Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 26 05 01 - Common Work Results for Electrical.

.2 The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

1.2 REFERENCES

.1 CSA International

.1 CAN/CSA-C22.2 No.47-M90(R2007), Air-Cooled Transformers (Dry Type).

.2 CSA C9-02(R2007), Dry-Type Transformers.

.3 CAN/CSA-C802.2-06, Minimum Efficiency Values for Dry Type Transformers.

.2 National Electrical Manufacturers Association (NEMA)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for dry type transformers and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

2.1 DESIGN DESCRIPTION

.1 Design 1.

.1 Type: ANN.

.2 Single phase, 25 kVA, 600V input, 120/208 V output, 60 Hz.

.3 Voltage taps: standard.

.4 Insulation: Class 220, 150 degrees C temperature rise.

.5 Basic Impulse Level (BIL): standard.

.6 Hipot: standard.

.7 Average sound level: standard

.8 Impedance at 17 degrees C: standard

.9 Enclosure: NEMA, removable metal front panel.

.10 Mounting: floor.

.11 Finish: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.12 Copper windings.

.13 Winding configuration to be as noted on drawings.

.14 Harmonic Mitigating Phase Shifting transformers as indicated on drawings.

.15 KL-Rated Transformers as indicated on drawings.

.16 Voltage Regulation to be 4% or better.

2.2 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results for Electrical.

.2 Label size: 7.

.3 Nameplate wording: XFMR-F73.

Part 3 Execution

3.1 INSTALLATION

.1 Not used.

3.2 PROTECTION

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Materials and installation for standard and custom breaker type panelboards.

1.2 Related Sections

.1 Section 26 05 01 - Common Work Results - Electrical.

.2 Section 26 28 21 - Moulded Case Circuit Breakers.

.3 The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

1.3 References

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2 No.29-M1989(R2000), Panelboards and enclosed Panelboards.

1.4 Shop Drawings

.1 Submit shop drawings in accordance with The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

.2 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

PART 2 - PRODUCTS

2.1 Panelboards

.1 Panelboards: to CSA C22.2 No.29 and product of one manufacturer.

.1 Install circuit breakers in panelboards before shipment.

.2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

.2 600 V panelboards: Bus and breakers rated as indicated on drawings. 22 kA (symmetrical) interrupting capacity minimum.

.3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.4 Panelboards: tin plated copper mains, number of circuits, and number and size of branch circuit breakers as indicated.

.5 Two keys for each panelboard and key panelboards alike.

.6 Tin plated copper bus with neutral of same ampere rating as mains.

.7 Mains: suitable for bolt-on breakers.

.8 Trim with concealed front bolts and hinges.

.9 Trim and door finish: baked grey enamel.

2.2 Service Entrance Rated Panel

.1 Provide a 600V, 600A, 3-phase, 4W with a 22kA SC rating.

.2 Provide a CT and PT compartment as required by Manitoba Hydro.

.3 Provide a separate breaker compartment with a 600V, 500A, 3P breaker.

.4 Each compartment shall be padlockable with a separate padlock.

.5 Panel shall be in a NEMA 3R rated enclosure complete with doors and padlockable hasps and all required accessories for mounting on a fibreglass open base.

2.3 Breakers

.1 Breakers: to Section 26 28 21 - Moulded Case Circuit Breakers.

.2 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

.3 Main breaker: separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.

.4 Lock-on devices for 10% of 15 to 30 A breakers installed as indicated. Turn over unused lock-on devices to City of Winnipeg.

.5 Interrupting capacity of each breaker must be in accordance to the panelboard interrupting capacity.

2.4 120 V Surge Suppressor

.1 Able to withstand a maximum surge current of 40 kA.

.2 DIN rail mount,

.3 Rated as type II TVSS,

.4 3 step visual indication,

.5 Integrated terminal disconnect to avoid fire risk,

.6 Acceptable Product: ABB OVR40150SP or EATON SPD50600Y1A

2.5 Equipment Identification

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Nameplate for each panelboard size 4 engraved as indicated.

.3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.

.4 Complete circuit directory with typewritten legend showing location and load of each circuit.

PART 3 - EXECUTION

3.1 Installation

.1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

.2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard.

.3 Mount panelboards to height specified in Section 26 05 01 - Common Work Results - Electrical or as indicated.

.4 Connect loads to circuits.

.5 Connect neutral conductors to common neutral bus with respective neutral identified.

~End~

PART 1 - GENERAL

1.1 Section Includes

.1 Materials for moulded-case circuit breakers, circuit breakers, and ground-fault circuit-interrupters, fused circuit breakers, and accessory high-fault protectors.

1.2 Related Sections

.1 The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

1.3 References

.1 Canadian Standards Association (CSA International).

.1 CSA-C22.2 No. 5-02, Moulded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (Tri-national standard with UL 489, tenth edition, and the second edition of NMX-J-266-ANCE).

1.4 Submittals

.1 Submit product data in accordance with The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

.2 Include time-current characteristic curves for breakers with ampacity of 600 A and over or with interrupting capacity of 22,000 A symmetrical (rms) and over at system voltage.

PART 2 - PRODUCTS

2.1 Breakers General

.1 Moulded-case circuit breakers, Circuit breakers, and Ground-fault circuit-interrupters, Fused circuit breakers, and Accessory high-fault protectors: to CSA C22.2 No. 5

.2 Bolt-on and Plug-in moulded case circuit breaker: quick-make, quick-break over center switching mechanism that is mechanically trip-free, for manual and automatic operation with temperature compensation for 40 degrees C ambient. Automatic tripping of the breaker shall be clearly indicated by the handler position. Contacts shall be non-welding silver alloy, and arc extinguishing shall be accomplished by means of DE-ION arc chutes.

.3 Common-trip breakers: with single handle for multi-pole applications.

.4 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.

.1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

.5 Circuit breakers with interchangeable trips as indicated.

.6 Circuit breakers to have minimum symmetrical rms interrupting capacity rating as indicated on the drawings.

.7 Circuit breakers identified as MCP will operate on the magnetic principle with a current sensing element in each pole.

.8 Circuit breakers 600 A through 2500 A frame shall be Cutler-Hammer type Westinghouse Series C with microprocessor-based RMS sensing trip units or approved equal in accordance with B7.

.1 Each moulded case circuit breaker microprocessor-based tripping system shall consist of three current transformers, and a flux-transfer shunt trip. The trip unit shall use microprocessor-based technology to provide the adjustable time-current protection functions. True RMS sensing circuit protection shall be achieved by analysing the secondary current signals received from the circuit breaker current transformers and initiating trip signals to the circuit breaker trip actuators when predetermined trip levels and time delay settings are reached.

.2 Interchangeable rating plugs shall establish the continuous trip ratings of each circuit breaker. Rating plugs shall be fixed. Rating plugs shall be interlocked such that a breaker cannot be closed and latched with the rating plug removed.

.3 The microprocessor-based trip unit shall have thermal memory capabilities to prevent the breaker from being reset following an overload condition until after a preset time delay.

.4 When the adjustable instantaneous setting is omitted, the trip unit shall be provided with an instantaneous override. Internal ground fault protection adjustable pick-up ratings shall not exceed 1200 amperes.

.5 Breakers shall have built-in test points for testing the long time delay, instantaneous, and ground fault functions of the breaker by means of a 120 Volt operated test set. Provide one test set capable of testing all breakers 600 ampere frame and above.

.6 System coordination shall be provided by the following microprocessor-based time-current curve shaping adjustments:

.1 Adjustable long time pick-up and delay.

.2 Adjustable short time pick-up and delay.

.3 Adjustable instantaneous pick-up.

.4 Adjustable ground pick up.

.7 Circuit Breakers shall be Cutler-Hammer type Westinghouse Series C circuit breakers, microprocessor-based RMS sensing trip units type Digitrip RMS 310 LSI or LSIG trip units or approved equal in accordance with B7.

.8 Accessories:

.1 Provide shunt trips, bell alarms, and auxiliary switches as shown on the contract drawings.

.9 Enclosure:

.1 All enclosed circuit breakers shall have EEMAC 1 general purpose enclosures.

.2 All enclosed circuit breakers shall have metal nameplates, front cover mounted, that contain a permanent record of catalog number and maximum rating. Provide handle mechanisms that are padlockable in the “OFF” position.

2.2 Thermal Magnetic Breakers

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

.2 Acceptable Product: Cutler-Hammer type Westinghouse Series C or approved equal in accordance with B7

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2.3 Magnetic Breakers

.1 Moulded case circuit breaker to operate automatically by means of magnetic tripping devices to provide instantaneous tripping for short circuit protection.

PART 3 - EXECUTION

3.1 Factory Testing

.1 Standard factory tests shall be performed on the equipment under this section. All tests shall be in accordance with the latest version of CSA standard.

3.2 Installation

.1 Install circuit breakers as indicated on drawings per the manufacturer's recommendations.

3.3 Field Settings

.1 The contractor shall perform field adjustments of the circuit breakers as required to place the equipment in final operating condition. The settings shall be in accordance with the drawings.

~End~

PART 1 - GENERAL

1.1 Section Includes

.1 Materials and installation for fused and non-fused disconnect switches.

1.2 Related Sections

.1 Section 26 05 01 - Common Work Results - Electrical.

.2 The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

1.3 References

.1 Canadian Standards Association (CSA International).

.1 CAN/CSA C22.2 No.4-M89 (R2000), Enclosed Switches.

.2 CSA C22.2 No.39-M89 (R2003), Fuseholder Assemblies.

1.4 Submittals

.1 Submit product data in accordance with The City of Winnipeg Standard Construction Specifications Section CW1110 – General Instructions.

PART 2 - PRODUCTS

2.1 Disconnect Switches

.1 Non-fusible, horsepower rated disconnect switch in CSA Enclosure, to CAN/CSA C22.2 No.4.

.2 One (1) 600V 200A disconnect switch and one (1) 600V 100A disconnect switch.

.3 Provision for padlocking in off switch position by three locks.

.4 Mechanically interlocked door to prevent opening when handle in ON position.

.5 Quick-make, quick-break action.

.6 ON-OFF switch position indication on switch enclosure cover.

.7 Provide two (2) auxiliary contacts.

2.2 Equipment Identification

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Indicate name of load controlled on size 4 nameplate.

PART 3 - EXECUTION

3.1 Installation

.1 Install disconnect switches.

~End~