

VARIABLE FREQUENCY DRIVES

1. GENERAL

1.1 Related Work

- .1 Mechanical: Division 23.

1.2 Scope

- .1 Division 26 shall supply, install, connect supply and motor wiring to VFD units.
- .2 Other divisions shall supply and connect control wiring.
- .3 It is the responsibility of this division to commission VFDs using the operator keypad including ensuring drive operation under load and any other necessary drive operation.

1.3 Standards Motor

- .1 All VFDs supplied under this Contract meet or exceed the following specifications.
- .2 Harmonic loading will not exceed a motor service factor of 1.0.
- .3 Products shall comply with IEEE Standard 519.
- .4 VFD unit shall be ULC listed or CSA certified.
- .5 VFD unit shall comply with applicable requirements of the latest standards of CSA, ANSI, IEEE and the Canadian Electrical Code.

1.4 Tests

- .1 Field testing.
 - .1 The Contractor shall provide on-site start-up, fine-tuning, commissioning, operator training and instruction.

1.5 Warranty

- .1 The Contractor shall provide warranty coverage for a period of one year.

2. PRODUCTS

2.1 Variable Frequency Drives

- .1 Variable Frequency Drives as manufactured by:
 - .1 Schneider Electric. Part numbers as indicated on Drawings.
 - .1 Line voltage sags down to 85% of rated voltage of up to one second duration.

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3. EXECUTION

3.1 Operations Manual Information

- .1 Installation:
 - .1 Identify mounting requirements and include all materials and labour.
 - .2 Install VFDs in locations as indicated on Drawings, and connect up all necessary wiring.
 - .3 Motor supply cables/conductors shall be run in cables separate from supply feeders to line side of VFD.
- .2 Field Quality Control:
 - .1 Contractor shall be responsible for complete commissioning of each variable speed drive to satisfaction of the Prime Contractor and the City.
- .3 Variable Frequency Drive Check-list:
 - .1 Upon the award of the Contract to the successful Contractor, the Prime Contractor will furnish a VFD checklist that is to be completed and submitted with the VFD Shop Drawings.
- .4 Software:
 - .1 Provide VFD programming/troubleshooting software to the City.
 - .2 Provide VFD Parameter list "as programmed during commissioning" for each VFD
- .5 VFD Shop Drawings:
 - .1 The Shop Drawings for each type/size of VFD must be specific to that unit. Generic Shop Drawing shall not be acceptable. The Shop Drawings are to include dimensions and physical details of the cabinets, a wiring diagram and a ladder diagram showing both internal connections and terminals for field wiring. Separate diagrams are required for each VFD/motor functions. Generic diagrams shall not be acceptable.
 - .2 All Drawings, manuals, parameter settings, and test reports are to be included with the "Electrical Maintenance Manual". This manual shall be issued in both hard copy, and electronic format.

END OF SECTION

VARIABLE FREQUENCY DRIVES

VFD CHECKLIST

INSTALLED VFD TEST

VFD EQUIPMENT NO. _____ DATE OF TEST _____

DRIVEN MOTOR EQUIPMENT NO. _____

DRIVEN LOAD CHARACTERISTIC: CONSTANT TORQUE _____

VARIABLE TORQUE _____

SETPOINTS:

MINIMUM FREQUENCY _____ Hz

MAXIMUM FREQUENCY _____ Hz

ACCELERATION TIME _____ Sec

DECELERATION TIME _____ Sec

SPEED RANGE: MANUAL ____ RPM, ____ RPM

CDACS ____ RPM, ____ RPM

VFD CURRENT AT FULL LOAD: PH.A. Amp, PH.B Amp, PH.C Amp.

MOTOR CURRENT: PH.A. Amp, PH.B Amp, PH.C Amp.

MOTOR NAMEPLATE DATA:

MFR.: _____ MFR. TYPE _____ FRAME _____ hp _____

VOLTS: PHASE RPM SERVICE FACTOR

AMPS _____ FREQ. _____ Hz _____ AMBIENT TEMP. RATING _____ °C

TIME RATING _____ DESIGN LETTER _____

kVA CODE LETTER _____ INSULATION CLASS _____

CERTIFIED _____ Date _____

Contractor's Representative

WITNESSED _____ **DATE** _____