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Gatineau, Québec K1A 0S5

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Construction Services Division/Division des services de
construction
11 Laurier St./11 Rue Laurier
3C2, Place du Portage
Phase III
Gatineau, Québec K1A 0S5

Title - Sujet Sir Frederick Banting Fit-up	
Solicitation No. - N° de l'invitation EP076-141420/A	Amendment No. - N° modif. 005
Client Reference No. - N° de référence du client 20141420	Date 2014-02-13
GETS Reference No. - N° de référence de SEAG PW-\$\$FG-356-64066	
File No. - N° de dossier fg356.EP076-141420	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2014-02-20	
Time Zone Fuseau horaire Eastern Standard Time EST	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Lagacé, Hélène	Buyer Id - Id de l'acheteur fg356
Telephone No. - N° de téléphone (819) 956-0060 ()	FAX No. - N° de FAX (819) 956-8335
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Sir Frederick Banting Research Centre 251 Sir Frederick Banting Way Ottawa, Ontario	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Solicitation No. - N° de l'invitation

EP076-141420/A

Client Ref. No. - N° de réf. du client

20141420

Amd. No. - N° de la modif.

005

File No. - N° du dossier

fg356EP076-141420

Buyer ID - Id de l'acheteur

fg356

CCC No./N° CCC - FMS No/ N° VME

This amendment is being issued to issue Addendum 04.

Bidders should note that the drawings are available for viewing and/or downloading from the Tenders site under the heading Attachments (<https://buyandsell.gc.ca/procurement-data/tenders>).

Bidders should also note that Addendum 01 can now be viewed in Solicitation Amendment 004.

All other terms and conditions remain unchanged.

ADDENDUM NO. 04

The following changes in bid documents are effective immediately. This addendum will form part of the contract documents.

All drawings that are referred to as “revised drawing” replace the original drawing of the same number.

All drawings that are referred to as “partial drawing revision” are in addition to the original drawing of the same number and only revise the change noted in the addendum list.

DRAWINGS**1. G002 – SHEET INDEX**

- .1 Add new drawing “G003 Code Analysis” to list of drawings.
- .2 Add new drawing “MF100 Basement Floor (Communal Wing) Fire Pump Layout” to list of drawings.

2. G003 – CODE ANALYSIS

- .1 Add new drawing G003 CODE ANALYSIS, attached to this addendum.

3. L100 – GENERATOR PLAN & DETAILS

- .1 Detail 4 – Wood and Galvanized Steel Fence Detail, change size of fence boards as follows:
 - .1 Delete note “(6) ROWS OF 38 x 184MM HIGH GRADE EASTERN WHITE CEDAR” and replace with “SEVEN ROWS OF 38 x 140MM HIGH GRADE EASTERN WHITE CEDAR OR HIGH GRADE WESTERN RED CEDAR”.
 - .2 Delete note “(5) ROWS OF 38 X 235MM HIGH GRADE EASTERN WHITE CEDAR” and replace with “SIX ROWS OF 38 x 184MM HIGH GRADE EASTERN WHITE CEDAR OR HIGH GRADE WESTERN RED CEDAR”.
 - .3 Delete note “(4) ROWS OF 38 x 286MM HIGH GRADE EASTERN WHITE CEDAR” and replace with “FIVE ROWS OF 35 X 235 MM HIGH GRADE EASTERN WHITE CEDAR OR HIGH GRADE WESTERN RED CEDAR”.

**4. AD130 – THIRD FLOOR DEMOLITION PLAN
AD140 – FOURTH FLOOR DEMOLITION PLAN**

- .1 Delete General Note 1 and replace with “DEMOLITION ITEMS - SALVAGE AND TURN OVER EQUIPMENT, LIGHT FIXTURES AND PLUMBING FIXTURES TO DEPARTMENTAL REPRESENTATIVE. DISPOSE OF DOORS, FRAMES AND HARDWARE CONTAINING LEAD-BASED PAINT IN ACCORDANCE WITH PROVINCIAL REGULATIONS.”
- .2 Delete Drawing Keynote 12 and replace with “REMOVE EXISTING VCT FLOORING”.

5. A430 – THIRD FLOOR SOUTHWEST PLAN

- .1 Room A336A, delete tag “3xK+S”.
 - .2 Room A336B, add tag “MC3S” to untagged cabinet under SF3AS.
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- .3 Room A346E, northeast of grid line M.Y-12, add tag “WS3B” to untagged bench with MC3 cabinet below.
 - .4 Room A348, east wall, delete “CA1” and replace with “CA”.
 - .5 Room A349A, north wall, delete “SF1A-WS” and replace with “SF1A”.
 - .6 Room A350A, add tag “SK2” to double bowl sink on SU4A.
- 6. A431 – THIRD FLOOR NORTHWEST PLAN**
- .1 Room A345A, delete tag “SF180”.
 - .2 Room A346D, along grid line 12, north of grid L.Y, delete tag “SF3B” and replace with “SF4B”.
- 7. A433 – THIRD FLOOR NORTHEAST PLAN**
- .1 Room A329F, on gridline K.Y delete tag “CS2” and change to “VENTED CABINET (NIC)”.
- 8. A440 – FOURTH FLOOR SOUTHWEST PLAN**
- .1 Room A432A, add tag “SF5A” to untagged Single Frame Bench on gridline 12 south of L.Y.
 - .2 Room A432A, on gridline 12, relocate “MC3” to south of column at gridlines L.Y and 12 under SF5A.
 - .3 Rooms A454 and A456, add casework as shown on partial drawing revision A440R1 attached.
 - .4 Room A457, delete tag “SF3A-WS” and replace with “SF3A”.
 - .5 Room A459B, delete tag “SHU3” and replace with “SHU1”.
 - .6 Room A460, work surfaces on instrument benches are stainless steel.
 - .7 Room A461A, south wall under SF3BS cabinet, delete tag “AC” and replace with “AC-S”.
 - .8 Room A461C, delete tag “AC” and replace with AC-S”, and delete “CA” and replace with “CA-S”.
- 9. A441 – FOURTH FLOOR NORTHWEST PLAN**
- .1 Delete drawing A441 and replace with drawing A441-X1.
- 10. A442 – FOURTH FLOOR SOUTHEAST PLAN**
- .1 Room A444, west wall between the sink and fume hoods, delete “SH3”.
 - .2 Room A444, gridline 30, south end of peninsula benching, delete “UC-S” and “UC-G” tags over the Instrument Bench IB3.
 - .3 Room A444, gridline 30, add tag “SF5A” to untagged bench north of grid M.Y.
 - .4 Room A451A, gridline 32, add two tags “UC-G” to cabinets above SF5A.
 - .5 Room A447, west wall between fume hood and biosafety cabinet, add WS1B bench at AC cabinet.
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- .6 Room A449, add tag “UC-S” above SF2B on north wall.
- 11. A443 – FOURTH FLOOR NORTHEAST PLAN**
- .1 Room A442, west of gridline 30 delete tags “IBP1D” and “IBD”.
- 12. AQ SERIES DRAWINGS**
- .1 Delete reference to “SN-EX” and “SN-EA” on AQ series drawings. Snorkel exhaust types are shown on MV series drawings.
- 13. AQ440 – FOURTH FLOOR SOUTHWEST EQUIPMENT PLAN**
- .1 Room A459C, delete “FH01A-CH” and replace with “FH03A-CH”.
- 14. AQ441 – FOURTH FLOOR NORTHWEST EQUIPMENT PLAN**
- .1 Room A434, delete “FH03D-CH” and replace with “FH08D-SV”.
- 15. AQ443 – FOURTH FLOOR NORTHEAST EQUIPMENT PLAN**
- .1 Room A442, delete tag “GC14A” and replace with “GC14D”.
- 16. A800 – LAB CASEWORK DETAILS**
- .1 Delete Drawing A800 and replace with revised drawing A800-X1 attached.
- 17. S100 – GENERAL NOTES AND DETAILS**
- .1 Housekeeping Pad Details, change thickness of housekeeping pads from 400 mm to 100 mm for floor mounted equipment, except 150 mm thick at air handlers AH-LAB-L3/L4.
- 18. MF100 – BASEMENT FLOOR (COMMUNAL WING) FIRE PUMP LAYOUT]**
- .1 Add new drawing MF100, issued as part of this Addendum.
- 19. MV131 – THIRD FLOOR SOUTHWEST LARGE SCALE PLAN
MV132 – THIRD FLOOR NORTHWEST LARGE SCALE PLAN
MV133 – THIRD FLOOR SOUTHEAST LARGE SCALE PLAN
MV134 – THIRD FLOOR NORTHEAST LARGE SCALE PLAN
MV141 – THIRD FLOOR SOUTHWEST LARGE SCALE PLAN
MV142 – THIRD FLOOR NORTHWEST LARGE SCALE PLAN
MV143 – THIRD FLOOR SOUTHEAST LARGE SCALE PLAN
MV144 – THIRD FLOOR NORTHEAST LARGE SCALE PLAN**
- .1 Change scale noted on drawing title bar (located in lower left corner of drawing) from 1:100 to 1:50.
- .2 Reference to bubble-tight dampers in keynotes is incorrect. Bubble-tight dampers are not required. In each occurrence, delete “bubble tight” and replace with “manual iris type”.
- 20. M402-X1 – LARGE SCALE PENTHOUSE PLAN HIGH LEVEL - SOUTH**
- .1 Provide 50mm MPS and 38mm MPC branch piping to existing penthouse ventilation system heating coil. Coordinate piping locations with new air handling units; run condensate piping between air handling units if required due to elevation constraints.
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21. M701 – MECHANICAL SCHEMATICS

- .1 Hydronic heating schematic: Provide 50mm MPS and 38mm MPC branch piping to existing penthouse ventilation system heating coil.

22. EP111 – MAIN FLOOR POWER LAYOUT

- .1 Delete ID tag “ATS#1” and replace with “ATS#4”.
- .2 Delete ID tag “ATS#2” and replace with “ATS#5”.

23. EP112 – EMERGENCY POWER SYSTEM DETAILS

- .1 Delete ID tag for 3200A switchgear “MD-M6E” and replace with “MD-M6EA”.
- .2 Locate weather-proof surface mounted exterior load bank disconnect switch at south west corner of generator emergency room enclosure. Disconnect switch to be painted same colour as genset enclosure.

24. EQ142 – FOURTH FLOOR NORTH WEST EQUIPMENT POWER LAYOUT

- .1 Locate recessed wall mounted “Panel N42EJ” in Storage Room A406 at Grids G.Y/16.

25. E601 – DISTRIBUTION SINGLE LINE DIAGRAM - EMERGENCY (DIESEL) POWER

- .1 Change location of 3200A emergency generator switchgear from “Main floor electrical room” to “Outdoor generator electrical room”.
- .2 Delete continuation note for ATS#4 feeder and replace with “Refer to Drawing E599 for continuation”.
- .3 Revise all power feeders to and from ATS #2 to read “3-1/C #500MCM Cu. Teck90 (620A)” instead of “3-1/C #1/0 Teck90 Cu. and “3#350MCM RW90 Cu.

26. E601.1 - DISTRIBUTION SINGLE LINE DIAGRAM - EMERGENCY (DIESEL) POWER

- .1 Panel LP2EA, delete note “9x 225A-3P spaces” and replace with “Refer to panelboard schedule for continuation”.
- .2 Panel SDPEB, delete ID for motors denoted as “EF-HF-1” and replace with “EF-HFA-1” and “EF-HFA-2” respectively.

27. E615 - ELECTRICAL PANEL SCHEDULES EMERGENCY POWER

- .1 Change location of Panel N32EJ to Storage Room A303 instead of Electrical Room A322.
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28. E617 – ELECTRICAL PANEL SCHEDULES EMERGENCY POWER

- .1 Add new panel schedule Panel SDP6EA, 225A, 600V/3ph/3w, 42 circuit single tub, surface mounted in Penthouse electrical room complete with drip hood, door and lock as follows:

Circuit	Breaker	Three Phase	Breaker	Circuit
Transformer	60A-3P	1A	22A	Space
“TRPEA”		2B	23B	Space
		3C	24C	Space
Spare	15A	4A	25A	Space
Spare	15A	5B	26B	Space
Spare	15A	6C	27C	Space
Space		7A	28A	Space
Space		8B	29B	Space
Space		9C	30C	Space
Space		10A	31A	Space
Space		11B	32B	Space
Space		12C	33C	Space
Space		13A	34A	Space
Space		14B	35B	Space
Space		16A	37A	Space
Space		17B	38B	Space
Space		18C	39C	Space
Space		19A	40A	Space
Space		20B	41B	Space
Space		21C	42C	Space

- .2 Add new panel schedule Panel SDP6EB, 100A, 600V/3ph/3w, 42 circuit single tub, surface mounted in Penthouse electrical room complete with drip hood, door and lock, as follows:

Circuit	Breaker	Three Phase	Breaker	Circuit
“EF-BSC-1”	20A-3P	1A	22A	15A-3P “P-2A”
“EF-BSC-1”		2B	23B	“P-2A”
“EF-BSC-1”		3C	24C	“P-2A”
“EF-BSC-2”	20A-3P	4A	25A	15A-3P “P-2B”
“EF-BSC-2”		5B	26B	“P-2B”
“EF-BSC-2”		6C	27C	“P-2B”
“EF-HF-1”	15A-3P	7A	28A	15A-3P “EF-RAD-1”
“EF-HF-1”		8B	29B	“EF-RAD-1”
“EF-HF-1”		9C	30C	“EF-RAD-1”
“EF-HF-2”	15A-3P	10A	31A	15A-3P “EF-RAD-2”
“EF-HF-2”		11B	32B	“EF-RAD-2”
“EF-HF-2”		12C	33C	“EF-RAD-2”
“P-1A”	20A-3P	13A	34A	15A-3P “P-8”
“P-1A”		14B	35B	“P-8”
“P-1A”		16A	37A	“P-8”
“P-1B”	20A-3P	17B	38B	20A-3P Spare
“P-1B”		18C	39C	Spare
“P-1B”		19A	40A	Spare
Space		20B	41B	Space
Space		21C	42C	Space

- .3 Change location of Panel N42EJ to Storage Room A406 instead of Electrical Room A453.

29. TG500 – TELECOM ROOM LAYOUTS AND DOOR INTERLOCK DETAILS

- .1 Detail 3, replace 1A, 1B and 1C 2 RU Fibre Patch Panel with 3RU 72 Port Fibre patch panels for both Telecom rooms.
- .2 Detail 4, replace 1A, 1B and 1C 2 RU Fibre Patch Panel with 3RU 72 Port Fibre patch panels for both Telecom rooms.

SPECIFICATIONS

1. SECTION 01 01 10 – TABLE OF CONTENTS

- .1 Add new drawing “G003 Code Analysis” to list of drawings.

2. SECTION 10 21 13 – METAL TOILET PARTITIONS

- .1 Add new article 3.6 SCHEDULE, as follows:

3.6 SCHEDULE

- .1 One standard stall and one barrier-free stall each in A302 – Washroom, and A402 – Washroom.

3. SECTION 10 22 21 – MOVABLE WALL SYSTEM

- .1 Article 2.5, delete paragraph 2.5.2.6 and replace with the following:
 - .6 Provide concealed reinforcement inside partitions for items mounted or fastened to movable walls, including but not limited to paper towel dispensers, glassware drying racks, fixed laboratory casework base cabinets and tall cabinets, and plumbing services.

4. SECTION 11 06 00 - EQUIPMENT SCHEDULE

- .1 Add Fume Hood FH02, 1500 mm wide.

5. SECTION 11 53 13 – FUME HOODS

- .1 Article 2.5, delete paragraph 2.5.2 and replace with the following:
 - .2 Exterior:
 - .1 Typical: painted steel or self-supporting solid phenolic resin panels.
 - .2 Rooms A461A and A461C: stainless steel.
 - .2 Article 2.6, add new paragraphs 2.6.4 and 2.6.5 as follows:
 - .4 Linear trim exhaust valves for balancing each fume hood.
 - .5 Paper tissue screen located behind baffle to prevent paper towels and other debris from blocking exhaust system.
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- .3 Article 2.7, delete entire article and replace with the following:

2.7 SAFETY ALARM CONSOLE

- .1 Face velocity control devices are specified in Section 25 90 01 – EMCS: Site Requirements, Applications, and Systems Sequences of Operation.
- .2 Coordinate and provide cut-outs in fume hood for face velocity control devices.
- .3 Mount face velocity control devices on fume hood in accordance with manufacturer’s recommendations.

6. SECTION 12 35 53 – STEEL LABORATORY CASEWORK

- .1 Article 2.4, paragraph 2.4.3 add drawing designation “(WS)” after “Worksurface Table Frames”.
- .2 Article 2.4, add new subparagraph 2.4.4.2 as follows:
- .2 Provide for three pre-plumbed services in uprights of single and double frame assembly uprights for compressed air (CA), water (H/C), and one spare for future gas service.
- .3 Article 2.4, delete paragraph 2.4.8 and replace with the following:
- .8 Specialty Cabinets: construct cabinets from painted steel (typical), or stainless steel (xx-S) construction, as indicated.
- .4 Article 2.8, add new subparagraph 2.8.2.6 as follows:
- .6 Provide stainless steel work surfaces at single frame and double frame benches, and WS work tables with -S suffix.
- .5 Article 2.11, delete paragraph 2.11.1 and replace with the following:
- .1 General: plumbing service fixtures connect to fittings in tubular upright of frame assembly. Media key and colour code service valves and quick connects.
- .6 Article 2.11, paragraph 2.11.6, delete “Air, Gas and Vacuum Service and Fixtures” and replace with “Compressed Air (CA), and Gas Service and Fixtures”, at the beginning of the paragraph.
- .7 Article 2.11, paragraph 2.11.7, delete “Vacuum” from list of services in table.
- .8 Article 2.15, add new paragraph 2.15.2 as follows:
- .2 Room A460, where instrument bench is identified as IB###-S, provide all stainless steel components and construction, including mobile instrument table and top, pump enclosure, and storage cabinet.
- .9 Article 2.17, paragraph 2.17.1, delete “Corrosion-resistant construction.” and replace with “Corrosion-resistant construction, stainless steel where indicated”.

7. SECTION 22 11 16 – DOMESTIC WATER PIPING AND VALVES

- .1 Article 3.2, add new paragraph 3.2.14 as follows:
- .14 Piping shall not be installed in moveable (factory assembled) wall partitions. Install piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

8. SECTION 22 13 17 – DRAINAGE WASTE AND VENT – CAST IRON AND COPPER

- .1 Article 3.2, add new paragraph 3.2.2 as follows:
 - .2 Piping shall not be installed in moveable (factory assembled) wall partitions. Install piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

9. SECTION 22 13 18 – DRAINAGE WASTE AND VENT - PLASTIC

- .1 Article 3.3, add new paragraph 3.3.4 as follows:
 - .4 Piping shall not be installed in moveable (factory assembled) wall partitions. Install piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

10. SECTION 22 61 13 – COMPRESSED-AIR PIPING FOR LABORATORIES

- .1 Article 3.1, add new paragraph 3.1.9 as follows:
 - .9 Piping shall not be installed in moveable (factory assembled) wall partitions. Install piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

11. SECTION 22 63 13 – GAS PIPING AND EQUIPMENT FOR LABORATORY FACILITIES

- .1 Article 3.2, add new paragraph 3.2.10 as follows:
 - .10 Piping shall not be installed in moveable (factory assembled) wall partitions. Located piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

12. SECTION 22 67 13 – PROCESSED WATER PIPING FOR LABORATORIES

- .1 Article 3.1, add new paragraph 3.1.6 as follows:
 - .6 Piping shall not be installed in moveable (factory assembled) wall partitions. Install piping in adjacent field constructed wall (steel stud wall) or surface mount pipe on moveable partition using approved mounting devices/clips as provided by the moveable wall partition manufacturer.

13. SECTION 23 07 13 – THERMAL INSULATION FOR DUCTWORK

- .1 Refer to last in table found in Article 3.4. Fire resistance rating for ducts requiring type D-4 insulation shall be the same as the highest fire-rating of wall or floor assembly through which the duct penetrates.
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14. SECTION 23 33 14 – DAMPERS - BALANCING

- .1 Add new article 2.6 MANUAL IRIS-TYPE BALANCING DAMPER” as follows:

2.6 MANUAL IRIS-TYPE BALANCING DAMPER

- .1 Frame: minimum 22 gauge steel.
- .2 Blades: segmented, minimum 22 gauge steel.
- .3 Air measurement taps: Plastic with dust caps.
- .4 Seal: Neoprene.
- .5 Damper frame and blades: Use galvanized steel when connected to galvanized steel ducts. Use stainless steel when connected to stainless steel ducts.

15. SECTION 23 73 13 – INDOOR AIR HANDLING UNITS - MODULAR

- .1 Article 2.6, add new paragraph 2.6.13 as follows:
.13 Provide acoustically insulated enclosure for each fan in the fan array.

16. SECTION 23 84 13 - HUMIDIFIERS

- .1 Article 3.2, add new paragraphs 3.2.8 and 3.2.9 as follows:
.8 Provide steam and condensate piping to steam distributors in air handling units in accordance with humidifier manufacturer’s recommendations. Condensate from steam distributor and steam piping drip legs for each air handling unit shall be piped to a self-actuated drain water tempering device.
.9 Install drain water tempering device on drain discharge from humidifier. Provide DCVA backflow preventor connected to cold water main located above air handling units. Pipe discharge from drain water tempering device to floor drain.

17. SECTION 23 57 00 – HEAT EXCHANGERS

- .1 Article 3.2, add new paragraph 3.2.4 as follows:
.4 Mount each heat exchanger on an angle iron stand secured to a concrete housekeeping pad.

18. SECTION 26 32 13 – DIESEL ELECTRIC GENERATING UNITS (LIQUID COOLED)

- .1 Delete Article 3.3, and replace with the following:
3.3 AUTOMATIC REDUNDANT LOAD SEQUENCER (SECONDARY PARALLELING GEAR)
.1 If communications or the paralleling system controller fail, the generator controller will take over the paralleling function. The generators shall automatically start based on a hardwired, two-wire start contact from the transfer switch(es). The generators shall automatically parallel together energizing the generator bus. The generator controllers are to manage load sharing based on internal algorithms. When operating in a backup mode, systems that require active communications to balance generator load are not acceptable.
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- .2 An automatic redundant load sequencing device (secondary paralleling gear) will be provided to replace the load sequencing functionality performed by the paralleling system controller. This backup system shall be hardwired and not rely on communications which may have been compromised. This device shall receive a “generator on-line” input contact from each generator. Using this information, this device will sequence the system load on & off using 3 permissive and 3 load shed steps.
- .2 Article 3.6, delete paragraph 3.6.5.2 and replace with the following:
 - .2 Tank to be CAN/ULC-S601 - Shop Fabricated Steel Aboveground Tanks For Flammable and Combustible Liquids, listed.
- .3 Article 3.9, delete paragraph 3.9.1 Factory Testing and replace with the following:
 - .1 Factory Testing
 - .1 Provide factory witness testing of completed generating power system to demonstrate the full function of equipment.
 - .2 Standard factory tests shall be performed on the equipment under this section. All tests shall be in accordance with the latest version of ANSI and NEMA standards.
 - .3 Notify Departmental Representative 14 days in advance of date of factory test.
 - .4 Representatives:
 - .1 The manufacturer shall notify the Departmental Representative two weeks prior to the date the tests are to be performed.
 - .2 The manufacturer shall include the cost of all transportation and lodging for up to two (2) Departmental Representatives. The cost of meals and incidental expenses shall be the Departmental Representative responsibility.
 - .5 Testing to include a formal review of all shop drawings on site with the manufacturer representative.
 - .6 Before shipment of the equipment, the engine-generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits.
 - .7 Factory test generator set including engine, alternator, control panels, transfer switch and accessories in presence of Departmental Representative.
 - .8 Test procedure:
 - .1 Prepare blank forms and check sheet with spaces to record data and at top of first sheet record:
 - .1 Date.
 - .2 Generator set serial no.
 - .3 Engine, make, model, serial no.
 - .4 Alternator, make, model, serial no.
 - .5 Voltage regulator, make and model.
 - .6 Rating of generator set, kW, kV.A, V, A, r/min, Hz.

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- .2 Mark check sheet and record data on forms in duplicate as test proceeds.
 - .3 Departmental Representative's signature on completed forms to indicate concurrence in results of test.
 - .9 Tests:
 - .1 With 100% rated load, operate set for 4 hours, taking readings at 30 minutes intervals, and record following:
 - .1 Time of reading.
 - .2 Running time.
 - .3 Ambient temp in degrees C.
 - .4 Lube oil pressure in kPa.
 - .5 Lube oil temp in degrees C.
 - .6 Engine coolant temp in degrees C.
 - .7 Exhaust stack temp in degrees C.
 - .8 Alternator voltage: phase 1, 2, 3.
 - .9 Alternator current: phase 1, 2, 3.
 - .10 Power in kW.
 - .11 Frequency in Hz.
 - .12 Power Factor.
 - .13 Battery charger current in A.
 - .14 Battery voltage.
 - .15 Alternator cooling air outlet temp.
 - .2 At end of 4 hours run increase load to 110% rated value, and take readings every 15 minutes for 1 hour.
 - .3 After completion of 5 hours run, demonstrate following shut down devices and alarms:
 - .1 Overcranking.
 - .2 Overspeed.
 - .3 High engine temp.
 - .4 Low lube oil pressure.
 - .5 Short circuit.
 - .6 Alternator over voltage.
 - .7 Low battery voltage, or no battery charge.
 - .8 Manual remote emergency stop.
 - .9 High alternator temperature.
 - .4 Install continuous strip chart recorders to record frequency and voltage variations during load switching procedures. Each load change delayed until steady state conditions exist. Switching increments to include:
 - .1 No load to full load to no load.
 - .2 No load to 70% load to no load.
 - .3 No load to 20% load to no load.
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- .4 20% load to 40% load to no load.
- .5 40% load to 60% load to no load.
- .6 60% load to 80% load to no load.
- .10 Demonstrate:
 - .1 Automatic starting of set and automatic transfer of load on failure of normal power.
 - .2 Operation of manual bypass switch.
 - .3 Automatic shut-down of engine on resumption of normal power.
 - .4 That battery charger reverts to high rate charge after cranking.
- .11 Demonstrate low oil pressure and high engine temperature shutdown devices operation without subjecting engine to these excesses.
- .12 The manufacturer shall provide three certified copies of factory test reports.

19. SECTION 27 11 00 – COMMUNICATIONS EQUIPMENT ROOMS FITTINGS

- .1 Article 2.2, delete paragraphs 2.2.3 and 2.3.4 and replace with the following:
 - .3 Copper Category 6 Modular Patch Panels: include following features:
 - .1 Steel frame with black powder coat finish, in 72-port configuration.
 - .2 Accommodate at least 24 ports for each rack mount space (1rms=44.5mm).
 - .3 Support applications up to 250 Mhz.
 - .4 Include Category 6 modular jacks tested in both directions as required by CSA-T529 in T568A wiring scheme.
 - .5 Backwards compatible to allow lower performing categories of cables or connecting hardware to operate to their full capacity.
 - .6 Port identification on front and rear.
 - .7 Meet ANSI/TIA/EIA-568-B Category 6 channel compliancy requirements.
 - .8 CSA C22.2 approved or equivalent.
 - .9 Mounted in 483 mm equipment racks.
 - .4 Riser Rack Mount Fibre Optic Modular Patch Panels:
 - .1 All panels and cable trays shall provide cross-connect, interconnect, splicing capabilities and contain cable management for supporting and routing of the fibre cables/jumpers.
 - .2 72-port configuration Modular jacks.
 - .3 Front access design with a hinged cover.
 - .4 Built-in bend radius control.
 - .5 Black in colour.
 - .6 Mounted in 483 mm equipment racks.
 - .7 Sized to permit termination of all fibres being installed and allow for future growth.

- .8 Modular to allow possibility of changing connector types in the future without replacing entire unit.
- .9 All fibre optic equipment shall be tested after installation to verify that the system meets the loss limit from patch panel to patch panel.

20. SECTION 27 15 00 – COMMUNICATIONS HORIZONTAL CABLING

- .1 Article 2.1, delete paragraph 2.1.2 and replace with the following:
 - .2 Shall be CSA certified as CMP per CSA C22.2, no 214-94. Shall have a minimum rating of FT-4.
- .2 Delete Article 2.3, and replace with the following:

2.3 COMMUNICATIONS FACEPLATES AND CONNECTORS

- .1 Voice/Data Face Plates and Connectors:
 - .1 Consist of single gang faceplate that accepts 4 modular jacks.
 - .2 Allow for 4-Rj-45 jacks wired to T568-A scheme.
 - .3 Voice/data connectors: 8-pin modular, category 6, colour white, pinned to ANSI/TIA/EIA 568A standard.
 - .4 Telecommunication outlets complete with modular jack openings faceplates and two RJ45 jacks (one voice, one data) shall be installed and terminated in each outlet box at minimum. Refer to patch panel schedule for cables.
- .2 Open Office Work Station Connector:
 - .1 Modular Furniture: sized for TIA/EIA-569A Standard Workstation opening.
 - .2 Voice/data connectors: 8-pin modular, category 6, colour white, pinned to ANSI/TIA/EIA 568A standard.
 - .3 Telecommunication outlets complete with modular jack openings faceplates and two RJ45 jacks (one voice, one data) shall be installed and terminated in each outlet box at minimum. Refer to patch panel schedule for cables.
 - .4 Provide with additional extenders to protect cabling and connectors.
- .3 Modular Wall Mounted Phone Jack:
 - .1 Consist of single gang stainless steel faceplate that accepts 1 module with a recessed jack.
 - .2 Allow for 1-Rj-45 jacks wired to T568-A scheme.
 - .3 Voice connector: 8-pin modular, category 6, colour white, pinned to ANSI/TIA/EIA 568A standard. Include stainless steel attachment pegs for installing wall mounted phones.
- .4 Surface Raceway Jacks:
 - .1 Consist of single gang 106 communications bracket that fits into a duplex receptacle cover plate that accepts 4 modular jacks.
 - .2 Allow for 4-Rj-45 jacks wired to T568-A scheme.

- .3 Voice/Data connectors: 8-pin modular, category 6, colour white, pinned to ANSI/TIA/EIA 568A standard.

END OF SECTION
