

AL - 814094
8032-10-11
AECOM REVIEW
DRFT CHK
AECOM/NOV/2014/11/11

INSTRUMENT & FUNCTION SYMBOLS

DISCRETE INSTRUMENTS
FIELD OR LOCALLY MOUNTED
NOT PANEL OR CABINET MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

DISCRETE INSTRUMENTS
SHARING COMMON HOUSING

DISCRETE INSTRUMENTS
SECONDARY OR LOCAL CONTROL ROOM
FIELD OR LOCAL CONTROL PANEL MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

DISCRETE INSTRUMENTS
CENTRAL OR MAIN CONTROL ROOM
FRONT OF MAIN PANEL MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

ANNUNCIATOR POINT
FIELD OR LOCALLY MOUNTED
NOT PANEL OR CABINET MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

ANNUNCIATOR POINT
FIELD OR LOCAL CONTROL PANEL
PANEL MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

ANNUNCIATOR POINT
CENTRAL OR MAIN CONTROL ROOM
MAIN PANEL MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR

CDACS (COMPUTER DATA ACQUISITION & CONTROL SYSTEM)
INPUT, OUTPUT, OR FUNCTION
ACCESSIBLE
EG. DCS OR SCADA

SHARED DISPLAY OR CONTROL
DEDICATED SINGLE FUNCTION DEVICE
FIELD OR LOCALLY MOUNTED
NORMALLY ACCESSIBLE TO THE OPERATOR AT DEVICE

SHARED DISPLAY OR CONTROL
SECONDARY OR LOCAL CONSOLE
FIELD OR LOCAL CONTROL PANEL
VISIBLE ON VIDEO DISPLAY
NORMALLY ACCESSIBLE TO AN OPERATOR AT CONSOLE

SHARED DISPLAY OR CONTROL
CENTRAL OR MAIN CONSOLE
VISIBLE ON VIDEO DISPLAY
NORMALLY ACCESSIBLE TO AN OPERATOR AT CONSOLE

PROGRAMMABLE LOGIC CONTROL
FIELD OR LOCALLY MOUNTED
NOT PANEL OR CABINET MOUNTED
NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE

PROGRAMMABLE LOGIC CONTROL
SECONDARY OR LOCAL CONSOLE
FIELD OR LOCAL CONTROL PANEL
VISIBLE ON VIDEO DISPLAY
ACCESSIBLE TO AN OPERATOR AT CONSOLE

PROGRAMMABLE LOGIC CONTROL
CENTRAL OR MAIN CONSOLE
VISIBLE ON VIDEO DISPLAY
NORMALLY ACCESSIBLE TO AN OPERATOR AT CONSOLE

COMPUTER FUNCTIONS
FIELD OR LOCALLY MOUNTED

COMPUTER FUNCTIONS
SECONDARY OR LOCAL COMPUTER
VISIBLE ON VIDEO DISPLAY
NORMALLY ACCESSIBLE TO AN OPERATOR AT TERMINAL

COMPUTER FUNCTIONS
CENTRAL OR MAIN COMPUTER
VISIBLE ON VIDEO DISPLAY
NORMALLY ACCESSIBLE TO AN OPERATOR AT TERMINAL

COMMUNICATION INTERFACE
COMMUNICATES TO AN ADDRESSABLE DEVICE
(i.e. DB=DEVICEBUS, MB=MODBUS, E=ETHERNET
IY=CURRENT-FIELDBUS, FB=FIELD BUS, PB=PROFIBUS)

NOTE: INSTRUMENTS & DEVICES NOT NORMALLY ACCESSIBLE TO THE OPERATOR
OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY
USING THE SAME SYMBOLS BUT WITH DASHED HORIZONTAL BARS, I.E.:

INSTRUMENT FIELD DEVICE IDENTIFICATION

FIELD DEVICE NAMING CONVENTION

POSITION: N - 999 - ABCD - 1234 - X

PLANT CODE (OPTIONAL)

PROCESS AREA

ALPHA SUFFIX

LOOP OR DEVICE NUMBER

INSTRUMENT IDENTIFICATION CODE
- UP TO FOUR CHARACTERS
- REFER TO ABBREVIATION LIST

NOTE: HYPHENS ARE OPTIONAL

FIELD DEVICE IDENTIFICATION

INSTRUMENT IDENTIFICATION CODE
- UP TO FOUR CHARACTERS
- REFER TO ABBREVIATION LIST

OPERATING FUNCTION
- OPTIONAL
- REFER TO ABBREVIATION LIST

PROCESS AREA

LOOP OR DEVICE NUMBER

POINT TAG NAMING CONVENTION

POSITION: N - 999 - ABCD - 1234 - X

PLANT CODE (OPTIONAL)

PROCESS AREA

ALPHA SUFFIX

LOOP OR DEVICE NUMBER

FUNCTIONAL IDENTIFICATION CODE
OR INTERNAL FUNCTIONAL CODE
- UP TO FOUR CHARACTERS
- REFER TO ABBREVIATION LIST

NOTE: HYPHENS ARE OPTIONAL

POINT IDENTIFICATION

FUNCTIONAL DESCRIPTION

LOOP OR DEVICE NUMBER

PROCESS AREA

FUNCTIONAL IDENTIFICATION CODE
- UP TO FOUR CHARACTERS
- REFER TO ABBREVIATION LIST

I/O OR COMMUNICATION TYPE

PROCESS & INSTRUMENTATION ABBREVIATIONS

OPERATING FUNCTIONS

ANALYTICAL FUNCTIONS

EXPOSED PROBE OR GAS DETECTOR

TAPPED OR SAMPLED

IN-LINE

CH4 METHANE
Cl2 CHLORINE
CO CARBON MONOXIDE
COMB COMBUSTIBLE GAS
DO DISSOLVED OXYGEN
HC HYDROCARBONS
H2S HYDROGEN SULFIDE
HUM HUMIDITY
LEL LOWER EXPLOSIVE LIMIT
MLSS MIXED LIQUOR SUSPENDED SOLIDS
NH4 AMMONIA GAS
NO NITRIC OXIDE
NO2 NITROGEN DIOXIDE
NO3 NITRATE
O2 OXYGEN
ORP OXIDATION REDUCTION POTENTIAL
OUR OXYGEN UPTAKE RATE
pH pH
PO4 PHOSPHORUS
SO2 SULPHUR DIOXIDE
SS SUSPENDED SOLIDS (DENSITY)
TSS TOTAL SUSPENDED SOLIDS
TURB TURBIDITY
VIB VIBRATION

SWITCHING FUNCTIONS

ACK ACKNOWLEDGE (ALARM)
ALOH AUTO-LOCAL-OFF-HAND
A/M AUTO/MANUAL
CLS CLOSE
COB COMPUTER-OFF-BYPASS
COH COMPUTER-OFF-HAND
ESD EMERGENCY SHUTDOWN DEVICE
F/S FAST-SLOW SELECTION
FOR FORWARD-OFF-REVERSE
FWD FORWARD SELECTION
HA HAND-AUTO SELECTION
HOA HAND-OFF-AUTO SELECTION
L/L LEAD-LAG SELECTION
LOR LOCAL-OFF-REMOTE
LOS LOCK-OFF-STOP
L/R LOCAL-REMOTE SELECTION
M/A MANUAL-AUTO SELECTION
MAN MANUAL
O/C OPEN/CLOSE
O/O ON-OFF SELECTION
OCA OPEN-CLOSE-AUTO SELECTION
O/A ON-OFF-AUTO SELECTION
OPN OPEN
OSC OPEN-STOP-CLOSE SELECTION
OVR INTERLOCK OVERRIDE SWITCH
P/M POSITIONER/MANUAL
P/R PANEL/REMOTE
POT POTENTIOMETER
R/B RUN/BYPASS
R/L RAISE-LOWER
REV REVERSE SELECTION
RST RESET
SEL SELECTOR SWITCH
S/S START-STOP
SP SET POINT

GENERAL INSTRUMENTATION

AI ANALOG INPUT
AO ANALOG OUTPUT
DI DIGITAL INPUT
DO DIGITAL OUTPUT
I/O INPUT/OUTPUT

PROCESS EQUIPMENT

BFV BUTTERFLY VALVE
CV CHECK VALVE
M MOTOR
P PUMP
SG SLUICE GATE
SLG SLIDE GATE

COMMODITIES

DRA DRAIN
STM STORM WATER

PIPE MATERIALS

CON CONCRETE
CS CARBON STEEL

ANNOTATION SYMBOLS

PIPE IDENTIFICATION

0000 - 999 - NNN - MMM

LINE NUMBER

NOMINAL DIAMETER

PIPE MATERIAL

COMMODITY

CHANNEL / CHUTE IDENTIFICATION

999 - NNN

COMMODITY

CHANNEL OR CHUTE SIZE
WIDTH x HEIGHT (mm)

INSTRUMENT SIGNAL IDENTIFICATION

NNN

SIGNAL IDENTIFICATION

EQUIPMENT & VALVE IDENTIFICATION

MOTORIZED EQUIPMENT

Equipment Abbreviation

Equipment Number

Process Area

NON-MOTORIZED EQUIPMENT / VALVES

Equipment / Valve Abbreviation

Equipment Number

Process Area

PROCESS LINE IDENTIFICATION

FLOW: LEFT TO RIGHT

REFERENCE NUMBER

COMMODITY

TO / FROM

REFERENCE DRAWING

SOURCE OR DESTINATION

FLOW: BOTH DIRECTIONS

REFERENCE NUMBER

COMMODITY

TO / FROM

REFERENCE DRAWING

SOURCE OR DESTINATION

FLOW: RIGHT TO LEFT

REFERENCE NUMBER

COMMODITY

TO / FROM

REFERENCE DRAWING

SOURCE OR DESTINATION

GENERAL SYMBOLS

FLOW ARROW

OVER / UNDER FLOW ARROW

WATER LEVEL

GATE SYMBOLS

SLUICE GATE

SLIDE GATE

VALVE SYMBOLS

DUCKBILL CHECK VALVE

BUTTERFLY VALVE

EQUIPMENT SYMBOLS

SUBMERSIBLE PUMP

SUBMERSIBLE PROPELLER PUMP

MOTOR

FLOAT

ELECTRICAL SUPPLY

INSTRUMENT SIGNAL TYPES

INSTRUMENT SUPPLY, PROCESS TAPS

PNEUMATIC SIGNAL

ELECTRIC SIGNAL

CAPILLARY TUBE OR FILLED SYSTEM

ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)

ELECTROMAGNETIC OR SONIC SIGNAL (UNGUIDED)

SOFTWARE OR DATA LINK

FOUNDATION FIELDBUS

HYDRAULIC

MECHANICAL LINK

INSTRUMENT IDENTIFICATION TABLE

| LETTER | FIRST LETTER (4) | | SUCCEEDING-LETTERS (3) | | |
|--------|---------------------------------|---------------------|-----------------------------|--|--|
| | MEASURED OR INITIATING VARIABLE | MODIFIER | READOUT OR PASSIVE FUNCTION | OUTPUT FUNCTION | MODIFIER |
| A | ANALYSIS | | ALARM | | |
| B | BURNER, COMBUSTION | | USER'S CHOICE | USER'S CHOICE | USER'S CHOICE |
| C | USER'S CHOICE (1) | | | CONTROL | |
| D | USER'S CHOICE (1) | DIFFERENTIAL | | | |
| E | VOLTAGE | | SENSOR (PRIMARY ELEMENT) | | |
| F | FLOW RATE | RATIO (FRACTION) | | | |
| G | USER CHOICE (1) | | GLASS, VIEWING DEVICE | | |
| H | HAND | | | | H-HIGH-(ALARM) HH-HIGH-(SHUTDOWN) |
| I | CURRENT (ELECTRICAL) | | INDICATE | | |
| J | POWER | SCAN | | | |
| K | TIME, TIME SCHEDULE | TIME RATE OF CHANGE | | CONTROL STATION | |
| L | LEVEL | | LIGHT | | L-LOW-(ALARM) LL-LOW-(SHUTDOWN) MIDDLE, INTERMEDIATE |
| M | USER'S CHOICE (1) | MOMENTARY | | | |
| N | USER'S CHOICE (1) | | USER'S CHOICE | USER'S CHOICE | USER'S CHOICE |
| O | USER'S CHOICE (1) | | ORIFICE, RESTRICTION | | |
| P | PRESSURE, VACUUM | | POINT (TEST) CONNECTION | | |
| Q | QUANTITY | INTEGRATE, TOTALIZE | | | |
| R | RADIATION | | RECORD | | |
| S | SPEED, FREQUENCY, SOLENOID | SAFETY | | SWITCH, OR SAFETY | |
| T | TEMPERATURE | | | TRANSMIT | |
| U | MULTIVARIABLE | | MULTIFUNCTION | MULTIFUNCTION | MULTIFUNCTION |
| V | VIBRATION, MECHANICAL ANALYSIS | | | VALVE, DAMPER, LOUVER | |
| W | WEIGHT, FORCE | | WELL | | |
| X | UNCLASSIFIED | X AXIS | UNCLASSIFIED | UNCLASSIFIED | UNCLASSIFIED |
| Y | EVENT, STATE OR PRESENCE | Y AXIS | | RELAY, COMPUTE, CONVERT | |
| Z | POSITION, DIMENSION | Z AXIS | | DRIVER, ACTUATOR, UNCLASSIFIED - FINAL CONTROL ELEMENT | |

NOTES:
(1) USER'S CHOICE - INTENDED TO COVER UNLISTED MEANINGS SPECIFIC TO A PROJECT
(2) INSTRUMENT SYMBOLS AND IDENTIFICATION STANDARD, ISA-S5.1-1984

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES
BID OPPORTUNITY NO. 712-2013

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE, BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

| B.M. ELEV. | NO. | ISSUED FOR | DATE | BY |
|------------|-----|---------------------|----------|-----|
| | 1 | ISSUED FOR ADDENDUM | 14/01/14 | KLC |
| | 0 | ISSUED FOR TENDER | 13/10/15 | SRG |

AECOM

DESIGNED BY: CL
CHECKED BY:

DRAWN BY: SRG
APPROVED BY:

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

RELEASED FOR CONSTRUCTION BY:

CONSULTANT DRAWING NO. 60273041-SHT-01-Con3- P-1001

THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT

PLESSIS ROAD TWINNING AND GRADE SEPARATION AT CN REDDITT SUBDIVISION CONTRACT 3

CITY DRAWING NUMBER U238-2014-2371
SHEET 1 OF 5

PUMPING STATION
PROCESS MECHANICAL
LEGEND & ABBREVIATIONS

P-1001

