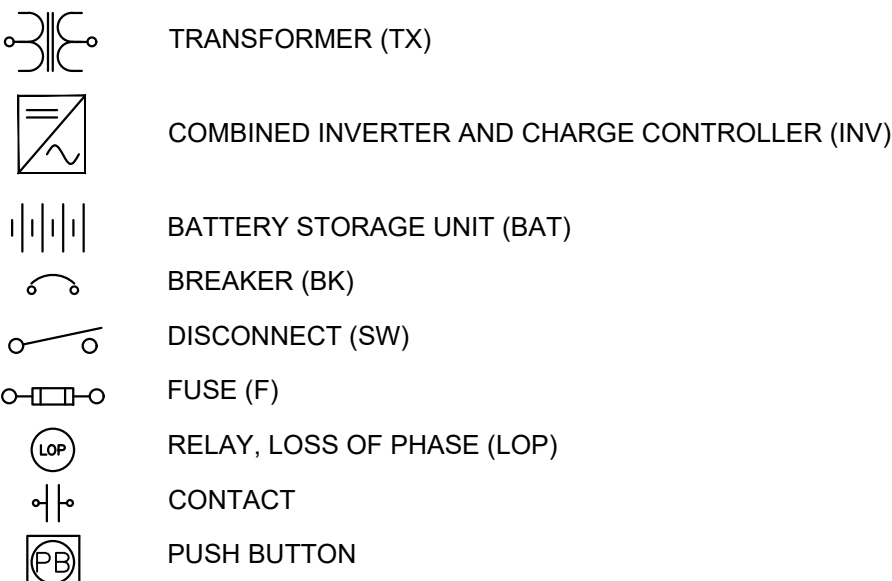


1. BECAUSE OF THE PROTOTYPE NATURE OF THE TRIAL, THE CA & HEMSC ARE IN THE SAME ENCLOSURE. FOR COMMERCIAL PURPOSES, THE CA & HEMSC ARE TO BE SEPARATE STANDALONE ELEMENTS WHEREBY FOR COMPETITIVE AND PRIVACY REASONS, THE CA IS OWNED, CONTROLLED AND MAINTAINED BY THE UTILITY AND THE HEMSC IS OWNED, CONTROLLED AND MAINTAINED BY THE DER PARTICIPANT.
2. THE CA CAN BE A GATEWAY TO MANY HEMSCS, BUT AT LEAST ONE IS REQUIRED. THE HEMSC CAN MANAGE MANY HEMS AND THESE HEMS CAN BE MANY TYPES OF SOURCES (EG. BESS, GENERATORS, ...), OR LOADS (EG. SMART THERMOSTATS, LOAD CONTROL MODULES, ...).
3. IIGEN IS TO COMPLY WITH THE INTEROPERABILITY STANDARD IEC62030.5, WHICH ALSO DEFINES THE MINIMUM CYBERSECURITY REQUIREMENTS, AND ADHERE TO BEST PRIVACY-BY-DESIGN PRINCIPLES.

PROGRAM MANAGER:	CONNECTING UTILITY REPRESENTATIVE RESPONSIBLE OF THE DISTRIBUTED ENERGY RESOURCES PROGRAM
PARTICIPANT:	OWNER OF THE DISTRIBUTED ENERGY RESOURCES
DER	DISTRIBUTED ENERGY RESOURCES
TA	TRANSFORMER AGENT
CA	CUSTOMER AGENT
HEMSC	HOME ENERGY MANAGEMENT SYSTEM CONTROLLER
DG	DISTRIBUTED GENERATION
DP	DISTRIBUTION PANEL
MET	METERING RELAY



INVERTERS	
REGULATORY APPROVALS AND COMPLIANCE	UL1741, CSA 22.2 No 107.1 IEEE 1547

BATTERY BANK	
REGULATORY APPROVALS AND COMPLIANCE	UL1973 CSA 22.2 No.60950-1

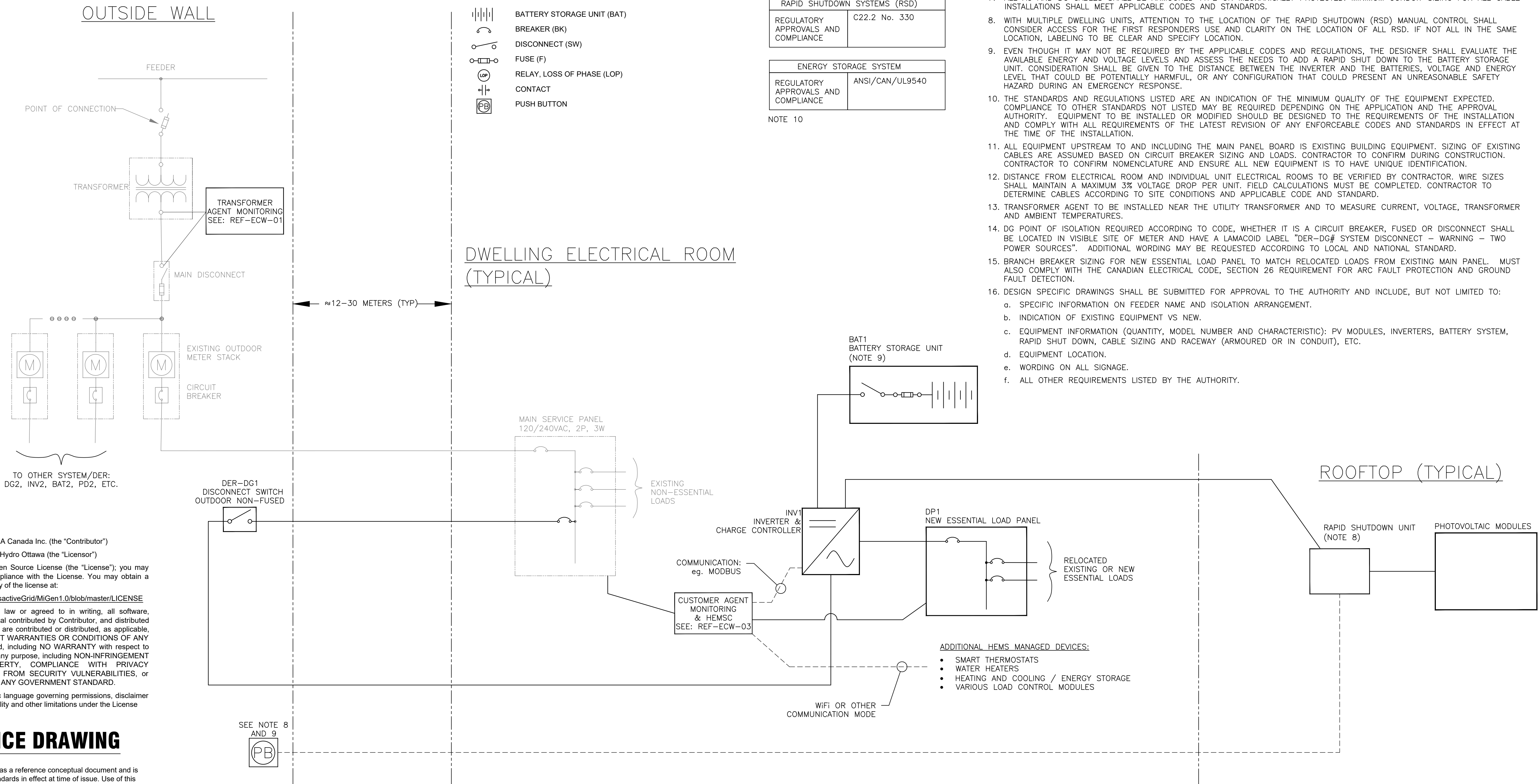
PHOTOVOLTAIC MODULE	
REGULATORY APPROVALS AND COMPLIANCE	CSA-C22.2 No.61215 CSA-C22.2 No.61730 UL1703

RAPID SHUTDOWN SYSTEMS (RSD)	
REGULATORY APPROVALS AND COMPLIANCE	C22.2 No. 330

ENERGY STORAGE SYSTEM	
REGULATORY APPROVALS AND COMPLIANCE	ANSI/CAN/UL9540

NOTES:-

1. THIS DRAWING IS A GENERIC REPRESENTATION OF AN INSTALLATION WITH ONE OR MORE SINGLE RESIDENTIAL-HOMES OR MULTIPLE DWELLING UNITS CONNECTED TO A SINGLE PHASE TRANSFORMER. IT CAN BE USED AS A GUIDE TO DEVELOP A SITE SPECIFIC DRAWING ACCORDING TO SITE SPECIFIC CONDITIONS. CONTACT DER PROGRAM MANAGER FOR ADAPTATION REQUIRED FOR YOUR SPECIFIC APPLICATION.
2. ALL PARTS AND WORK SHALL BE ACCORDING TO CODES, STANDARDS AND REGULATIONS APPLICABLE TO THE LOCATION OF THE INSTALLATION. NEVERTHELESS DUE TO THE NEW NATURE OF THE TECHNOLOGY THAT INTRODUCES BATTERY STORAGE IN RESIDENTIAL DWELLINGS, IT MAY BE NECESSARY TO GO ABOVE THE REQUIREMENTS OF CODES AND STANDARDS TO INSURE THE SAFETY OF THE PUBLIC AND PROPERTY.
3. METERING REQUIREMENTS TO BE REPLACED WITH BI-DIRECTIONAL REVENUE METER. THE LOCAL UTILITY SHALL BE CONTACTED TO VALIDATE THE REQUIREMENTS SPECIFIC TO THE LOCATION.
4. METER BASE SHALL BE ONE OF THE APPROVED MANUFACTURERS AND CATALOGUE NUMBER AS PER LOCAL UTILITY METERING REQUIREMENT.
5. EQUIPMENT LAMACOID LABELING REQUIREMENT SHALL BE VALIDATED WITH THE LOCAL AUTHORITY. WHERE MULTIPLE DWELLING UNITS ARE INVOLVED AND IMPLIED SEPARATE DISTRIBUTED ENERGY RESOURCES / PARTICIPANT CONTRACTUAL AGREEMENT, IT SHALL BE REFLECTED IN THE LABELING. FOR EXAMPLE, THE ACRONYM "DER" COULD BE REPLACE BY A REFERENCE TO THE OWNER OF THE DER.
6. INVERTER GROUNDING / BONDING AS PER MANUFACTURER INSTRUCTIONS AND APPLICABLE CODES AND STANDARDS.
7. ALL AC AND DC CABLES SHALL BE ARMoured TYPE OR MECHANICALLY PROTECTED. MINIMUM CONDUIT SIZING FOR ALL CABLE INSTALLATIONS SHALL MEET APPLICABLE CODES AND STANDARDS.
8. WITH MULTIPLE DWELLING UNITS, ATTENTION TO THE LOCATION OF THE RAPID SHUTDOWN (RSD) MANUAL CONTROL SHALL CONSIDER ACCESS FOR THE FIRST RESPONDERS USE AND CLARITY ON THE LOCATION OF ALL RSD. IF NOT ALL IN THE SAME LOCATION, LABELING TO BE CLEAR AND SPECIFY LOCATION.
9. EVEN THOUGH IT MAY NOT BE REQUIRED BY THE APPLICABLE CODES AND REGULATIONS, THE DESIGNER SHALL EVALUATE THE AVAILABLE ENERGY AND VOLTAGE LEVELS AND ASSESS THE NEEDS TO ADD A RAPID SHUT DOWN TO THE BATTERY STORAGE UNIT. CONSIDERATION SHALL BE GIVEN TO THE DISTANCE BETWEEN THE INVERTER AND THE BATTERIES, VOLTAGE AND ENERGY LEVEL THAT COULD BE POTENTIALLY HARMFUL, OR ANY CONFIGURATION THAT COULD PRESENT AN UNREASONABLE SAFETY HAZARD DURING AN EMERGENCY RESPONSE.
10. THE STANDARDS AND REGULATIONS LISTED ARE AN INDICATION OF THE MINIMUM QUALITY OF THE EQUIPMENT EXPECTED. COMPLIANCE TO OTHER STANDARDS NOT LISTED MAY BE REQUIRED DEPENDING ON THE APPLICATION AND THE APPROVAL AUTHORITY. EQUIPMENT TO BE INSTALLED OR MODIFIED SHOULD BE DESIGNED TO THE REQUIREMENTS OF THE INSTALLATION AND COMPLY WITH ALL REQUIREMENTS OF THE LATEST REVISION OF ANY ENFORCEABLE CODES AND STANDARDS IN EFFECT AT THE TIME OF THE INSTALLATION.
11. ALL EQUIPMENT UPSTREAM TO AND INCLUDING THE MAIN PANEL BOARD IS EXISTING BUILDING EQUIPMENT. SIZING OF EXISTING CABLES ARE ASSUMED BASED ON CIRCUIT BREAKER SIZING AND LOADS. CONTRACTOR TO CONFIRM DURING CONSTRUCTION. CONTRACTOR TO CONFIRM NOMENCLATURE AND ENSURE ALL NEW EQUIPMENT IS TO HAVE UNIQUE IDENTIFICATION.
12. DISTANCE FROM ELECTRICAL ROOM AND INDIVIDUAL UNIT ELECTRICAL ROOMS TO BE VERIFIED BY CONTRACTOR. WIRE SIZES SHALL MAINTAIN A MAXIMUM 3% VOLTAGE DROP PER UNIT. FIELD CALCULATIONS MUST BE COMPLETED. CONTRACTOR TO DETERMINE CABLES ACCORDING TO SITE CONDITIONS AND APPLICABLE CODE AND STANDARD.
13. TRANSFORMER AGENT TO BE INSTALLED NEAR THE UTILITY TRANSFORMER AND TO MEASURE CURRENT, VOLTAGE, TRANSFORMER AND AMBIENT TEMPERATURES.
14. DG POINT OF ISOLATION REQUIRED ACCORDING TO CODE, WHETHER IT IS A CIRCUIT BREAKER, FUSED OR DISCONNECT SHALL BE LOCATED IN VISIBLE SITE OF METER AND HAVE A LAMACOID LABEL "DER-DG# SYSTEM DISCONNECT – WARNING – TWO POWER SOURCES". ADDITIONAL WORDING MAY BE REQUESTED ACCORDING TO LOCAL AND NATIONAL STANDARD.
15. BRANCH BREAKER SIZING FOR NEW ESSENTIAL LOAD PANEL TO MATCH RELOCATED LOADS FROM EXISTING MAIN PANEL. MUST ALSO COMPLY WITH THE CANADIAN ELECTRICAL CODE, SECTION 26 REQUIREMENT FOR ARC FAULT PROTECTION AND GROUND FAULT DETECTION.
16. DESIGN SPECIFIC DRAWINGS SHALL BE SUBMITTED FOR APPROVAL TO THE AUTHORITY AND INCLUDE, BUT NOT LIMITED TO:
 - a. SPECIFIC INFORMATION ON FEEDER NAME AND ISOLATION ARRANGEMENT.
 - b. INDICATION OF EXISTING EQUIPMENT VS NEW.
 - c. EQUIPMENT INFORMATION (QUANTITY, MODEL NUMBER AND CHARACTERISTIC): PV MODULES, INVERTERS, BATTERY SYSTEM, RAPID SHUT DOWN, CABLE SIZING AND RACEWAY (ARMoured OR IN CONDUIT), ETC.
 - d. EQUIPMENT LOCATION.
 - e. WORDING ON ALL SIGNAGE.
 - f. ALL OTHER REQUIREMENTS LISTED BY THE AUTHORITY.



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Project Manager:
E. Cantin, tech

Drawing title: SINGLE PHASE SYSTEM
GENERAL SITE INTERCONNECTION
SINGLE LINE DIAGRAM

Project number:
A000597B

Designed by:
R.Langlois

Drawn by:
A.Langlois

Verified by:
E.Cantin

Revision:
0

Drawing N°:
REF-ESL-01

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