

ELECTRICAL SYMBOL LEGEND

SINGLE LINE

|  |   |
|--|---|
|  | LOAD BREAK SWITCH                               |
|  | UNFUSED DISCONNECT SWITCH                       |
|  | FUSED CUTOUT SWITCH                             |
|  | FUSED DISCONNECT SWITCH                         |
|  | FUSE  |
|  | CIRCUIT BREAKER                                 |
|  | DRAW OUT CIRCUIT BREAKER                        |
|  | CIRCUIT BREAKER C/W CURRENT LIMITERS            |
|  | POWER CIRCUIT BREAKER C/W FRAME SIZE INDICATION |
|  | STAB TYPE DISCONNECT                            |
|  | LIGHTNING ARRESTER                              |
|  | SURGE ARRESTER                                  |
|  | THERMAL OVERLOAD DEVICE                         |
|  | CONTACT   |
|  | CONTACT   |
|  | CAPACITOR C/W KVAR RATING                       |
|  | POTENTIAL TRANSFORMER C/W VOLTAGE AND QUANTITY  |
|  | CURRENT TRANSFORMER C/W RATIO AND QUANTITY      |
|  | ZSCT  |
|  | DIGITAL METERING                                |
|  | TRANSIENT VOLTAGE SURGE SUPPRESSOR              |
|  | VARIABLE FREQUENCY DRIVE                        |
|  | METERING DEVICE                                 |
|  | ELECTRIC MOTOR                                  |
|  | HARMONIC FILTER kW RATED                        |
|  | DISTRIBUTION TRANSFORMER                        |
|  | ISOLATION TRANSFORMER                           |
|  | SHIELDED ISOLATION TRANSFORMER                  |
|  | TERMINAL  |
|  | CABLE TERMINATION                               |
|  | WEATHERHEAD                                     |
|  | BUS BAR WITH CONNECTION                         |

| LINE SYMBOLS   |                                    |
|--|------------------------------------|
|  | CONDUCTOR                          |
|  | UNDERGROUND CONDUCTOR              |
|  | OVERHEAD CONDUCTOR                 |
|  | TRIPPING OR INTERLOCKING CIRCUIT   |
|  | EQUIPMENT OUTLINE                  |
|  | KEY INTERLOCKING                   |
| SWITCH GEAR DEVICE NUMBER AND FUNCTIONS  |                                    |
|  | SYNCHRONIZATION CHECK RELAY        |
|  | AC UNDER VOLTAGE                   |
|  | DIRECTIONAL POWER RELAY            |
|  | LOSS OF FIELD PROTECTION RELAY     |
|  | PHASE BALANCE CURRENT RELAY        |
|  | PHASE SEQUENCE RELAY               |
|  | INCOMPLETE SEQUENCE RELAY          |
|  | AC THERMAL OVERLOAD RELAY          |
|  | AC INSTANTANEOUS OVERCURRENT RELAY |
|  | AC TIME DELAY OVERCURRENT RELAY    |
|  | AC CIRCUIT BREAKER                 |
|  | AC OVER VOLTAGE RELAY              |
|  | SUDDEN PRESSURE RELAY              |
|  | PHASE ANGLE MEASURING RELAY        |
|  | UNDER FREQUENCY RELAY              |
|  | LOCKOUT RELAY                      |
|  | DIFFERENTIAL CURRENT RELAY         |
|  | REVERSE POWER RELAY                |
| SPECIALIZED RELAY FUNCTION ARE INDICATED BY A LETTER SUFFIX. e.g.<br>S - STALL. G - GROUND. T - TEMPERATURE. |                                    |

|  | OHM RATING IDENTIFIER  |
|--|--|
|  | RESISTOR   |
|  | POTENTIOMETER  |
|  | THERMISTOR   |
| 3 PHASE TRANSFORMER CONNECTION SYMBOLS |  |
|  | DELTA  |
|  | WYE  |
|  | WYE OR STAR WITH SOLID GROUNDED NEUTRAL                                    |
|  | WYE OR STAR WITH RESISTANCE GROUNDED NEUTRAL AND MAXIMUM CURRENT INDICATED |
|  | FEEDER IDENTIFICATION SYMBOL   |
|  | GROUND   |
|  | STARTER - FVNR FULL VOLTAGE NON-REVERSING                                  |
|  | STARTER - SOFT START   |
|  | STARTER - 2 SPEED, 1 WINDING   |
|  | AUTOMATIC TRANSFER SWITCH  |
|  | STAND-BY GENERATOR   |

SCHEMATIC

|  |  |
|--|--|
|  | DRAW-OUT DEVICE  |
|  | BREAKER  |
|  | FUSE   |
|  | THERMAL OVERLOAD                                       |
|  | CONTROL TRANSFORMER                                    |
|  | GROUND   |
|  | BATTERY  |
|  | N.O. CONTACT   |
|  | N.C. CONTACT   |
|  | TIME DELAY CLOSE ON ENERGIZE                           |
|  | TIME DELAY OPEN ON DE-ENERGIZE                         |
|  | TIME DELAY CLOSE ON DE-ENERGIZE                        |
|  | TIME DELAY OPEN ON ENERGIZE                            |
|  | SINGLE POLE SINGLE THROW SWITCH                        |
|  | SINGLE POLE DOUBLE THROW SWITCH                        |
|  | LEVEL SWITCH (N.C.) OPENS ON RISING LEVEL              |
|  | LEVEL SWITCH (N.O.) CLOSES ON RISING LEVEL             |
|  | FLOW SWITCH (N.C.) OPENS ON FLOW                       |
|  | FLOW SWITCH (N.O.) CLOSES ON FLOW                      |
|  | PRESSURE SWITCH (N.C.) OPENS ON RISING PRESSURE        |
|  | PRESSURE SWITCH (N.O.) CLOSES ON RISING PRESSURE       |
|  | TEMPERATURE SWITCH (N.C.) OPENS ON RISING TEMPERATURE  |
|  | TEMPERATURE SWITCH (N.O.) CLOSES ON RISING TEMPERATURE |
|  | VIBRATION SWITCH (N.C.)                                |
|  | VIBRATION SWITCH (N.O.)                                |
|  | LIMIT SWITCH (N.C.)                                    |
|  | LIMIT SWITCH (N.C. HELD OPEN)                          |
|  | LIMIT SWITCH (N.O.)                                    |
|  | LIMIT SWITCH (N.O. HELD CLOSED)                        |
|  | MOMENTARY PUSHBUTTON (N.C.)                            |
|  | MOMENTARY PUSHBUTTON (N.O.)                            |
|  | MUSHROOM HEAD  |

|  |  |
|--|--|
|  | NO CONNECTION  |
|  | CONNECTION   |
|  | CONTROL PANEL TERMINAL   |
|  | MCC TERMINAL   |
|  | FIELD TERMINAL   |
|  | SWITCH GEAR  |
|  | EQUIPMENT CONTROL PANEL  |
|  | FIELD JUNCTION BOX TERMINAL  |
|  | PANEL WIRING   |
|  | FIELD WIRING   |
|  | CONTROL RELAY 284 (TYP.) COIL  |
|  | MOTOR CONTROL RELAY (TYP.) COIL  |
|  | TIME - DELAY RELAY (TYP.) COIL   |
|  | PILOT LIGHT  |
|  | INDICATING LIGHT: A - AMBER G - GREEN<br>B - BLUE R - RED<br>C - CLEAR W - WHITE |
|  | PUSH-TO-TEST PILOT LIGHT   |
|  | SOLENOID   |
|  | 2 POSITION MAINTAINED SELECTOR SWITCH  |
|  | 3 POSITION MAINTAINED SELECTOR SWITCH  |

FOR INFORMATION ONLY - NOT IN CONTRACT

|   |  |                                    |                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |
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| <table border="1"> <tr><td>B.M. ELEV.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> | B.M. ELEV.   |                                    |                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | <br><br> | ENGINEER'S SEAL<br><b>PRELIMINARY</b><br>NOT FOR CONSTRUCTION | <br><b>THE CITY OF WINNIPEG</b><br>WATER AND WASTE DEPARTMENT<br>ENGINEERING DIVISION<br>WATER TREATMENT PLANT | CITY FILE NUMBER<br>SHEET 1 OF 2 |
|   | B.M. ELEV.   |                                    |                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |
|   |  |                                    |                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |
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| DESIGNED BY PS<br>CHECKED BY CPG  | APPROVED BY<br>RELEASED FOR CONSTRUCTION BY:                 | CONSULTANT DRAWING NO.<br>WM-E0010 | CITY DRAWING NUMBER       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |
| DRAWN BY CPG  | SCALE: NTS<br>NTS  | DATE 2005/07/26                    | ELECTRICAL SYMBOLS LEGEND |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |
| NO. REVISIONS<br>DATE BY  | 01 REVISED 05/10/28 CPG<br>00 ISSUED FOR TENDER 05/04/17 ERC | DATE                               | DATE                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |          |   |  |                                  |