

Project Title FRENCH RIVER, ONTARIO
PWGSC
GAINS HEATERS AT PORTAGE DAM

Project Number R.012222.021

Project Date 2013-06-13

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PART 1 - GENERAL

- 1.1 GENERAL DESCRIPTION OF WORK .1 Work generally comprises of the following:
- .1 Supply and install gains heaters.
 - .2 Supply and install disconnect switch, power panel including breakers.
 - .3 Supply and install power cables and junction boxes.
- 1.2 MINIMUM STANDARDS .1 Execute work to meet or exceed:
- .1 National Building Code of Canada 2010, National Fire Code of Canada 2010, Ontario Building Code 2012 and any other code of provincial or local application, including all amendments up to project date, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
 - .2 Rules and regulations of authorities having jurisdiction.
 - .3 Federal Fire Commissioner, No. 301, Standard for Construction Operations, and No. 302, Standard for Welding and Cutting, June 1982.
 - .4 Observe and enforce construction safety measures required by National Building Code 2010, Part 8 Safety Measures at Construction and Demolition Sites, Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter O.1 as amended, O. Reg. 213/91 as amended by O. Reg. 631/94, O. Reg. 143/99, O. Reg. 571/99, O. Reg. 145/00, O. Reg. 527/00, R.R.O. 1990, Reg. 834, O. Reg. 278/05 (Asbestos), Workplace Safety and Insurance Board and municipal statutes and authorities.
 - .5 Environmental Protection Act, O. Reg. 102/94 and O. Reg. 103/94.
- 1.3 TAXES .1 Pay applicable Federal, Provincial and Municipal taxes.
- 1.4 FEES, PERMITS, CERTIFICATES AND LETTERS .1 Provide authorities having jurisdiction with information requested.
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- 1.4 FEES, PERMITS, CERTIFICATES AND LETTERS
(Cont'd)
- .2 Pay fees and obtain certificates including Electrical Safety Authority certificate, permits and letters required.
 - .3 Furnish certificates, permits and letters when requested.
- 1.5 EXAMINATION
- .1 Examine existing conditions and determine conditions affecting work.
- 1.6 DOCUMENTS
- .1 Keep one copy of contract documents on the site.
- 1.7 ELECTRONIC SUBMITTALS
- .1 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, and Autocad dwg files; on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.
- 1.8 CONTRACTOR'S AS-BUILT DRAWINGS AND SPECIFICATIONS
- .1 As work progresses, neatly record significant deviations from the Contract drawings and specifications using fine, red marker on full size white prints and specifications. Make the same changes on the electronic files.
 - .2 Neatly print lettering and numbers in size to match original. Lines may be drawn free-hand but shall be neat and accurate. Add at each title block note: "AS BUILT". Also circle on List of Drawings each title and number of drawing marked with "AS-BUILT" information. Circle on Table of Contents each specification section number and title of specification sections marked with "AS-BUILT" information.
 - .3 Departmental Representative will provide one electronic set of drawings, schedules and specifications for as-built drawing and specification purposes.
 - .1 Drawings are in Autocad.
 - .2 Specifications are in NMSEdit Professional.
 - .3 Amendments and addenda are in MS Word.
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1.8 CONTRACTOR'S
AS-BUILT DRAWINGS
AND SPECIFICATIONS
(Cont'd)

- .4 Record following significant deviations:
 - .1 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.
 - .2 Field changes of dimension.
 - .3 Other significant deviations which are concealed in construction and can not be identified by visual inspection.
 - .4 Alternative materials and systems installed replacing original materials and systems specified by trade name.
- .5 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work. Submit pdf files on USB compatible with PWGSC encryption requirements, through email or alternate electronic file sharing service such as ftp.
- .6 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".

1.9 OPERATIONS AND
MAINTENANCE DATA

- .1 On completion of project submit to Departmental Representative 3 copies of Operations and Maintenance Data assembled in three 255 x 295 mm vinyl-covered, 3-ring, loose-leaf binders with title sheet labelled "Operations Data and Maintenance Manual", project title, date and list of contents. Organize content into applicable sections between hard paper dividers with labelled tabs.
 - .2 Include in each binder maintenance instructions for finished surfaces, warranties and guarantees in form approved by Departmental Representative and operations and maintenance data for equipment and systems with parts list, suppliers' names and addresses, schematic diagrams for electrical hardware, complete set of final shop drawings (bound separately), names, addresses and phone numbers of sub-contractors and suppliers, list of materials with names of manufacturer and source of supply. Neatly type lists and rates. Use clear drawings, diagrams or manufacturer's literature.
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1.10 SHOP DRAWINGS
AND PRODUCT DATA
SHEETS

- .1 Prior to submission check and certify as correct, shop drawings and product data sheets. Issue to Departmental Representative each submission at least 14 days before dates reviewed submission will be needed.
- .2 Submit 3 prints and 1 electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .3 Submit 3 prints and 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .4 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept. This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.
- .5 Responsibility for errors, omissions or deviations from requirements of Contract Documents is not relieved by Departmental Representative's review of submittals.

1.11 CONSTRUCTION
PHOTOGRAPHS

- .1 Submit electronic and hard copy of colour digital photography in jpg format, standard resolution.
 - .2 Identification: name and number of project and date of exposure indicated.
 - .3 Number of viewpoints and location of viewpoints determined by Departmental Representative.
 - .4 Frequency: as directed by Departmental Representative.
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- 1.12 DESIGN DATA, TEST REPORTS, CERTIFICATES, MANUFACTURER'S INSTRUCTIONS, MANUFACTURER'S FIELD REPORTS
- .1 Prior to submission check and certify as correct each submission. Issue to Departmental Representative each submission at least 14 days before reviewed submission will be needed.
 - .2 Submit 3 white print copies of each item requested.
 - .3 Responsibility for errors, omissions or deviations from requirements of Contract Documents is not relieved by Departmental Representative's review of submittals.
- 1.13 ADDITIONAL DRAWINGS
- .1 Departmental Representative may furnish additional drawings to clarify work.
 - .2 Such drawings become part of Contract Documents.
- 1.14 PROTECTION
- .1 Protect existing work from damage.
 - .2 Replace damaged existing work with material and finish to match original.
 - .3 Protect existing trees and plants on site and adjacent properties.
- 1.15 EXISTING SERVICES
- .1 Establish location, protect and maintain existing utility lines.
 - .2 Maintain existing services in occupied areas.
 - .3 Use designated existing sanitary facilities.
 - .4 Use existing water and electrical services at no cost.
- 1.16 TEMPORARY FACILITIES AND SERVICES
- .1 Provide and maintain temporary facilities and services required to carry out work.
 - .2 Remove temporary facilities and services on completion of work.
 - .3 Provide and maintain temperature and enclosure required to prevent frost damage to work.
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- 1.17 METRIC SIZED MATERIALS
- .1 SI metric units of measurement are used exclusively on the drawings and in the specifications for this project.
 - .2 The Contractor is required to provide metric products in the sizes called for in the Contract Documents except where a valid claim can be made that a particular product is not available on the Canadian market.
- 1.18 MATERIAL AND EQUIPMENT
- .1 Use new products unless otherwise specified.
 - .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.
 - .3 When material or equipment is specified by standard or performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.
- 1.19 CUTTING AND REMEDIAL WORK
- .1 Co-ordinate work to keep cutting and remedial work to a minimum.
 - .2 Execute cutting and remedial work required. Notify Departmental Representative before cutting, boring or sleeving structural members.
 - .3 Prior to cutting or drilling horizontal or vertical surfaces including concrete, concrete block or other structural substrate, determine location of reinforcing, service lines, pipes, conduits or other items by appropriate method. Submit findings to Departmental Representative prior to cutting or drilling.
 - .4 Match work to adjoining construction and finishes.
 - .5 Make good surfaces exposed or disturbed by work with material and finish to match existing adjoining surfaces.
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- 1.20 FASTENINGS .1 Provide fastenings of type, size and spacing required to assure secure anchorage.
- .2 Obtain Departmental Representative's permission before using explosive actuated fasteners.
- 1.21 CO-ORDINATION AND CO-OPERATION .1 Site will not be occupied during execution of work.
- .2 Work area will not be occupied during execution of work.
- .3 Execute work with minimum disturbance to occupants and normal use of site and work area.
- .4 Where security has been reduced by work of contract, provide temporary means to maintain security.
- 1.22 INSPECTION AND TESTING .1 When initial tests and inspections reveal work not to contract requirements, pay for tests and inspections required by Departmental Representative on corrected work.
- 1.23 COST BREAKDOWN .1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating contract amount.
- .2 Within 48 hours of acceptance of bid submit a list of subcontractors.
- 1.24 SCHEDULING .1 On award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by the Departmental Representative take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.
- .2 Carry out work Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays and statutory holidays.
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- 1.25 CLEANING .1 Maintain project free of accumulated waste and rubbish.
- .2 Final cleaning:
.1 Remove temporary protection.
.2 Broom clean paved exterior surfaces, rake clean other exterior surfaces.
- 1.26 DESIGNATED SUBSTANCES .1 The work area has been surveyed for the presence of designated substances referred to in the Occupational Health and Safety Act and Regulations for Construction Projects, O.Reg. 213/91 as amended.
- 1.27 SPECIAL PROTECTION AND PRECAUTIONS .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of material safety data sheets acceptable to HRSDC - Labour Program.
- 1.28 POLLUTION CONTROL .1 Spills of deleterious substances:
.1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.
.2 Report immediately to Ontario Spills Action Centre: 1-800-268-6060.
.3 Further information on dangerous goods emergency cleanup and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.
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PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA): Canada
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Building Code 2010 (NBC):
 - .1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .3 National Fire Code 2010 (NFC):
 - .1 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .4 Province of Ontario:
 - .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
 - .2 O. Reg. 490/09, Designated Substances.
 - .3 Workplace Safety and Insurance Act, 1997.
 - .4 Municipal statutes and authorities.
- .5 Treasury Board of Canada Secretariat (TBS):
 - .1 Treasury Board, Fire Protection Standard April 1, 2010 www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.
- .6 Fire Commissioner of Canada (FCC):
 - .1 FC-301 Standard for Construction Operations, June 1982.
 - .2 FC-302 Standard for Welding and Cutting, June 1982.

Human Resources and Social Development Canada
Labour Program
Fire Protection Engineering Services
4900 Yonge Street 8th Floor
North York, Ontario M2N 6A8

and copies may be obtained from:

Human Resources and Social Development Canada
Labour Program
Fire Protection Engineering Services
Ottawa, Ontario K1A 0J2

- 1.2 SUBMITTALS
- .1 Make submittals in accordance with Section 01 11 01.
 - .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operations found in work plan.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
 - .4 Provide a Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.3 prior to commencement of work. Deliver two copies of the Fire Safety Plan to the Departmental Representative not later than 14 days before commencing work.
 - .5 Contractor's and Sub-contractors' Safety Communication Plan.
 - .6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Emergency Response requirements and procedures provided by Departmental Representative.
 - .3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 days after receipt of comments from Departmental Representative.
 - .4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
 - .5 Submit names of personnel and alternates responsible for site safety and health.
 - .6 Submit records of Contractor's Health and Safety meetings when requested.
 - .7 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, bi-weekly.
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- 1.2 SUBMITTALS (Cont'd)
- .8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
 - .9 Submit copies of incident and accident reports.
 - .10 Submit Material Safety Data Sheets (MSDS).
 - .11 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.
- 1.3 FILING OF NOTICE
- .1 File Notice of Project with Provincial authorities prior to commencement of Work.
- 1.4 WORK PERMIT
- .1 Obtain building permits related to project prior to commencement of Work.
- 1.5 SAFETY ASSESSMENT
- .1 Perform site specific safety hazard assessment related to project.
- 1.6 MEETINGS
- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- 1.7 REGULATORY REQUIREMENTS
- .1 Comply with the Acts and regulations of the Province of Ontario.
 - .2 Comply with specified standards and regulations to ensure safe operations at site.
- 1.8 GENERAL REQUIREMENTS
- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
 - .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

- 1.8 GENERAL REQUIREMENTS (Cont'd) .3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.
- 1.9 COMPLIANCE REQUIREMENTS .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.
- 1.10 RESPONSIBILITY .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.
- 1.11 UNFORSEEN HAZARDS .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
- .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.
- 1.12 HEALTH AND SAFETY CO-ORDINATOR .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
- .1 Have working knowledge of occupational safety and health regulations.
- .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing

- 1.12 HEALTH AND SAFETY CO-ORDINATOR (Cont'd)
- .1 (Cont'd)
- .2 (Cont'd)
- required training are not permitted to enter site to perform Work.
- .3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .4 Be on site during execution of Work and report directly to and be under direction of Registered Occupational Hygienist and or site supervisor.
- 1.13 POSTING OF DOCUMENTS
- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
- .1 Contractor's Safety Policy.
- .2 Constructor's Name.
- .3 Notice of Project.
- .4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).
- .5 Ministry of Labour Orders and reports.
- .6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
- .7 Address and phone number of nearest Ministry of Labour office.
- .8 Material Safety Data Sheets.
- .9 Written Emergency Response Plan.
- .10 Site Specific Safety Plan.
- .11 Valid certificate of first aider on duty.
- .12 WSIB "In Case of Injury At Work" poster.
- .13 Location of toilet and cleanup facilities.
- 1.14 CORRECTION OF NON-COMPLIANCE
- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING .1 Blasting or other use of explosives is not permitted.

1.16 POWDER ACTUATED DEVICES .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.17 PROJECT/SITE CONDITIONS .1 Work at site will involve contact with:
.1 Silica in concrete.
.2 Guano.

1.18 WORK STOPPAGE .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
.2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

PART 1 - GENERAL

- 1.1 CODES AND STANDARDS
- .1 Do complete installation in accordance with:
 - .1 CAN/CSA-C22.1-12, Canadian Electrical Code, Part I, except where specified otherwise.
 - .2 The Ontario Electrical Safety Code 2012, and all bulletins (Ontario).
 - .3 Hydro requirements and local applicable codes and regulations.
 - .2 Do underground systems in accordance with CSA C22.3 No.7-94(R2004), Underground Systems except where specified otherwise.
 - .3 Obtain inspection certificate from Electrical Safety Authority.
- 1.2 SUBMITTALS
- .1 Provide shop drawings of heaters for approval before manufacturing in accordance with Section 01 11 01.

PART 2 - PRODUCTS

- 2.1 DISTRIBUTION SYSTEM
- .1 347/600V, 3 phase, 4W, 60 Hz.
- 2.2 WIRING SYSTEM
- .1 Power circuits in Teck 90 cables.
 - .2 Copper conductors.
 - .3 Use approved connectors for Teck cables.
 - .4 Provide proper cable/conductor identification tags.
- 2.3 GROUNDING
- .1 Ground service entrance and equipment with approved conductors and connectors.
 - .2 Make tests required by code and authorities having jurisdiction.
 - .3 Provide 2 or more ground rods to limit resistance to 10 ohms maximum.
-

- 2.4 PANELBOARD
- .1 Provide panelboard of the circuit breaker type.
 - .2 Install branch circuit breakers shown on panel schedule.
 - .3 Panel to be in dead front metal cabinet with hinged door and catches.
 - .4 Breakers: GFI, toggle type, bolt-on, quick-make, quick-break, 40°C ambient temperature compensated and trip-free of operating handles on overloads.
 - .5 3P breakers to be with single handle common trip type.
 - .6 Panel and circuit breakers to have minimum 14,000 A symmetrical rms interrupting capacity rating.
 - .7 Typed directory card showing load supplied by each circuit, mounted inside cabinet door.
 - .8 Mount panel at 1500 mm above ground with the top of panel not higher than 2000 mm.
 - .9 Copper bus with neutral of same ampere rating as mains.
- 2.5 DISCONNECT SWITCHES
- .1 Heavy duty, quick-make, quick-break.
 - .2 Type 3R weatherproof for outdoors.
- 2.6 FUSES
- .1 HRC, Class J dimension, time delay.
 - .2 Provide 1 spare set of fuses.
- 2.7 ELECTRIC GAINS HEATERS
- .1 347 V, 1 phase.
 - .2 Two elements, rated at 750 W each, 750 W at low connection and 1500 W at high connection.
 - .3 76 mm (3") 150#flange.
 - .4 B = 6,756 mm (266"). B is length of heater element.
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- 2.7 ELECTRIC GAINS HEATERS (Cont'd)
- .5 610mm (24") cold end.
 - .6 Immersion type.
 - .7 Water tight, moisture resistance terminal box.
 - .8 Fit into 73 mm inner diameter tube.
 - .9 Spare gains heaters: In addition to supply and install eighteen (18) gains heaters as mentioned on drawings, supply two (2) spare gains heaters. Hand over spare heaters to Departmental Representative.

- 2.8 JUNCTION BOXES
- .1 Weatherproof.
 - .2 Construction: welded sheet steel, hinged door, latch and catch.
 - .3 Surface return flange mounting as indicated.
 - .4 Completed inside with one 14-position, 12 A, 600 V terminal block. Two terminal blocks, totally 14 positions, is acceptable.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- .1 Install material and equipment in accordance with referenced standards and manufacturer's written instructions.