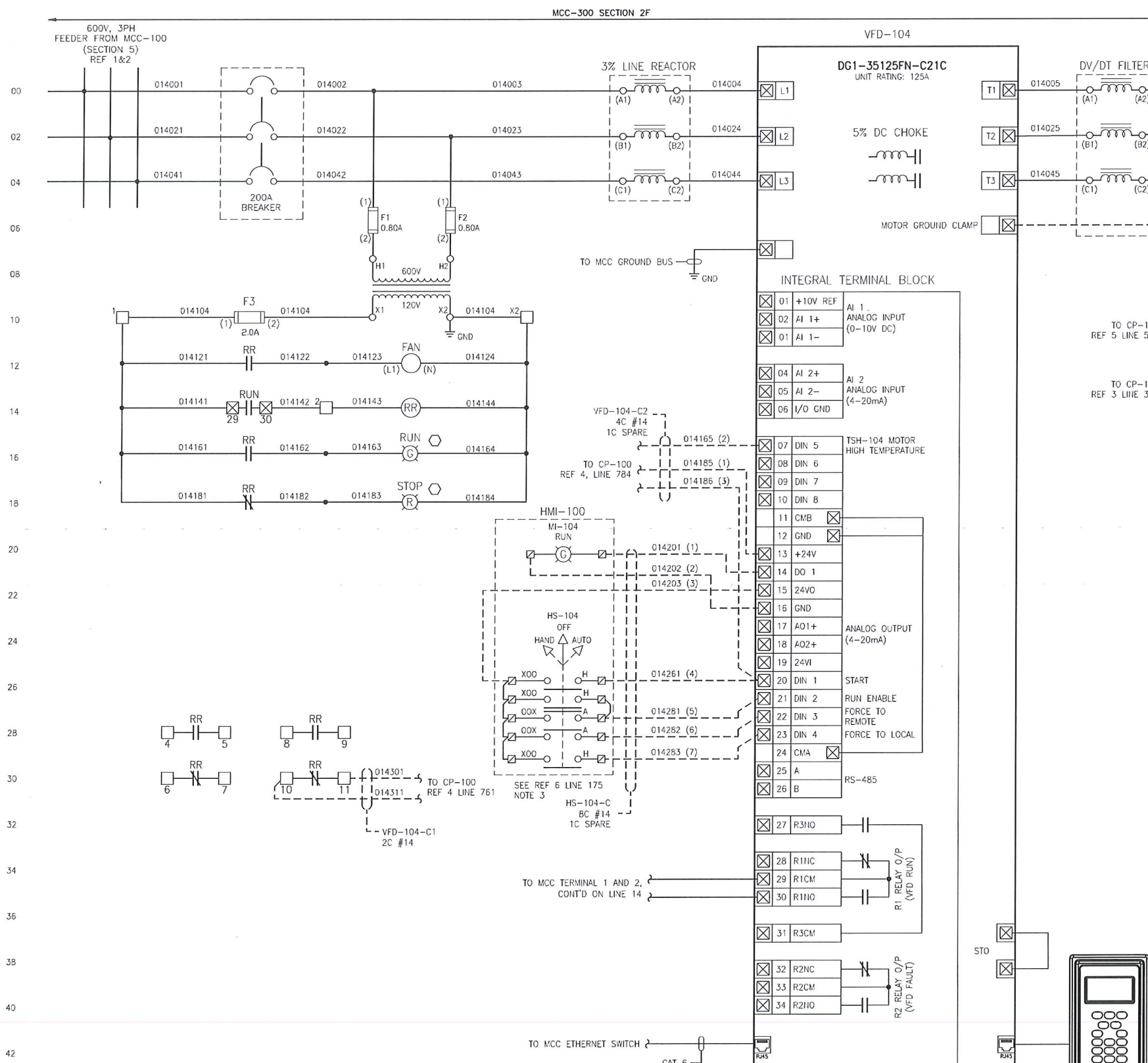
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SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

P-103 SCHEMATIC DIAGRAM

DWG NO:	CRPS-E-013	REV:	0
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REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2
CRPS-I-106	CP-100 ANALOG & RTD INPUT	3
CRPS-I-111	BUC-100 SCHEMATIC DIAGRAM	4
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUTS	5
CRPS-I-123	HMI-100 PANEL SCHEMATICS	6

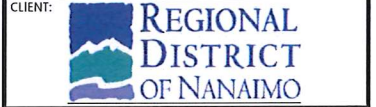
- NOTES:
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 - SEE 'VFD PARAMETER SETTINGS' TABLE ON THIS DRAWING FOR THE REQUIRED PARAMETER SET UP AND INPUT CONFIGURATION.
 - HAND-OFF-AUTO SWITCH IS MOUNTED ON THE DOOR OF HMI-100 IN THE LUNCHROOM.
 - EXISTING WET WELL WALL MOUNT JUNCTION BOX TO BE REPLACED WITH NEW HAZARDOUS RATED JUNCTION BOX. ALL CABLE CONNECTIONS REQUIRE HAZARDOUS RATED CABLE GLANDS. JUNCTION BOX TERMINATION DETAILS BY CONTRACTOR. NEW JB TAGS ARE JB-104A FOR MOTOR FEEDER AND NEW JB-104B FOR PUMP PROTECTION SIGNALS.
 - EXISTING SUBMERSIBLE CABLE FROM JB TO MOTOR TO BE RE-USED.

- LEGEND:
- MCC CUBICLE INTERNAL TERMINATIONS
 - MCC CUBICLE TERMINAL BLOCKS
 - ⊗ HMI-100 TERMINALS
 - ⊗ VFD TERMINALS
 - LOCATED ON MCC CUBICLE DOOR

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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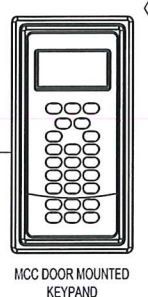
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DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

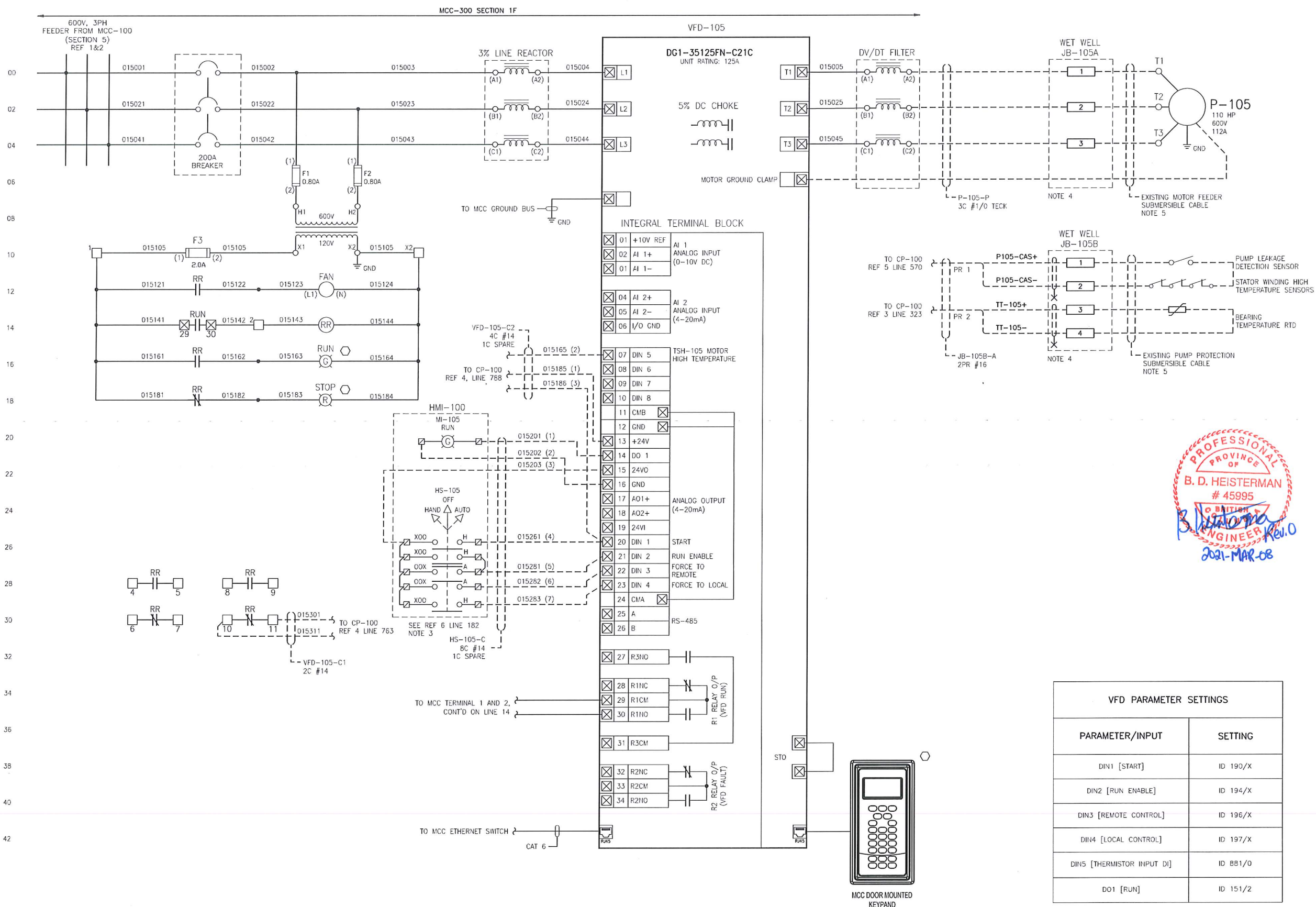
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P-104 SCHEMATIC DIAGRAM

DWG NO:	CRPS-E-014	REV:	0
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VFD PARAMETER SETTINGS	
PARAMETER/INPUT	SETTING
DIN1 [START]	ID 190/X
DIN2 [RUN ENABLE]	ID 194/X
DIN3 [REMOTE CONTROL]	ID 196/X
DIN4 [LOCAL CONTROL]	ID 197/X
DIN5 [THERMISTOR INPUT DI]	ID 881/0
DO1 [RUN]	ID 151/2



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REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2
CRPS-I-106	CP-100 ANALOG & RTD INPUT	3
CRPS-I-111	BU-100 SCHEMATIC DIAGRAM	4
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUTS	5
CRPS-I-123	HMI-100 PANEL SCHEMATICS	6

- NOTES:
- INTERNAL WIRING OF THE DG1 IS NOT SHOWN. REFER TO MANUFACTURER'S DOCUMENTATION FOR DETAILED WIRING.
 - SEE 'VFD PARAMETER SETTINGS' TABLE ON THIS DRAWING FOR THE REQUIRED PARAMETER SET UP AND INPUT CONFIGURATION.
 - HAND-OFF-AUTO SWITCH IS MOUNTED ON THE DOOR OF HMI-100 IN THE LUNCHROOM.
 - EXISTING WET WELL WALL MOUNT JUNCTION BOX TO BE REPLACED WITH NEW HAZARDOUS RATED JUNCTION BOX. ALL CABLE CONNECTIONS REQUIRE HAZARDOUS RATED CABLE GLANDS. JUNCTION BOX TERMINATION DETAILS BY CONTRACTOR. NEW JB TAGS ARE JB-105A FOR MOTOR FEEDER AND NEW JB-105B FOR PUMP PROTECTION SIGNALS.
 - EXISTING SUBMERSIBLE CABLE FROM JB TO MOTOR TO BE RE-USED.

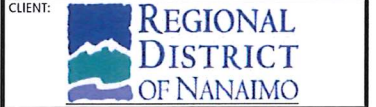
- LEGEND:
- MCC CUBICLE INTERNAL TERMINATIONS
 - MCC CUBICLE TERMINAL BLOCKS
 - ⊗ HMI-100 TERMINALS
 - ⊗ VFD TERMINALS
 - LOCATED ON MCC CUBICLE DOOR

ISSUED FOR CONSTRUCTION
Date: 2021/03/08



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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH



CLIENT NO:	-	DRWN:	AF	DATE:	21/01/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	21/01/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

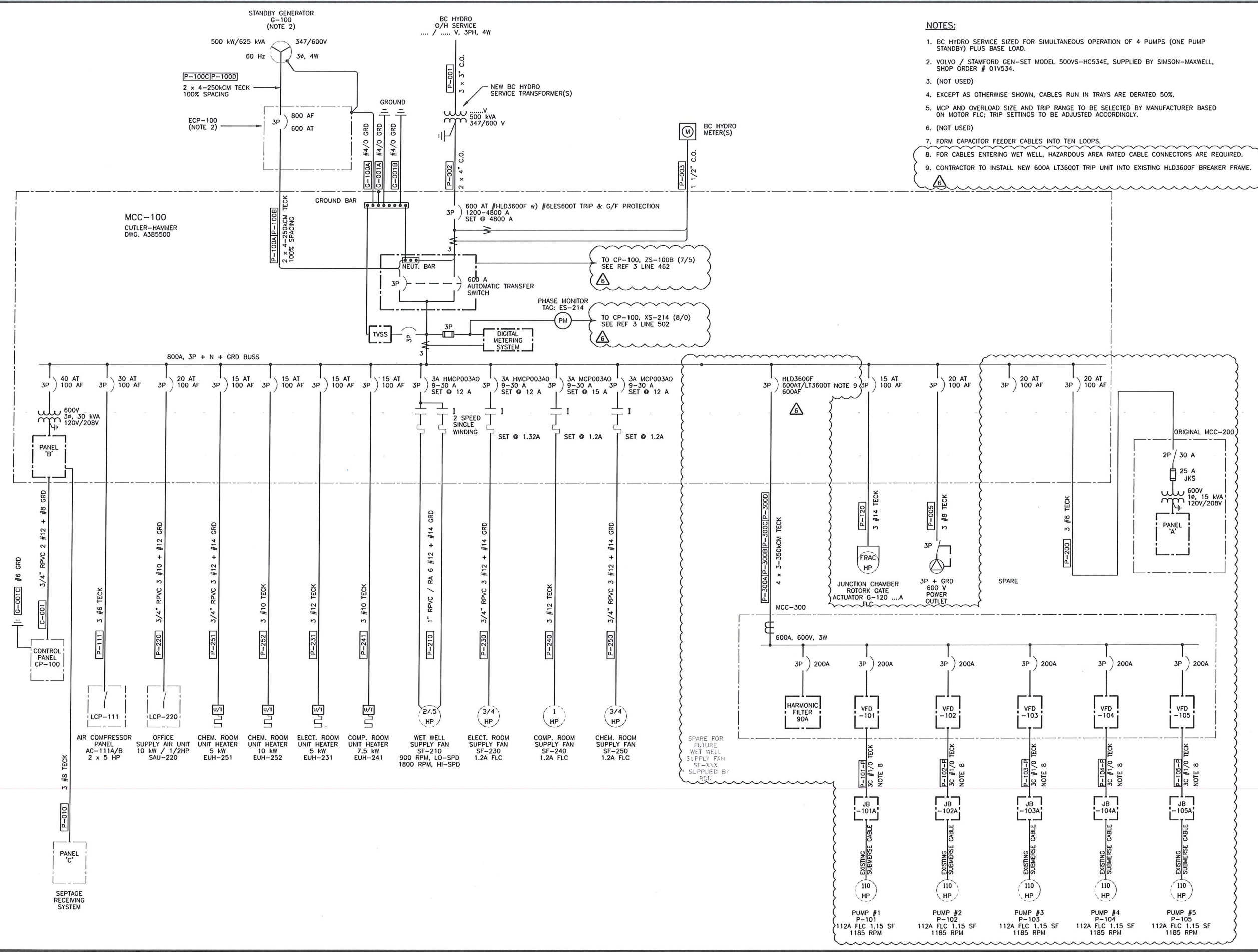
PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
P-105 SCHEMATIC DIAGRAM

DWG NO:	CRPS-E-015	REV:	0
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VFD PARAMETER SETTINGS	
PARAMETER/INPUT	SETTING
DIN1 [START]	ID 190/X
DIN2 [RUN ENABLE]	ID 194/X
DIN3 [REMOTE CONTROL]	ID 196/X
DIN4 [LOCAL CONTROL]	ID 197/X
DIN5 [THERMISTOR INPUT DI]	ID 881/0
DO1 [RUN]	ID 151/2

Date: 2021/03/08 10:14 AM | User: A:\Users\jg\Documents\Projects\2006\4\20\Drawings\AutoCAD\Files\Q:\9828\CH\B\Elec\CH0360\H.DWG (6/1)



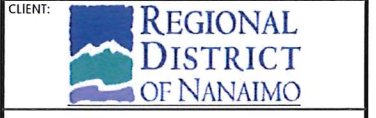
- NOTES:**
1. BC HYDRO SERVICE SIZED FOR SIMULTANEOUS OPERATION OF 4 PUMPS (ONE PUMP STANDBY) PLUS BASE LOAD.
 2. VOLVO / STAMFORD GEN-SET MODEL 500VS-HC534E, SUPPLIED BY SIMSON-MAXWELL, SHOP ORDER # 01V534.
 3. (NOT USED)
 4. EXCEPT AS OTHERWISE SHOWN, CABLES RUN IN TRAYS ARE DERATED 50%.
 5. MCP AND OVERLOAD SIZE AND TRIP RANGE TO BE SELECTED BY MANUFACTURER BASED ON MOTOR FLC; TRIP SETTINGS TO BE ADJUSTED ACCORDINGLY.
 6. (NOT USED)
 7. FORM CAPACITOR FEEDER CABLES INTO TEN LOOPS.
 8. FOR CABLES ENTERING WET WELL, HAZARDOUS AREA RATED CABLE CONNECTORS ARE REQUIRED.
 9. CONTRACTOR TO INSTALL NEW 600A LT3600T TRIP UNIT INTO EXISTING HLD3600F BREAKER FRAME.

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-106	MCC LAYOUTS, SCHEDULES & DETAILS	1
CRPS-E-110	FIELD WIRING BLOCK DIAGRAM	2
CRPS-I-108	CP-100 SLOT 7&8 DISCRETE INPUT	3



ISSUED FOR CONSTRUCTION
Date: 2021/03/08

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
6	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
5	13/07/20	DRAWING UPDATED	RS		
4	04/04/20	P-103 REPLACED	JT	JT	
3	02/07/09	RECORD DRAWING, STAGE 3	JT	JT	
2	02/01/03	GATE ACTUATOR ADDED	JT	MI	
1	01/09/24	ISSUED FOR CONSTRUCTION	ST	KM	
0	01/08/09	ISSUED FOR TENDER	ST	KM	

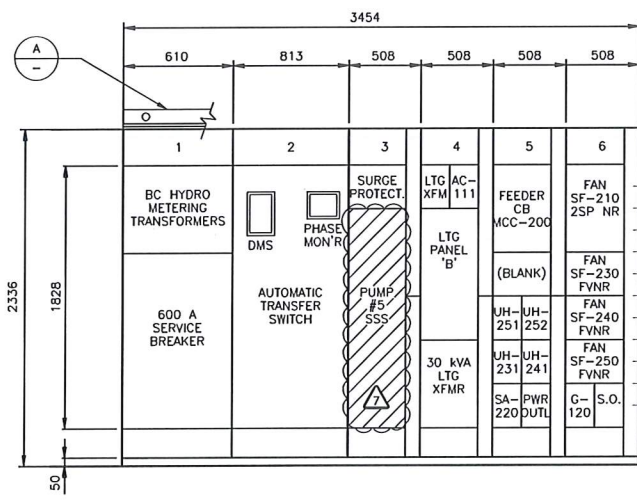


CLIENT NO:	-	DRWN:	JT	DATE:	-
PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI 'D'	CHKD:	JG	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

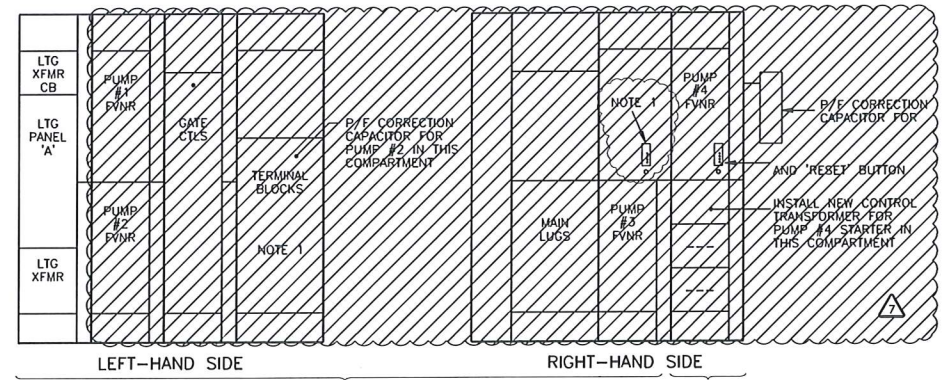
CHASE RIVER PUMPING STATION UPGRADE

SINGLE LINE DIAGRAM

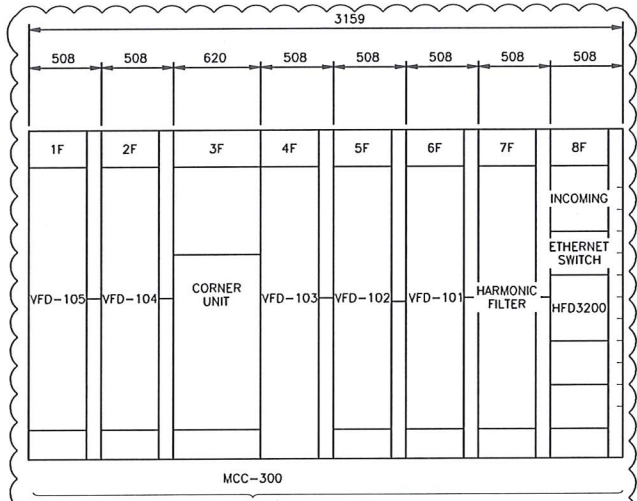
DWG NO:	CRPS-E-105	REV:	6
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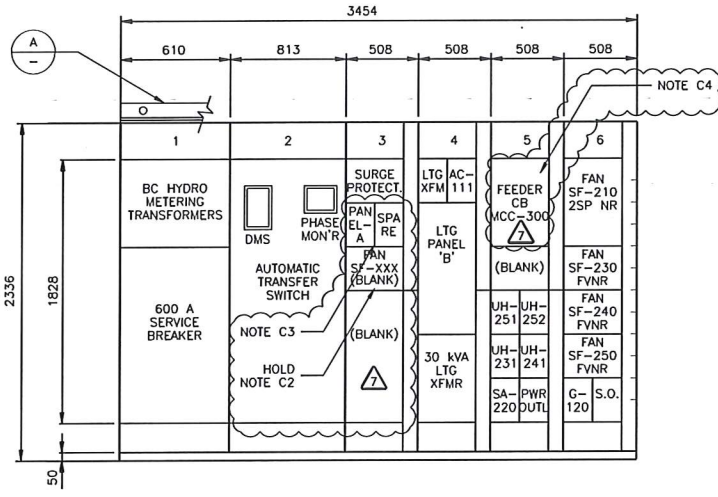
MCC-100 DEMOLITION PLAN



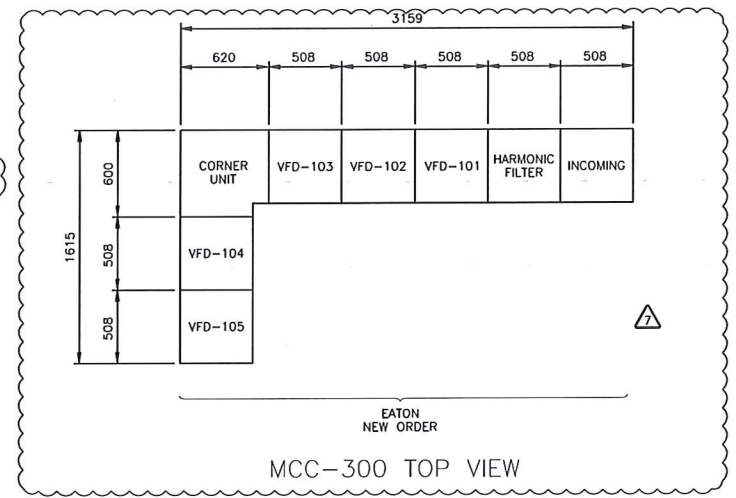
MCC-200 DEMOLITION PLAN



MCC-200/300 CONSTRUCTION PLAN



MCC-100 CONSTRUCTION PLAN

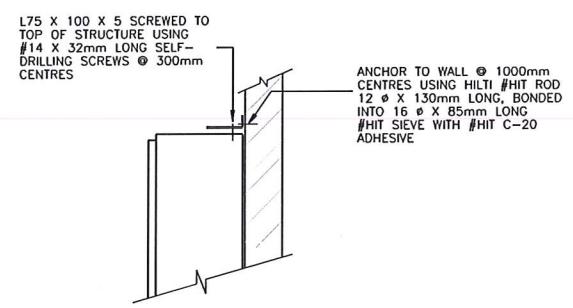


MCC-300 TOP VIEW

DESCRIPTION		LOAD	BKR SIZE	PHASE A B C	BKR SIZE	LOAD	DESCRIPTION
BATTERY PACK EMERGENCY LIGHTS	300 VA	15A	1	2	20A	3000 W	HOT WATER TANK HWT-120 CHEMICAL ROOM
EXTERIOR LIGHTS	700 VA	15A	3	4		3000 W	
LIGHTS WASHROOM & OFFICE/LUNCHROOM	770 VA	15A	5	6			SPARE
LIGHTS CHEMICAL & COMPRESSOR ROOMS	840 VA	15A	7	8	15A	1250 W	WASHROOM HEATER EBH-261
LIGHTS ELECTR. ROOM	400 VA	15A	9	10	15A	3	RECEPTACLES CHEMICAL & COMPRESSOR ROOMS
DOMESTIC HOT WATER TANK HWT-121	2250 VA	15A	11	12	15A	3	RECEPTACLES CHEMICAL & COMPRESSOR ROOMS
CONTROL PANEL CP-100	1500 VA	20A	13	14	15A	4	RECEPTACLES WASHROOM & OFFICE / LUNCHROOM
ENGINE CONTROL PANEL ECP-100	1500 VA	30A	15	16	15A	4	RECEPTACLES WASHROOM & OFFICE / LUNCHROOM
WEATHER STATION	100 VA	15A	17	18	15A	1	SPLIT RECEPTACLES KITCHEN COUNTER
CHEMICAL METERING PUMP P-105 (UNDER STAGE 2)	FRAC HP	15A	19	20	15A	1	SPLIT RECEPTACLES KITCHEN COUNTER
CHEMICAL METERING PUMP P-107 (UNDER STAGE 2)	FRAC HP	15A	21	22	15A	3	RECEPTACLES EL. ROOM
AIR DRYER AD-114	600 VA	15A	23	24	15A	3	RECEPTACLES EL. ROOM & EXTERIOR
PANEL 'C' VA	40A	25	26	15A	3	RECEPTACLES EXTERIOR
GENERATOR ROOM EXHAUST FAN EF-270	FRAC.HP	15A	27	28	15A		SPARE
SPARE		15A	29	30	15A		AIR CURTAIN
NEW AIR DRYER PLUG		15A	31	32	15A		OUTSIDE CHAMBER FAN & LIGHT
			33	34	30A		AIR COMPRESSOR
			35	36			
			37	38			
			39	40			
			41	42			

TYPE	LAMP	DESCRIPTION
FA	2x32W T8 "COOL"	SURFACE-MOUNTED OR SUSPENDED INDUSTRIAL FLUORESCENT LUMINAIRE WITH SLOTTED REFLECTOR AND TURRET SOCKETS, PEERLESS #IST
FB	2x32W T8 "COOL"	SURFACE-MOUNTED VAPOURTIGHT FLUORESCENT LUMINAIRE NON-METALLIC BODY WIT ACRYLIC CLEAR LENS PEERLESS #FCC
FC	3x32W T8 "COOL"	RECESSED FLUORESCENT LUMINAIRE FOR LAY-IN T-BAR CEILING, HINGED FRAME AND K12 ACRYLIC LENS, PEERLESS #LACH-24G-332-12
FD	2x32W T8 "COOL"	RECESSED FLUORESCENT LUMINAIRE FOR WASHROOM DRYWALL CEILING WITH INTEGRATED HINGED FRAMED DIFFUSER PEERLESS #TL-14F
SG	70W HPS CLEAR	WALL MOUNTED OUTDOOR HPS LUMINAIRE WITH GREY BODY AND POLYCARBONATE REFRACTOR OR SHIELD, HOLOPHANE #WALLPACKETTE LARGE
EY	12W HALOGEN SEALED BEAM	BATTERY-PACK EMERGENCY LIGHT, EEMAC TYPE 12, WITH INTEGRAL HEADS; LUMACEL #LD12-100-IF-2 w) OPTIONS
EZ	12W HALOGEN SEALED BEAM	REMOTE HEAD FOR EMERGENCY LIGHT, # INDICATES BATTERY PACK IT IS SLAVED TO. LUMACEL #LH1, LH2 AND WH1 AS SHOWN ON DRAWINGS

DESCRIPTION		LOAD	BKR SIZE	PHASE A B C	BKR SIZE	LOAD	DESCRIPTION
KIOSK LIGHT	50 VA	15A	1	2	15A	500 VA	PINCH VALVE ACTUATOR ** HSY-250
KIOSK RECEPTACLE	1	15A	3	4	15A	500 VA	
KIOSK HEATER	... W	15A	5	6	15A	500 VA	FLUSH VALVE SV-250
SAMPLER RECEPTACLE	1	15A	7	8	15A	50 VA	ACCESS TERMINAL, CP-250
SPARE		15A	9	10	15A	500 VA	SPARE
SPARE		15A	11	12	15A		



PANEL SEISMIC RESTRAINT N.T.S.

NOTES:
 1. INSTALL 200A PUMP FAULT ALARM AND ASSOCIATED CONTROLS FOR P-105 IN THIS COMPARTMENT.
 2. PROVIDE NAMEPLATES TO CLEARLY IDENTIFY NEW CIRCUITS.

CONSTRUCTION NOTES:
 C1. REPLACE EXISTING PANELBOARD 'B' CIRCUIT 15 15A BREAKER WITH NEW 20A BREAKER.
 C2. FUTURE WET WELL FAN STARTER BY RON.
 C3. NEW 20A FEEDER BREAKER FOR PANEL 'A' COMES AS A DUAL PACKAGE, MOUNTED SIDE BY SIDE HORIZONTALLY.
 C4. CONTRACTOR TO INSTALL NEW 600A LT3600 TRIP UNIT INTO EXISTING HLD3600F BREAKER FRAME, AND RE-TAG CUBICLE DOOR.



ISSUED FOR CONSTRUCTION
 Date: 2021/03/08

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
7	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
6	13/07/20	DRAWING UPDATED	RS		
5	04/04/20	'CAS' ADDED FOR P-103	JT	JT	JT
4	03/03/04	SAMPLER ADDITION	ST	MI	
3	02/07/09	RECORD DRAWING, STAGE 3	JT	JT	
2	02/01/03	GATE ACTUATOR ADDED	JT	MI	
1	01/09/24	ISSUED FOR CONSTRUCTION	ST		KM

CLIENT: REGIONAL DISTRICT OF NANAIMO



CLIENT NO:	-	DRWN:	JT	DATE:	-
PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	JG	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

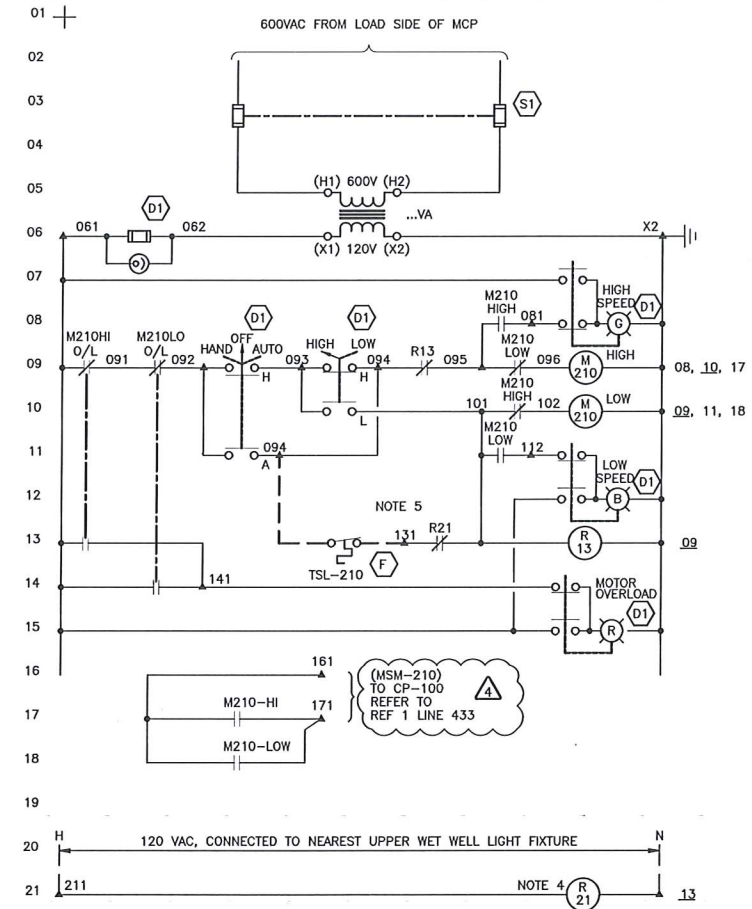
PROJECT: CHASE RIVER PUMP STATION UPGRADE

TITLE: MCC LAYOUTS, SCHEDULES AND DETAILS

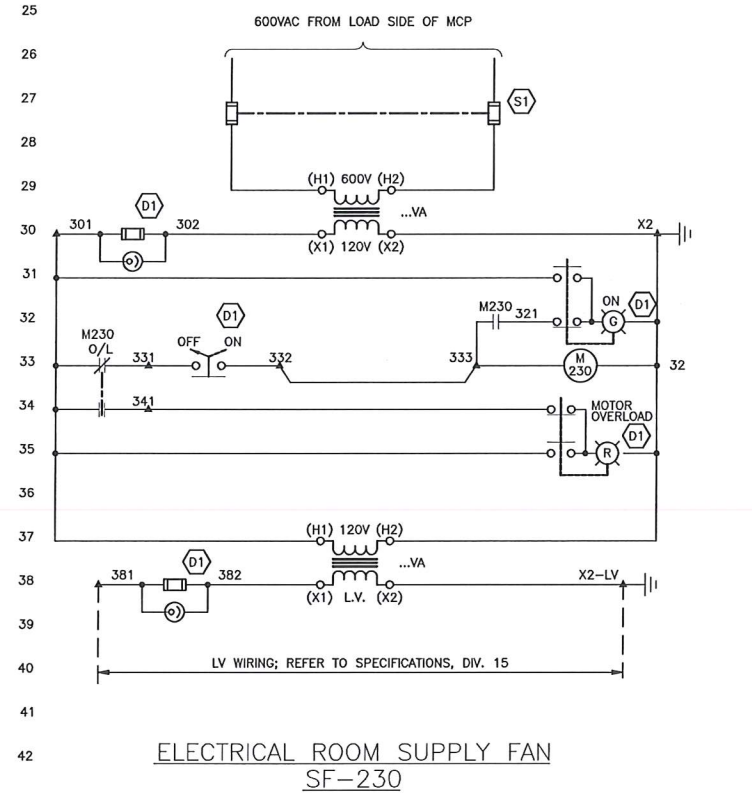
DWG NO:	CRPS-E-106	REV:	7
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GENERAL NOTES (APPLIES TO DRAWINGS 982819-601-1-606 TO -608, AND APPLICABLE INSTRUMENTATION DRAWINGS)

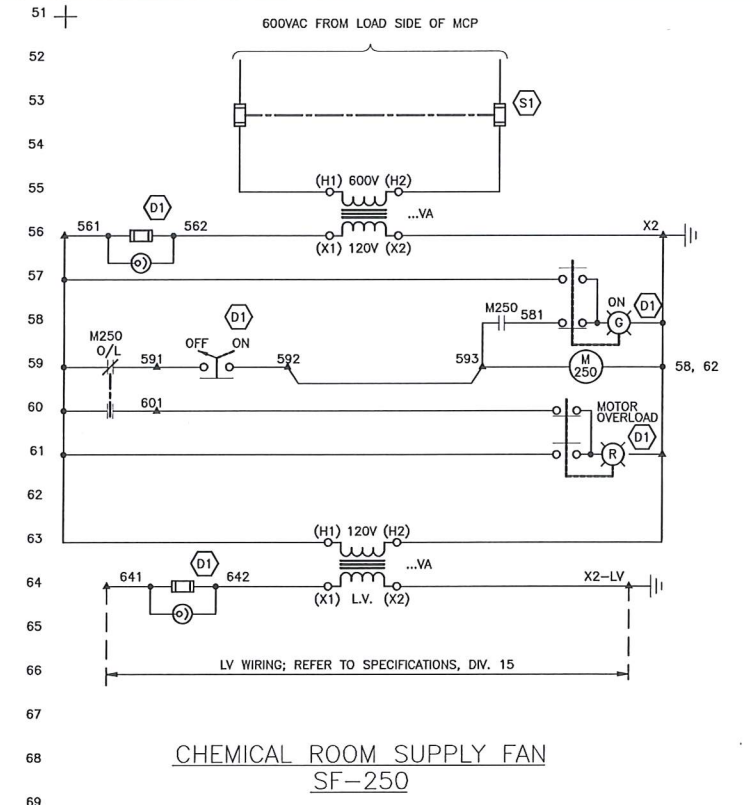
- THE FOLLOWING LOCATION DESIGNATIONS APPLY:
 - (S1) DEVICE LOCATED IN MCC-100 / UNIT COMPARTMENT
 - (D1) DEVICE LOCATED IN DOOR OF MCC-100 / UNIT COMPARTMENT
 - (S2) DEVICE LOCATED IN MCC-200 / UNIT COMPARTMENT
 - (D2) DEVICE LOCATED IN DOOR OF MCC-200 / UNIT COMPARTMENT
 - (P) DEVICE LOCATED IN CONTROL PANEL CP-100
 - (PD) DEVICE LOCATED IN DOOR OF CONTROL PANEL CP-100
 - (P1) DEVICE LOCATED IN ENGINE CONTROL PANEL ECP-100
 - (F) DEVICE LOCATED IN FIELD
 - () DEVICE LOCATED IN
- THE TERMINAL BLOCKS SHOWN ON THE DRAWINGS ARE MANDATORY REQUIREMENTS. CONTRACTOR MAY ADD FURTHER TERMINAL BLOCKS TO FACILITATE WIRING. TERMINAL BLOCKS ARE IDENTIFIED AS FOLLOWS:
 - TERMINAL BLOCK ON EQUIPMENT
 - ▲ TERMINAL BLOCK IN MCC-100 / UNIT COMPARTMENT
 - TERMINAL BLOCK IN MCC-200 / UNIT COMPARTMENT
 - TERMINAL BLOCK IN CP-100
 - ◆ TERMINAL BLOCK IN ENGINE CONTROL PANEL ECP-100
 - TERMINAL BLOCK ON SOFT-START CONTROLLER CHASSIS
- EXCEPT AS OTHERWISE SHOWN, DEVICES ARE LOCATED IN MCC-100 / UNIT COMPARTMENTS.
- INSTALL A RED LAMACOID NAMEPLATE ON UNIT COMPARTMENT DOOR: "WARNING - MORE THAN ONE CONTROL POWER SOURCE; RELAY R21 POWERED FROM WET WELL LIGHT CIRCUIT".
- IN 'AUTO' MODE, FAN RUNS CONTINUOUSLY AT HIGH SPEED EXCEPT DURING PERIODS OF LOW OUTSIDE TEMPERATURE FAN RUNS AT LOW SPEED. THERMOSTAT IS DISABLED WHILE LIGHTS ARE TURNED ON, I.E. FAN RUNS AT HIGH SPEED REGARDLESS OF OUTSIDE TEMPERATURE WHILE AN OPERATOR IS IN THE WET WELL.



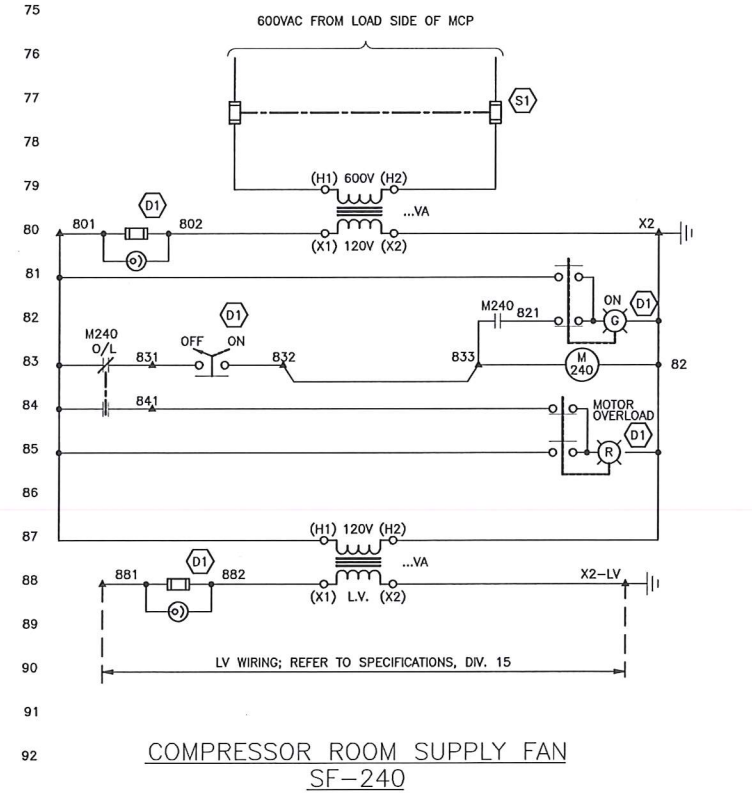
WET WELL SUPPLY FAN SF-210
(NOTE 5)



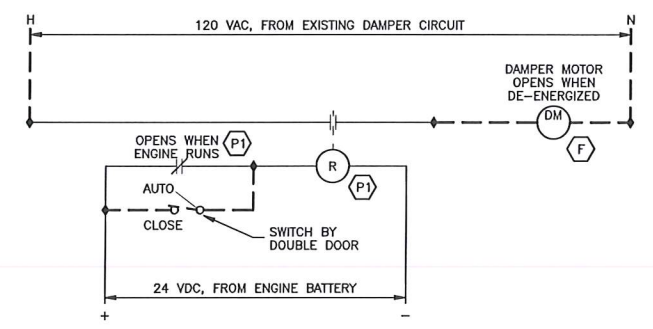
ELECTRICAL ROOM SUPPLY FAN SF-230



CHEMICAL ROOM SUPPLY FAN SF-250



COMPRESSOR ROOM SUPPLY FAN SF-240



GENERATOR ROOM DAMPER CONTROLS

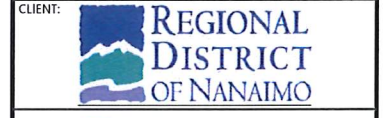
REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-1-107	CP-100 SLOT 5&6 DISCRETE INPUT	1



ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
4	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
3	13/05/25	RECORD DRAWING UPDATED	RS		JK
2	09/03/24	RECORD DRAWING STAGE 2	JT		MI
1	99/08/24	ISSUED FOR CONSTRUCTION	ST		KM
0	99/06/22	ISSUED FOR TENDER	ST		KM



CLIENT NO:	-	DRWN:	JT	DATE:	00/03
PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	DSW	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

CHASE RIVER PUMP STATION UPGRADE

ELECTRICAL CONTROL SCHEMATICS

DWG NO:	CRPS-E-107	REV:	4
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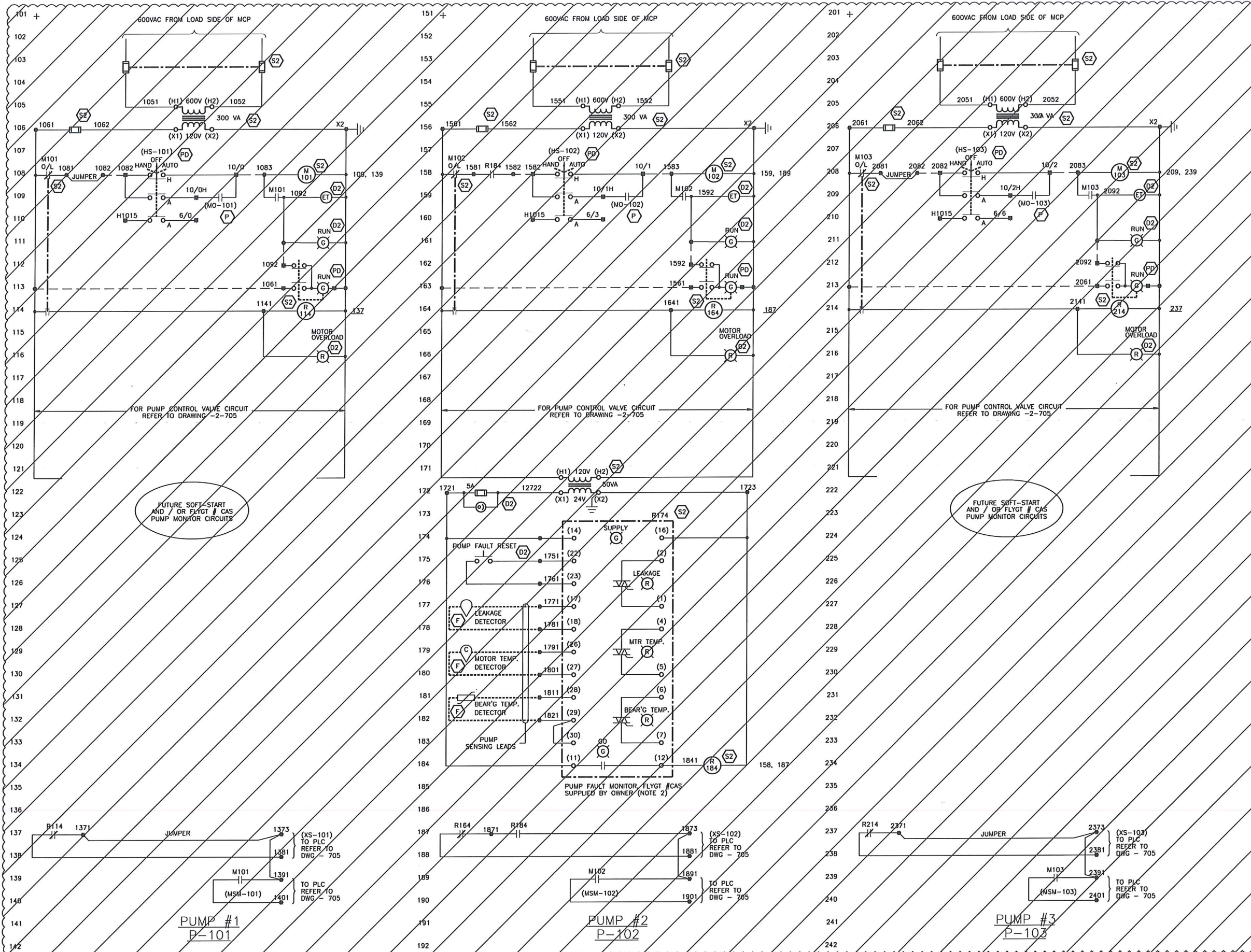
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DRAWING IS DATA-LINKED



VERIFY SCALES
 BAR IS BASED ON ORIGINAL DRAWING
 0 20mm
 IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OR ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING -1-606.
 - PROVIDE A VIEWING WINDOW FOR VISUAL ACCESS TO THE UNIT-MOUNTED LED'S.

NO.	DATE	ENG.	BY	SUBJECT
3	25 MAY 2013	JK	RS	RECORD DRAWING UPDATE
2	30 NOV. 00	K.M.	J.T.	RECORD DRAWING, STAGE 2
1	23 JUNE 00	K.M.	J.T.	ISSUED FOR CONSTRUCTION
0	14 APR 00	K.M.	J.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-601/602
SCALE	AS SHOWN
DRAWN	J.T.
DESIGNED	J.T.
CHECKED	D.S.W.
APPROVED	
APPROVED	
DATE	MARCH 2000

ISSUED FOR
DEMOLITION
 Date: 2021/03/08



DISTRICT PROJECT NUMBER
 0810-20-CRPS-04

DISTRICT DRAWING NUMBER
 CRPS-E-108

REGIONAL DISTRICT
 OF NANAIMO

CHASE RIVER
 PUMPING STATION UPGRADE

ELECTRICAL
 CONTROL SCHEMATICS
 SHEET 2 OF 3

DRAWING NUMBER	REV. NO.	SHEET
CH2-607	3	

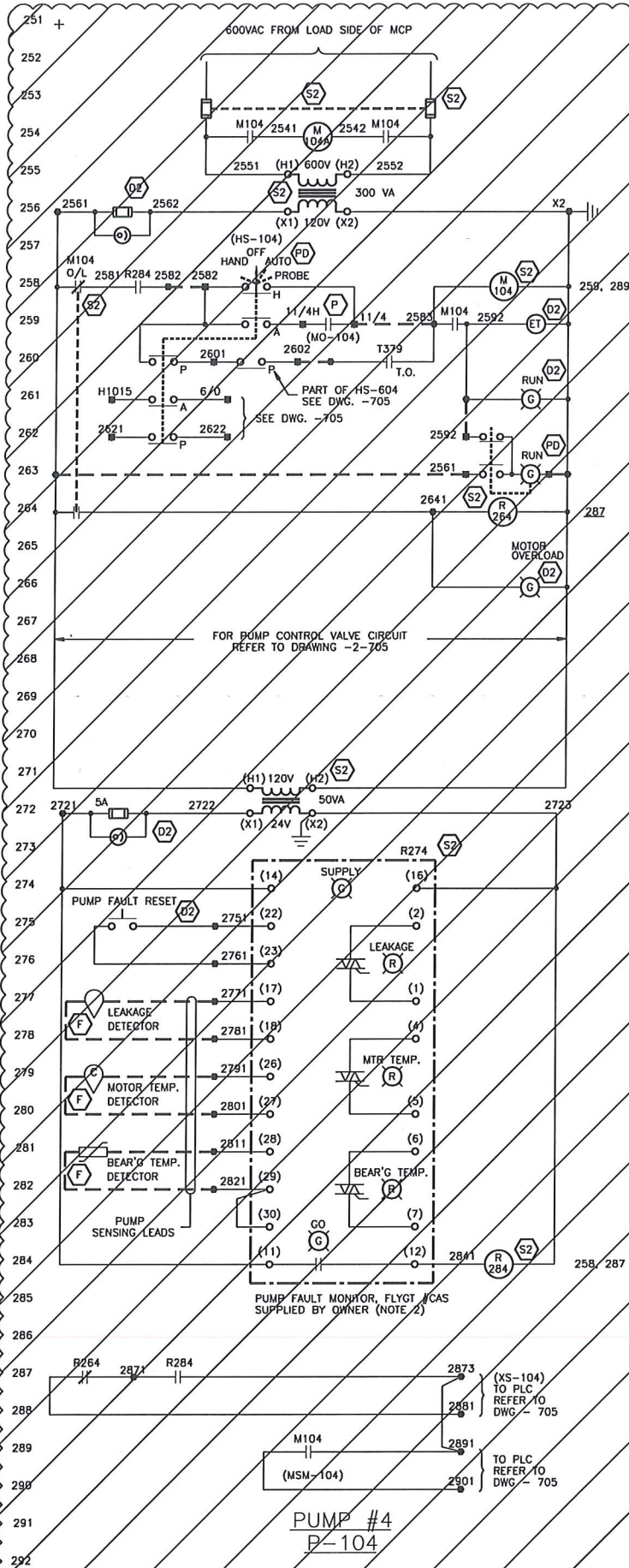
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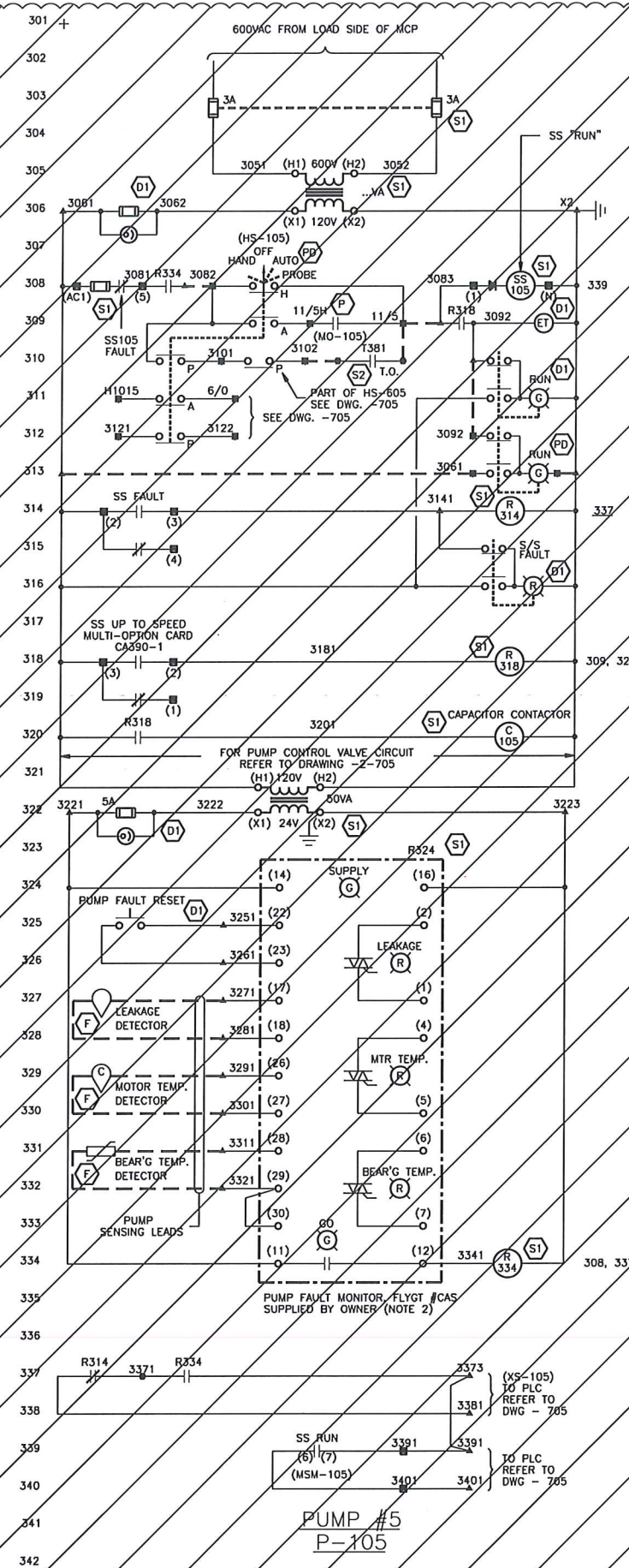
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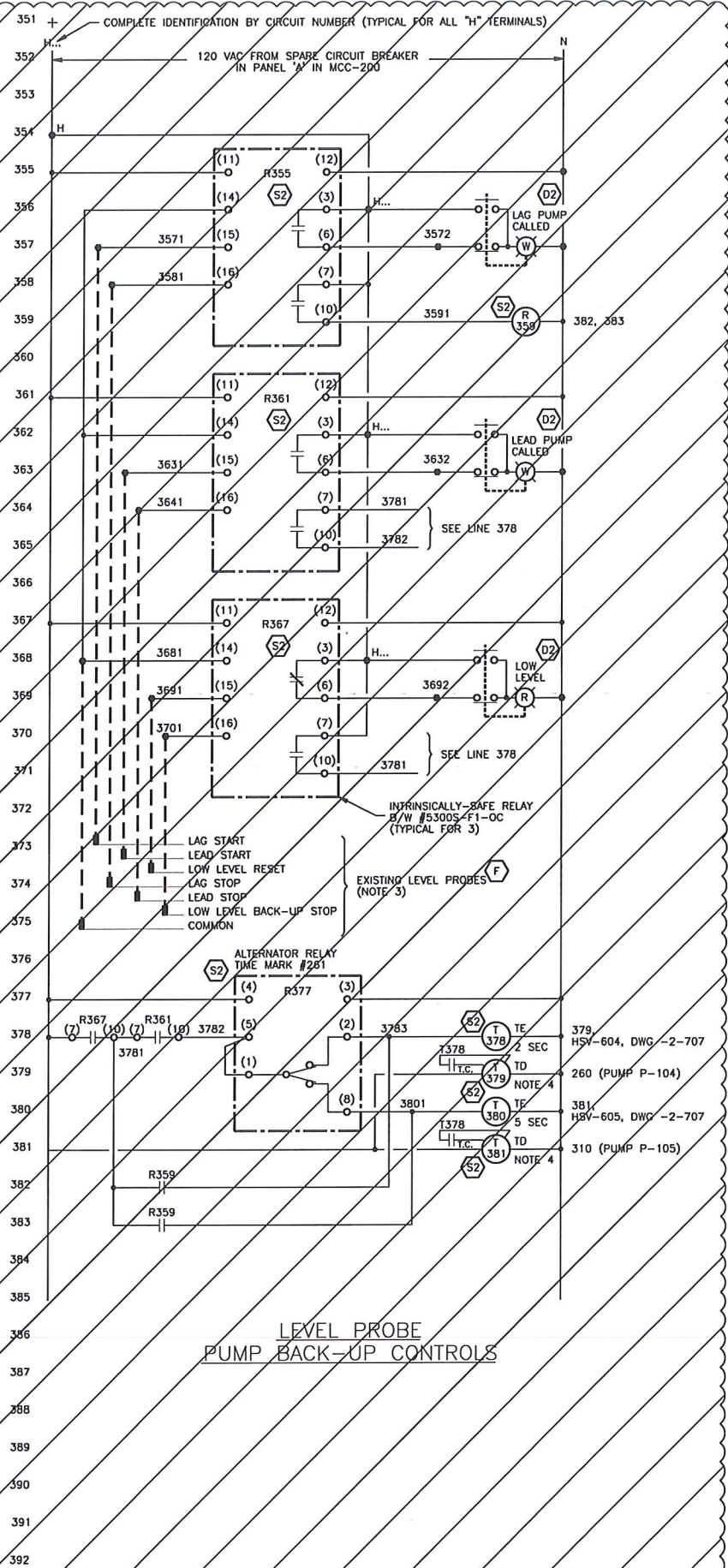
DRAWING IS DATA-LINKED



PUMP #4
P-104



PUMP #5
P-105



LEVEL PROBE
PUMP BACK-UP CONTROLS

CIRCUIT SHOWN BASED ON CUTLER-HAMMER "TRU-START" SOFT START CONTROLLER; TO BE MODIFIED BY MCC MANUFACTURER AS REQUIRED TO SUIT THE PARTICULAR EQUIPMENT BEING SUPPLIED.

RENUMBERED FROM 982819-602-1-608 TO

VERIFY SCALES
BAR IS BASED ON ORIGINAL DRAWING
0 20mm
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OR ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING -1-606.
 - PROVIDE A VIEWING WINDOW FOR VISUAL ACCESS TO THE UNIT-MOUNTED LED'S.
 - WIRING OF ALL 11 PROBES IS PRESENTLY TERMINATED IN MCC-200. EXTEND WIRING FOR 7 PROBES TO NEW SENSING RELAYS TO BE INSTALLED IN MCC-200. CONFIRM WITH ENGINEER WHICH PROBES ARE TO BE USED.
 - SET 5 SECONDS LONGER THAN IT TAKES THE DISCHARGE VALVE TO CLOSE.

NO.	DATE	ENG.	BY	SUBJECT
3	20 JUL 2013		RS	DRAWING UP DATED
2	30 NOV 00	K.M.	J.T.	RECORD DRAWING, STAGE 2
1	23 JUN 00	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	14 APR 00	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-601/602
SCALE	AS SHOWN
DRAWN	J.T.
DESIGNED	J.T.
CHECKED	D.S.W.
APPROVED	
APPROVED	
DATE	MARCH 2000

ISSUED FOR DEMOLITION
Date: 2021/03/08



DISTRICT PROJECT NUMBER
0810-20-CRPS-04

DISTRICT DRAWING NUMBER
CRPS-E-109

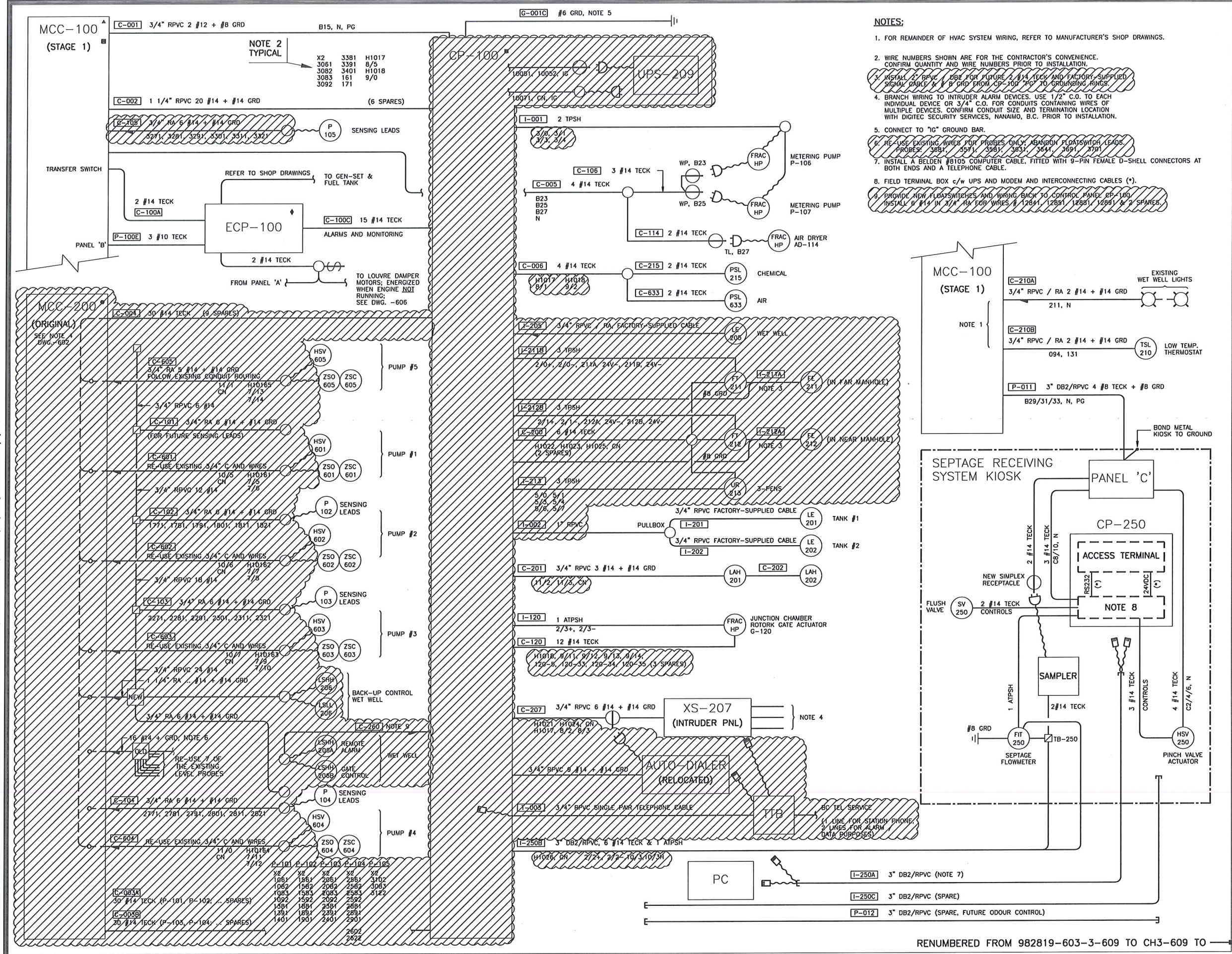
REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

ELECTRICAL CONTROL SCHEMATICS SHEET 3 OF 3

DRAWING NUMBER	REV. NO.	SHEET
CH2-608	3	

DRAWING IS DATA-LINKED Timer: 821 Date: 2004/4/21 Plot Scale: 1=1 (Paper Space) AutoCAD File: C:\982819\CH\ELEC\CH04-609.DWG (JT)



VERIFY SCALES			
BAR IS BASED ON ORIGINAL DRAWING			
0 20mm			
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY			

RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OR ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.			
NO.	DATE	ENG.	BY
6	20 JULY 2013	J.K.	R.S.
5	20 APR. 2004	J.T.	J.T.
4	04 MAR 2003	M.L.	S.T.
3	09 JUL 2002	J.T.	J.T.
2	03 JAN 2002	M.L.	J.T.
1	24 SEP 01	K.M.	S.T.
0	9 AUG 2001	K.M.	S.T.
NO.	DATE	ENG.	BY

PROJECT NO.	982819-604
SCALE	N.T.S.
DRAWN	J.T.
DESIGNED	J.T.
CHECKED	J.G.
APPROVED	
APPROVED	
DATE	JULY 2001

ISSUED FOR
DEMOLITION
Date: 2023/03/08

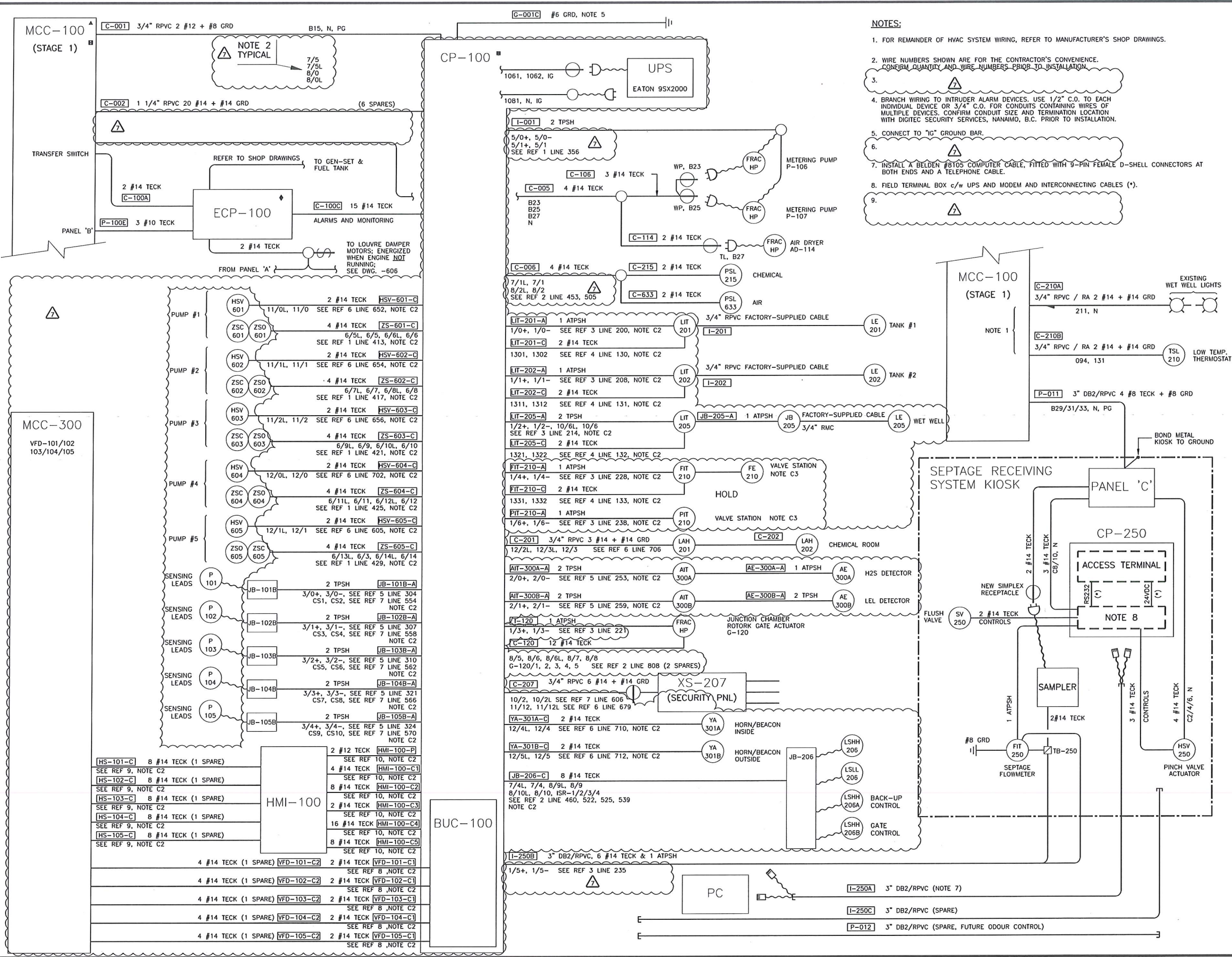
ASSOCIATED ENGINEERING

DISTRICT PROJECT NUMBER	0810-20-CRPS-04
DISTRICT DRAWING NUMBER	CRPS-E-110
REGIONAL DISTRICT OF NANAIMO	
CHASE RIVER PUMPING STATION UPGRADE	
ELECTRICAL CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM	

DRAWING NUMBER	REV. NO.	SHEET
CH-04-609	6	

RENUMBERED FROM 982819-603-3-609 TO CH3-609 TO

Date: 2021/03/07 1:02 PM | User: Ana Fu | File: P:\NAVA\2020\2023251\RDN-Chase River Pump Station\1016-Elc-101-Production\CRPS-E-110 | Layout: RD7 | Paper Size: 865.0mm x 558.0mm



- NOTES:**
- FOR REMAINDER OF HVAC SYSTEM WIRING, REFER TO MANUFACTURER'S SHOP DRAWINGS.
 - WIRE NUMBERS SHOWN ARE FOR THE CONTRACTOR'S CONVENIENCE. CONFIRM QUANTITY AND WIRE NUMBERS PRIOR TO INSTALLATION.
 -
 - BRANCH WIRING TO INTRUDER ALARM DEVICES. USE 1/2" C.O. TO EACH INDIVIDUAL DEVICE OR 3/4" C.O. FOR CONDUITS CONTAINING WIRES OF MULTIPLE DEVICES. CONFIRM CONDUIT SIZE AND TERMINATION LOCATION WITH DIGITEC SECURITY SERVICES, NANAIMO, B.C. PRIOR TO INSTALLATION.
 - CONNECT TO "IG" GROUND BAR.
 -
 - INSTALL A BELDEN #8T05 COMPUTER CABLE, FITTED WITH 9-PIN FEMALE D-SHELL CONNECTORS AT BOTH ENDS AND A TELEPHONE CABLE.
 - FIELD TERMINAL BOX c/w UPS AND MODEM AND INTERCONNECTING CABLES (*).
 -

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-107	CP-100 ANALOG OUTPUT	1
CRPS-I-108	CP-100 DISCRETE INPUT	2
CRPS-I-105	CP-100 ANALOG INPUT	3
CRPS-I-103	CP-100 POWER DISTRIBUTION	4
CRPS-I-106	CP-100 ANALOG & RTD INPUT	5
CRPS-I-110	CP-100 OUTPUT	6
CRPS-I-109	CP-100 DISCRETE INPUT	7
CRPS-I-111	BUC-100 SCHEMATIC DIAGRAM	8
CRPS-E-011 TO 015	VFD-101/102/103/104/105 SCHEMATIC	9
CRPS-I-123	HMI-100 PANEL SCHEMATIC	10

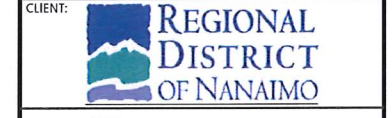
- CONSTRUCTION NOTES:**
- CONTRACTOR TO INSTALL NEW CP-100 PLC PANEL.
 - CONTRACTOR TO INSTALL NEW CABLE. REFER TO CABLE SCHEDULE 2003251-000-1618-002.
 - VALVE STATION DEVICES INSTALLED BY OTHERS. CABLE BY RDL.



ISSUED FOR CONSTRUCTION
Date: 2021/03/08

CLIENT: REGIONAL DISTRICT OF NANAIMO

REV	Y/M/D	DESCRIPTION	DRWN	CHKD	APVD
7	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
6	13/07/20	DRAWING UPDATED	RS	JT	JT
5	04/04/20	'CAS' ADDED FOR P-103	JT	MI	JT
4	03/03/04	SAMPLER ADDITION	ST	MI	ST
3	02/07/09	RECORD DRAWING, STAGE 3	JT	JT	JT
2	02/01/03	GATE ACTUATOR ADDED	JT	MI	JT
1	01/09/24	ISSUED FOR CONSTRUCTION	ST	KM	ST



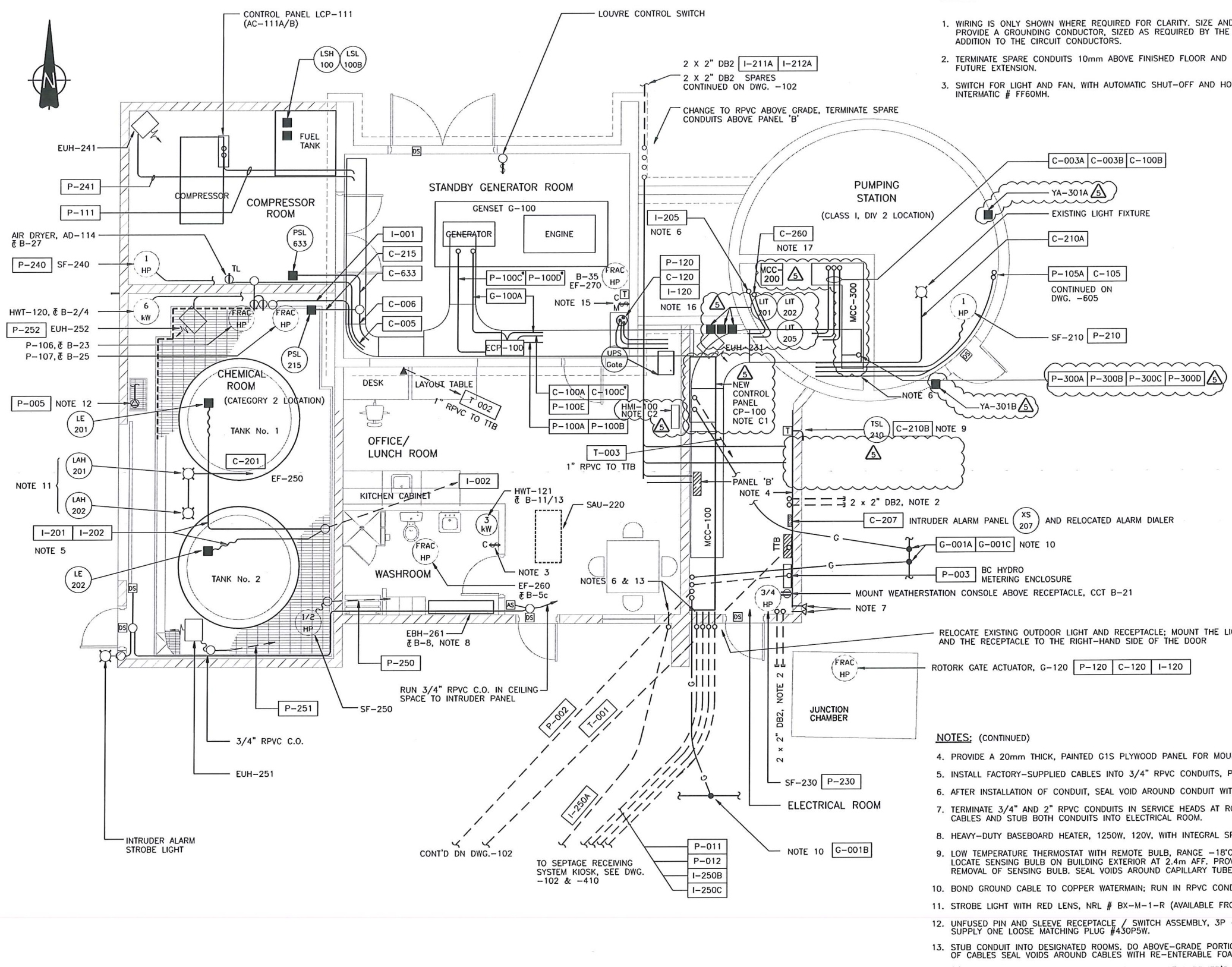
CLIENT NO: - DRWN: JT DATE: -
PROJECT NO: 2003251 DSGN: JT DATE: -
DRAWING SIZE: ANSI "D" CHKD: JG DATE: -
SCALE: AS NOTED APVD: - DATE: -

CHASE RIVER PUMPING STATION UPGRADE

TITLE: **CONTROL AND INSTRUMENTATION FIELD WIRING BLOCK DIAGRAM**

DWG NO: **CRPS-E-110** REV: **7**

Date: 2021/03/05 10:59 AM | User: Aun Fu | File: P:\NAN\2020\030251\RDN-Chase River Pump Stn Upgrade\1000-Dwg\1016-Elc\01-Production\CRPS-E-111 | Layout: REV 5 | Paper Size: 863.6mm x 558.8mm



FLOOR PLAN
SCALE 1:50

NOTES:

1. WIRING IS ONLY SHOWN WHERE REQUIRED FOR CLARITY. SIZE AND ROUTE REMAINDER OF WIRING AS REQUIRED. PROVIDE A GROUNDING CONDUCTOR, SIZED AS REQUIRED BY THE ELECTRICAL CODE, IN EACH CONDUIT IN ADDITION TO THE CIRCUIT CONDUCTORS.
2. TERMINATE SPARE CONDUITS 10mm ABOVE FINISHED FLOOR AND CAP 1m CLEAR OF FOOTINGS FOR FUTURE EXTENSION.
3. SWITCH FOR LIGHT AND FAN, WITH AUTOMATIC SHUT-OFF AND HOLD (OVERRIDE) FEATURE, 60 MINUTE RANGE, INTERMATIC # FF60MH.

NOTES: (CONTINUED)

4. PROVIDE A 20mm THICK, PAINTED G15 PLYWOOD PANEL FOR MOUNTING OF ELECTRICAL AND TELEPHONE EQUIPMENT.
5. INSTALL FACTORY-SUPPLIED CABLES INTO 3/4" RPVC CONDUITS, PROVIDE RIGID SUPPORT FOR DROP FROM CEILING.
6. AFTER INSTALLATION OF CONDUIT, SEAL VOID AROUND CONDUIT WITH GROUT; REFER TO STRUCTURAL SPECIFICATION.
7. TERMINATE 3/4" AND 2" RPVC CONDUITS IN SERVICE HEADS AT ROOF LEVEL FOR INSTALLATION OF WEATHERSTATION CABLES AND STUB BOTH CONDUITS INTO ELECTRICAL ROOM.
8. HEAVY-DUTY BASEBOARD HEATER, 1250W, 120V, WITH INTEGRAL SP THERMOSTAT, STELPRO #DBS1512-T12.
9. LOW TEMPERATURE THERMOSTAT WITH REMOTE BULB, RANGE -18°C TO 35°C, HONEYWELL #T675A, SET AT 0°C. LOCATE SENSING BULB ON BUILDING EXTERIOR AT 2.4m AFF. PROVIDE CONDUIT SLEEVE THROUGH WALL TO ALLOW REMOVAL OF SENSING BULB. SEAL VOIDS AROUND CAPILLARY TUBE AFTER INSTALLATION OF BULB.
10. BOND GROUND CABLE TO COPPER WATERMAIN; RUN IN RPVC CONDUIT WHERE INSTALLED UNDER FLOOR SLAB.
11. STROBE LIGHT WITH RED LENS, NRL # BX-M-1-R (AVAILABLE FROM SLS LIGHTING, VANCOUVER, B.C.).
12. UNFUSED PIN AND SLEEVE RECEPTACLE / SWITCH ASSEMBLY, 3P + GRD, 30 A, 600 V, HUBBELL #430M5W. SUPPLY ONE LOOSE MATCHING PLUG #430P5W.
13. STUB CONDUIT INTO DESIGNATED ROOMS. DO ABOVE-GRADE PORTION WITH RPVC CONDUIT. AFTER INSTALLATION OF CABLES SEAL VOIDS AROUND CABLES WITH RE-ENTERABLE FOAM OR DUXEAL COMPOUND.
14. (*) INDICATES NEW WIRING. REFER ALSO TO GEN-SET SUPPLIER'S SHOP DRAWINGS FOR ADDITIONAL WIRING BETWEEN ECP AND GENERATOR, ENGINE AND FUEL TANK RESPECTIVELY. INSTALL WIRING ON EXISTING CABLE TRAY.
15. MANUAL MOTOR STARTER WITH 'HAND-OFF-AUTO' SELECTOR SWITCH FOR EF-270, A-B #600-TAX9. WIRE COOLING START INTO 'AUTO' LEG OF SELECTOR SWITCH. CONNECT DAMPER MOTOR PARALLEL WITH FAN MOTOR.
16. REMOVE EXISTING GATE CONTROL PANEL AND HYDRAULIC AND ELECTRICAL CONTROLS. INSTALL NEW CABLES INTO EXISTING PIPE TO JUNCTION CHAMBER. AFTER REMOVAL OF THE PANEL AND WIRING, INSTALL A SUITABLE HEAVY GAUGE STAINLESS-STEEL PLATE OVER REMAINING OPENING IN WALL.
17. INSTALL NEW WIRING TO LSHH-206A AND LSHH-206B IN WET WELL.

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2

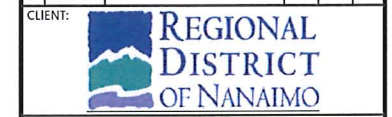
CONSTRUCTION NOTES:

- C1. CONCRETE CURB UNDER CP-100 TO BE EXTENDED BY 12" FOR NEW 60" CP-100 PANEL. CURE EXTENSION BY RDN.
- C2. LOCATION OF HMI-100 TO BE FINALIZED BY RDN.



ISSUED FOR CONSTRUCTION
Date: 2021/03/08

REV	Y/M/D	DESCRIPTION	DRWN	CHKD	APVD
5	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
4	13/07/20	DRAWING UPDATED	RS		
3	02/07/09	RECORD DRAWING, STAGE 3	JT		JT
2	02/01/03	GATE ACTUATOR ADDED	JT		MI
1	01/09/24	ISSUED FOR CONSTRUCTION	ST		KM
0	01/08/09	ISSUED FOR TENDER	ST		KM



CLIENT NO:	2003251	DRWN:	JT	DATE:	-
PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	JG	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

CHASE RIVER PUMPING STATION UPGRADE

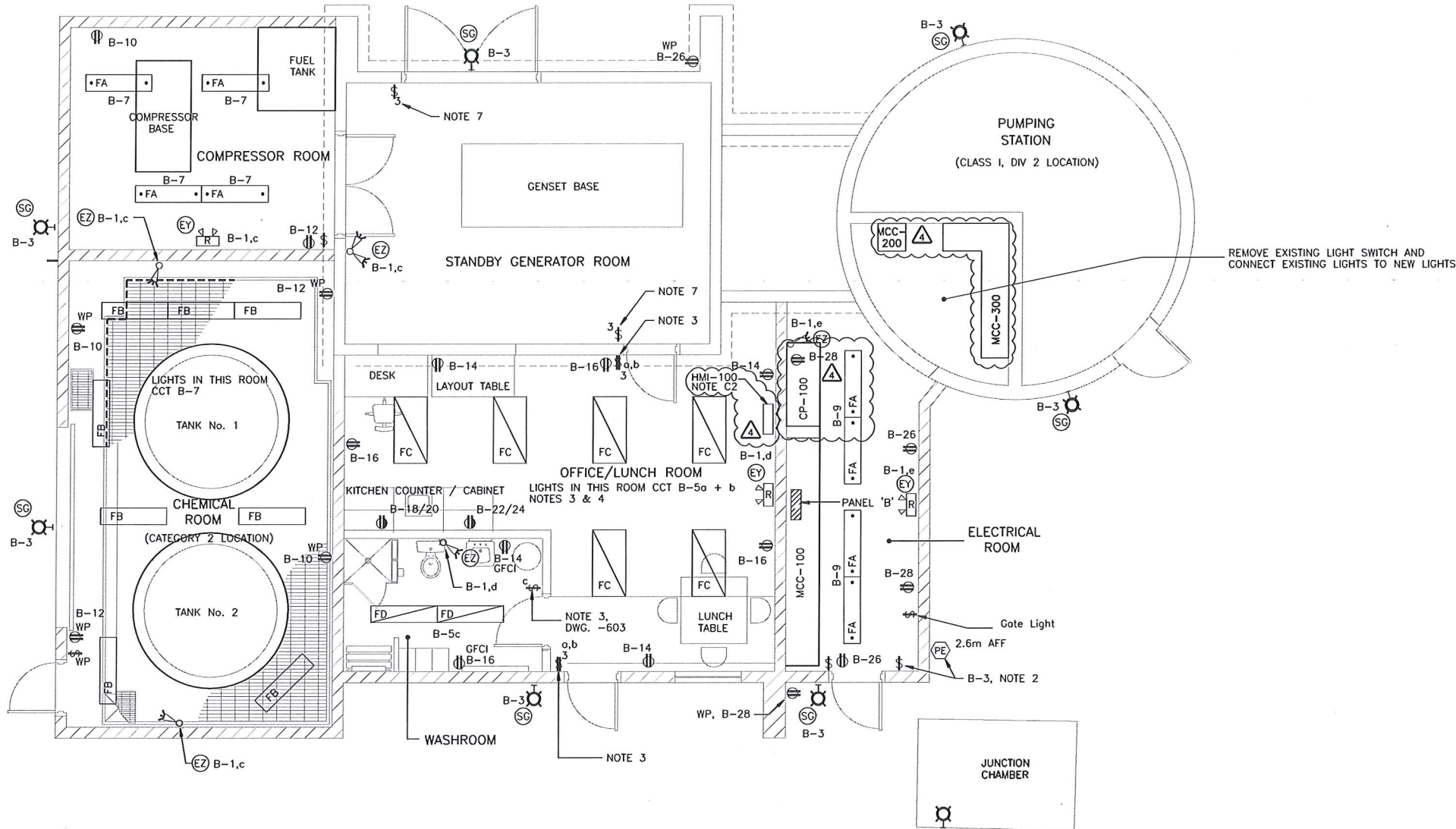
POWER, CONTROL AND INSTRUMENTATION LAYOUTS

DWG NO:	CRPS-E-111	REV:	5
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NOTES:

1. WIRING IS ONLY SHOWN WHERE REQUIRED FOR CLARITY. SIZE AND ROUTE REMAINDER OF WIRING AS REQUIRED. PROVIDE A GROUNDING CONDUCTOR, SIZED AS REQUIRED BY THE ELECTRICAL CODE, IN EACH CONDUIT IN ADDITION TO THE CIRCUIT CONDUCTORS.
2. "ON-OFF-AUTO" SWITCH FOR EXTERIOR LIGHTS, HUBBELL #1385 WITH NAMEPLATE "EXTERIOR LIGHTS". WIRE PHOTOCELL INTO "AUTO" LEG OF SWITCH.
3. LUMINAIRES WITH ONE TWO-LAMP AND ONE SINGLE-LAMP BALLAST. FOR EACH LUMINAIRE, CONNECT 2 LAMPS ON ONE SWITCH AND ONE LAMP TO THE OTHER SWITCH.
4. SECURE LUMINAIRES IN OR ON SUSPENDED T-BAR CEILINGS INDEPENDENTLY FROM T-BAR SUPPORTS, USING A 2mm DIAMETER STRANDED, STAINLESS STEEL CABLE. ATTACH CABLE TO BOTH ENDS OF LUMINAIRE AND ANCHOR TO ROOF SUPPORTS OR CONCRETE CEILING.
5. UNLESS OTHERWISE NOTED, MOUNT EMERGENCY LIGHT BATTERY PACKS AND REMOTE HEADS SHOWN ON THIS DRAWING WITH U/S @ 2.2m AFF.
6. UNLESS OTHERWISE NOTED, MOUNT SUSPENDED FLUORESCENT LUMINAIRES 2.6m AFF.
7. CHANGE WIRING FOR EXISTING LIGHTS TO ALLOW 3-WAY SWITCHING.



FLOOR PLAN
SCALE 1:50

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-105	SINGLE LINE DIAGRAM	1
CRPS-E-106	MCC LAYOUTS & SCHEDULES	2

CONSTRUCTION NOTES:

- C1. CONCRETE CURB UNDER CP-100 TO BE EXTENDED BY 12" FOR NEW 60" CP-100 PANEL. CURB EXTENSION BY RDN.
- C2. LOCATION OF HMI-100 TO BE FINALIZED BY RDN.



ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
4	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
3	13/05/25	RECORD DRAWING UPDATED	RS		JK
2	00/03/24	RECORD DRAWING, STAGE 2	JT		MI
1	99/08/24	ISSUED FOR CONSTRUCTION	ST		KM
0	99/06/22	ISSUED FOR TENDER	ST		KM

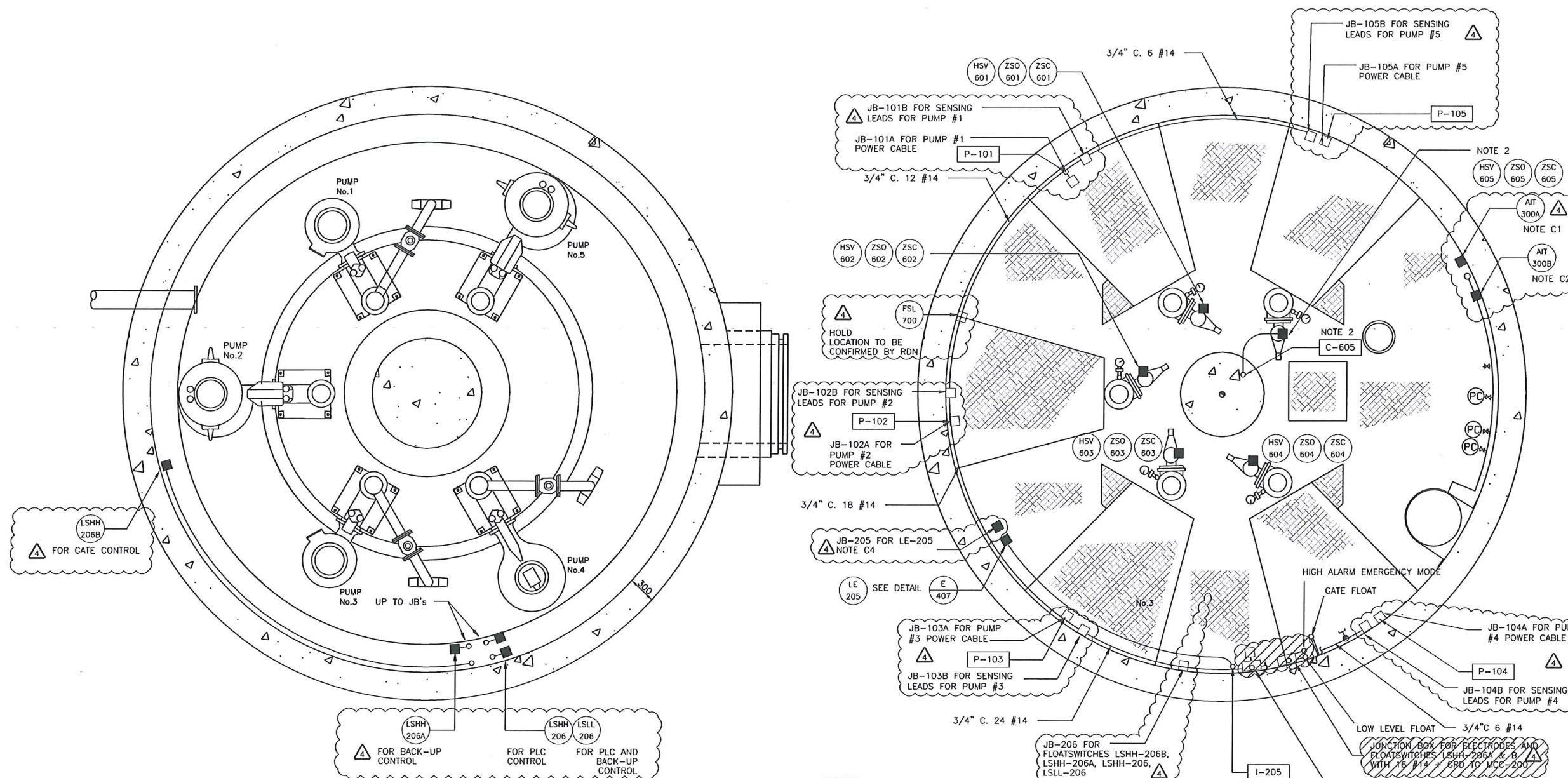


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PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	DSW	DATE:	-
SCALE:	AS NOTED	APVD:	LWP	DATE:	-

CHASE RIVER PUMPING STATION UPGRADE

LIGHTING LAYOUTS

DWG NO:	CRPS-E-112	REV:	4
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PLAN AT ELEVATION -2.45m (BELOW LOWER FLOOR)

PLAN AT ELEVATION -1.20m (ABOVE LOWER FLOOR)

PROFESSIONAL
 PROVINCE OF
B. D. HEISTERMAN
 # 45995
 BRITISH COLUMBIA
 ENGINEER
B. Heisterman
 2021-MAR-08 Rev.4

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF

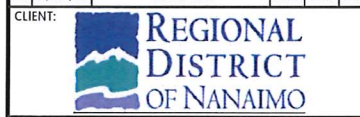
- NOTES:
- LOCATIONS OF JUNCTION BOXES AND CONTROL DEVICES ARE APPROXIMATE ONLY; VERIFY EXACT LOCATION IN FIELD.
 - EXISTING PUMP JB's TO BE REMOVED AND REPLACED WITH NEW CLASS 1, DIV 2 RATED JB's. EXISTING SUBMERSIBLE CABLES TO BE RE-ROUTED AND RE-TERMINATED IN NEW JB's AS FOLLOW:
 -POWER CABLES: JB-101/102/103/104/105A
 -SENSOR CABLES: JB-101/102/103/104/105B
 - WET WELL AREA IS CLASSIFIED AS A CLASS 1, DIV 2 LOCATION.

- CONSTRUCTION NOTES:
- AIT-300A H2S GAS DETECTOR SHOULD BE MOUNTED 1-3' ABOVE GROUND. CONTRACTOR TO FINALIZE THE LOCATION.
 - AIT-300B LEL GAS DETECTOR SHOULD BE MOUNTED 1-3' BELOW THE ROOF OF THE CEILING. CONTRACTOR TO FINALIZE THE LOCATION.
 - LEVEL INSTRUMENT LSHH-206, LSLL-206, LSHH-206A & LSHH-206B MANUFACTURER CABLES TO BE ROUTED IN PVC CONDUIT TO JB-206. NEW TECK CABLE INSTALLED FROM JB-206 TO CP-100
 - LE-205 MANUFACTURER CABLES TO BE ROUTED IN METAL CONDUIT TO JB-205. NEW TECK CABLE INSTALLED FROM JB-205 TO CP-100.
 - ALL CABLES REQUIRE HAZARDOUS RATED CABLE GLAND.

ISSUED FOR CONSTRUCTION
 Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
4	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
3	13/05/25	RECORD DRAWING UPDATED	RS		JK
2	00/03/24	RECORD DRAWING STAGE 2	JT		MI
1	99/08/24	ISSUED FOR CONSTRUCTION	ST		KM
0	99/06/22	ISSUED FOR TENDER	ST		KM



CLIENT NO:	-	DRWN:	JT	DATE:	00/03
PROJECT NO:	2003251	DSGN:	JT	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	DSW	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

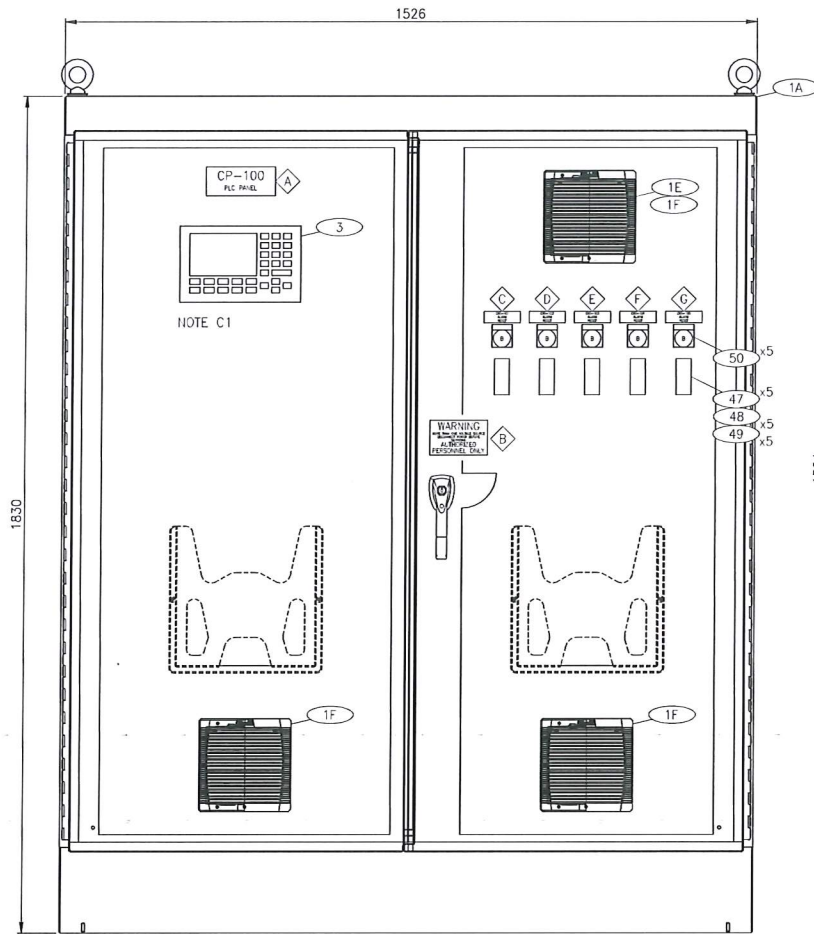
PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
ELECTRICAL WET WELL LAYOUTS

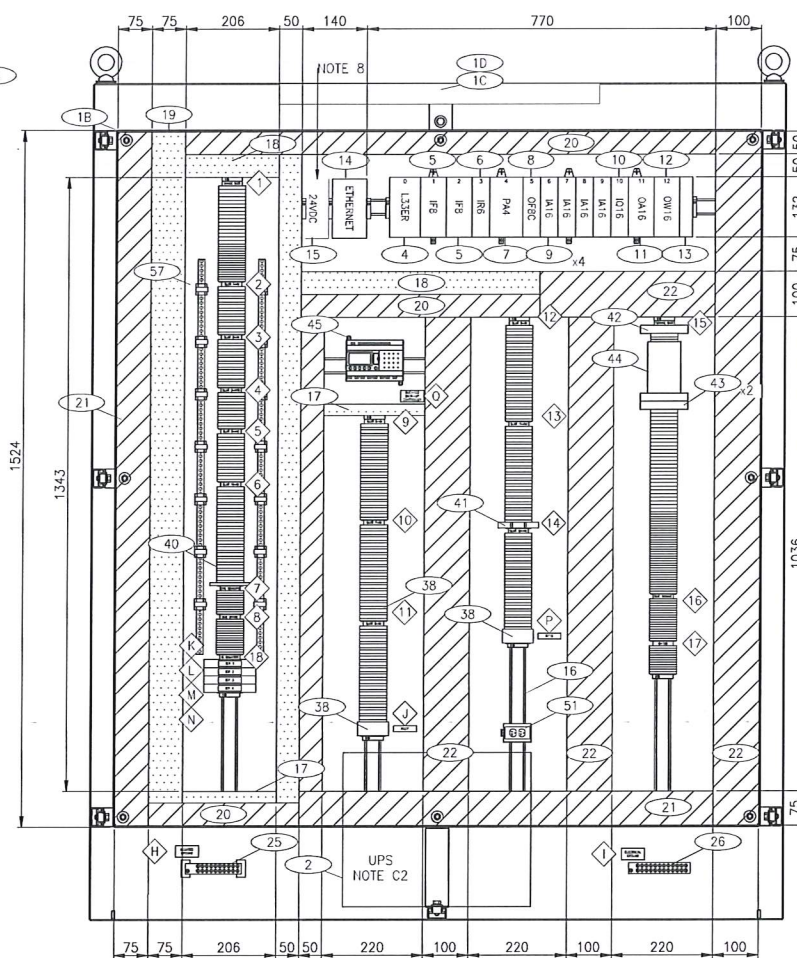
DWG NO:	CRPS-E-203	REV:	4
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Date: 2021/03/07 9:56 PM | User: Ava Fu | File: P:\MVA\2020\2003251 RDN-Chase River Pump Station Upgrade\1000-Dwg\1017-Inst\101-Production\CRPS-I-101 | Layout: REV 0 | Paper Size: 863.6mm x 558.8mm



FRONT VIEW - DOOR CLOSED
SCALE: 1:8



FRONT VIEW - DOOR REMOVED
SCALE: 1:8

LAMACOIDS				
TAG #	TAG	COLOR	LAMACOID SIZE	TEXT HEIGHT
A	CP-100 / PLC PANEL	BLACK ON WHITE	7" x 2-1/2"	3/4" / 3/8"
B	SEE DETAIL A	BLACK ON WHITE	3" x 5"	5/8" / 3/16" / 3/8"
C	CAS-101 ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
D	CAS-102 ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
E	CAS-103 ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
F	CAS-104 ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
G	CAS-105 ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
H	ISOLATED GROUND	BLACK ON WHITE	1" x 3"	3/16"
I	ELECTRICAL GROUND	BLACK ON WHITE	1" x 3"	3/16"
J	R527	BLACK ON WHITE	1/2" x 3"	3/16"
K	ISR 1	BLACK ON WHITE	1/2" x 3"	3/16"
L	ISR 2	BLACK ON WHITE	1/2" x 3"	3/16"
M	ISR 3	BLACK ON WHITE	1/2" x 3"	3/16"
N	ISR 4	BLACK ON WHITE	1/2" x 3"	3/16"
P	R715	BLACK ON WHITE	1/2" x 3"	3/16"
Q	BUC-100/BACK-UP CONTROLLER	BLACK ON WHITE	1" x 3"	3/16"

WARNING
MORE THAN ONE VOLTAGE SOURCE
DISCONNECT POWER BEFORE
SERVICING
AUTHORIZED PERSONNEL
ONLY

DETAIL A
SCALE: NTS



WIRE WAY LEGEND	
	WHITE - 24 VDC
	GREY - 120 VAC

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-102	CP-100 BILL OF MATERIAL	1

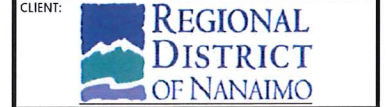
- NOTES:
- FOR BILL OF MATERIALS, TERMINAL STRIP BREAKDOWNS & LAMACOIDS SEE REFERENCE 1.
 - ALL LAMACOIDS/LABELLING TO BE PROVIDED/INSTALLED BY PANEL VENDOR.
 - NAME PLATE SHALL BE MOUNTED WITH STAINLESS STEEL SELF TAPPING SCREWS ON THE OUTSIDE OF THE CONTROL PANEL DOOR. ENSURE PANEL NEMA RATING INTEGRITY IS MAINTAINED.
 - ALL CABLES SHALL ENTER PANEL FROM THE TOP ONLY.
 - ALL INTERNAL CABINET WIRING TO BE ON LEFT HAND SIDE WHEREVER POSSIBLE. ALL FIELD CABLES TERMINATE ON RIGHT HAND SIDE.
 - COMPLETED CABINET TO MEET CSA APPROVAL.
 - PANEL VENDOR TO MOUNT TS35 DIN RAIL ON STAND-OFFS. TERMINALS TO BE FLUSH WITH THE TOP OF THE WIRE DUCT.
 - POWER SUPPLY REQUIRES MINIMUM 5MM CLEARANCE ON EACH SIDE AND 50MM CLEARANCE AT TOP AND BOTTOM.

- CONSTRUCTION NOTES:
- EXISTING HVI PANEL TO BE RE-INSTALLED IN NEW PANEL DOOR.
 - RDN TO INSTALL UPS AT SITE.

ISSUED FOR
CONSTRUCTION
Date: 2021/03/08

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REV	Y/M/D	DESCRIPTION	DRWN	CHKD	APVD
0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH



CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

**CHASE RIVER
PUMP STATION
UPGRADE**

**CP-100
PANEL LAYOUT**

DWG NO:	CRPS-I-101	REV:	0
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Date: 2021/03/07 9:46 PM | User: Ava Ru | File: P:\NA\2020\2003251\RDN-Chase River Pump Stn. Upgrades\1000-Design\1017-Inst\01-Production\CRPS-1-102 | Layout: REV 0 | Paper Size: 865.0mm x 568.0mm

BILL OF MATERIALS					
ITEM	QUANTITY	DESCRIPTION	MANUFACTURER	MODEL	PROVIDED BY
1A	1	NEMA 12 FREESTANDING ENCLOSURE, SINGLE ACCESS, DOUBLE DOOR - 72" x 60" x 18" (1830mm x 1526mm x 459mm)	HAMMOND	1418ZX18	PANEL VENDOR
1B	1	FULL HEIGHT INNER PANEL 60" X 56"	HAMMOND	72ZXFV	PANEL VENDOR
1C	2	COMPACT LED LIGHTING KIT W/SWITCH SCREW MOUNT - 90-260V AC	HAMMOND	LEDACSWSCR	PANEL VENDOR
1D	1	LED LIGHTING AC POWER CORD 2m	HAMMOND	LEDACCORDPOW	PANEL VENDOR
1E	1	65 CFM FILTERFAN, 120V AC, 20 W	HAMMOND	PF32000T12LG	PANEL VENDOR
1F	3	EXHAUST FILTER	HAMMOND	FFA30000LG	PANEL VENDOR
2	1	DOUBLE CONVERSION ONLINE UPS, 2000VA, 1800 W	EATON	9SX2000	OWNER SUPPLIED
3	1	PANELVIEW PLUS 700 HMI	ALLEN BRADLEY	2711P-B7C15D2	EXISTING
4	1	COMPACTLOGIX 5370 CONTROLLER	ALLEN BRADLEY	1769-L33ER	OWNER SUPPLIED
5	2	ANALOG INPUT - COMPACT VOLTAGE/CURRENT ANALOG INPUT MODULE, 8 CHANNELS	ALLEN BRADLEY	1769-IF8	OWNER SUPPLIED
6	1	RTD INPUT - COMPACT RTD/RESISTANCE INPUT MODULE, 6 CHANNELS	ALLEN BRADLEY	1769-IR6	OWNER SUPPLIED
7	1	PLC POWER SUPPLY	ALLEN BRADLEY	1769-PA4	OWNER SUPPLIED
8	1	ANALOG OUTPUT - COMPACT CURRENT OUTPUT ANALOG MODULE, 24V DC, 8 CHANNELS	ALLEN BRADLEY	1769-OF8C	OWNER SUPPLIED
9	4	DIGITAL INPUT COMPACT 120V AC INPUT MODULE, 120V AC, 16 CHANNELS	ALLEN BRADLEY	1769-IA16	OWNER SUPPLIED
10	1	DIGITAL INPUT - COMPACT 24V DC SINK/SOURCE INPUT MODULE, 16 CHANNELS	ALLEN BRADLEY	1769-IQ16	OWNER SUPPLIED
11	1	DIGITAL OUTPUT - COMPACT 120/240V AC SOLID-STATE OUTPUT MODULE, 16 CHANNELS, MAX 0.5A PER POINT	ALLEN BRADLEY	1769-OA16	OWNER SUPPLIED
12	1	RELAY OUTPUT - COMPACT AC/DC RELAY CONTACT MODULE, 16 CHANNELS, MAX 10A PER COMMON	ALLEN BRADLEY	1769-OW16	OWNER SUPPLIED
13	1	RIGHT SIDE END CAP	ALLEN BRADLEY	1769-ECR	OWNER SUPPLIED
14	1	6 PORT ETHERNET SWITCH, STRATIX 5700 - FULL MANAGE	ALLEN BRADLEY	1783-BMS06TA	OWNER SUPPLIED
15	1	24VDC POWER SUPPLY, 10A	PHOENIX	QUINT4-PS/1AC/24DC/10	PANEL VENDOR
16	A/R	TS-35 DIN MOUNTING RAIL	OPEN	OPEN	PANEL VENDOR
17	A/R	PVC WIRE DUCT WHITE - 1"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F1X4WH6; C1WH6	PANEL VENDOR
18	A/R	PVC WIRE DUCT WHITE - 2"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F2X4WH6; C2WH6	PANEL VENDOR
19	A/R	PVC WIRE DUCT WHITE - 3"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F3X4WH6; C3WH6	PANEL VENDOR
20	A/R	PVC WIRE DUCT GREY - 2"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F2X4LG6; C2LG6	PANEL VENDOR
21	A/R	PVC WIRE DUCT GREY - 3"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F3X4LG6; C3LG6	PANEL VENDOR
22	A/R	PVC WIRE DUCT GREY - 4"W x 4"H NARROW SLOT C/W DUCT COVER	PANDUIT	F4X4LG6; C4LG6	PANEL VENDOR
23		SPARE			
24		SPARE			
25	1	COPPER GROUND BAR (MINIMUM 1/4" THICK x 1"H WITH MINIMUM TEN (10) GROUNDING SCREWS SUITABLE FOR #14 AWG TO #4 AWG CONDUCTORS, AND ONE (1) GROUND LUG SUITABLE FOR #2 AWG CONDUCTOR, MOUNTED ON ISOLATED STANDOFF	OPEN	OPEN	PANEL VENDOR
26	1	COPPER GROUND BAR (MINIMUM 1/4" THICK x 1"H WITH MINIMUM TEN (10) GROUNDING SCREWS SUITABLE FOR #14 AWG TO #4 AWG CONDUCTORS, AND ONE (1) GROUND LUG SUITABLE FOR #2 AWG CONDUCTOR	OPEN	OPEN	PANEL VENDOR
27	17	LABEL HOLDERS - DIN RAIL MOUNT SCHT-5S	WEIDMULLER	1631930000	PANEL VENDOR
28	17	ESD 5 S DIN A4 WS TERMINAL LABEL FOR SCHT-5S HOLDER	WEIDMULLER	1631920000	PANEL VENDOR
29	17	SCHT-5S LABEL COVER	WEIDMULLER	1631940000	PANEL VENDOR
30	210	FEED THROUGH TERMINAL BLOCK (SINGLE WDU 2.5) - 20 A, 600 V, #12-#26 AWG	WEIDMULLER	1020000000	PANEL VENDOR
31	1	FEED THROUGH TERMINAL BLOCK (SINGLE WDU 6) - 45 A, 600 V, #8-#20 AWG	WEIDMULLER	1020200000	PANEL VENDOR
32	67	FUSED TERMINAL BLOCK (WSI 6/LD) - 6.3 A, 10-36 VDC, #8-#20 AWG, LED, 5 mm X 20 mm FUSE	WEIDMULLER	1119840000	PANEL VENDOR
33	126	FUSED TERMINAL BLOCK (WSI 6/LD) - 6.3 A, 60-150 V, #8-#20 AWG, LED, 5 mm X 20 mm FUSE	WEIDMULLER	1119850000	PANEL VENDOR
34	30	TEST-DISCONNECT TERMINAL BLOCKS (WTR 2.5) - 24A, 500V, #12 - #30 AWG	WEIDMULLER	1855610000	PANEL VENDOR
35	8	TERMINAL BLOCK END CLAMPS - EW 35 FOR TS35 RAIL	WEIDMULLER	383560000	PANEL VENDOR

BILL OF MATERIALS					
ITEM	QUANTITY	DESCRIPTION	MANUFACTURER	MODEL	PROVIDED BY
36	17	TERMINAL BLOCK END CLAMPS - EW 35 FOR TS35 RAIL	WEIDMULLER	383560000	PANEL VENDOR
37	A/R	TERMINAL BLOCK MARKING TAGS FOR BOM ITEMS 30, 31	WEIDMULLER	1609840000	PANEL VENDOR
38	2	MINNATURE ICE CUBE RELAY - 120V AC, 7A; COMPLETE WITH DIN RAIL MOUNTING BASE SOCKET	ALLEN BRADLEY	700-HC24A1; 700-HN12B	PANEL VENDOR
39	4	ISOLATED BARRIER - SWITCH AMPLIFIER, 20-125 VDC, 2 CHANNELS RELAY OUTPUT (NO)	TURCK	IM1-22EX-R	PANEL VENDOR
40	1	CONTROL RELAY (TRS 5VDC 1CO) - 6A, SCREW CONNECTION	WEIDMULLER	1122740000	PANEL VENDOR
41	1	CONTROL RELAY (TRS 120VAC RC 2CO) - 8A, SCREW CONNECTION	WEIDMULLER	1123550000	PANEL VENDOR
42	1	20A CIRCUIT BREAKER - 1P, 480/277 VAC, #16 - #6 AWG, 10 kA (TYPE B BRANCH CIRCUIT)	EATON	FAZ-B20/1-NA	PANEL VENDOR
43	2	15A CIRCUIT BREAKER - 1P, 480/277 VAC, #18 - #6 AWG, 10 kA (TYPE B BRANCH CIRCUIT)	EATON	FAZ-B15/1-NA	PANEL VENDOR
44	1	AEGIS LINE FILTERS AND SURGE PROTECTORS - 120V AV, 20A	EATON	AGPH12020	PANEL VENDOR
45	1	ZELIO LOGIC COMPACT SMART RELAY, 120V AC WITH CLOCK	SCHNEIDER	SR2B201FU	PANEL VENDOR
46	1	CONNECTION CABLE FOR ZELIO RELAY	SCHNEIDER	SR2USB01	PANEL VENDOR
47	5	FLYGT MINI CAS PUMP SENSOR MONITOR, 120V AC	XYLEM	40-50 10 98	PANEL VENDOR
48	5	MOUNTING BRACKET TO MOUNT CAS ON PANEL	XYLEM	13-40 01 87	PANEL VENDOR
49	5	SOCKET II PINS BACK MOUNTED	XYLEM	13-40 02 00	PANEL VENDOR
50	5	30 mm FLUSH HEAD PUSHBUTTON, BLACK	ALLEN BRADLEY	800T-A2A	PANEL VENDOR
51	1	DUAL RECEPTACLE, 120V 20A, DIN RAIL SCREWED, TYPE NEMA 5-20R	PHOENIX	5600525	PANEL VENDOR
52	57	0.25 A FUSE - FAST ACTING, NON-HAZARDOUS	BUSSMANN	GMA-250-R	PANEL VENDOR
53	69	0.5 A FUSE - FAST ACTING, NON-HAZARDOUS	BUSSMANN	GMA-500-R	PANEL VENDOR
54	17	1 A FUSE - FAST ACTING, NON-HAZARDOUS	BUSSMANN	GMA-1-R	PANEL VENDOR
55	44	2 A FUSE - FAST ACTING, NON-HAZARDOUS	BUSSMANN	GMA-2-R	PANEL VENDOR
56	1	3 A FUSE - FAST ACTING, NON-HAZARDOUS	BUSSMANN	GMA-3-R	PANEL VENDOR
57	A/R	NSCH 1M ISOLATED COPPER BUSBAR c/w CLAMPING SCREW (0296700000), CLAMPING PRESSURE PIECES (0280100000) & BUS SUPPORT (2998600000)	WEIDMULLER	280200000	PANEL VENDOR
58	2	CAT 6 SHIELDED NETWORK CABLE COMPLETE WITH RJ45 CONNECTORS, LENGTH AS REQUIRED.	OPEN	OPEN	PANEL VENDOR

TERMINAL STRIP BREAKDOWN																			
TAG#	DESCRIPTION	27	28	29	30	31	32	33	34	35	36	39	40	41	52	53	54	55	56
1	24VDC DIST	1	1	1	16		16			1	1				11			1	1
2	SLOT 1-AI	1	1	1	8		8				1				8				
3	SLOT 2-AI	1	1	1	8		8				1				8				
4	SLOT 3-RTD	1	1	1	6		6				1				6				
5	SLOT 5-AO	1	1	1	8		8				1				8				
6	SLOT 10-DI	1	1	1	16		16				1		1		16				
7	CAS SENSORS (CS)	1	1	1	10						1								
8	BUC 24VDC	1	1	1	10		5			1	1					5			
9	SLOT 6-DI	1	1	1	16			16		1	1				16				
10	SLOT 7-DI	1	1	1	16			16			1				16				
11	SLOT 8-DI	1	1	1	16			16			1				16				
12	SLOT 9-DI	1	1	1	16			16		1	1					16			
13	SLOT 11-DO	1	1	1	16			16		1	1			1			16		
14	SLOT 12-RO	1	1	1	16			16		1	1							16	
15	120VAC	1	1	1	32	1		30		1	1						1	27	
16	BUC 120VAC	1	1	1					18		1								
17	G-120	1	1	1					12	1	1								
18	IS RELAY ISOLATOR	1	1	1									4						

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-1-101	CP-100 PANEL LAYOUT	1

NOTES:

- PANEL VENDOR TO PROVIDE MINIMUM FIVE (5) SPARE FUSES FOR EACH BOM ITEM 52-56.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH

CLIENT: **REGIONAL DISTRICT OF NANAIMO**

Allnorth

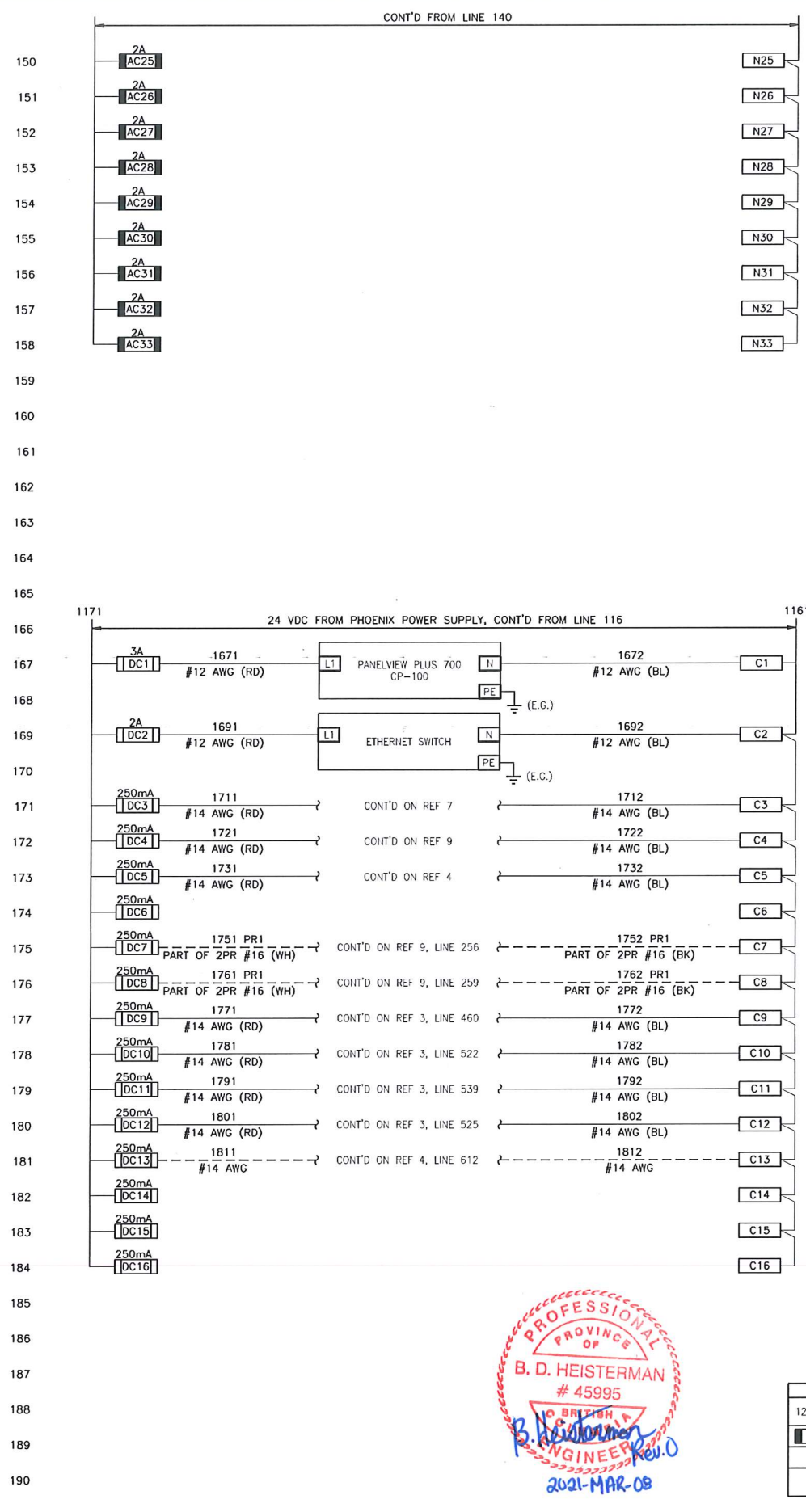
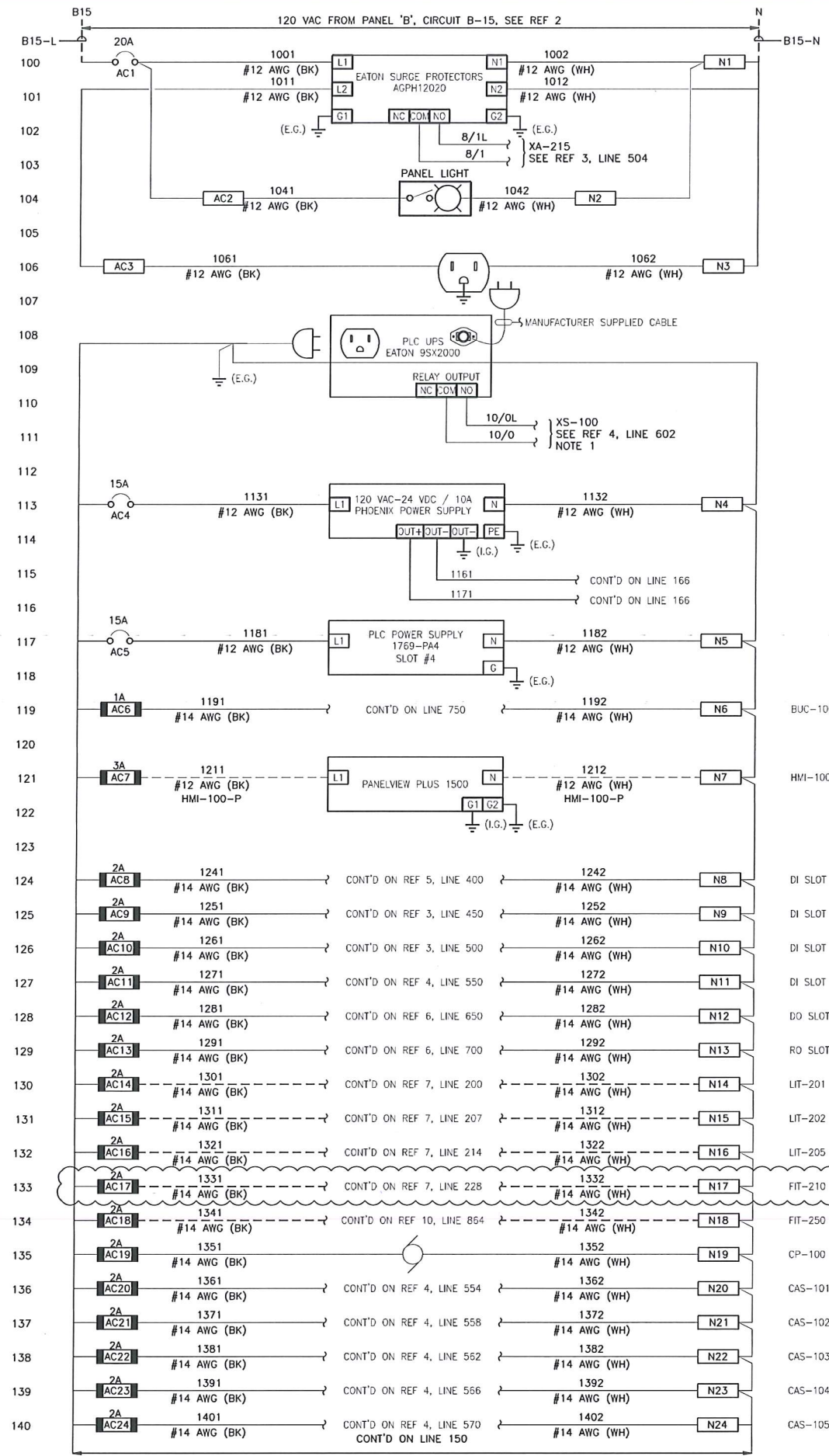
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DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

PROJECT: **CHASE RIVER PUMP STATION UPGRADE**

TITLE: **CP-100 BILL OF MATERIAL**

DWG NO:	CRPS-1-102	REV:	0
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WIRING LEGEND

— PANEL WIRING
 - - - FIELD WIRING

TERMINAL BLOCK SYMBOLS:

120 VAC	24 VDC / ANALOG
[Symbol]	ACSED DISCONNECT
[Symbol]	FEED THROUGH
[Symbol]	SHIELD BAR CONNECTION



REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-E-110	E/KC FIELD WIRING BLOCK DIAGRAM	1
CRPS-E-106	MCC LAYOUT, SCHEDULES AND DETAILS	2
CRPS-I-108	CP-100 SLOT 7&8 DISCRETE INPUT	3
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUT	4
CRPS-I-108	CP-100 SLOT 5&6 DISCRETE INPUT	5
CRPS-I-110	CP-100 SLOT 11&12 OUTPUTS	6
CRPS-I-105	CP-100 SLOT 1 ANALOG INPUT	7
CRPS-I-101	CP-100 PANEL LAYOUT	8
CRPS-I-106	CP-100 SLOT 2&3 INPUTS	9
CRPS-I-112	GATE CONTROL SCHEMATICS	10

NOTES:

1. UPS RELAY OUTPUT SIGNAL CAN BE CONFIGURED FOR EATON MODEL 95X2000. CHOOSE EVENTS THAT WILL TRIGGER THIS ALARM THROUGH THE LCD. REFER TO USER MANUAL FOR MORE INFORMATION.

FABRICATION NOTES:

F1. ALL WIRES TO BE LABELED AT BOTH ENDS.

ISSUED FOR CONSTRUCTION
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CLIENT: REGIONAL DISTRICT OF NANAIMO

0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	Y/M/A/ODD	DESCRIPTION	DRWN	CHKD	APVD

CLIENT: Allnorth

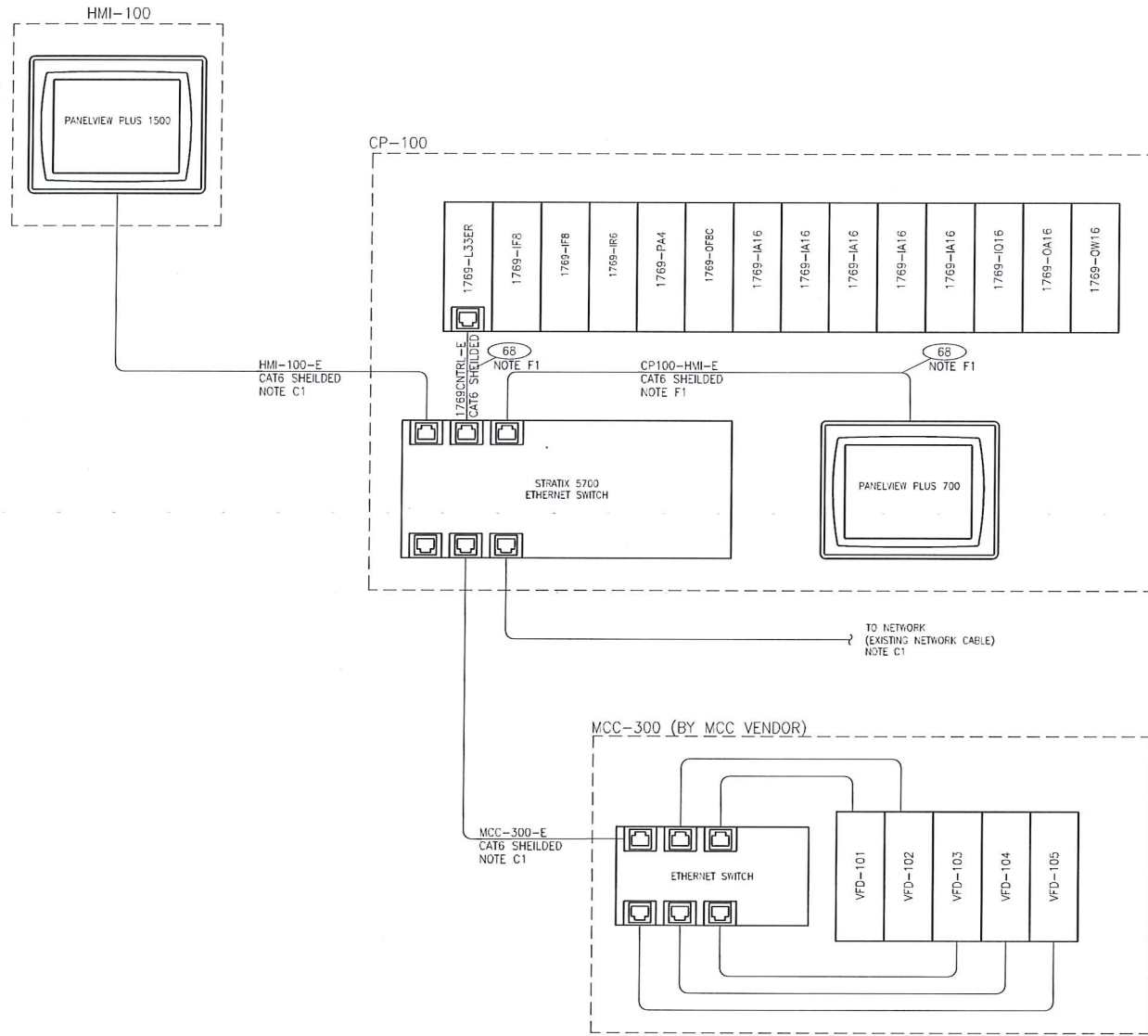
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SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

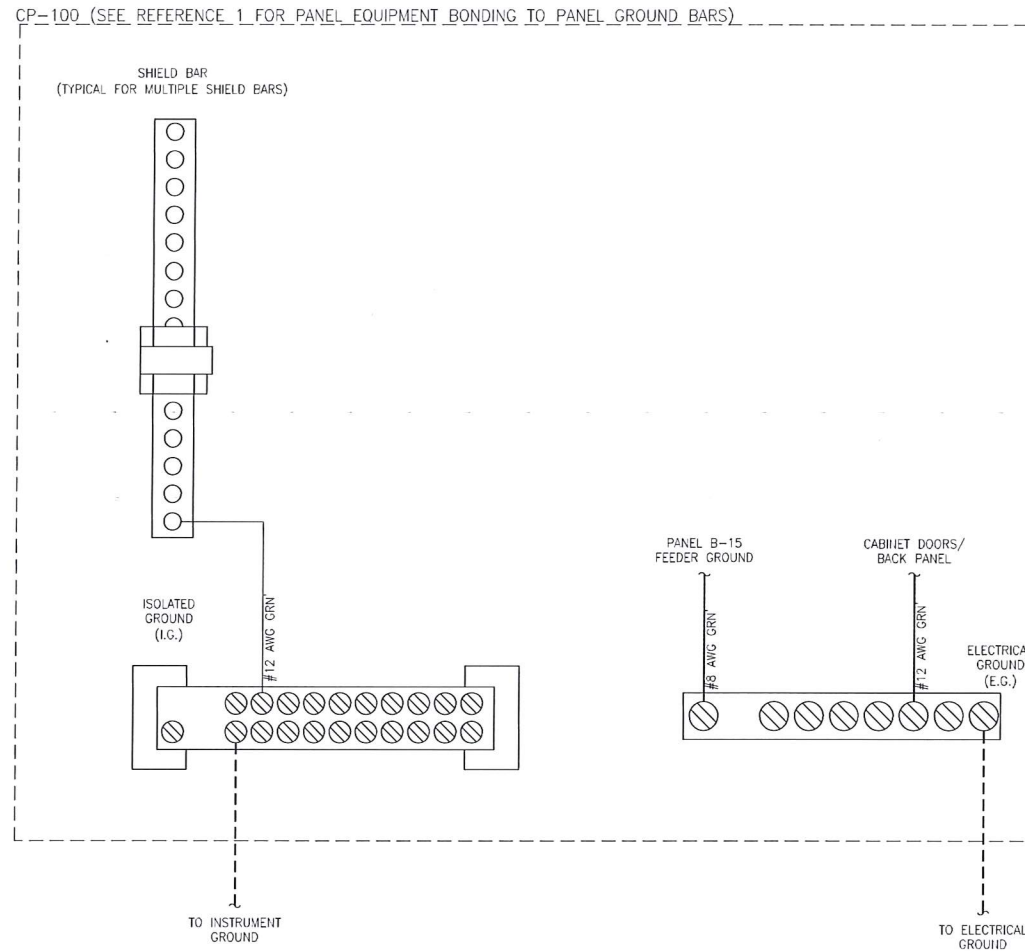
TITLE: CP-100 POWER DISTRIBUTION

DWG NO: CRPS-I-103

REV: 0



NETWORK CONNECTIONS
SCALE: NTS



PANEL EQUIPMENT GROUNDING
SCALE: NTS

PROFESSIONAL
PROVINCE OF
B. D. HEISTERMAN
45995
REGISTERED
ENGINEER
2021-MAR-08

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-103	CP-100 POWER DISTRIBUTION	1
CRPS-I-102	CP-100 BILL OF MATERIAL	2

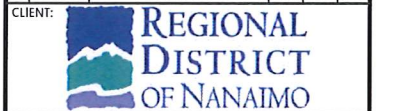
FABRICATION NOTES:
F1. PANEL VENDOR TO INSTALL CAT 6 CABLE COMPLETE WITH CABLE TAGS. SEE REFERENCE 2 FOR DETAILS.

CONSTRUCTION NOTES:
C1. CONTRACTOR TO INSTALL, TAG, AND TERMINATE NETWORK CABLE.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
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CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
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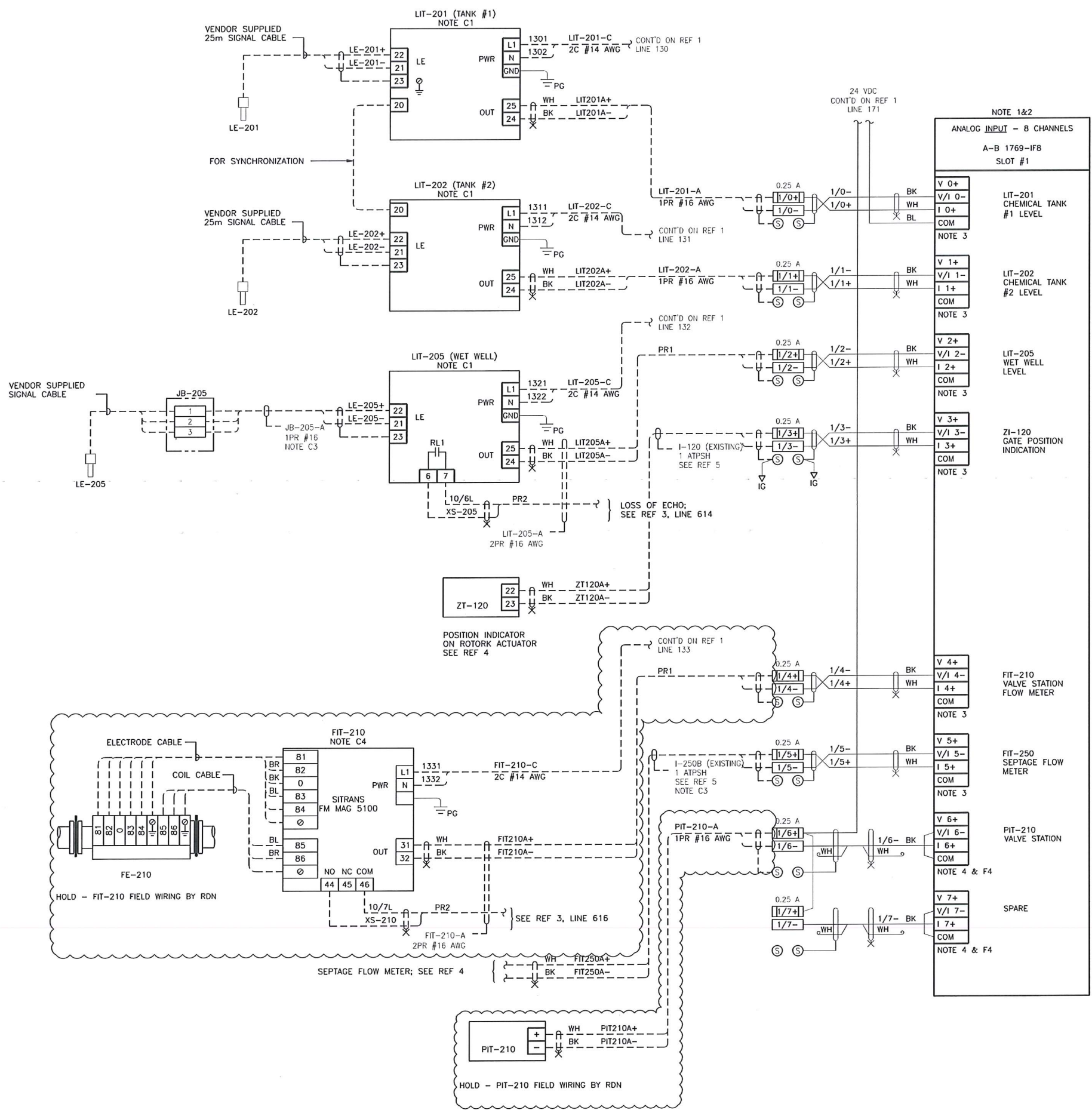
PROJECT:
**CHASE RIVER
PUMP STATION
UPGRADE**

TITLE:
**CP-100
GENERAL SCHEMATICS**

DWG NO:	CRPS-I-104	REV:	0
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WIRING LEGEND	
	PANEL WIRING
	FIELD WIRING

TERMINAL BLOCK SYMBOLS:	
	120 VAC
	24 VDC ANALOG
	FUSED DISCONNECT
	FEED THROUGH
	SHIELD BAR CONNECTION

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-103	CP-100 POWER DISTRIBUTION	1
CRPS-I-108	CP-100 SLOT 7&8 DISCRETE INPUT	2
CRPS-I-109	CP-100 SLOT 9&10 DISCRETE INPUT	3
CRPS-I-112	GATE CONTROL SCHEMATICS	4
CRPS-E-110	FIELD WIRING BLOCK DIAGRAM	5

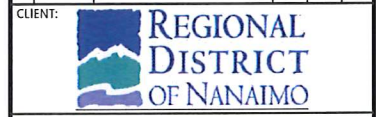
- NOTES:**
- ALL MODULE COMMONS (ANALOG COMMON) ARE CONNECTED IN THE ANALOG MODULE.
 - THE 1769-IF8 MODULE DOES NOT PROVIDE LOOP POWER FOR ANALOG INPUTS.
 - CURRENT OUTPUT IS FIELD POWERED FROM TRANSMITTER.
 - 2-WIRE LOOP POWERED DEVICE.
- FABRICATION NOTES:**
- ALL PANEL ANALOG WIRING TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
 - ALL WIRES TO BE LABELED AT BOTH ENDS.
 - INSTALL JUMPER BETWEEN AT MODULE TERMINALS 1 X+ AND COM.
 - COIL AND TAPE SPARE WHITE CONDUCTOR.

- CONSTRUCTION NOTES:**
- EXISTING PANEL MOUNT TRANSMITTERS REPLACED WITH NEW WALL MOUNT TRANSMITTERS IN ELECTRICAL ROOM. INSTALL, TAG AND TERMINATE NEW CABLES FROM TRANSMITTERS TO CP-100.
 - EXISTING CABLES/CONDUIT FOR LE-201/202 TO BE RE-ROUTED FROM CP-100 TO NEW LIT-201/202 WALL-MOUNT TRANSMITTERS.
 - NEW TECK CABLE TO BE INSTALLED FROM JB-205 TO LIT-205.
 - NEW FIT-210 INSTALLED ON VALVE STATION PACKAGE.

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CONSTRUCTION
Date: 2021/03/08

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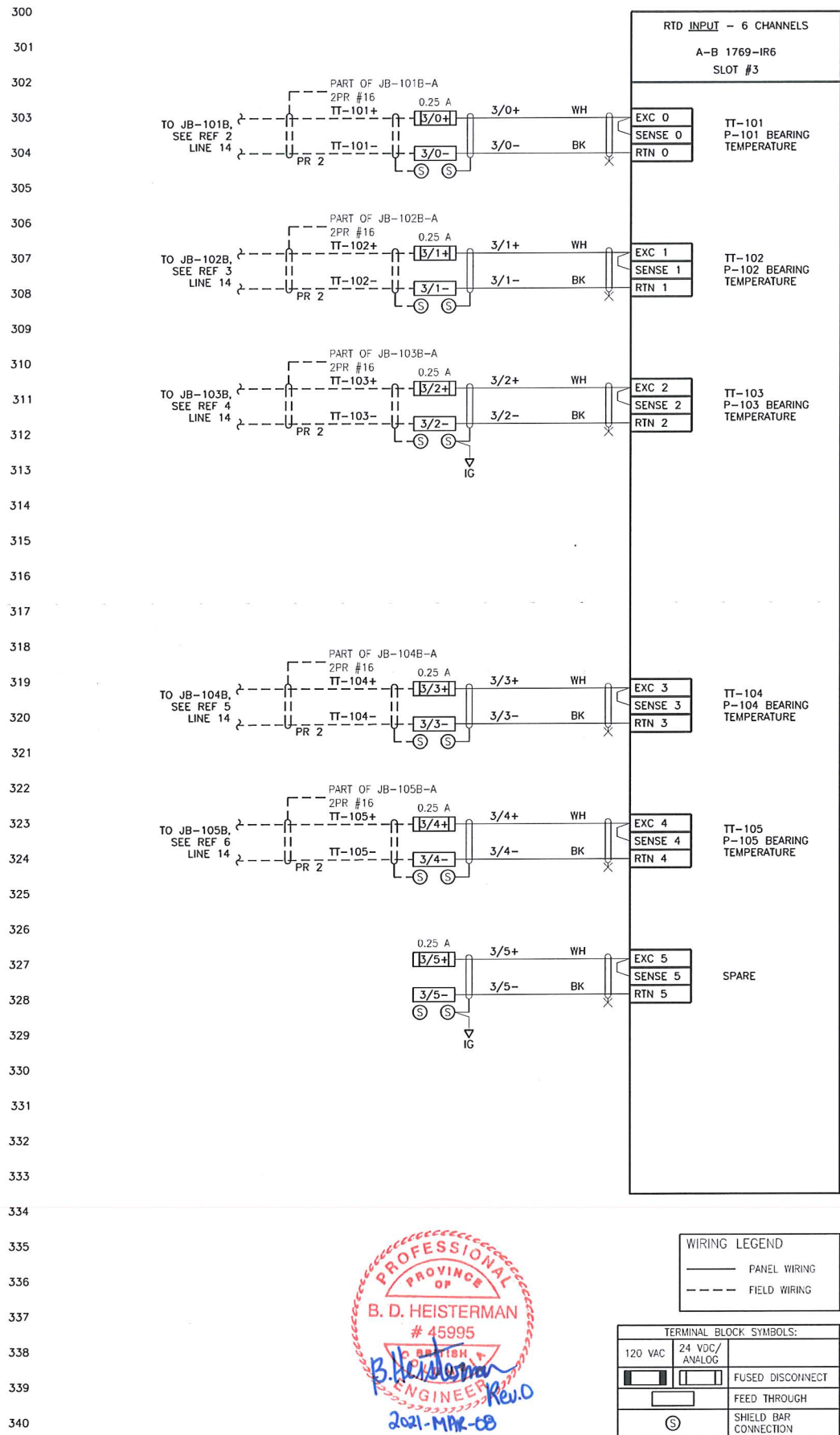
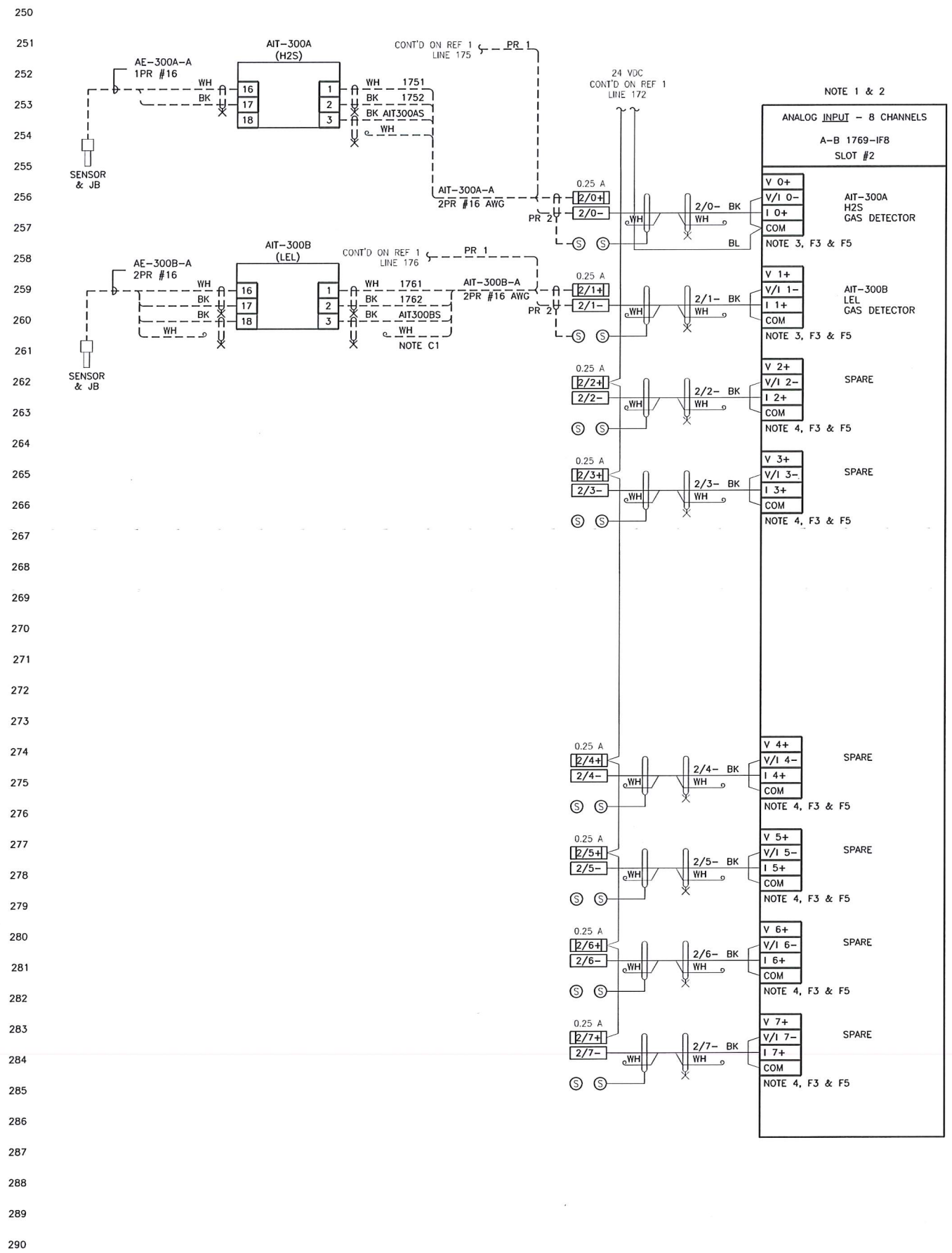


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PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

CP-100 SLOT 1 ANALOG INPUT

DWG NO:	CRPS-I-105	REV:	0
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REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-103	CP-100 POWER DISTRIBUTION	1
CRPS-E-011	P-101 SCHEMATIC DIAGRAM	2
CRPS-E-012	P-102 SCHEMATIC DIAGRAM	3
CRPS-E-013	P-103 SCHEMATIC DIAGRAM	4
CRPS-E-014	P-104 SCHEMATIC DIAGRAM	5
CRPS-E-015	P-105 SCHEMATIC DIAGRAM	6

- NOTES:**
- ALL MODULE COMMONS (ANALOG COMMON) ARE CONNECTED IN THE ANALOG MODULE.
 - THE 1769-IF8 MODULE DOES NOT PROVIDE LOOP POWER FOR ANALOG INPUTS.
 - 3-WIRE SOURCING TRANSMITTER.
 - 2-WIRE LOOP POWERED DEVICE.

- FABRICATION NOTES:**
- ALL PANEL ANALOG WIRING TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
 - ALL WIRES TO BE LABELED AT BOTH ENDS.
 - INSTALL JUMPER BETWEEN MODULE TERMINALS I X+ AND COM.
 - FOR 2-WIRE RTD INSTALL JUMPER BETWEEN MODULE TERMINALS EXC AND SENSE.
 - COIL AND TAPE SPARE WHITE CONDUCTOR.

- CONSTRUCTION NOTES:**
- COIL AND TAPE SPARE WHITE CONDUCTOR.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD

CLIENT: REGIONAL DISTRICT OF NANAIMO

Allnorth

CLIENT NO:	DRWN:	AF	DATE:	20/12/21	
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	NTS	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

TITLE: **CP-100 SLOT 2 & 3 ANALOG & RTD INPUT**

DWG NO: **CRPS-I-106** REV: **0**



WIRING LEGEND

— PANEL WIRING
- - - FIELD WIRING

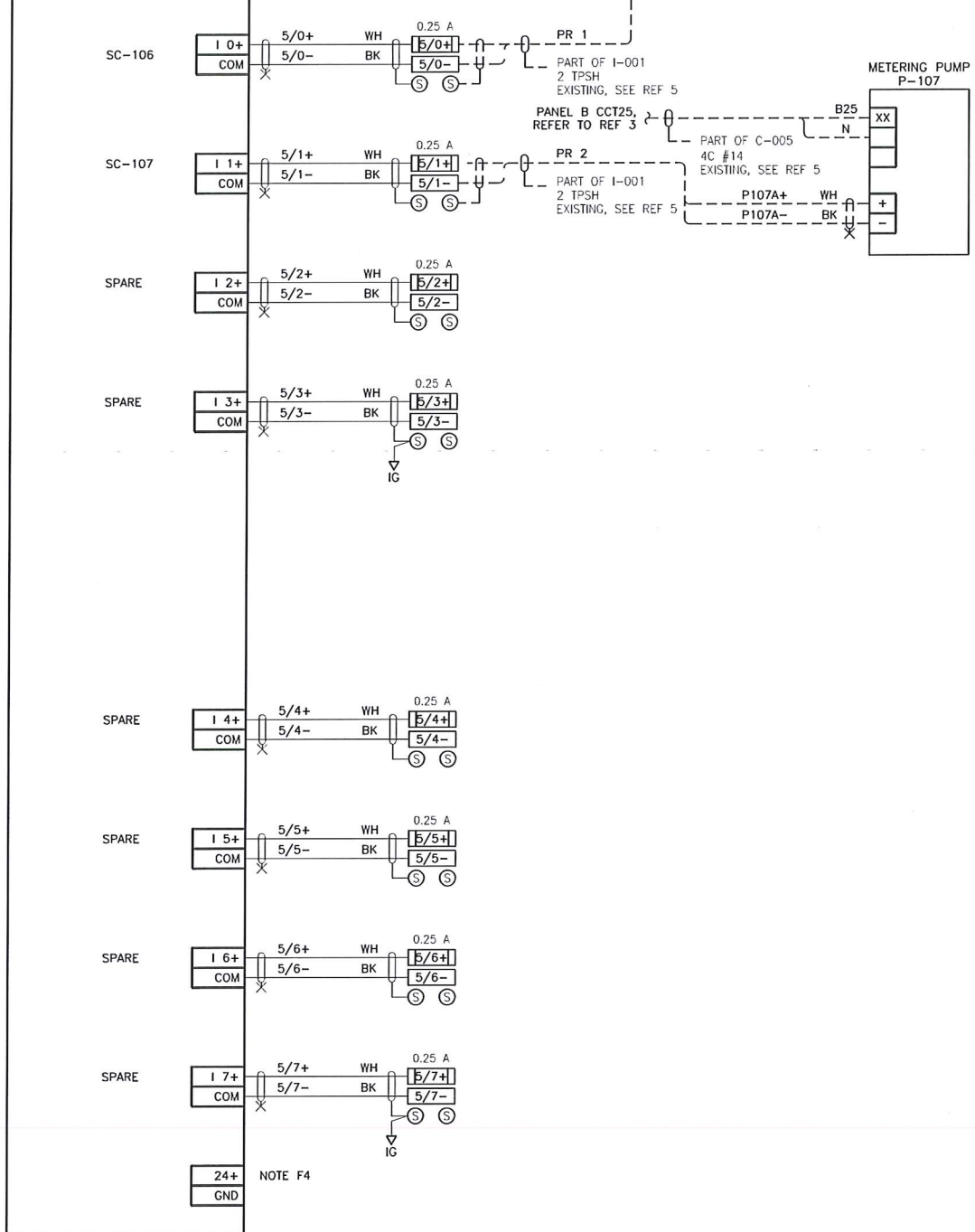
TERMINAL BLOCK SYMBOLS:

120 VAC	24 VDC/ANALOG
[Symbol]	FUSED DISCONNECT
[Symbol]	FEED THROUGH
[Symbol]	SHIELD BAR CONNECTION

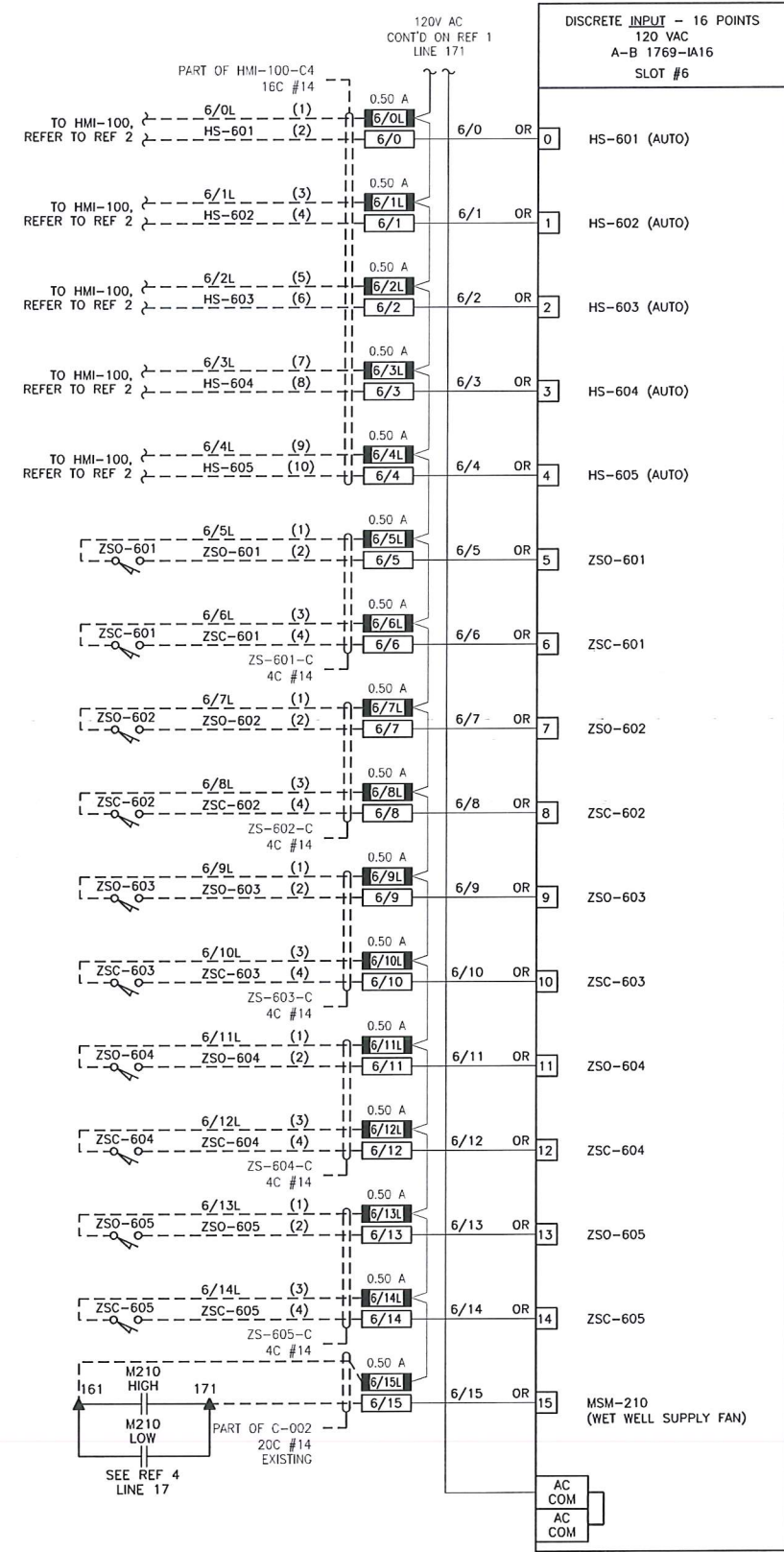
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ANALOG OUTPUT - 8 CHANNELS
A-B 1769-OF8C
SLOT #5



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WIRING LEGEND

—	PANEL WIRING
- - -	FIELD WIRING

TERMINAL BLOCK SYMBOLS:

120 VAC	24 VDC/ANALOG	FUSED DISCONNECT
□	□	FEED THROUGH
▲	▲	MCC-100 TERMINAL
⊙	⊙	SHIELD BAR CONNECTION

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-104	CP-100 POWER DISTRIBUTION	1
CRPS-I-123	HMI-100 WIRING DIAGRAM	2
CRPS-E-106	MCC LAYOUTS, SCHEDULES AND DETAILS	3
CRPS-E-107	ELECTRICAL CONTROL SCHEMATICS	4
CRPS-E-110	FIELD WIRING BLOCK DIAGRAM	5

NOTES:

FABRICATION NOTES:

F1. ALL PANEL ANALOG WIRING TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
 F2. ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
 F3. ALL WIRES TO BE LABELED AT BOTH ENDS.
 F4. ENSURE THE 1769-OF8C AO CARD BUS POWER SWITCH IS PRESSED TO THE TOP POSITION (DEFAULT) FOR 24V POWER FROM THE 1769 SYSTEM POWER SUPPLY VIA THE I/O BUS.

CONSTRUCTION NOTES:

C1. FIELD CABLES FOR VALVE LIMIT SWITCHES ZSO/ZSC ARE CURRENTLY TERMINATED TO MCC-200. CONTRACTORS SHALL INSTALL NEW FIELD CABLES FROM CP-100 TO ZSO/ZSC-601,602,603,604 AND 605.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD

CLIENT:

CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
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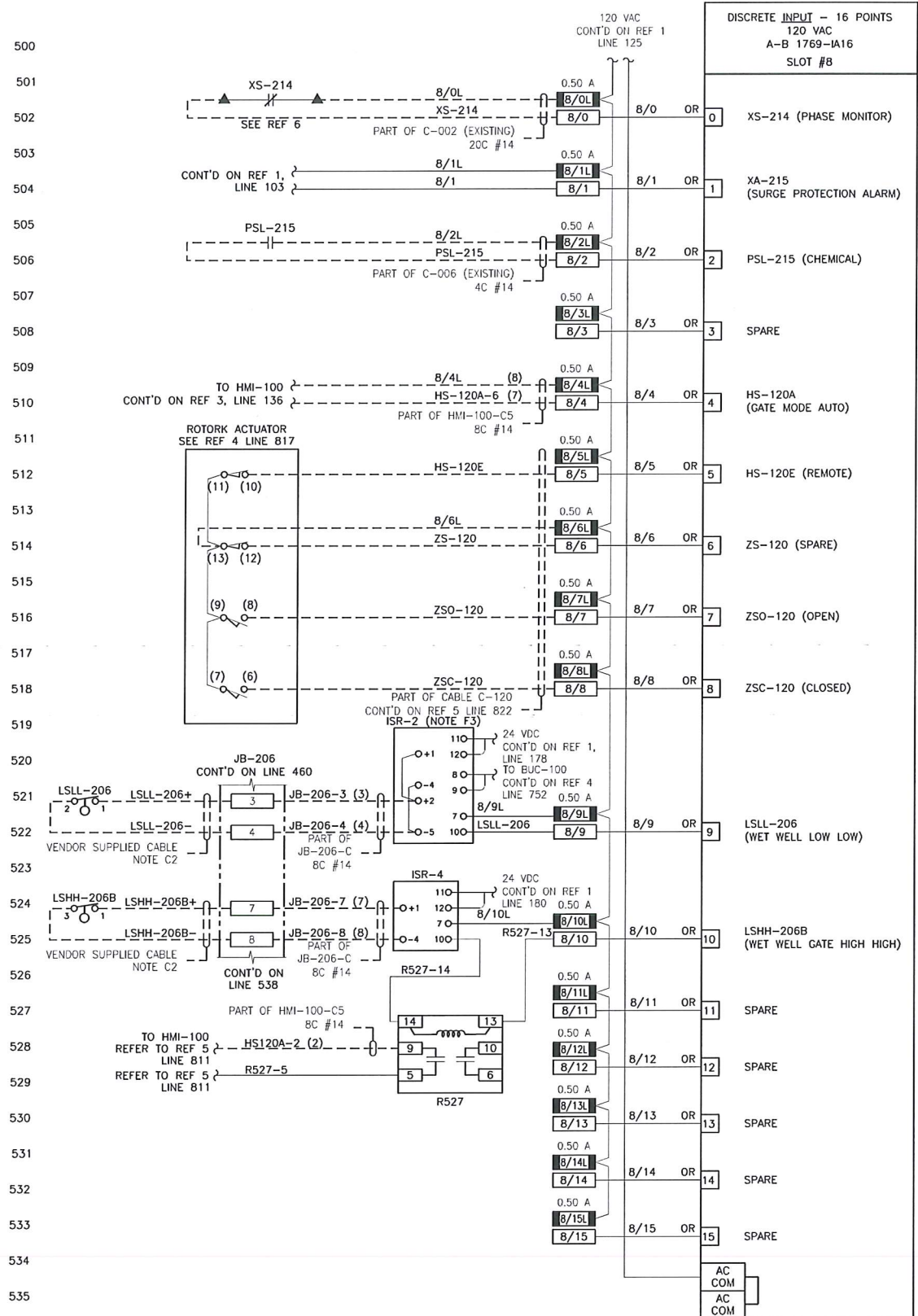
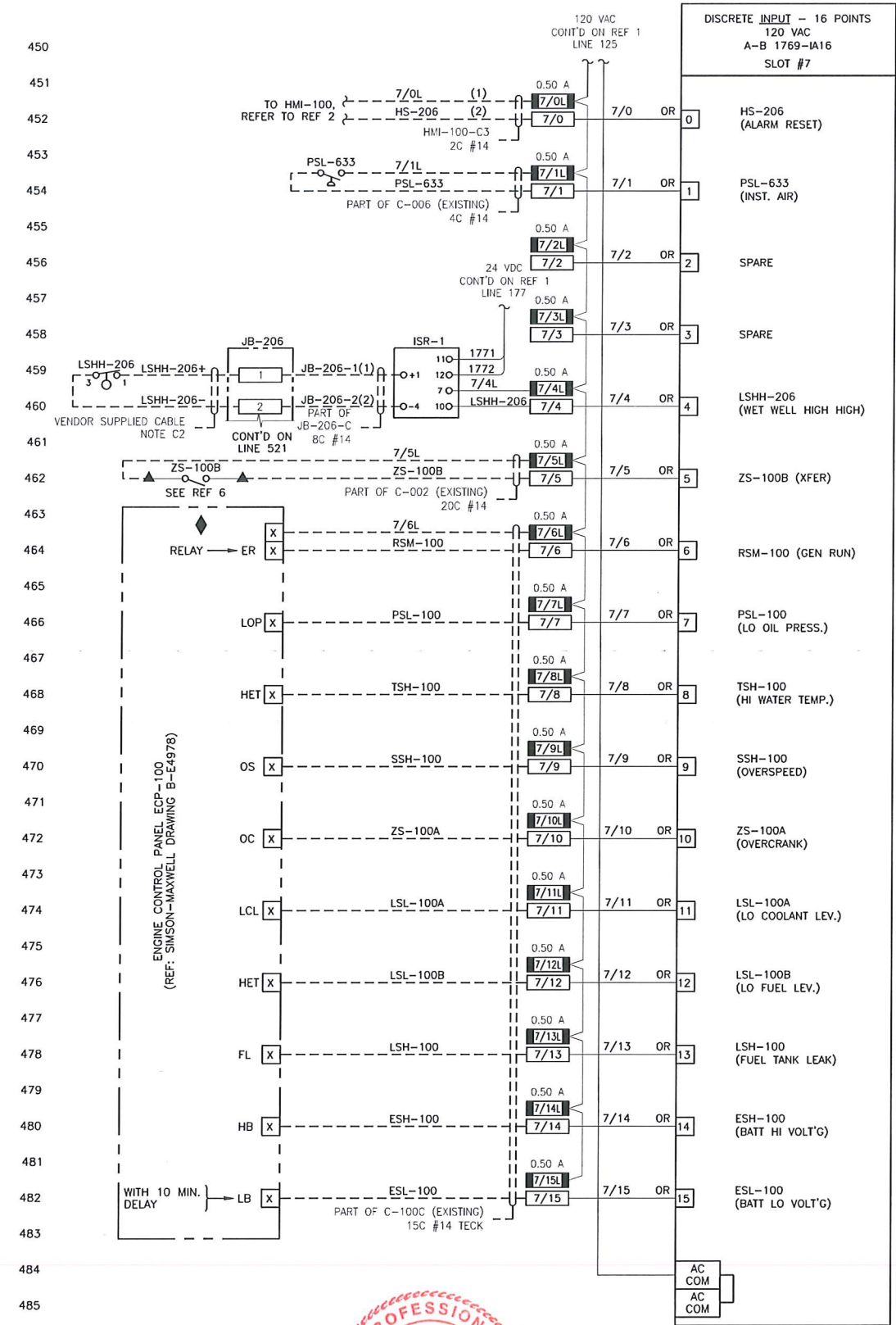
CHASE RIVER PUMP STATION UPGRADE

TITLE:

CP-100 SLOT 5 & 6 ANALOG OUTPUT & DISCRETE INPUT

DWG NO: **CRPS-I-107** REV: **0**

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WIRING LEGEND

—	PANEL WIRING
- - -	FIELD WIRING

TERMINAL BLOCK SYMBOLS:

120 VAC	24 VDC/ANALOG
[Symbol]	FUSED DISCONNECT
[Symbol]	FEED THROUGH
[Symbol]	ECP-100 TERMINAL
[Symbol]	MCC-100 TERMINAL
[Symbol]	SHIELD BAR CONNECTION

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-104	CP-100 POWER DISTRIBUTION	1
CRPS-I-105	CP-100 ANALOG INPUT	2
CRPS-I-123	HMI-100 WIRING	3
CRPS-I-111	BUC-100 WIRING	4
CRPS-I-112	GATE CONTROL WIRING	5
CRPS-E-105	SINGLE LINE DIAGRAM	6

NOTES:

FABRICATION NOTES:

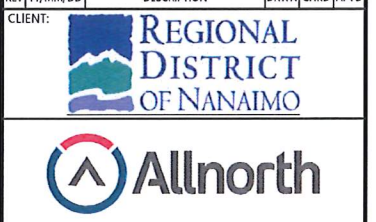
F1. ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
 F2. ALL WIRES TO BE LABELED AT BOTH ENDS.
 F3. JUMPER TO BE INSTALLED BETWEEN ISR-2 CHANNEL 1 AND 2 INPUT.

CONSTRUCTION NOTES:

C1. CABLE SUPPLIED WITH NEW LEVEL SWITCH, CABLE TO BE ROUTED IN METAL CONDUIT TO JB-206.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD



CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

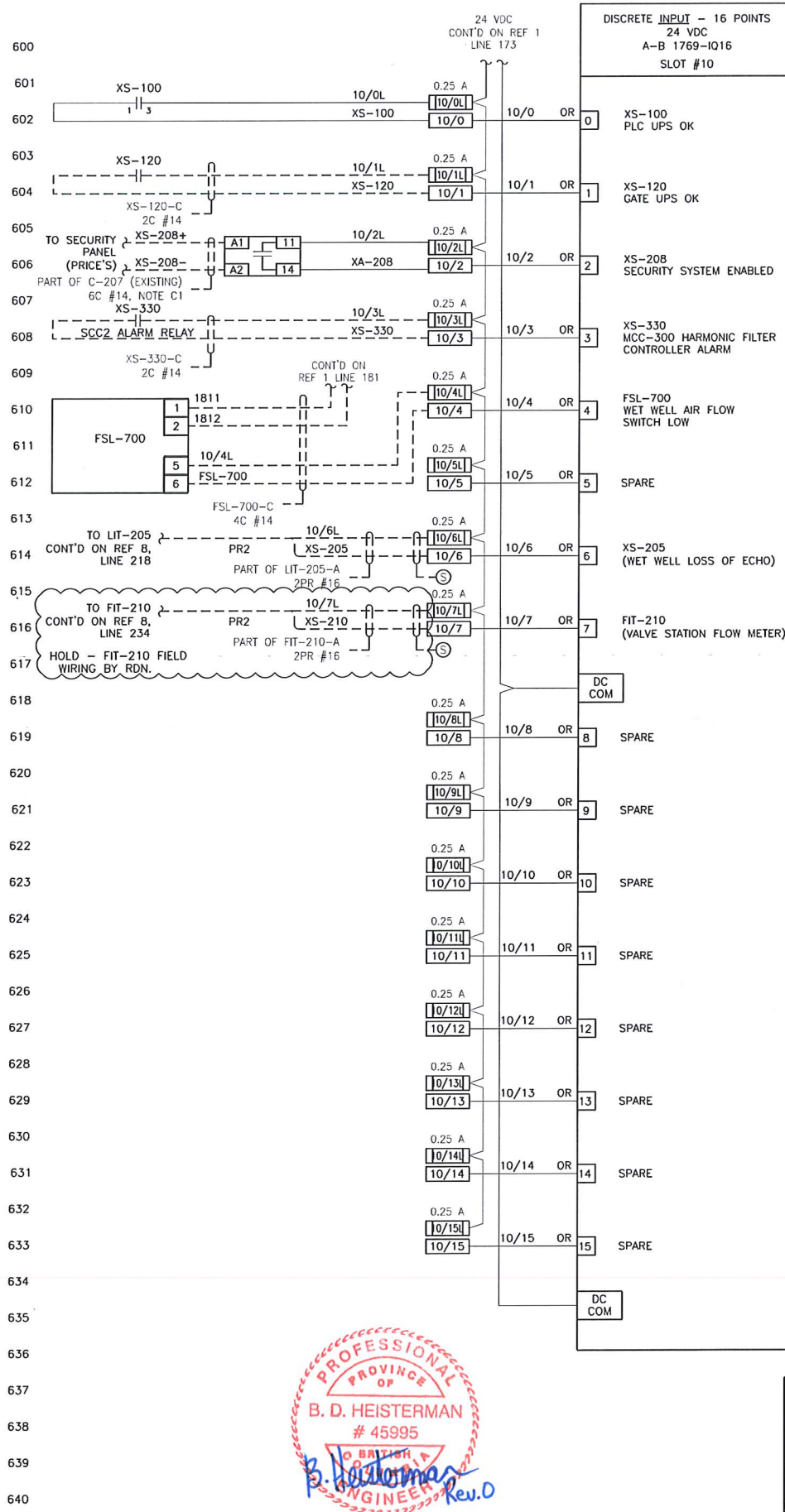
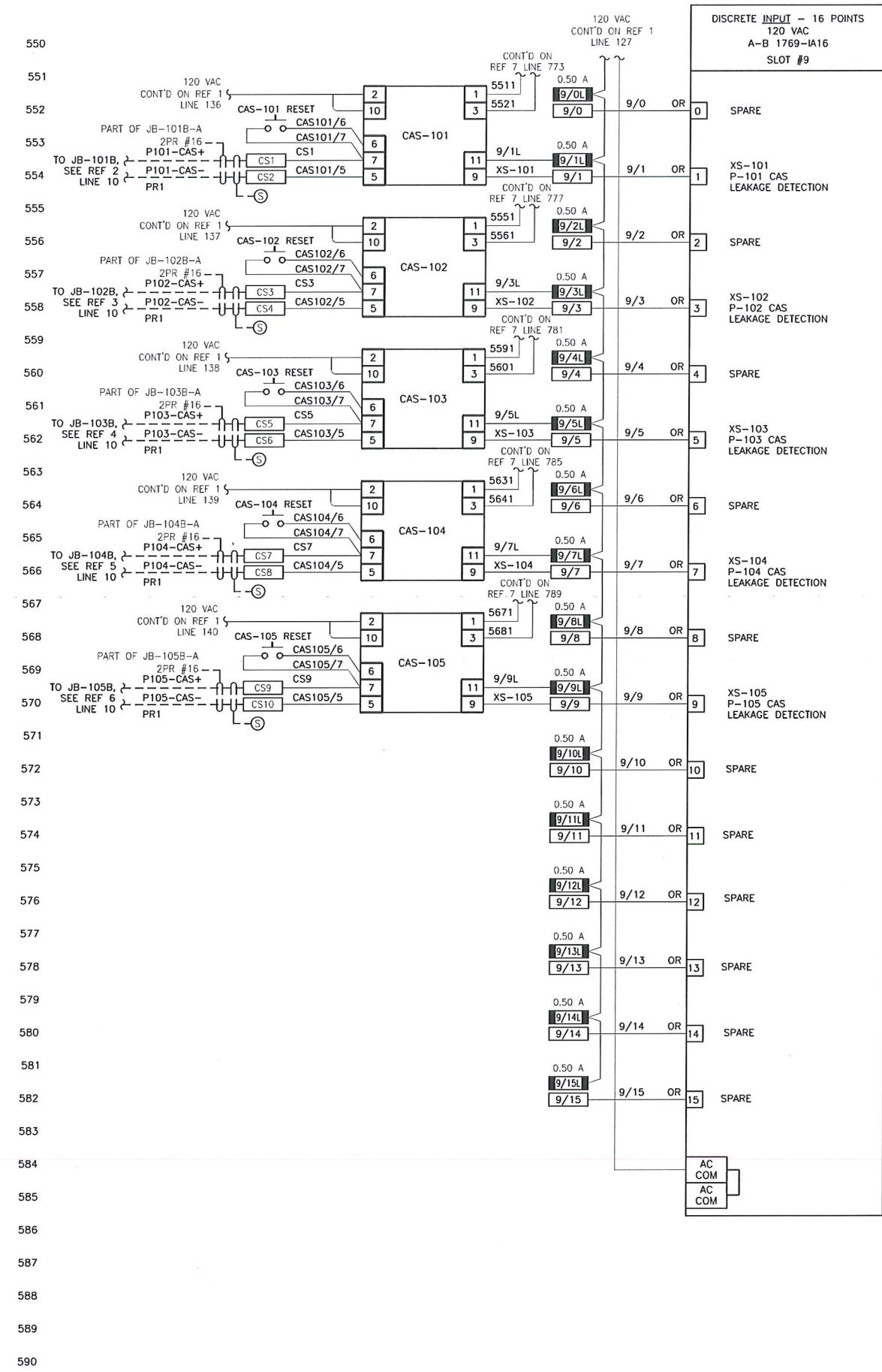
TITLE:

CP-100 SLOT 7 & 8 DISCRETE INPUT

DWG NO:	CRPS-I-108	REV:	0
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Date: 2021/03/08 10:56 AM | User: Ava Fu | File: P:\NA\2020\2003251 RDN-Chase River Pump Stn Upgrade\1000-Dwg\1017-Inst\01-Production\CRPS-I-109 | Layout: REV 0 | Paper Size: 863.6mm x 558.8mm



WIRING LEGEND
 ——— PANEL WIRING
 - - - FIELD WIRING

TERMINAL BLOCK SYMBOLS:

	120 VAC
	24 VDC/ANALOG
	FUSED DISCONNECT
	FEED THROUGH
	MCC-100 TERMINAL
	SHIELD BAR CONNECTION

PROFESSIONAL
 PROVINCE OF
B. D. HEISTERMAN
 # 45995
 ENGINEER
B. Heisterman
 2021-MAR-08

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-104	CP-100 POWER DISTRIBUTION	1
CRPS-E-011	P-101 SCHEMATIC DIAGRAM	2
CRPS-E-012	P-102 SCHEMATIC DIAGRAM	3
CRPS-E-013	P-103 SCHEMATIC DIAGRAM	4
CRPS-E-014	P-104 SCHEMATIC DIAGRAM	5
CRPS-E-015	P-105 SCHEMATIC DIAGRAM	6
CRPS-I-111	BUC-100 SCHEMATIC	7
CRPS-I-105	CP-100 SLOT 1 ANALOG INPUT	8

NOTES:

FABRICATION NOTES:

F1. ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
 F2. ALL WIRES TO BE LABELLED AT BOTH ENDS.

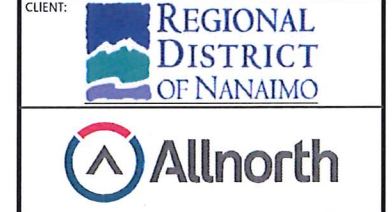
CONSTRUCTION NOTES:

C1. USE EXISTING CONDUCTOR IN CONDUIT TO SECURITY ALARM PANEL (PRICE'S), IF EXISTING CONDUCTORS ARE NOT AVAILABLE CONTRACTOR TO RUN NEW CONDUCTOR IN EXISTING CONDUIT.

ISSUED FOR
CONSTRUCTION
 Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH



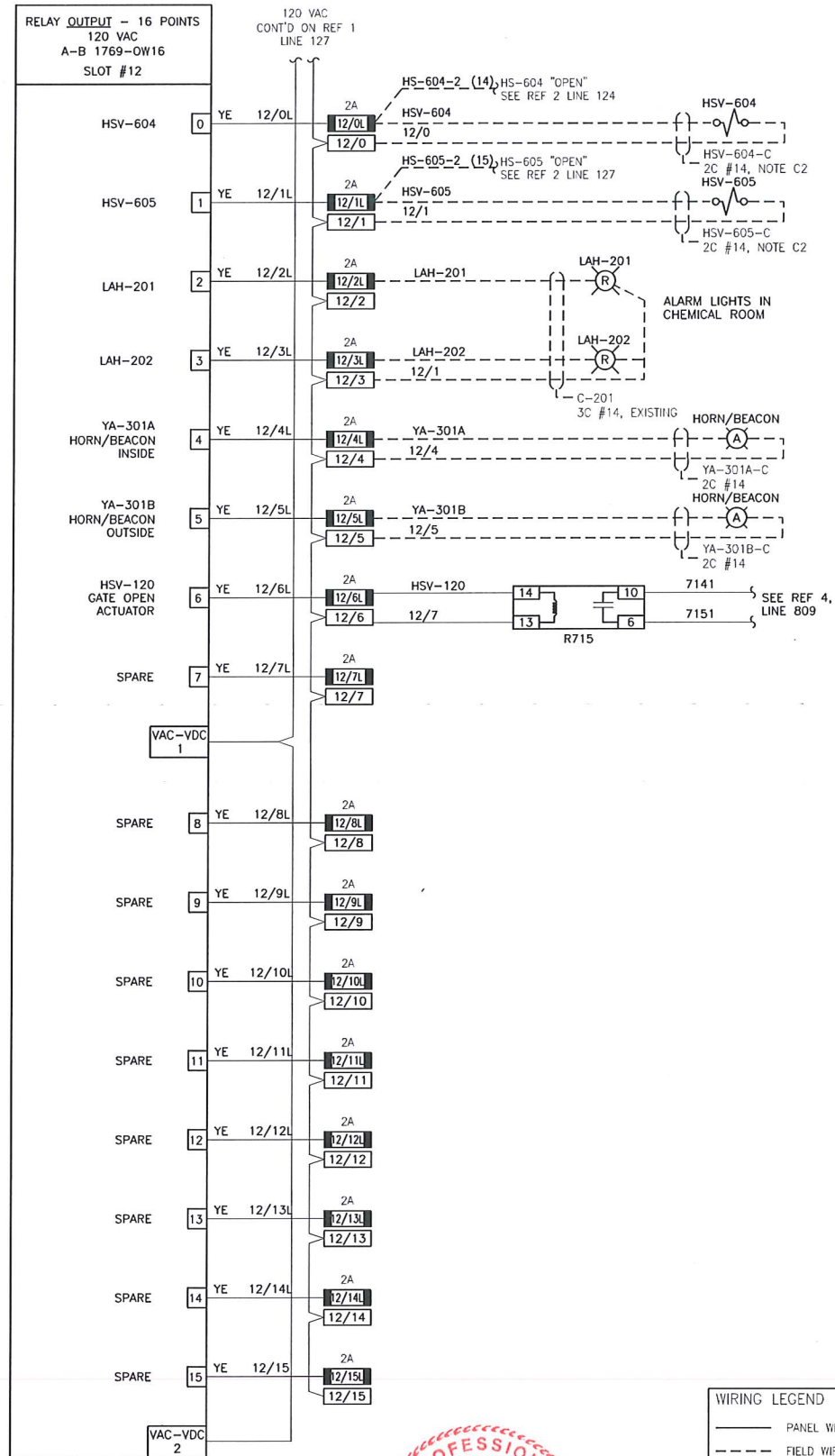
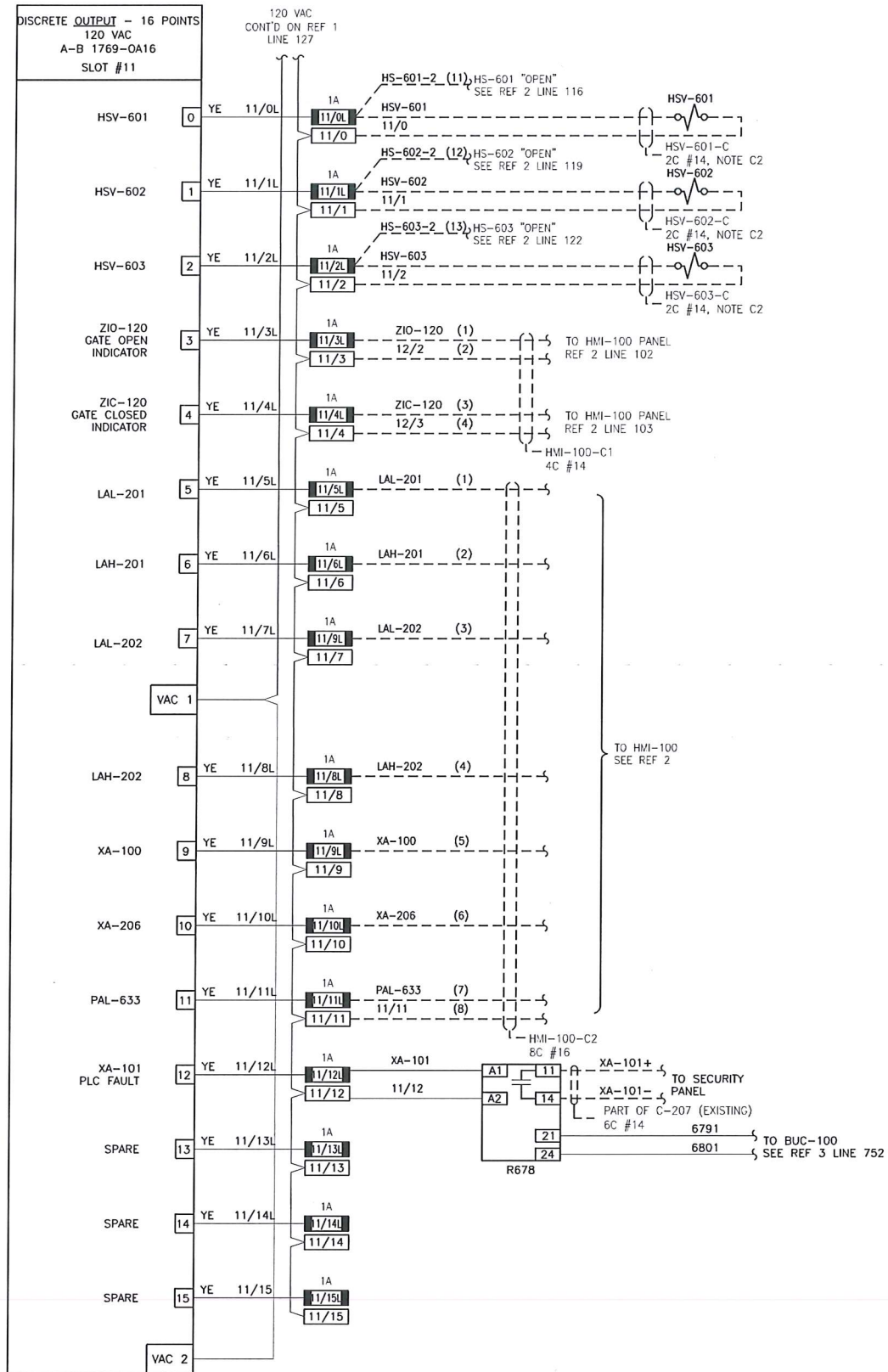
CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

**CHASE RIVER
 PUMP STATION
 UPGRADE**

**CP-100
 SLOT 9 & 10
 DISCRETE INPUT**

DWG NO:	CRPS-I-109	REV:	0
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Date: 2021/03/08 9:00 AM | User: Awa Fu | File: P:\NA\2020\2003251\RDN-Chase River Pump Station\100-Dwg\101-Prod\CP-100-110 | Layout: REV 0 | Paper Size: 863.0mm x 558.0mm



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-104	CP-100 POWER DISTRIBUTION	1
CRPS-I-123	HMI-100 PANEL SCHEMATICS	2
CRPS-I-111	BUC-100 SCHEMATICS	3
CRPS-I-112	GATE CONTROL SCHEMATICS	4

NOTES:

FABRICATION NOTES:

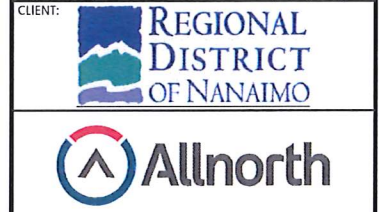
F1. ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
 F2. ALL WIRES TO BE LABELED AT BOTH ENDS.

CONSTRUCTION NOTES:

C1. USE EXISTING CONDUCTOR IN CONDUIT TO SECURITY ALARM PANEL (PRICE'S). IF EXISTING CONDUCTORS ARE NOT AVAILABLE CONTRACTOR TO RUN NEW CONDUCTOR IN EXISTING CONDUIT.
 C2. FIELD CABLES FOR VALVES HSV-601, 602, 603, 604, 605 ARE CURRENTLY TERMINATED TO MCC-200. CONTRACTOR TO INSTALL NEW FIELD CABLES FROM CP-100 TO HSV-601, 602, 603, 604 AND 605.

ISSUED FOR CONSTRUCTION
 Date: 2021/03/08

0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD

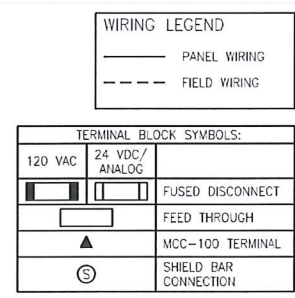


CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/12
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

PROJECT: CHASE RIVER PUMP STATION UPGRADE

TITLE: CP-100 SLOT 11 & 12 DISCRETE & RELAY OUTPUT

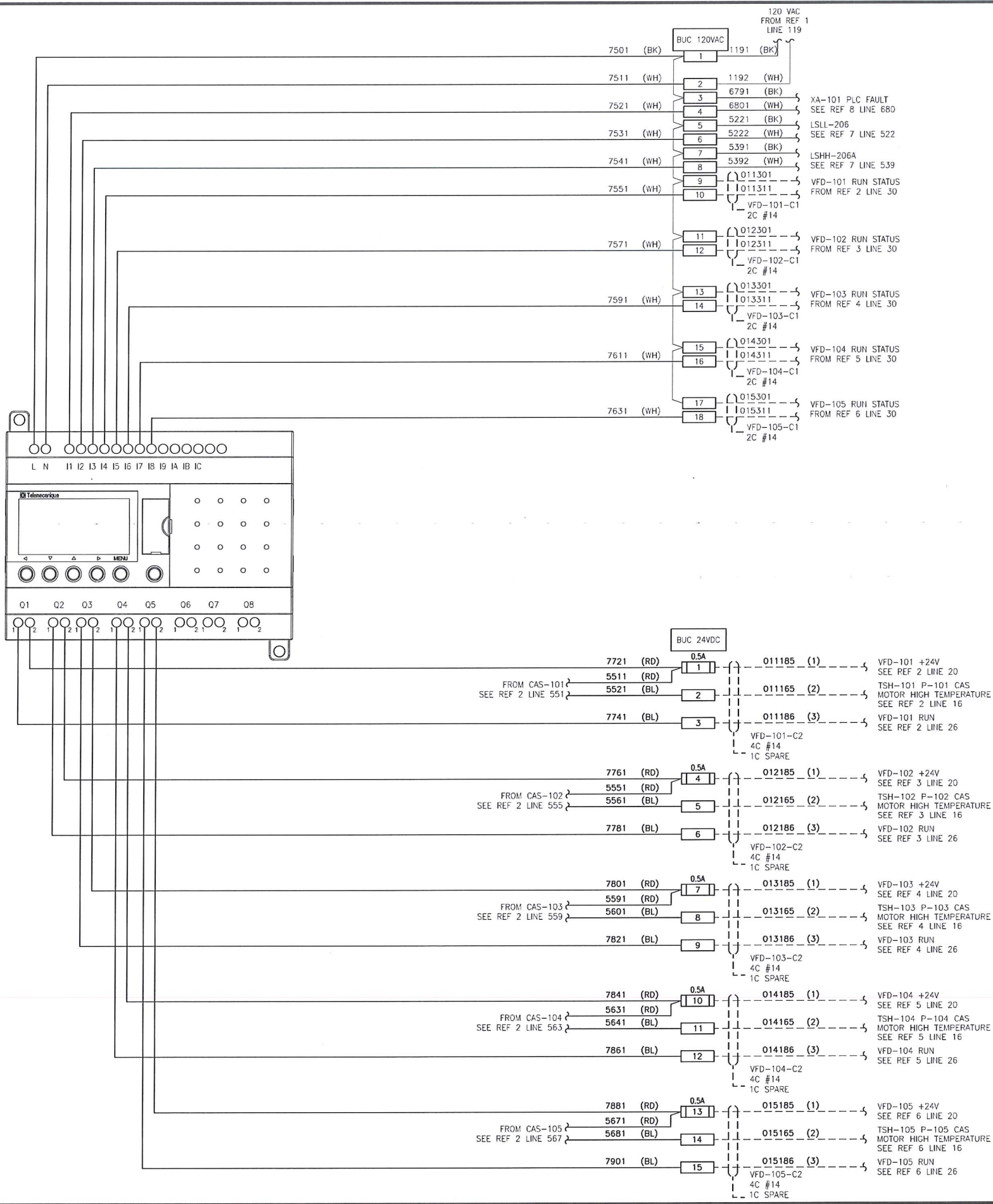
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BUC-100
BACK-UP CONTROLLER



WIRING LEGEND
 ——— PANEL WIRING
 - - - - FIELD WIRING

TERMINAL BLOCK SYMBOLS:	
120 VAC	24 VDC/ANALOG
	FUSED DISCONNECT
	FEED THROUGH
	MCC-100 TERMINAL
	SHIELD BAR CONNECTION

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-103	CP-100 POWER DISTRIBUTION	1
CRPS-E-011	P-101 SCHEMATIC DIAGRAM	2
CRPS-E-012	P-102 SCHEMATIC DIAGRAM	3
CRPS-E-013	P-103 SCHEMATIC DIAGRAM	4
CRPS-E-014	P-104 SCHEMATIC DIAGRAM	5
CRPS-E-015	P-105 SCHEMATIC DIAGRAM	6
CRPS-I-108	CP-100 SLOT 788 DIGITAL INPUT	7
CRPS-I-110	CP-100 DISCRETE & RELAY OUTPUT	8

NOTES:
 1. BACK-UP CONTROLLER ACTIVATED BY PLC FAULT ALARM (XA-101) OR LSHH-206A.

ISSUED FOR CONSTRUCTION
 Date: 2021/03/08

0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD



CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

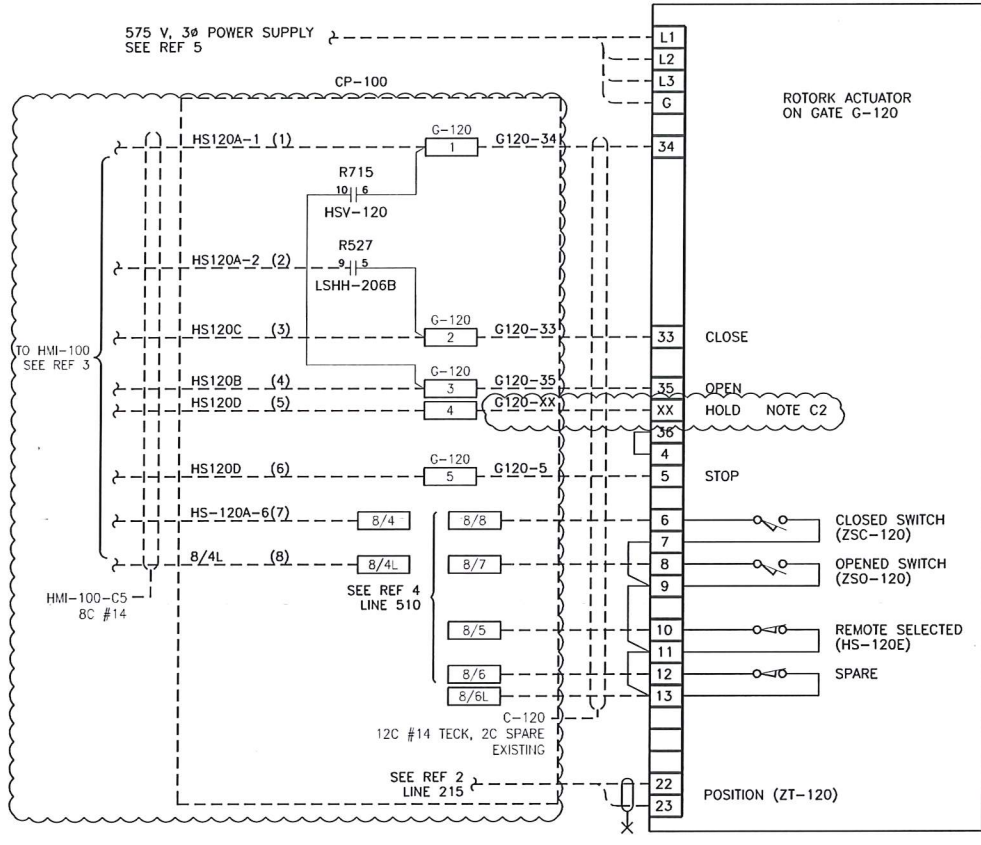
PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
CP-100 BACK-UP CONTROLLER SCHEMATIC DIAGRAM

DWG NO: **CRPS-I-111** REV: **0**

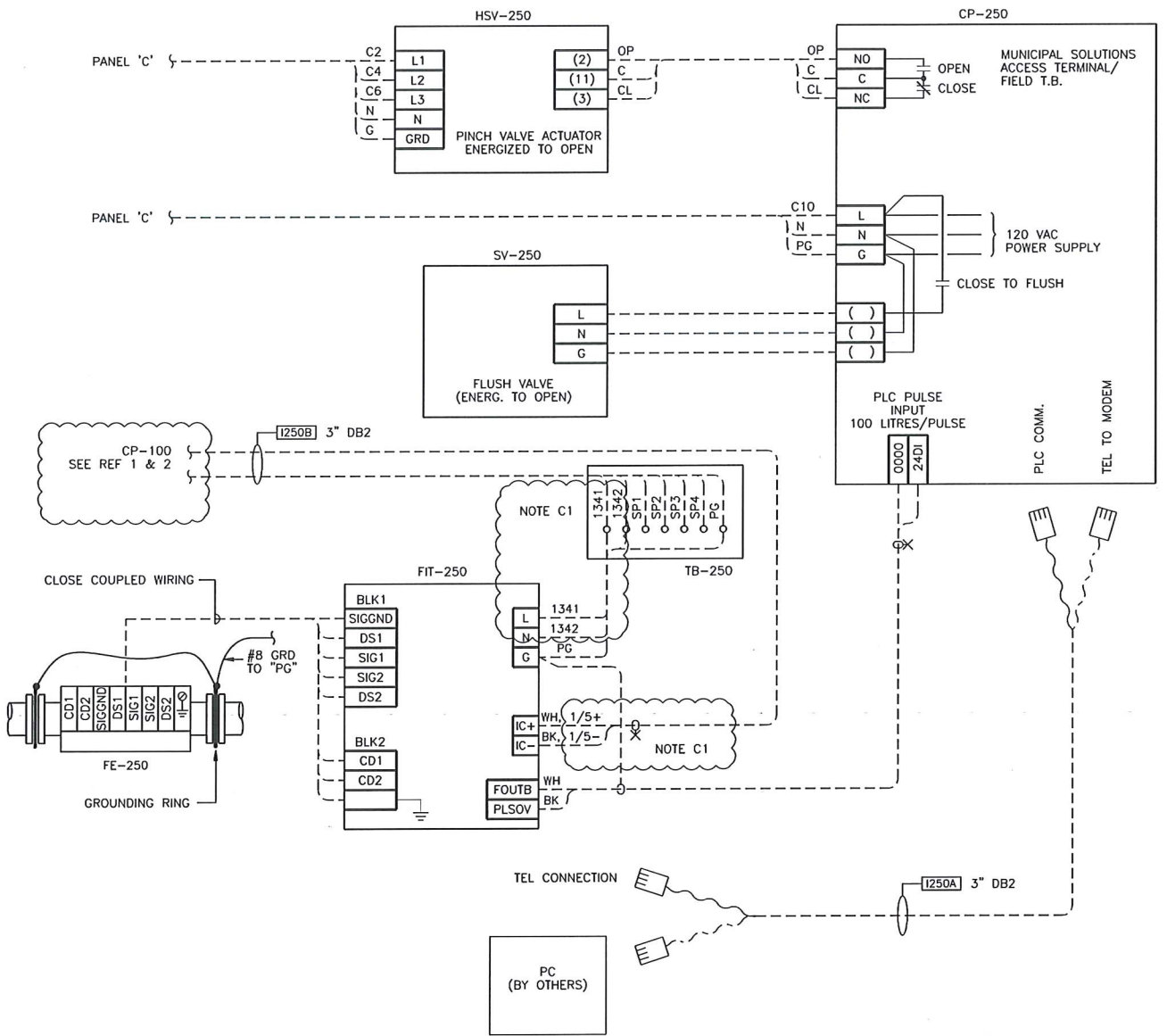
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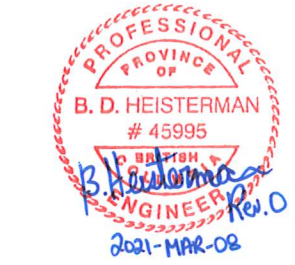


JUNCTION CHAMBER GATE CONTROLS

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SEPTAGE RECEIVING SYSTEM



WIRING LEGEND	
	PANEL WIRING
	FIELD WIRING

TERMINAL BLOCK SYMBOLOGY:	
	120 VAC
	24 VDC/ANALOG
	FUSED DISCONNECT
	FEED THROUGH
	MCC-100 TERMINAL
	SHIELD BAR CONNECTION

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-104	CP-100 POWER DISTRIBUTION	1
CRPS-I-105	CP-100 SLOT 1 ANALOG INPUT	2
CRPS-I-123	HMI-100 PANEL SCHEMATICS	3
CRPS-I-108	CP-100 SLOT 7&8 DIGITAL INPUT	4
CRPS-E-105	SINGLE LINE DIAGRAM	5

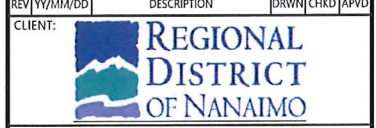
NOTES:
1. DRAWING IS CREATED AND RE-HUMBERED FROM CH3-708 REV 4. ALL CHANGES AND UPDATES FROM EXISTING DRAWING ARE CLOUDED.

FABRICATION NOTES:
F1. ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
F2. ALL WIRES TO BE LABELED AT BOTH ENDS.

CONSTRUCTION NOTES:
C1. CONTRACTOR TO RE-TAG CONDUCTORS AT FIT-250.
C2. CONTRACTOR TO REDLINE TERMINAL NUMBER.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH



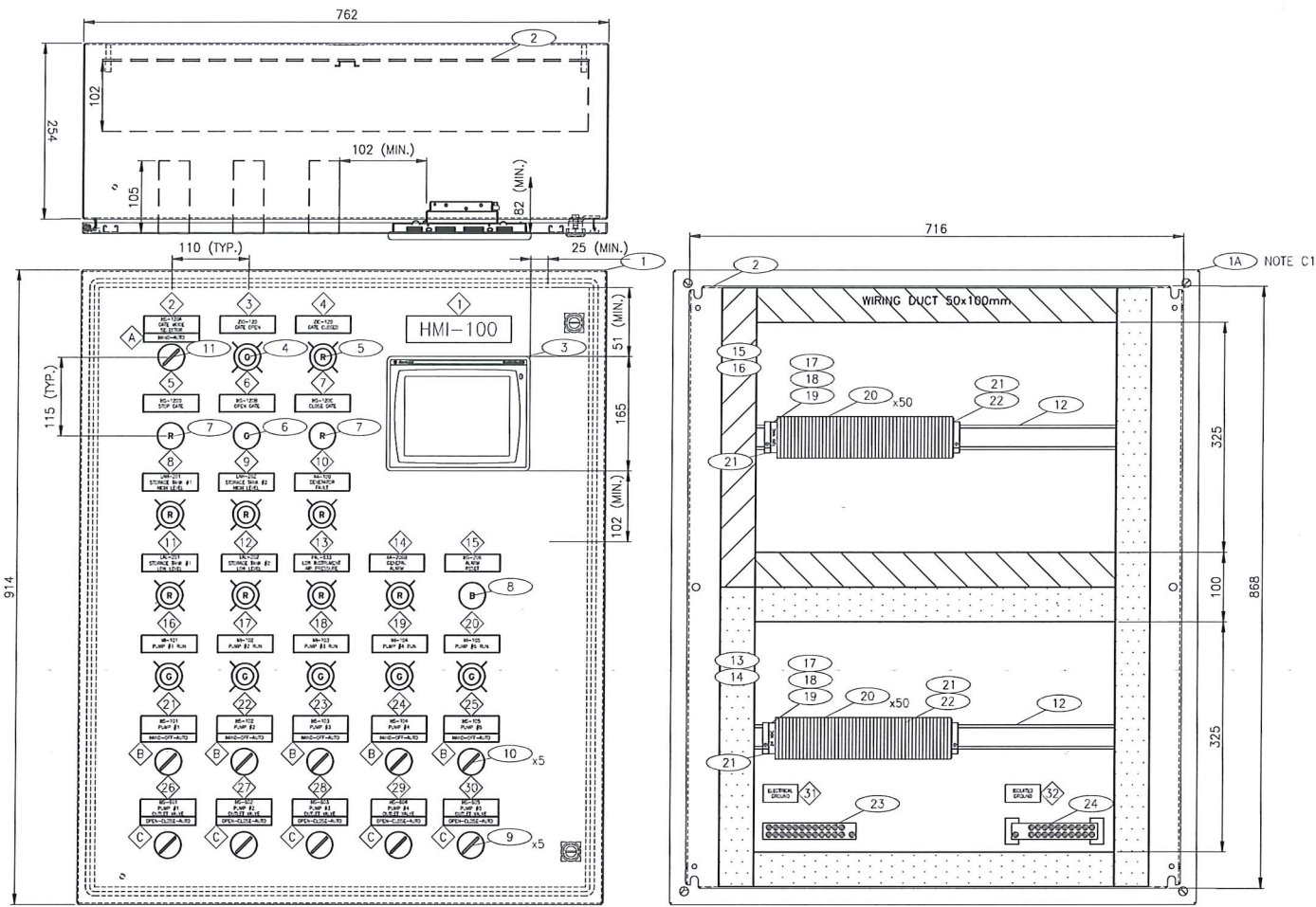
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PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

CHASE RIVER PUMP STATION UPGRADE

INSTRUMENTATION SEPTAGE RECEIVING AND GATE CONTROL WIRING DETAILS

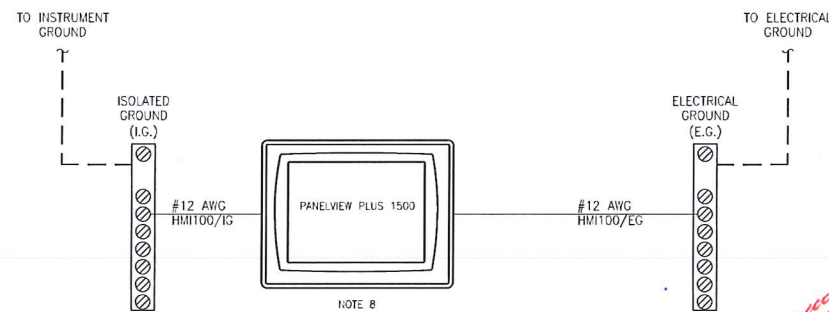
DWG NO:	CRPS-I-112	REV:	0
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FRONT VIEW – DOOR CLOSED
SCALE: 1:5

FRONT VIEW – DOOR REMOVED
SCALE: 1:5



GROUNDING DETAIL
SCALE: NTS

PROFESSIONAL
PROVINCE OF
B. D. HEISTERMAN
45995
BRITISH COLUMBIA
REGISTERED
ELECTRICAL ENGINEER
B. Heisterman Rev 0
2021-MAR-08

LAMACOIDS				
TAG #	TAG	COLOR	LAMACOID SIZE	TEXT HEIGHT
1	HMI-100	BLACK ON WHITE	7" x 2-1/2"	3/4" / 3/8"
2	HS-120A/GATE MODE SELECTOR	BLACK ON WHITE	1" x 3"	3/16"
3	ZIO-120/ GATE OPEN	BLACK ON WHITE	1" x 3"	3/16"
4	ZIC-120/GATE CLOSED	BLACK ON WHITE	1" x 3"	3/16"
5	HS-120D/STOP GATE	BLACK ON WHITE	1" x 3"	3/16"
6	HS-120B/OPEN GATE	BLACK ON WHITE	1" x 3"	3/16"
7	HS-120C/CLOSE GATE	BLACK ON WHITE	1" x 3"	3/16"
8	LAH-201/STORAGE TANK #1 HIGH LEVEL	BLACK ON WHITE	1" x 3"	3/16"
9	LAH-202/STORAGE TANK #2 HIGH LEVEL	BLACK ON WHITE	1" x 3"	3/16"
10	XA-100/GENERATOR FAULT	BLACK ON WHITE	1" x 3"	3/16"
11	LAL-201/STORAGE TANK #1 LOW LEVEL	BLACK ON WHITE	1" x 3"	3/16"
12	LAL-202/STORAGE TANK #2 LOW LEVEL	BLACK ON WHITE	1" x 3"	3/16"
13	PAL-633/LOW INSTRUMENT AIR PRESSURE	BLACK ON WHITE	1" x 3"	3/16"
14	XA-206B/GENERAL ALARM	BLACK ON WHITE	1" x 3"	3/16"
15	HS-206/ALARM RESET	BLACK ON WHITE	1" x 3"	3/16"
16	MI-101/PUMP #1 RUN	BLACK ON WHITE	1" x 3"	3/16"
17	MI-102/PUMP #2 RUN	BLACK ON WHITE	1" x 3"	3/16"
18	MI-103/PUMP #3 RUN	BLACK ON WHITE	1" x 3"	3/16"
19	MI-104/PUMP #4 RUN	BLACK ON WHITE	1" x 3"	3/16"
20	MI-105/PUMP #5 RUN	BLACK ON WHITE	1" x 3"	3/16"
21	HS-101/PUMP #1	BLACK ON WHITE	1" x 3"	3/16"
22	HS-102/PUMP #2	BLACK ON WHITE	1" x 3"	3/16"
23	HS-103/PUMP #3	BLACK ON WHITE	1" x 3"	3/16"
24	HS-104/PUMP #4	BLACK ON WHITE	1" x 3"	3/16"
25	HS-105/PUMP #5	BLACK ON WHITE	1" x 3"	3/16"
26	HS-601/PUMP #1 OUTLET VALVE	BLACK ON WHITE	1" x 3"	3/16"
27	HS-602/PUMP #2 OUTLET VALVE	BLACK ON WHITE	1" x 3"	3/16"
28	HS-603/PUMP #3 OUTLET VALVE	BLACK ON WHITE	1" x 3"	3/16"
29	HS-604/PUMP #4 OUTLET VALVE	BLACK ON WHITE	1" x 3"	3/16"
30	HS-605/PUMP #5 OUTLET VALVE	BLACK ON WHITE	1" x 3"	3/16"
31	ELECTRICAL GROUND	BLACK ON WHITE	1" x 3"	3/16"
32	ISOLATED GROUND	BLACK ON WHITE	1" x 3"	3/16"
A	HAND-AUTO	BLACK ON WHITE	1/2" x 3"	3/16"
B	HAND-OFF-AUTO	BLACK ON WHITE	1/2" x 3"	3/16"
C	OPEN-CLOSE-AUTO	BLACK ON WHITE	1/2" x 3"	3/16"

WIRE WAY LEGEND	
	WHITE - 24 VDC
	GREY - 120 VAC

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-101	CP-100 PANEL LAYOUT	1
CRPS-I-122	HMI-100 BILL OF MATERIAL	2

NOTES:

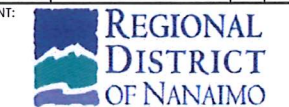
- FOR BILL OF MATERIALS, TERMINAL STRIP BREAKDOWNS & LAMACOIDS SEE CRPS-I-122.
- ALL LAMACOIDS/LABELLING TO BE PROVIDED/INSTALLED BY PANEL VENDOR.
- NAME PLATE SHALL BE MOUNTED WITH STAINLESS STEEL SELF TAPPING SCREWS ON THE OUTSIDE OF THE CONTROL PANEL DOOR. ENSURE PANEL NEMA RATING INTEGRITY IS MAINTAINED.
- ALL CABLES SHALL ENTER PANEL FROM THE TOP ONLY.
- ALL INTERNAL CABINET WIRING TO BE ON LEFT HAND SIDE WHEREVER POSSIBLE. ALL FIELD CABLES TERMINATE ON RIGHT HAND SIDE.
- COMPLETED CABINET TO MEET CSA APPROVAL.
- PANEL VENDOR TO MOUNT TS35 DIN RAIL ON STAND-OFFS. TERMINALS TO BE FLUSH WITH THE TOP OF THE WIRE DUCT.
- PANELVIEW PLUS FUNCTIONAL EARTH CONNECTION ON BACK OF DISPLAY TO IG AND PROTECTIVE EARTH CONNECTION AT THE POWER INPUT TERMINAL TO EG.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
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CLIENT: REGIONAL DISTRICT OF NANAIMO



CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/03
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

PROJECT: CHASE RIVER PUMP STATION UPGRADE

CHASE RIVER PUMP STATION UPGRADE

TITLE: HMI-100 PANEL LAYOUT

DWG NO:	CRPS-I-121	REV:	0
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Date: 2021/03/08 10:56 AM | User: Ava Fu | File: P:\NAI\2020\03\251 RDN-Chase River Pump Stn Upgrade\1000-Design\1017-Inter\01-Production\CRPS-I-122 | Layout: REV 0 | Paper Size: 863.6mm x 558.8mm

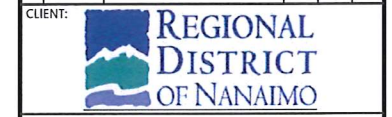
BILL OF MATERIALS					
ITEM	QUANTITY	DESCRIPTION	MAKE	MODEL	PROVIDED BY
1	1	MILD STEEL WALLMOUNT ENCLOSURE, HINGE DOOR WITH QUARTER TURN 36" X 30" X 10"	HAMMOND	EN45D363010LG	PANEL VENDOR
2	1	BACK PANEL 36" X 30"	HAMMOND	EP3630	PANEL VENDOR
3	1	PANELVIEW PLUS6 1500 HMI, 120VAC, TOUCH SCREEN WITH KEYPAD, WINDOW S CE	ALLEN BRADLEY	2711P-B15C4A8	OWNER SUPPLIED
4	6	30 mm PILOT LIGHT, GREEN, 12-130 V AC/DC, LED, PUSH-TO-TEST, METAL	ALLEN BRADLEY	800T-QTH2G	PANEL VENDOR
5	8	30 mm PILOT LIGHT, RED, 12-130 V AC/DC, LED, PUSH-TO-TEST, METAL	ALLEN BRADLEY	800T-QTH2R	PANEL VENDOR
6	1	30 mm FLUSH HEAD PUSH BUTTON, GREEN, 1 N.O. - 1 N.C., METAL	ALLEN BRADLEY	800T-A1A	PANEL VENDOR
7	2	30 mm FLUSH HEAD PUSH BUTTON, RED, 1 N.O. - 1 N.C., METAL	ALLEN BRADLEY	800T-A6A	PANEL VENDOR
8	1	30 mm FLUSH HEAD PUSH BUTTON, BLACK, 1 N.O. - 1 N.C., METAL	ALLEN BRADLEY	800T-A2A	PANEL VENDOR
9	5	30 mm 3-POSITION SELECTOR SWITCH, MAINTAINED, 2 N.O. - 2 N.C., METAL	ALLEN BRADLEY	800T-J2B	PANEL VENDOR
10	5	30 mm 3-POSITION SELECTOR SWITCH, MAINTAINED, 3 N.O. - 3 N.C., METAL	ALLEN BRADLEY	800T-J2H	PANEL VENDOR
11	1	30 mm 2-POSITION SELECTOR SWITCH, MAINTAINED, 2 N.O. - 2 N.C., METAL	ALLEN BRADLEY	800T-H2B	PANEL VENDOR
12	A/R	TS-35 DIN MOUNTING RAIL	HAMMOND	2D2K20	PANEL VENDOR
13	A/R	PVC WIRE DUCT WHITE - 2"W x 4"H NARROW SLOT	PANDUIT	F2X4WH5	PANEL VENDOR
14	A/R	PVC WIRE DUCT COVER WHITE - 2" WIDE	PANDUIT	C2WH5	PANEL VENDOR
15	A/R	PVC WIRE DUCT GREY - 2"W x 4"H NARROW SLOT	PANDUIT	F2X4LG6	PANEL VENDOR
16	A/R	PVC WIRE DUCT COVER GREY - 2" WIDE	PANDUIT	C2LG6	PANEL VENDOR
17	2	LABEL HOLDERS - DIN RAIL MOUNT SCHK-5S	WEIDMULLER	1631930000	PANEL VENDOR
18	2	ESD 5 S DIN A4 WS TERMINAL LABEL FOR SCHK-5S HOLDER	WEIDMULLER	1631920000	PANEL VENDOR
19	2	SCHK-5S LABEL COVER	WEIDMULLER	1631940000	PANEL VENDOR
20	100	FEED THROUGH TERMINAL BLOCK (SINGLE WDU 2.5) - 20 A, 600 V, #12-#26 AWG	WEIDMULLER	1020000000	PANEL VENDOR
21	2	TERMINAL BLOCK END CLAMPS - EW 35 FOR TS35 RAIL	WEIDMULLER	383560000	PANEL VENDOR
22	4	TERMINAL BLOCK END PLATE - WAP 2.5-10	WEIDMULLER	1050000000	PANEL VENDOR
23	A/R	COPPER GROUND BAR (MINIMUM 1/4" THICK x 1" WITH MINIMUM THEN (10) GROUNDING SCREWS SUITABLE FOR #14 AWG TO #4 AWG CONDUCTORS, AND ONE (1) GROUND LUG SUITABLE FOR #2 AWG CONDUCTOR	OPEN	OPEN	PANEL VENDOR
24	A/R	COPPER GROUND BAR (MINIMUM 1/4" THICK x 1" WITH MINIMUM THEN (10) GROUNDING SCREWS SUITABLE FOR #14 AWG TO #4 AWG CONDUCTORS, AND ONE (1) GROUND LUG SUITABLE FOR #2 AWG CONDUCTOR, MOUNTED ON ISOLATED STANDOFF	OPEN	OPEN	PANEL VENDOR

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-121	HMI-100 PANEL LAYOUT	1
CRPS-I-123	HMI-100 PANEL SCHEMATICS	2

ISSUED FOR
CONSTRUCTION
Date: 2021/03/08

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REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH



CLIENT NO:	-	DRWN:	AF	DATE:	20/12/21
PROJECT NO:	2003251	DSGN:	AF	DATE:	20/12/21
DRAWING SIZE:	ANSI "D"	CHKD:	JAK	DATE:	21/03/08
SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

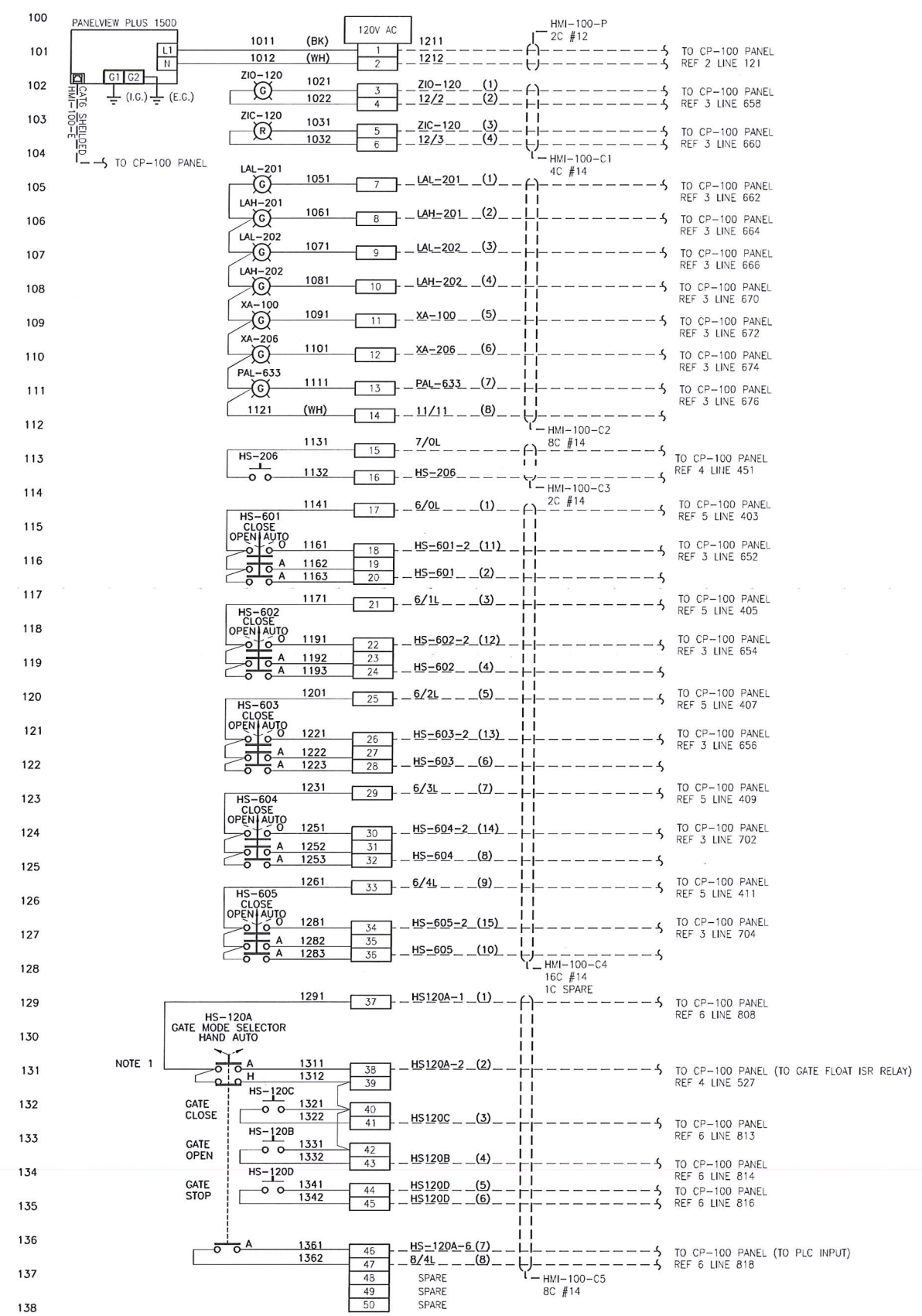
PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
HMI-100 BILL OF MATERIAL

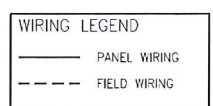
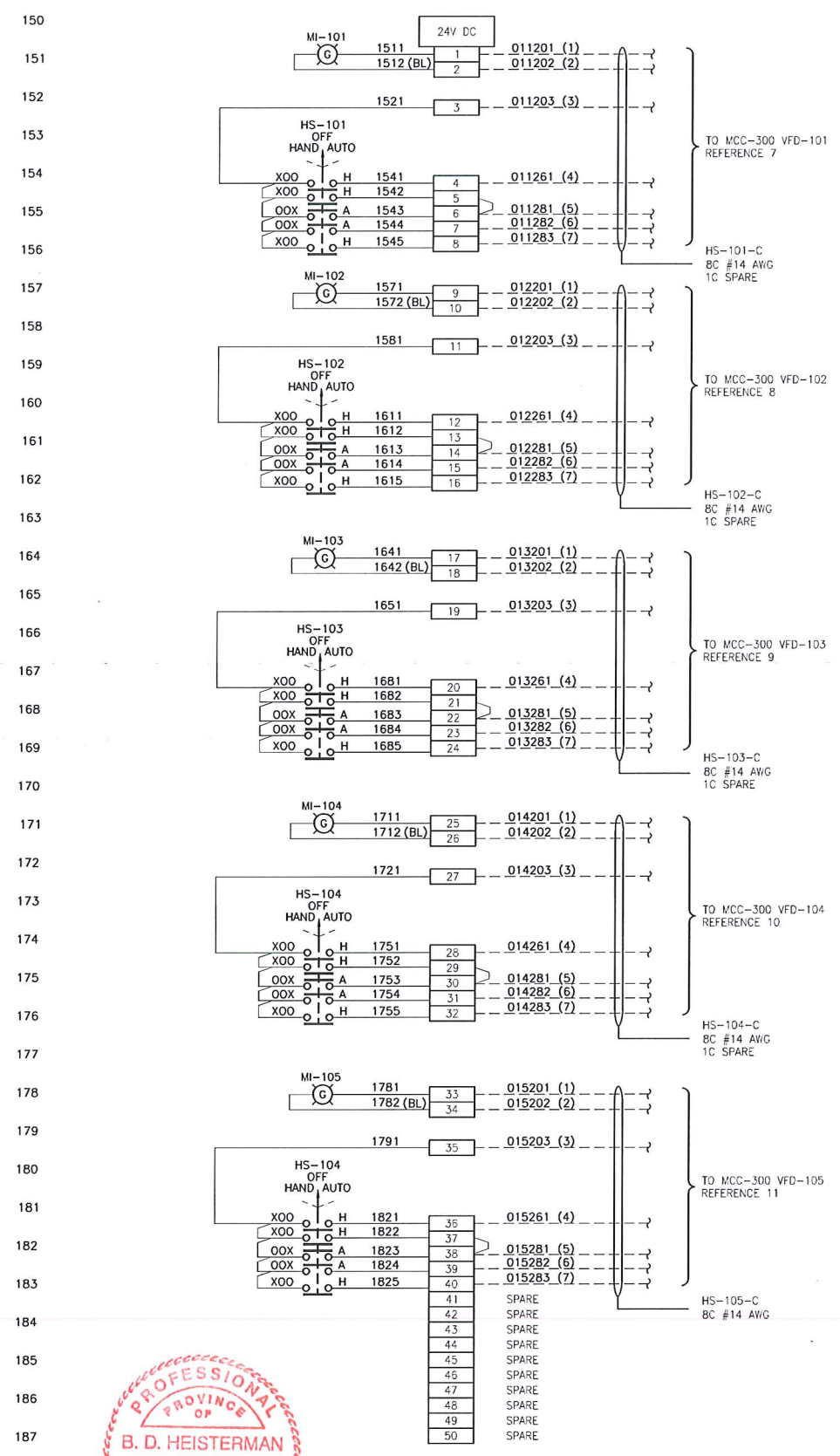
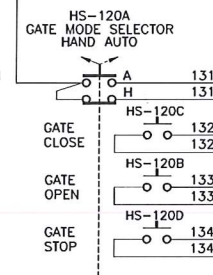
DWG NO:	CRPS-I-122	REV:	0
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Date: 2021/03/07 10:35 PM | User: Ava Fu | File: P:\NAVA\2020\2003251 RDN-Case River Pump Stn Upgrade\1000-Dwg\1017-Inst\01-Production\CRPS-I-123 | Layout: REV 0 | Paper Size: 863.6mm x 558.8mm



NOTE 1



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
CRPS-I-121	HMI-100 PANEL LAYOUT	1
CRPS-I-103	CP-100 POWER DISTRIBUTION	2
CRPS-I-110	CP-100 SLOT 11&12 OUTPUTS	3
CRPS-I-108	CP-100 SLOT 7&8 DIGITAL INPUT	4
CRPS-I-107	CP-100 SLOT 5&6 DIGITAL INPUT	5
CRPS-I-112	GATE CONTROL WIRING DIAGRAM	6
CRPS-E-011	VFD-101 SCHEMATIC DIAGRAM	7
CRPS-E-012	VFD-102 SCHEMATIC DIAGRAM	8
CRPS-E-013	VFD-103 SCHEMATIC DIAGRAM	9
CRPS-E-014	VFD-104 SCHEMATIC DIAGRAM	10
CRPS-E-015	VFD-105 SCHEMATIC DIAGRAM	11

NOTES:

- WHEN IN AUTO THE GATE WILL CLOSE IF LSHH-206B IS ACTIVATED. THERE IS NO OUTPUT FROM THE PLC TO COMMAND THE GATE TO CLOSE. IN AUTO THE GATE WILL OPEN FROM PLC OUTPUT COMMAND HSV-120.

FABRICATION NOTES:

- ALL PANEL DISCRETE WIRING TO BE #16 AWG UNLESS OTHERWISE SPECIFIED.
- ALL WIRES TO BE LABELLED AT BOTH ENDS.
- ALL 120VAC PANEL WIRING TO BE BLACK AND ALL 24VDC PANEL WIRING TO BE RED UNLESS OTHERWISE SPECIFIED.

ISSUED FOR CONSTRUCTION
Date: 2021/03/08

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0	21/03/08	ISSUED FOR CONSTRUCTION	AF	BDH	BDH
REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD



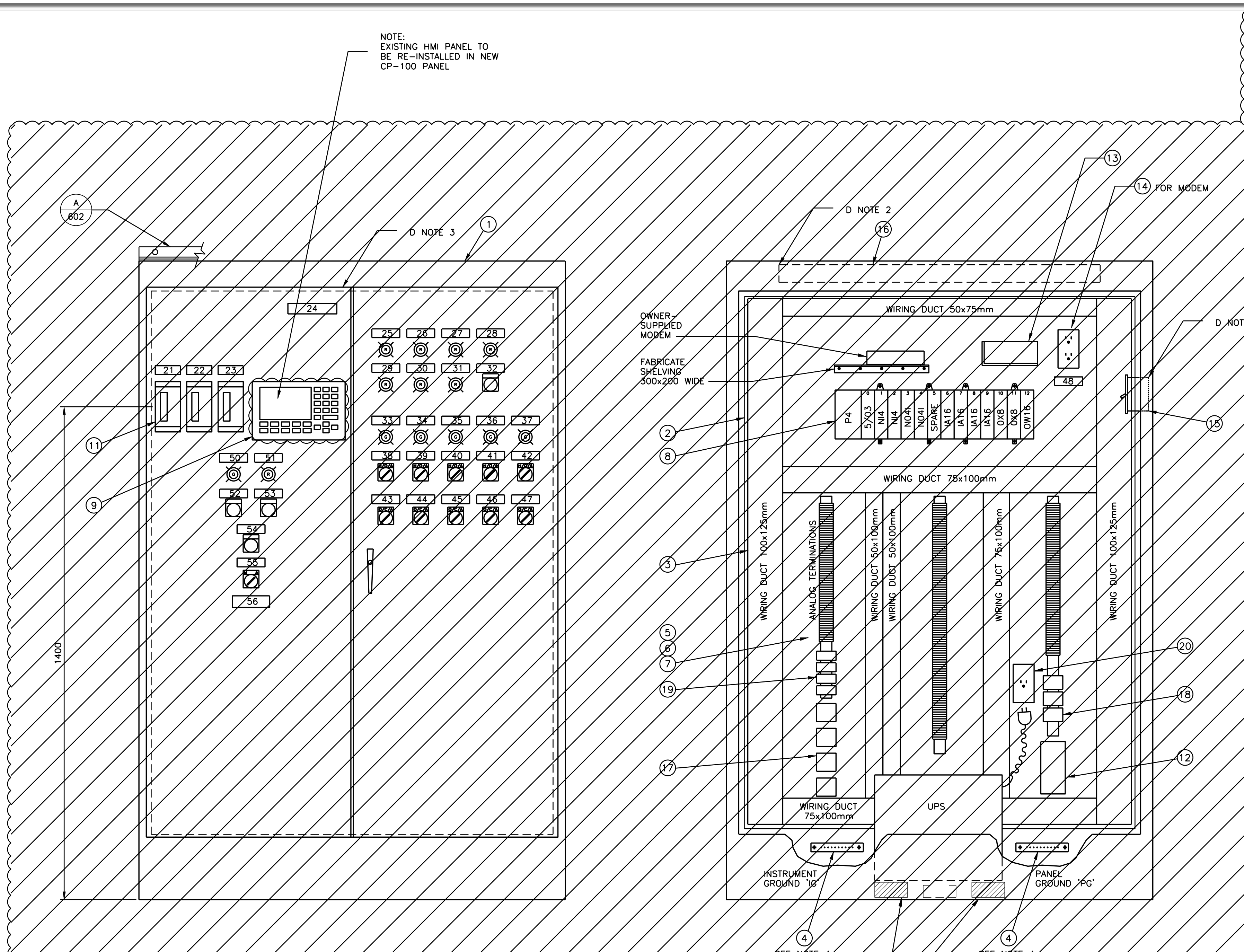
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SCALE:	AS NOTED	APVD:	BDH	DATE:	21/03/08

PROJECT:
CHASE RIVER PUMP STATION UPGRADE

TITLE:
HMI-100 PANEL SCHEMATICS

DWG NO:	CRPS-I-123	REV:	0
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2002/08/20 11:48:16 ST 20920st - G:\982819\CH\instr_28193701.dwg



NOTE:
EXISTING HMI PANEL TO
BE RE-INSTALLED IN NEW
CP-100 PANEL

D NOTE 3

D NOTE 2

D NOTE 2

OWNER-SUPPLIED
MODEM

FABRICATE
SHELVING
300x200
WIDE

WIRING DUCT 50x75mm

WIRING DUCT 75x100mm

WIRING DUCT 100x125mm

WIRING DUCT 90x100mm

WIRING DUCT 50x100mm

WIRING DUCT 75x100mm

WIRING DUCT 100x125mm

INSTRUMENT
GROUND 'IG'

PANEL
GROUND 'PG'

SEE NOTE 4

SEE NOTE 4

BLOCKING TO SECURE UPS
TO BOTTOM OF PANEL

BILL OF MATERIAL

ITEM	QUANTITY	MAKE	MODEL	DESCRIPTION
1	1	HAMMOND	1418 ZW18	ENCLOSURE 72" X 48" X 18" (1830mm X 1219mm X 457mm) C/W TWO HINGED DOORS AND AUTOMOTIVE TYPE HANDLE
2	1	HAMMOND	72ZWPW	BACK PANEL 60" X 44" (1524mm X 1118mm)
3	AS REQUIRED		SNAP IN SKOT STYLE	WIRING DUCT
4	2			COPPER GROUND BAR 25x150x6mm
5	AS REQUIRED	WEIDMULLER	TS-32xWVRI	RAIL C/W END BRACKET
6	AS REQUIRED	WEIDMULLER	SAK4	TERMINALS
7	AS REQUIRED	WEIDMULLER		FUSED TERMINAL
8	1	A-B	SLC 5/03	PLC ASSEMBLY AS SPECIFIED
9	1	A-B	PANEL VIEW 550	OPERATOR INTERFACE PANEL AS SPECIFIED
10	AS REQUIRED	IDEC		SELECTOR SWITCHES/ PUSHBUTTONS/LIGHTS
11	3	MILLTRONICS	MINIRANGER PLUS	LEVEL TRANSMITTERS AS SPECIFIED
12	1	TYCOR	AGS120XS	TVSS, 15 AMP CAPACITY
13	1	POWER-ONE	MAP55-1024	24 VDC POWER SUPPLY
14	1			120VAC DUPLEX RECEPTACLE
15	1			PANEL LIGHT SWITCH
16	1			FLUORESCENT STRIP LIGHT
17	4	SEE SPEC.	SEE SPEC.	INTRINSICALLY SAFE RELAY
18	3	SEE SPEC.	SEE SPEC.	RELAY, 120VAC COIL
19	4	SEE SPEC.	SEE SPEC.	RELAY, 24VDC COIL
20	1			120 VAC SIMPLEX RECEPTACLE

NAMEPLATE NOTES:

- 2 PLY LAMINATED PLASTIC, 3mm THICK, WHITE FACE, BLACK CORE, BEVELLED EDGES.
- TAG NUMBER ON TOP LEFT, REMAINING TEXT IS CENTERED.
- VERIFY THAT THE NAMEPLATE SIZES ARE ADEQUATE BEFORE FABRICATION.

ITEM	WORDING
21	LIT-201 STORAGE TANK #1
22	LIT-202 STORAGE TANK #2
23	LIT-205 WET WELL
24	CP-100 CONTROL PANEL
25	LAH-201 STORAGE TANK #1 HIGH LEVEL
26	LAH-202 STORAGE TANK #2 HIGH LEVEL
27	XA-100 GENERATOR FAULT
28	XA-206B GENERAL ALARM
29	LAL-201 STORAGE TANK #1 LOW LEVEL
30	LAL-202 STORAGE TANK #2 LOW LEVEL
31	PAL-633 LOW INSTRUMENT AIR PRESSURE
32	HS-206 ALARM RESET
33	MI-101B PUMP #1 RUN
34	MI-102B PUMP #2 RUN
35	MI-103B PUMP #3 RUN
36	MI-104B PUMP #4 RUN
37	MI-105B PUMP #5 RUN

ITEM	WORDING
38	HS-101 PUMP #1
39	HS-102 PUMP #2
40	HS-103 PUMP #3
41	HS-104 PUMP #4
42	HS-105 PUMP #5
43	HS-601 PUMP #1 OUTLET VALVE
44	HS-602 PUMP #2 OUTLET VALVE
45	HS-603 PUMP #3 OUTLET VALVE
46	HS-604 PUMP #4 OUTLET VALVE
47	HS-605 PUMP #5 OUTLET VALVE
48	UPS-SUPPLY FOR INSTRUMENT USE ONLY
49	POWER SUPPLY FOR UPS ONLY
50	ZIO-120 GATE OPEN
51	ZIC-120 GATE CLOSED
52	HS-120B OPEN
53	HS-120C CLOSE
54	HS-120D STOP
55	HS-120A GATE MODE SELECTOR
56	G-120 JUNCTION CHAMBER GATE CONTROLS

NOTES:

- PLACE A GROUND TERMINAL AT THE TOP OF EACH TERMINAL BLOCK ROW AND PLACE AN END BRACKET AT THE BOTTOM OF THE ROW.
- PANEL GROUND BAR (PG) IS USED FOR GROUNDING PANEL CHASSIS, DOOR, INNER PANEL, 120 VAC DEVICES AND TECK CABLE GROUNDS.
- INSTRUMENT GROUND BAR (IG) IS USED FOR GROUNDING ANALOG CABLE SHIELDS AND THE 24 VDC POWER SUPPLY NEGATIVE TERMINAL.
- KEEP THE INSTRUMENT GROUND BAR ELECTRICALLY ISOLATED FROM THE PANEL AND FROM THE PANEL GROUND BAR EXCEPT FOR A 14 AWG WIRE CONNECTING THE TWO GROUND BARS.
- KEEP ANALOG WIRING SEPARATE FROM DISCRETE AND POWER WIRING AS MUCH AS POSSIBLE.
- THE 'BILL OF MATERIAL' ILLUSTRATES FEATURES REQUIRED AND ESTABLISHES THE QUALITY OF THE EQUIPMENT. OTHER PRODUCTS LISTED IN THE SPECIFICATIONS, WITH IDENTICAL FEATURES, ARE ACCEPTABLE.
- WIRE NUMBERS WILL BE THE SAME AS THE TERMINAL DESIGNATION UNLESS SHOWN OTHERWISE.

VERIFY SCALES
BAR IS BASED ON ORIGINAL DRAWING
0 20mm
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OR ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

NO.	DATE	ENG.	BY	SUBJECT
4	17 JUL 2013		RS	UPDATE DRAWINGS
3	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE CONTROLS ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	09 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	S.L./H.S./J.T.
DESIGNED	M.L.
CHECKED	
APPROVED	
APPROVED	
DATE	JAN 2002

ISSUED FOR
DEMOLITION
Date: 2021/03/08



DISTRICT PROJECT NUMBER
0810-20-CRPS-04

DISTRICT DRAWING NUMBER
CRPS-I-101

REGIONAL DISTRICT
OF NANAIMO

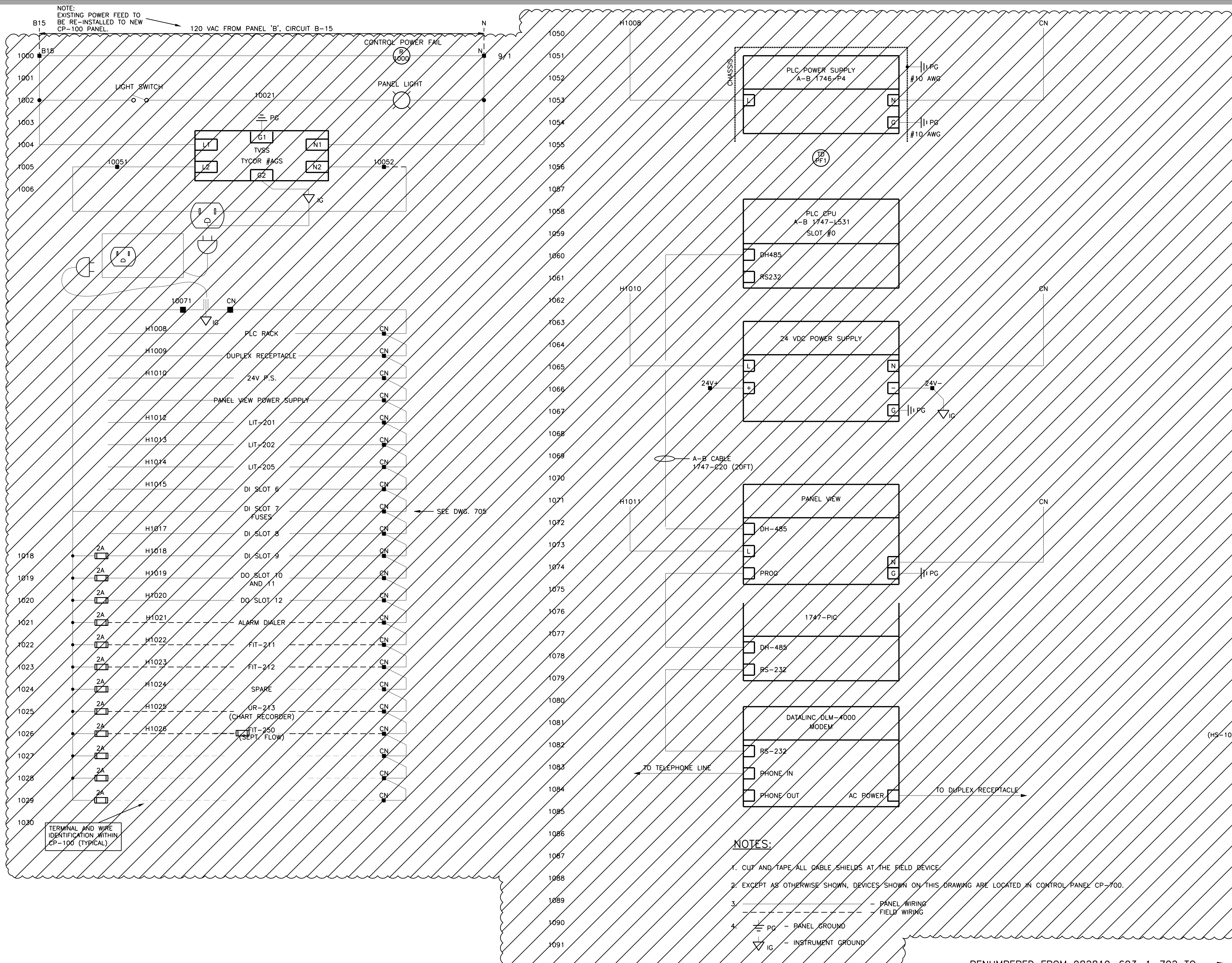
CHASE RIVER
PUMPING STATION UPGRADE

INSTRUMENTATION
CP-100 PANEL LAYOUT

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NO.	DATE	ENG.	BY	SUBJECT
3	29 JUNE 2013	RS	RS	DRAWINGS UPDATED
2	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	S.L.
DESIGNED	M.L.
CHECKED	J.G.
APPROVED	
APPROVED	
DATE	JULY 2001

ISSUED FOR DEMOLITION
Date: 2021/03/08



DISTRICT PROJECT NUMBER	0810-20-CRPS-04
DISTRICT DRAWING NUMBER	CRPS-I-102

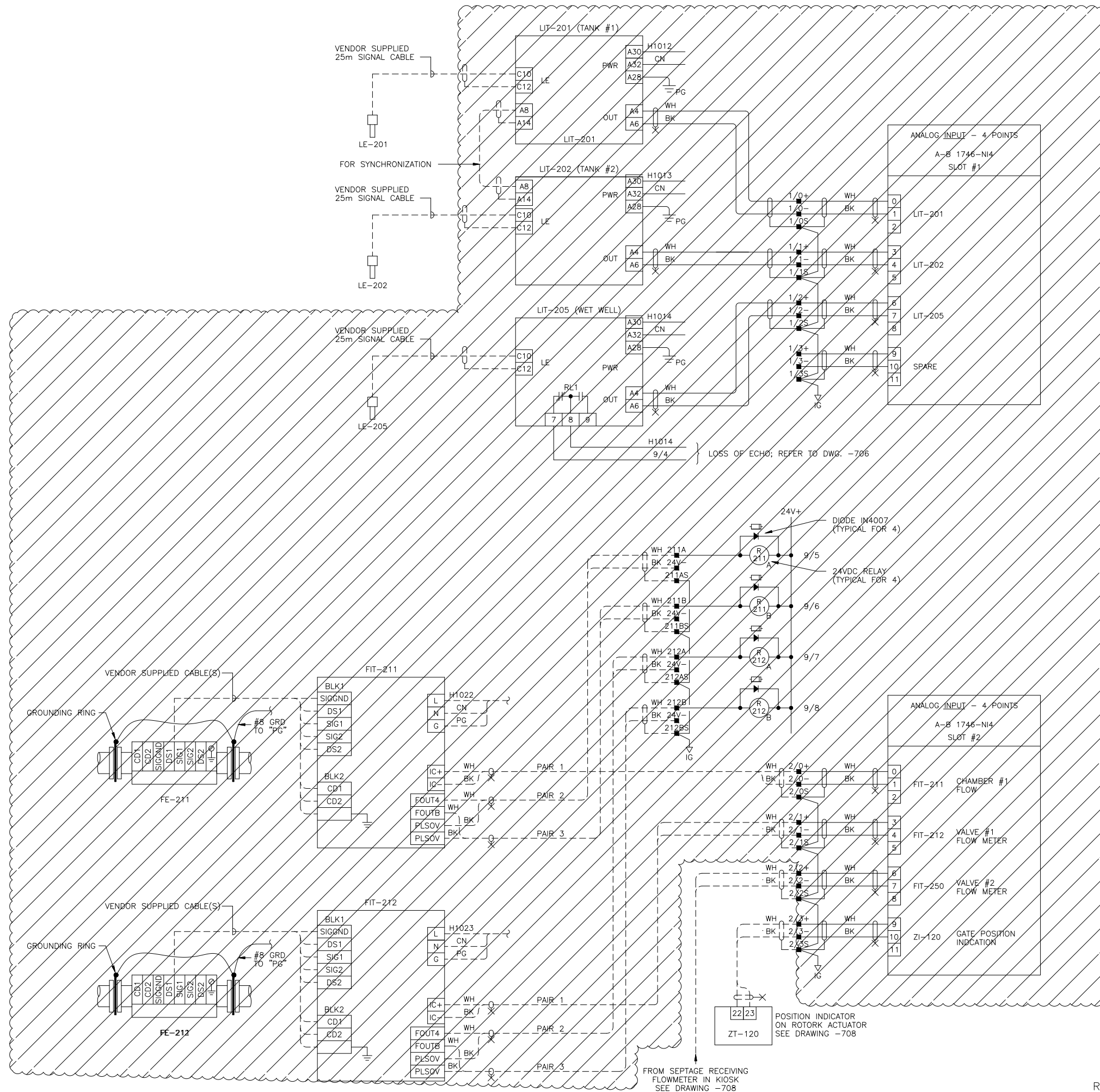
REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

INSTRUMENTATION CP-100 WIRING SHEET 1 OF 6

DRAWING NUMBER	REV. NO.	SHEET
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RENUMBERED FROM 982819-603-1-702 TO →



VERIFY SCALES
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NO.	DATE	ENG.	BY	SUBJECT
4	DEC 2012	JK	RS	DRAWINGS UPDATE
3	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE CONTROLS ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS	
PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	S.L.
DESIGNED	M.L.
CHECKED	J.G.
APPROVED	
APPROVED	
DATE	JULY 2001

ISSUED FOR DEMOLITION
 Date: 2021/03/08



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 DISTRICT DRAWING NUMBER
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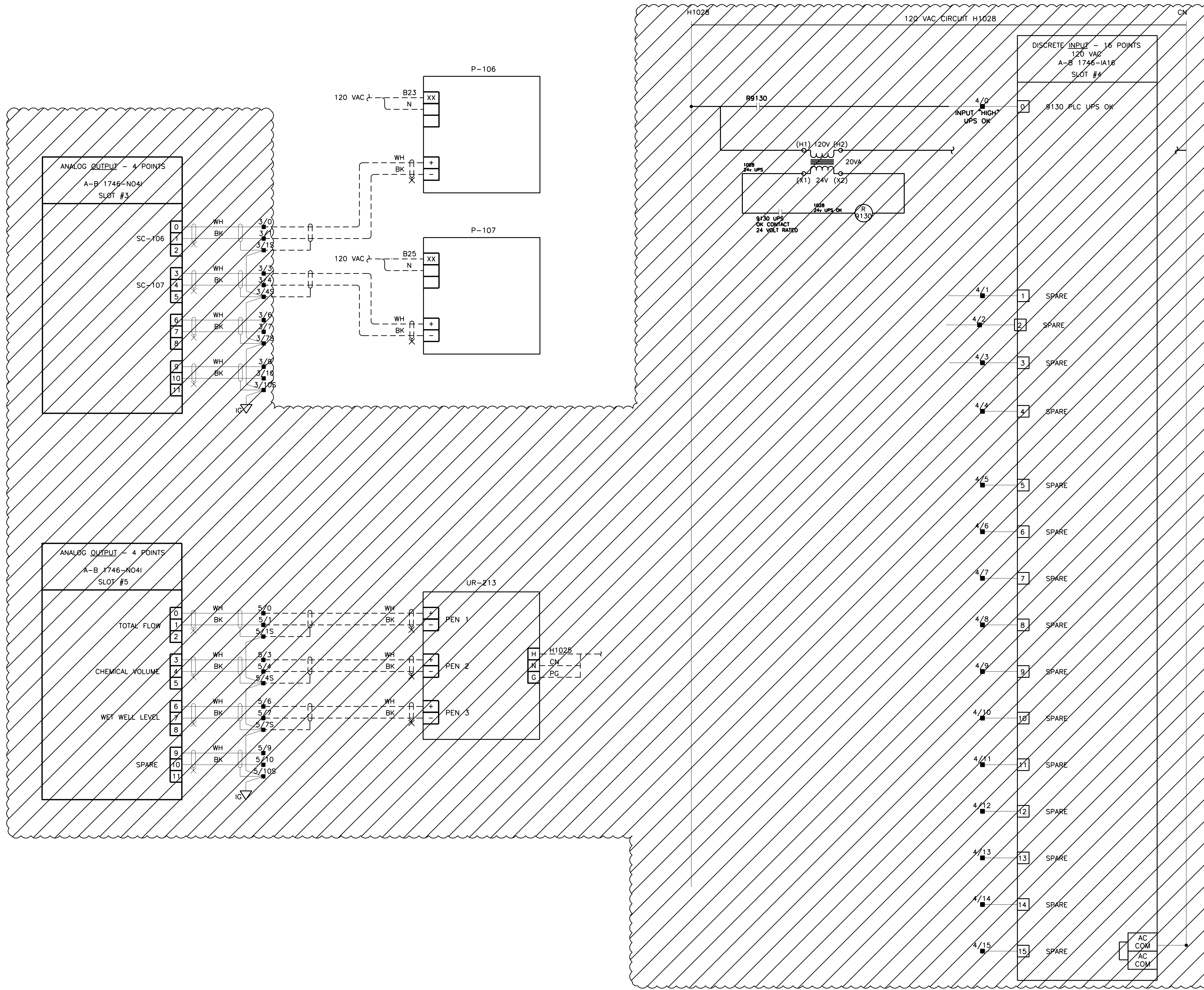
REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

INSTRUMENTATION
 CP-100 WIRING
 SHEET 2 OF 6

DRAWING NUMBER	REV. NO.	SHEET
CH3-703	4	

RENUMBERED FROM 982819-603-1-703 TO



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NO.	DATE	ENG.	BY	SUBJECT
3	25 MAY 2013	JK	RS.	RECORD DRAWING UPDATE
2	30 NOV. 00	K.M.	J.T.	RECORD DRAWING, STAGE 2
1	23 JUNE 00	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	14 APR 00	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-602
SCALE	N.T.S.
DRAWN	S.L./H.S.
DESIGNED	M.L.
CHECKED	D.S.W.
APPROVED	
APPROVED	
DATE	MARCH 2000

ISSUED FOR DEMOLITION
 Date: 2021/03/08



DISTRICT PROJECT NUMBER	0810-20-CRPS-04
DISTRICT DRAWING NUMBER	CRPS-I-104

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

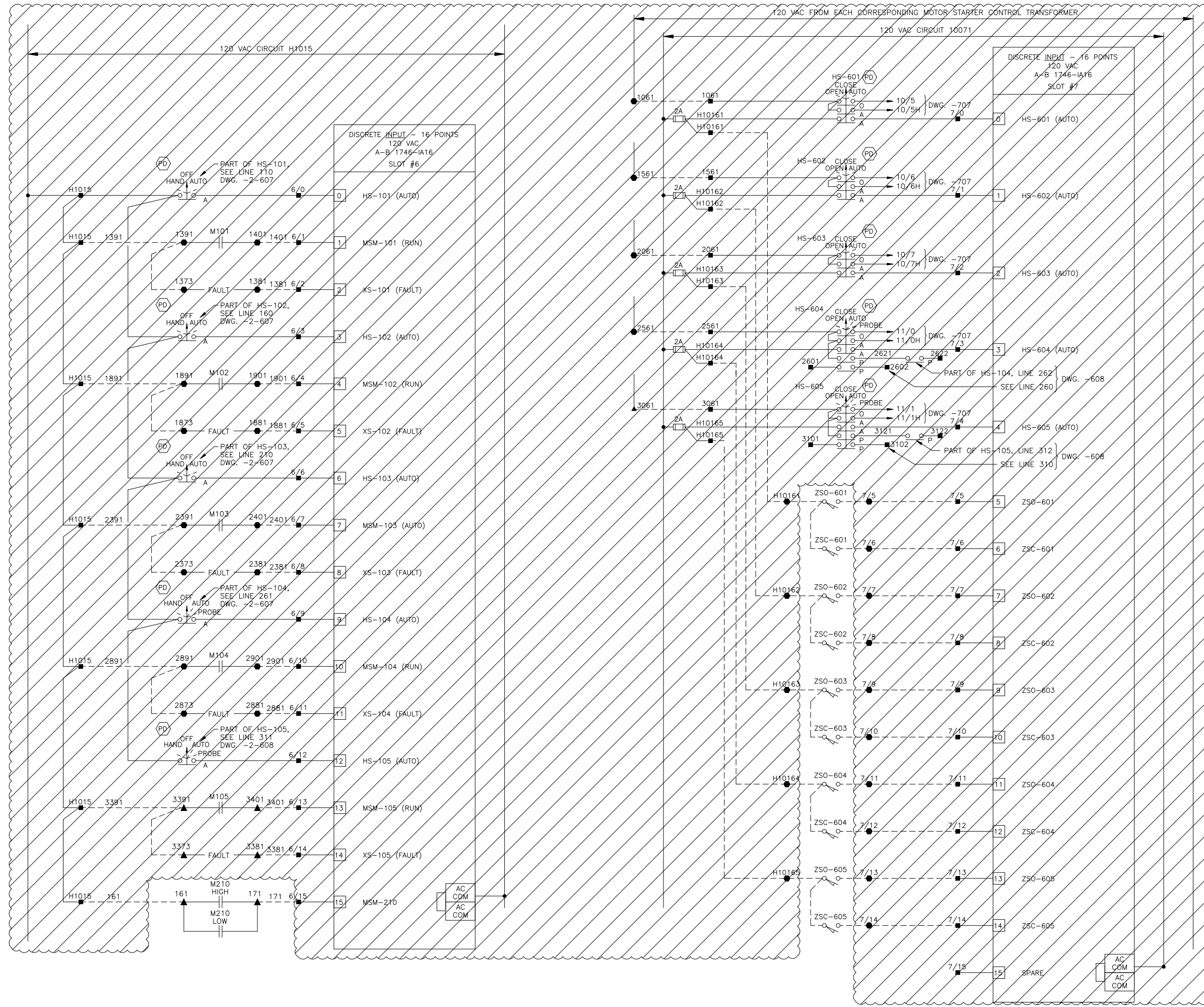
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 SHEET 3 OF 6

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RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OF ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

NO.	DATE	ENG.	BY	SUBJECT
3	25 MAY 2013	J.K.	R.S.	RECORD DRAWING UPDATE
2	30 NOV. 00	K.M.	J.T.	RECORD DRAWING, STAGE 2
1	23 JUNE 00	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	14 APR 00	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS	
PROJECT NO.	982819-602
SCALE	N.T.S.
DRAWN	J.T.
DESIGNED	J.T.
CHECKED	D.S.W.
APPROVED	
APPROVED	
DATE	MARCH 2000

ISSUED FOR DEMOLITION
 Date: 2021/03/08



DISTRICT PROJECT NUMBER
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 DISTRICT DRAWING NUMBER
 CRPS-1-105

REGIONAL DISTRICT OF NANAIMO

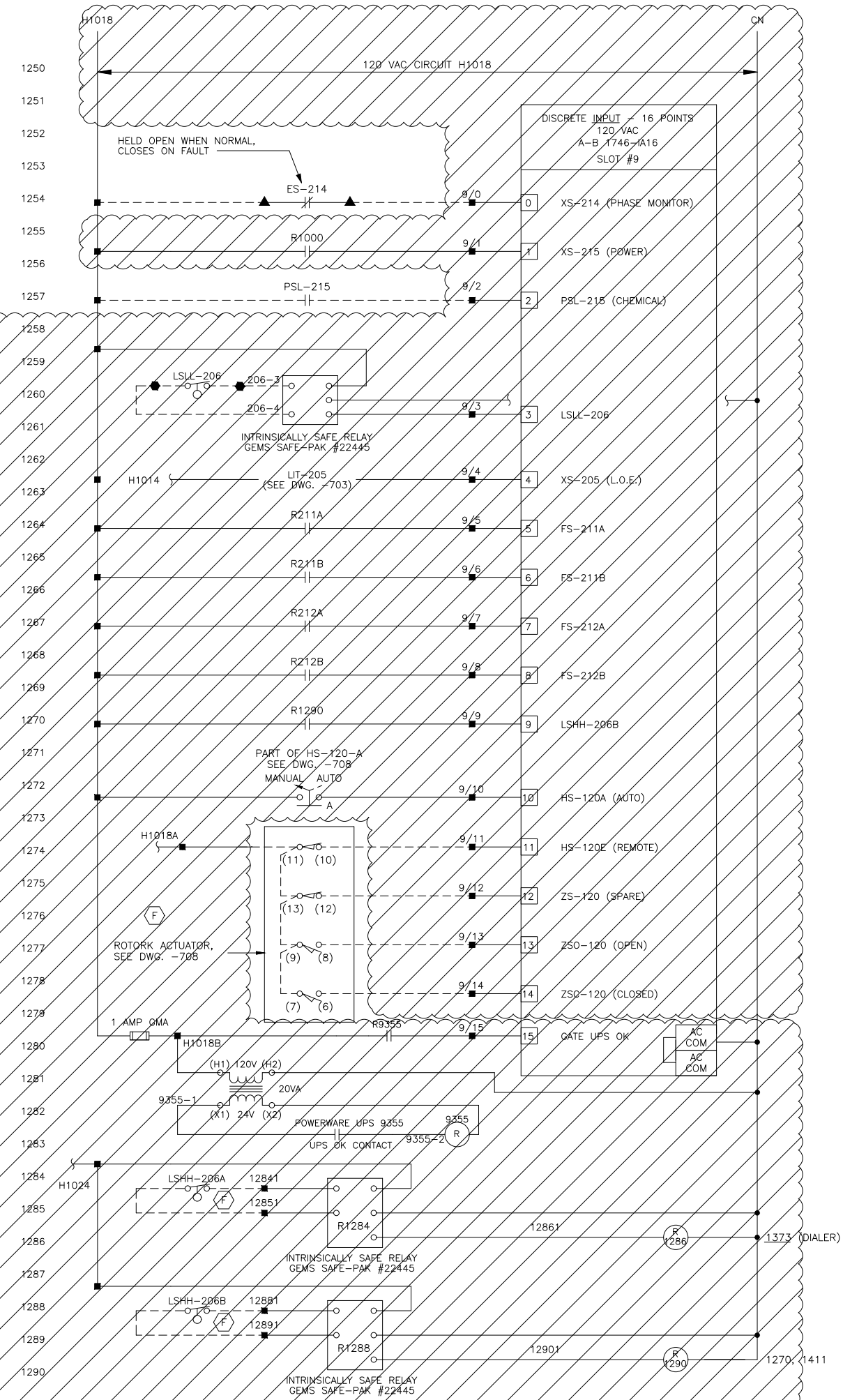
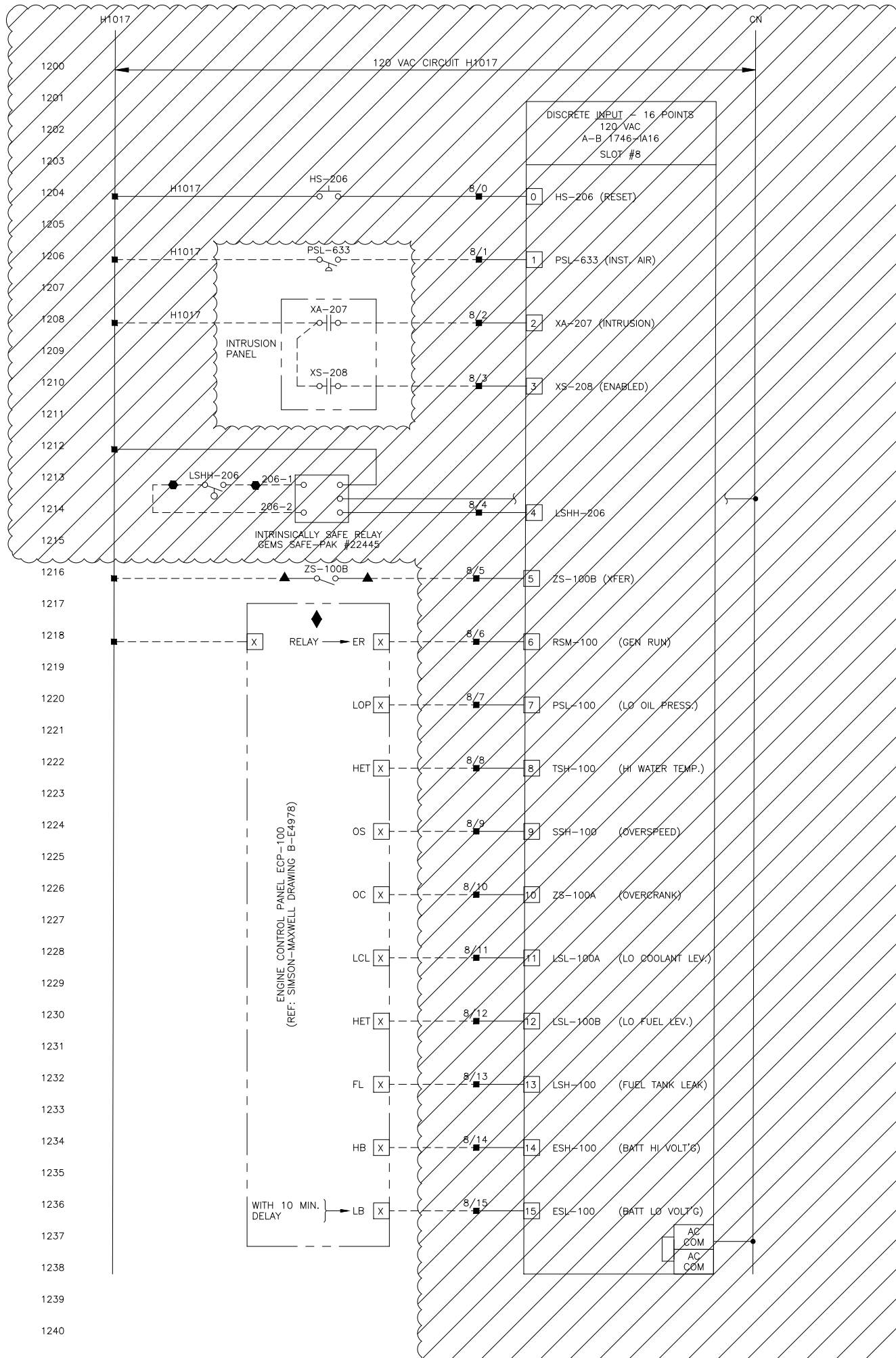
CHASE RIVER PUMPING STATION UPGRADE

INSTRUMENTATION
 CP-100 WIRING
 SHEET 4 OF 6

DRAWING NUMBER	REV. NO.	SHEET
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RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OF ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

NO.	DATE	ENG.	BY	SUBJECT
4	25 MAY 2013	J.K.	R.S.	RECORD DRAWING UPDATE
3	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
2	02 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE CONTROLS ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	09 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS	
PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	S.L./H.S.
DESIGNED	M.L.
CHECKED	J.G.
APPROVED	
DATE	JULY 2001

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DEMOLITION
Date: 2021/03/08

ASSOCIATED ENGINEERING

DISTRICT PROJECT NUMBER
0810-20-CRPS-04

DISTRICT DRAWING NUMBER
CRPS-I-106

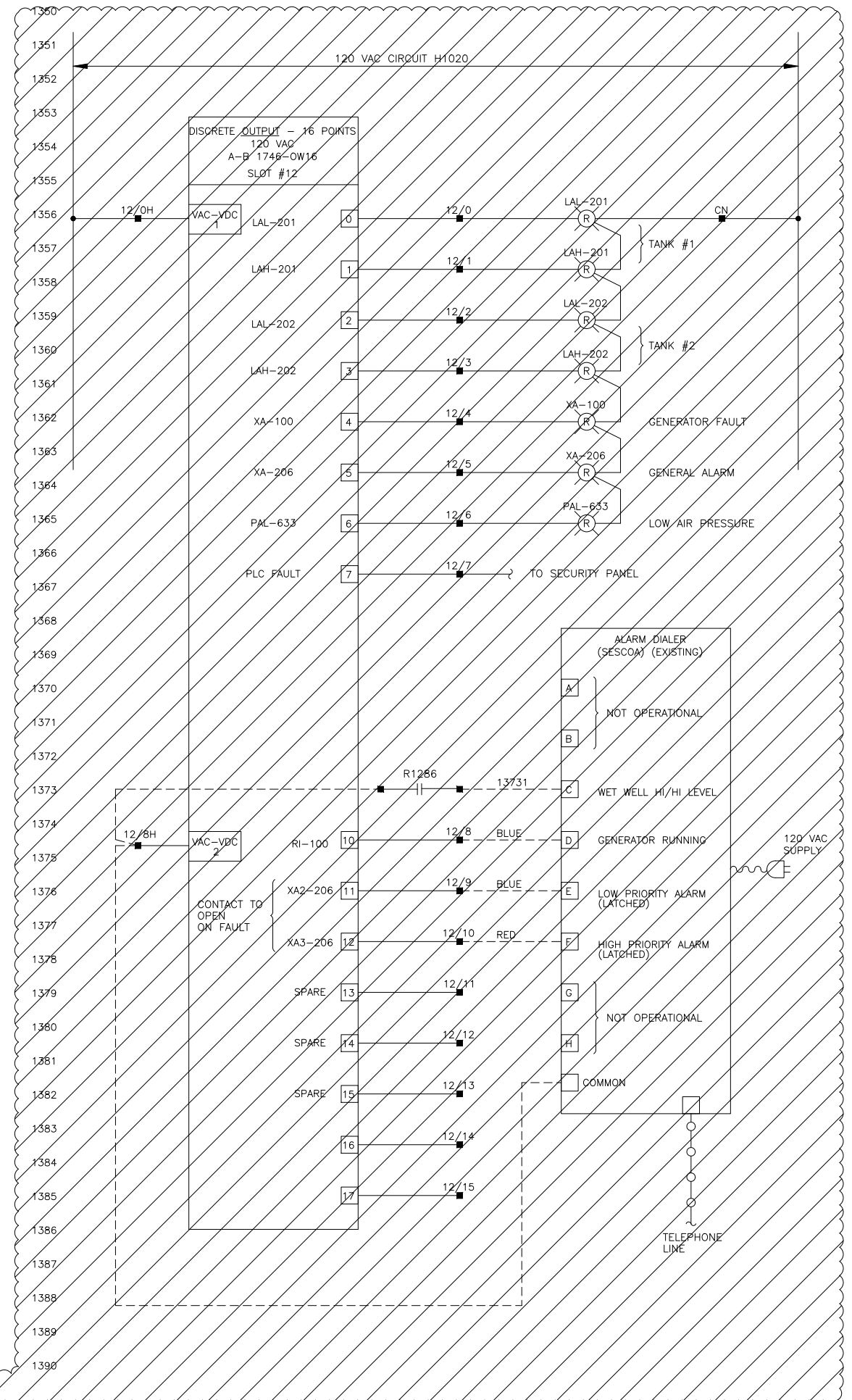
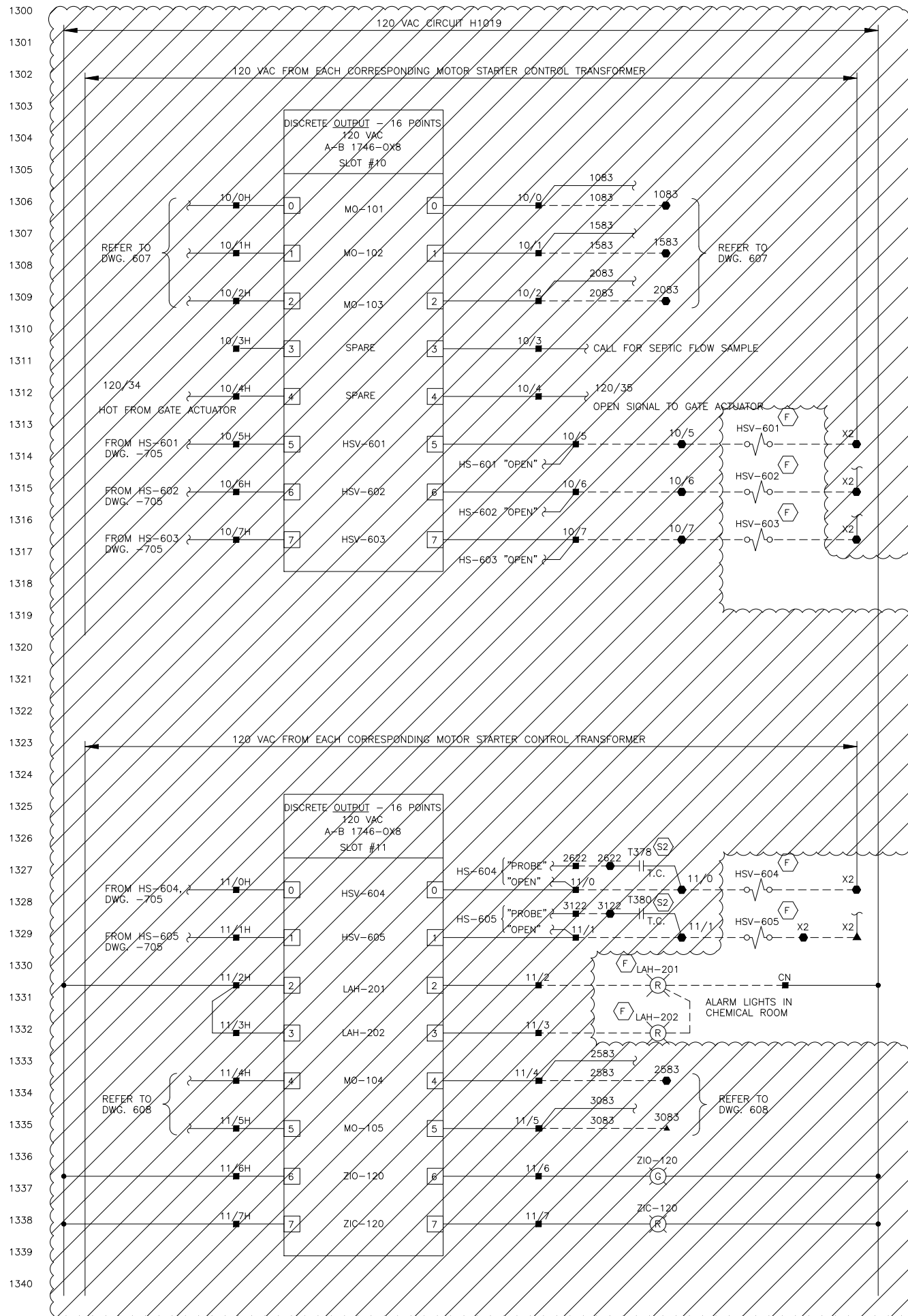
REGIONAL DISTRICT
OF NANAIMO

CHASE RIVER
PUMPING STATION UPGRADE

INSTRUMENTATION
CP-100 WIRING
SHEET 5 OF 6

DRAWING NUMBER	REV. NO.	SHEET
CH3-706	4	

RENUMBERED FROM 982819-603-1-706 TO



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RECORD DRAWING — NOT TO BE USED FOR CONSTRUCTION OF ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

NO.	DATE	ENG.	BY	SUBJECT
4	30 DEC 2012	JK	RS	RECORD DRAWING UPDATE
3	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE CONTROLS ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	09 AUG 2001	M.L.	J.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	J.T.
DESIGNED	M.L.
CHECKED	
APPROVED	
APPROVED	
DATE	JAN 2002

ISSUED FOR DEMOLITION
 Date: 2021/03/08



DISTRICT PROJECT NUMBER
 0810-20-CRPS-04
 DISTRICT DRAWING NUMBER
 CRPS-I-107

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

INSTRUMENTATION
 CP-100 WIRING
 SHEET 6 OF 6

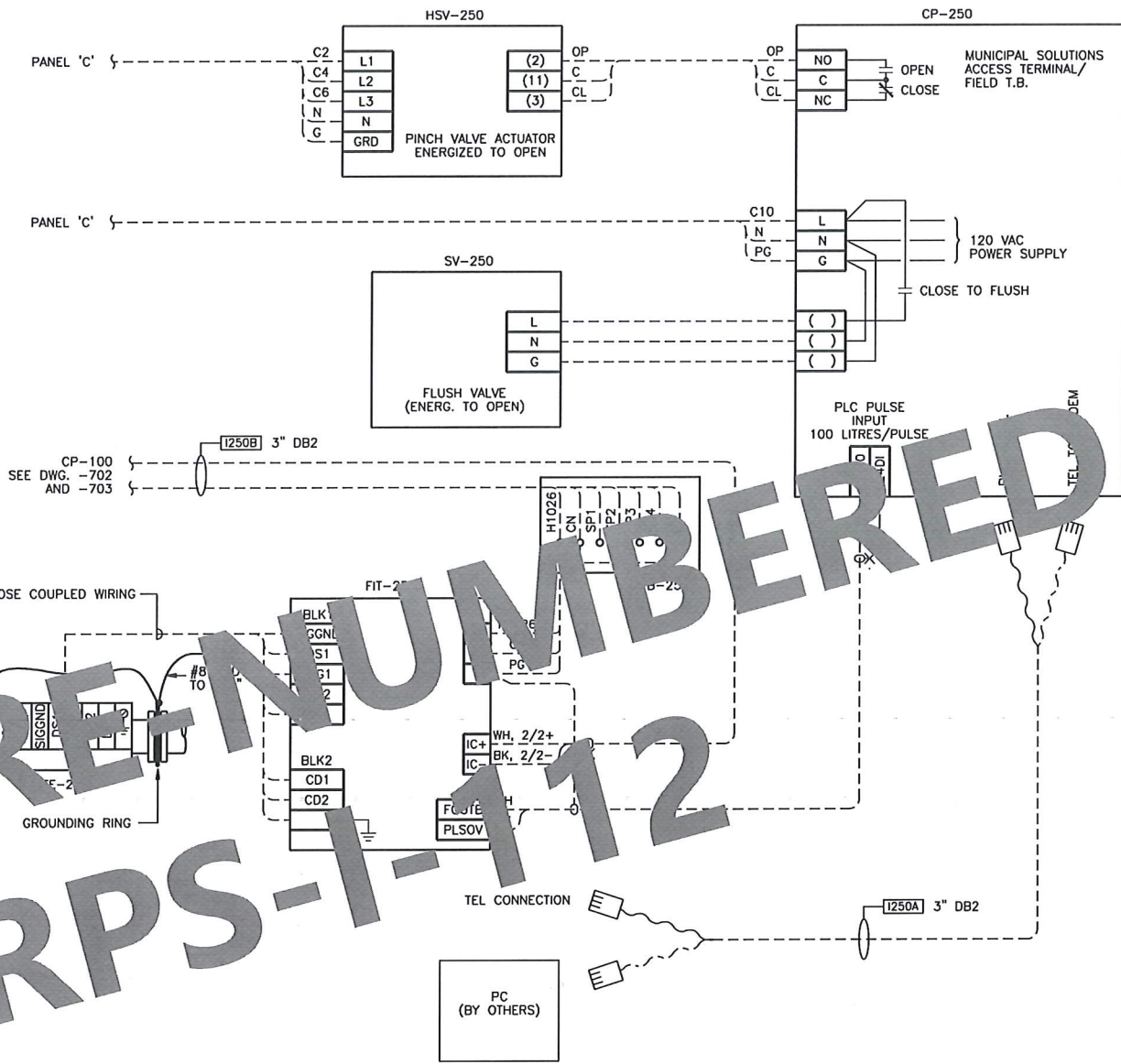
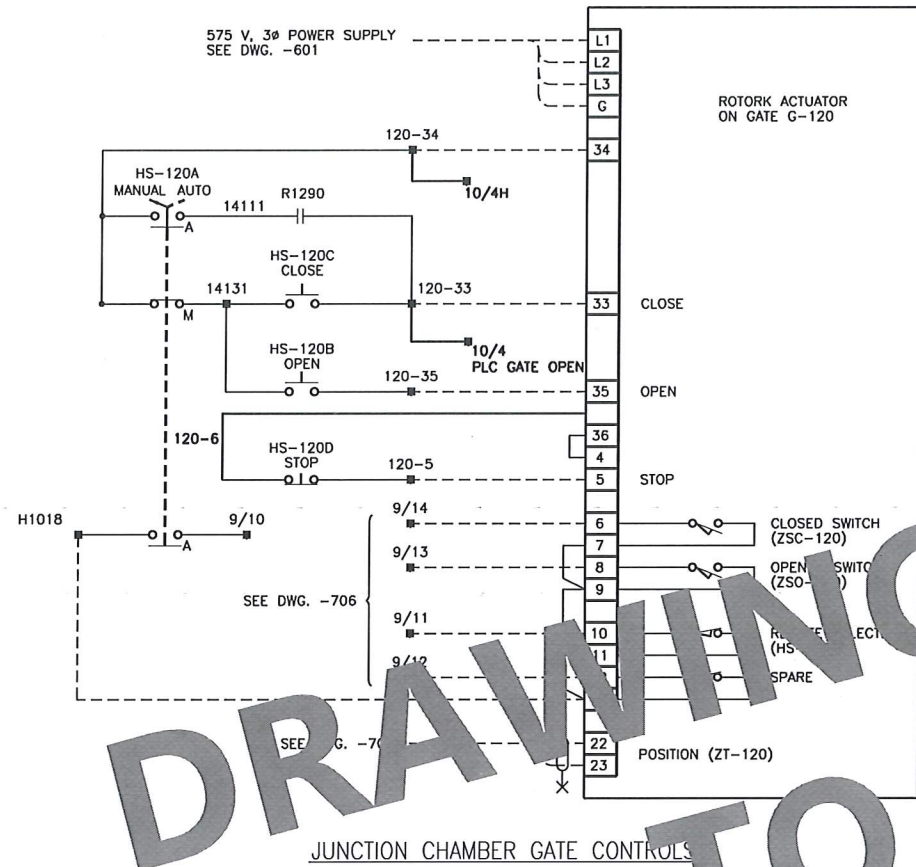
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DRAWING RENUMBERED TO CRPS-1-112

VERIFY SCALES
BAR IS BASED ON ORIGINAL DRAWING
0 20mm
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

RECORD DRAWING - NOT TO BE USED FOR CONSTRUCTION OF ALTERATIONS. ALL ITEMS SHOWN, MATERIALS, AND DIMENSIONS TO BE CONFIRMED ON SITE.

NO.	DATE	ENG.	BY	SUBJECT
4	1 FEB 2013	RS	RS	RECORD DRAWING UPDATE
3	17 JUL 2002	M.L.	J.T.	RECORD DRAWING, STAGE 3
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE CONTROLS ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-603
SCALE	N.T.S.
DRAWN	J.T.
DESIGNED	M.L.
CHECKED	J.G.
APPROVED	
APPROVED	
DATE	JULY 2001

ISSUED FOR
OBsolete
Date: 2021/03/08

ASSOCIATED ENGINEERING

DISTRICT PROJECT NUMBER	0810-20-CRPS-04
DISTRICT DRAWING NUMBER	CRPS-1-108

REGIONAL DISTRICT OF NANAIMO

CHASE RIVER PUMPING STATION UPGRADE

INSTRUMENTATION
SEPTAGE RECEIVING AND GATE CONTROLS
WIRING DETAILS

DRAWING NUMBER	REV. NO.	SHEET
CH3-708	4	

RENUMBERED FROM 982819-603-1-708 TO →