Appendix « E »

TECHNICAL SPECIFICATIONS & SCOPE OF WORK_V2

Appendix "E"
TECHNICAL SPECIFICATIONS & SCOPE OF WORK_V2

Subject: Installation of Level 2 Electric Vehicle Charging Station at seven (7) AAFC Research Stations 1) Kentville, NS ; 2) St. Foy (Québec), QC ; 3) London, ON; 4) Saint-Hyacinthe, QC ; 5) Charlottetown, PEI ; 6) Fredericton, NB ; 7) St. John's, NFLD.

1.0 Introduction

To provide a turnkey solution for electric vehicle charging stations at seven (7) Agriculture & Agri-Food Canada Research Centres, located at: 1)Kentville, NS ; 2) St. Foy (Québec), QC ; 3) London, ON; 4) Saint-Hyacinthe, QC ; 5) Charlottetown, PEI ; 6) Fredericton, NB ; 7) St. John's, NFLD.

This turnkey solution shall include the supply and installation of the electrical vehicle supply equipment (EVSE) and add-on components (energy monitoring and payment system), coordination of work to be completed by a certified local electrician, and project management services from start to finish -- from an initial site visit through to when the equipment is put into service to ensure it is functioning as designed. The EVSE will have the capacity to charge multiple vehicles simultaneously, monitor energy usage, control access and provide a pay-per-use function for employee usage. The installation will also permit potential future expansion with minimal operating and infrastructure costs. The EVSE must be Open Charge Point Protocol (version 1.5 or later), or proprietary equipment compatible with AAFC's existing system for monitoring and controlling electric vehicle usage.

The purpose of this Request for Proposal (RFP) is to invite design-build contractors to submit proposals for consideration.

2.0 Construction Works Timeline:

Commencement of Works
Canada intends of having the works start at contract award (tentative date August 29, 2018).

Completion of Works
The contractor shall complete the works by October 31st, 2018.

3.0 Non-Mandatory Site Visits:

Although not mandatory, potential bidders or their representatives are encouraged to participate in as many site visits as possible. The site visits will permit interested bidders to confirm the feasibility of the installation and if the existing electrical service will handle the new load from EVSE and to identify the extent of work required.

It is recommended that the Bidder or a representative of the Bidder visit the work site. Arrangements have been made for a tour of the work sites. Should contractors or their representatives choose to visit the jobsites, below are the dates and times for each location.

1) Kentville, Nova Scotia: **Tuesday July 31, 2018, at 10:00am (local time),** 32 Main Street, Kentville, NS, B4N 1J5;

2) St. Foy (Québec), Québec: **Tuesday July 31, 2018, at 10:00am (local time),** 2560 Hochelaga Boulevard, Québec, G1V 2J3;

3) London, Ontario, **Tuesday July 31, 2018, at 10:00am (local time),** 1391 Sandford Street, London, ON N5V 4T3;

4) Saint-Hyacinthe, Québec: **Wednesday August 1, 2018 at 10:00 am (local time),** 3600 Casavant Blvd W, Saint-Hyacinthe, Qu J2S 8E3;

5) Charlottetown PEI: **Wednesday August 1, 2018 at 10:00 am (local time),** 440 University Ave, Charlottetown, PEI, C1A 4N6;

6) Fredericton, New Brunswick: **Thursday August 2, 2018 at 10:00 am (local time),** 850 Lincoln Road, Fredericton, NB E3B 4Z7;

7) St. John's, Newfoundland**, Thursday, August 2, 2018 at 10:00 am (local time),** 308 Brookfield Road, St. John's, NL, A1E 0B2.

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Bidders will be requested to sign an attendance form.

Bidders who do not attend or send a representative will not be given an alternative appointment but they will not be precluded from submitting a bid.

Any clarifications or changes to the bid solicitation resulting from the site visit will be included as an amendment to the bid solicitation.

4.0 Technical Specifications

General Requirements for all locations:

- Two Level 2 Chargers at each location, mounted on a single pedestal.
- EVSE Open Charge Point Protocol (version 1.5 or later) or proprietary equipment compatible with
- AAFC's existing data management system. (Note: AAFC currently has a network of 20 electric vehicle charging stations which are monitored with software offered by FLO Global Management System. If proprietary equipment is offered, it must integrate seamlessly into this existing data management system.)
- Safety disconnect (UL Listed circuit breaker) must be on each device
- Installed on AAFC circuit breaker minimum rating of 40 Amps
- Capacity to optimally share the available maximum current amongst up to four charging stations which are connected in parallel to the same branch circuit, while making sure that the maximum circuit capacity is never exceeded.
- Installation must allow for potential future expansion of up to 2 additional chargers, providing at a minimum between 8A-30A for each station. Potential suppliers should conduct site visits in order to understand the capacity of the power supply available at each location and the extent of the work involved to meet this requirement.
- The conduit and electrical wiring must be "stepped out" at the junction of the next successive parking spaces and capped in anticipation of future expansion. (See site maps for parking configuration.)
- Pedestal must be mounted on concrete pad minimum 16" X 16" and set to adequate depth to prevent heaving from frost.
- All electrical lines will need to be brought through underground minimum 2.5" conduit to accommodate future wires. A pull string must be left in the conduit. Site visits are recommended in order for potential suppliers to identify the extent of excavation and restoration that will be required.
- All underground locates must be conducted by the contractor and exposed to daylight prior to commencement of excavation.
- One (1) Protective bollard in front of the pedestal – 6" aluminum bollard, core filled with concrete, with yellow vinyl outer sleeve. Work to include: excavation to 3 feet below grade; back fill with concrete; restoration of area around bollards.
- Retractable cable system (minimum 18') – must be capable of being self-drawn back so that cable and plug are off the ground.
- All work undertaken must be compliant with SAE J1772 specifications
- All work undertaken must be compliant with UL and CSA and 2018 CE Code, Part 1 for EVSE
- All work undertaken must be completed under permit, in compliance with local regulations.

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- All work undertaken must be compliant with the installation specifications of the electric vehicle supply equipment.
- Safety features of the electric vehicle supply equipment must include at a minimum: overcurrent protection, ground fault circuit interrupt (GFCI), ground verification and stuck relay detection.
- Rated for outdoor use (exposure to wind, rain, snow and temperatures between -30 C to +40 C).
- Secure Payment System and terminal (integral to the equipment or as an add-on) – In order to facilitate pay-per-use, this payment method must be managed by a third party (ex. STRIPE, PayPal, Veritrust, Moneris or demonstrated equivalent). Revenue shall be dispersed to AAFC quarterly, at a minimum.
- Energy monitoring system – A web-based system will permit AAFC to collect data from all seven locations through either internet connection or cellular services and to analyze the data in a single monitoring program. This monitoring program must be "off the shelf" and ready for immediate application. The data must include at a minimum: user identification, station identification, time of day, duration, kWh consumed, cost.
- Access Control (FOB or RFID card) – the control will not permit the equipment to dispense electricity unless authorized by means of FOB/RFID (or a credit card
- Extended Warranty (3 years from date of in service) for parts and labour of EVSE

Electrical Considerations for All Locations:

Chargers must be installed on their own branch circuit; no other outputs will be on the same circuit. AAFC's supply is either 208V/3 Phase or 240V/single phase but should be confirmed during the recommended site visits. During construction, all power outages must be scheduled ahead of time in cooperation with the Primary Contact (typically the Facility Manager) at each location.

Deliverable Required for All Locations:

- Project Management Services to oversee the project from start to finish which includes the coordination of all installation activities until the equipment is put into service and available for usage.
- Hands-on training of local Fleet Manager and Facility Manager for familiarization of usage and maintenance of electric vehicle supply equipment by an OEM trained individual, offered in the language of choice of the Facility Manager; provision of operating and maintenance documentation for all components of the EVSE in French and English (paper copy or electronic), one copy (if paper) for each of seven locations.
- Within one month following the in-service date of the equipment, provide training for up to 14 AAFC employees (2 per site) for use of the data management system (various media are acceptable, ex. webex, manuals, telephone support), offered in both French and English.
- When submitting the final invoice to the project authority, detailed as-built drawings must be provided for each of the seven (7) locations in electronic format (pdf or AutoCADD) as well as two (2) paper copies for each location. The as-built drawing must include at a minimum:
    - Electric Vehicle Supply Equipment, main electric service panel, disconnects and overcurrent protection locations;
    - underground conduit locations and routing;
    - Electrical diagram including EVSE supply equipment; conductor and conduit size, type; size of over current device supplying the EVSE; size and location of the main electric panel, distribution panels, overcurrent protection, disconnects, additional meters and EVSE equipment; the type (level), voltage and ampacity for each charging station; all equipment labelling requirements per Canadian Electrical Code.

Completion of the Work: The work shall be complete on or before October 31, 2018.

Constraints:

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1. The successful bidder shall be qualified to undertake the necessary work;
2. Time – time is of the essence. The Contractor shall pursue completion of the work immediately upon award.
3. Site Safety – See General Conditions for Major Works
4. The work shall be subject to inspection by agencies having authority and/or other staff appointed by AAFC.

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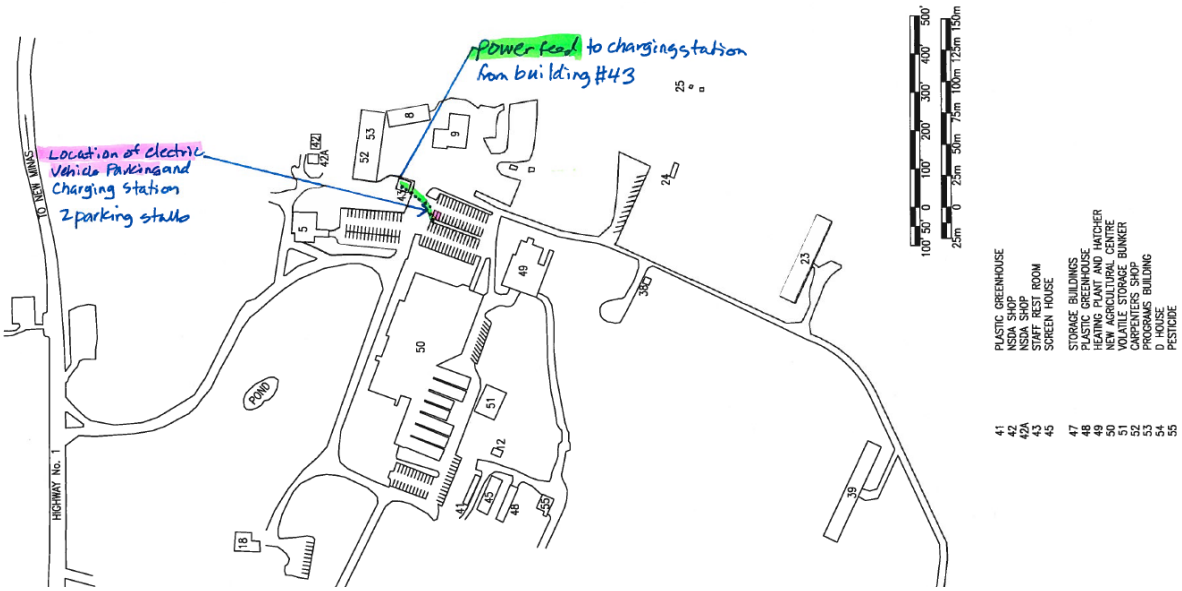
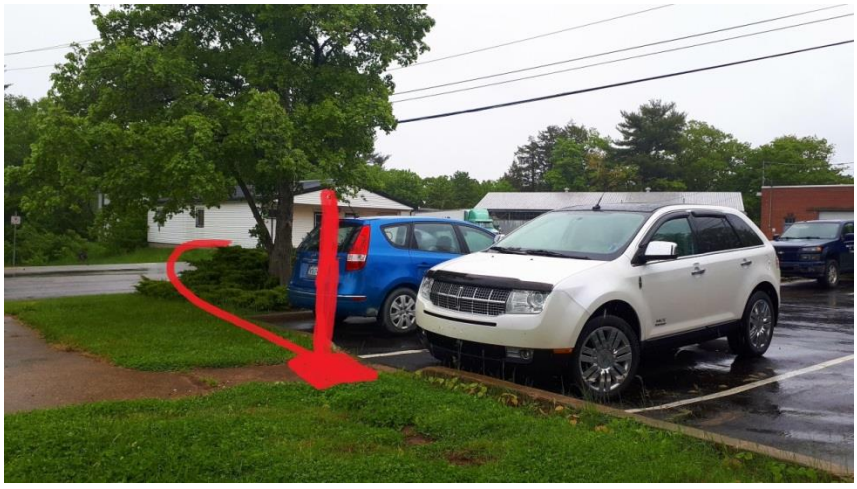
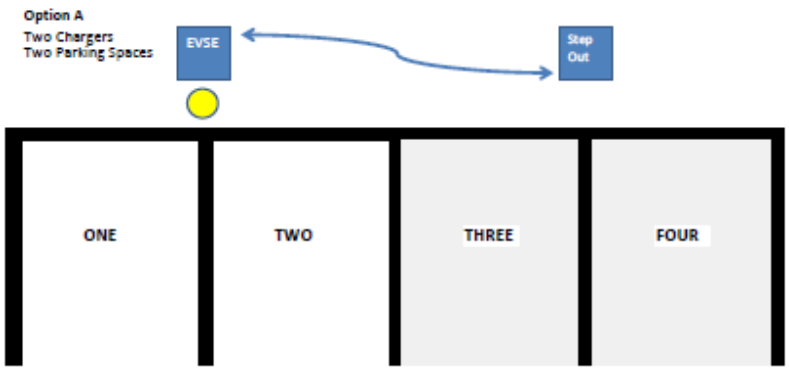
5.0 Site Maps

1) Kentville Research and Development Centre
Power supply located in Building # 43 (Staff Rest Room & Offices)





Excavation from power feed to pedestal location: sod, asphalt road, concrete curb sod.
Approximate distance of 50 metres



Parking Configuration A

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Kentville Power Supply in Building 43: 208 Volt 3 phase

Kentville, additional site specific Notes:

In addition to the regular underground services of electrical, gas and telephone, underground locates for this location must include plumbing as well.

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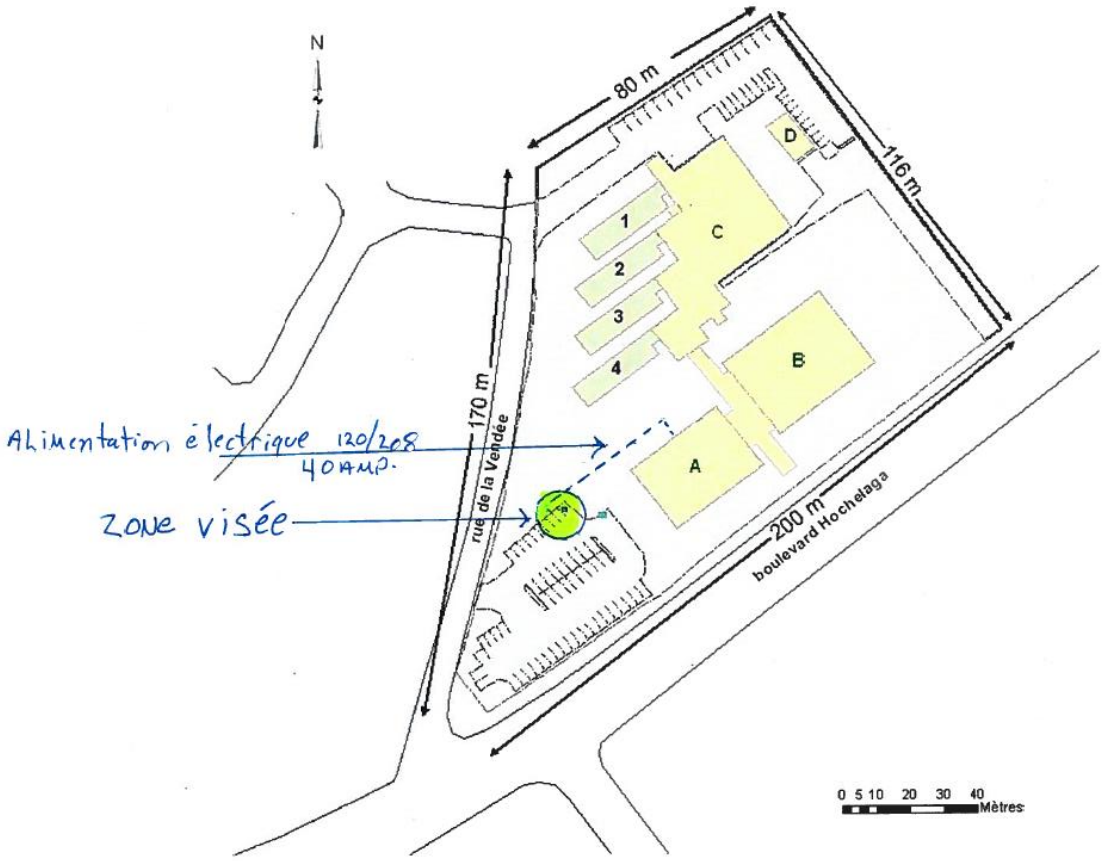
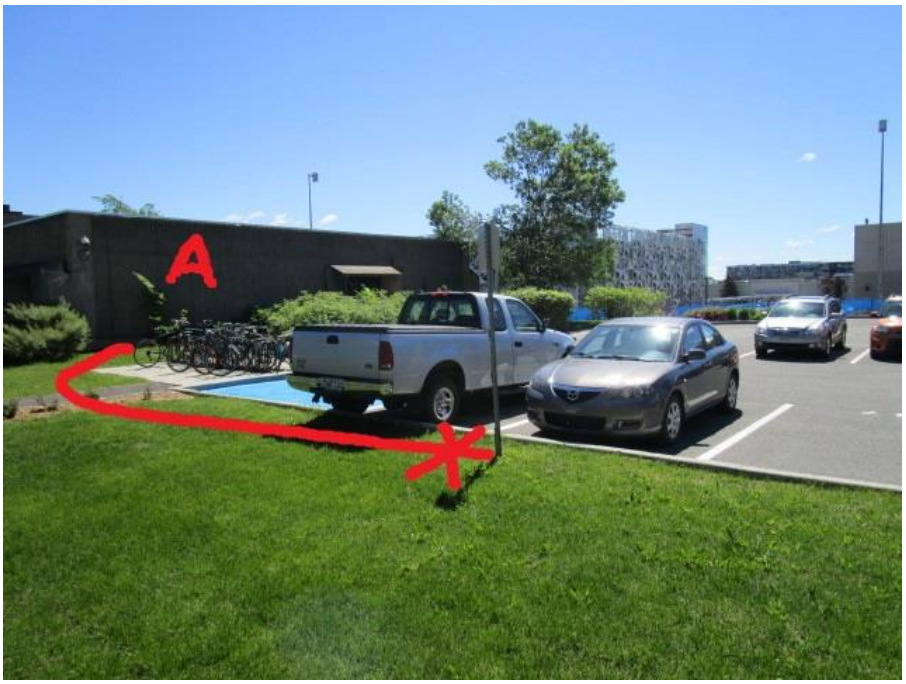
2) Quebec (Sainte-Foy) Research and Development Centre

Power supply located in Building A





Excavation: sod and narrow paved path, approximately 150 feet.

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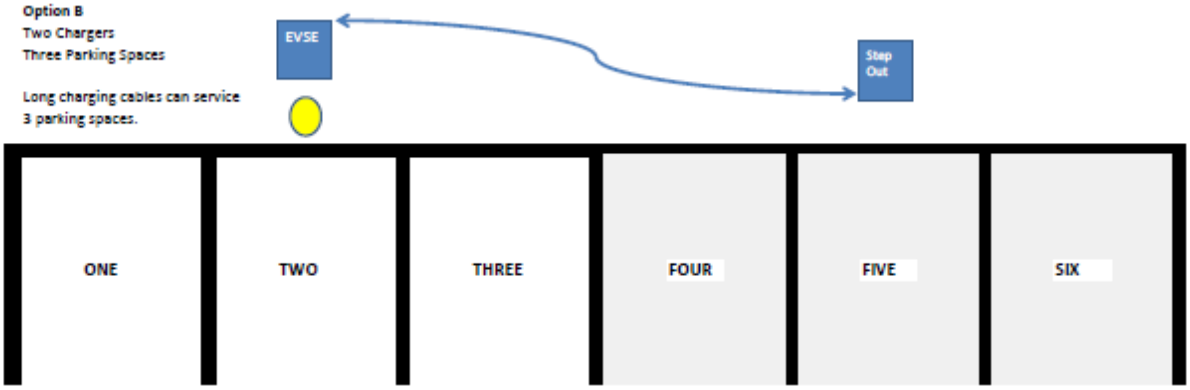
Parking Configuration B



Power Supply, PS-21 (120/208, 40 A)

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3) London Research and Development Centre

Power supply located in Building # 14

Excavation for underground conduit: Sod area

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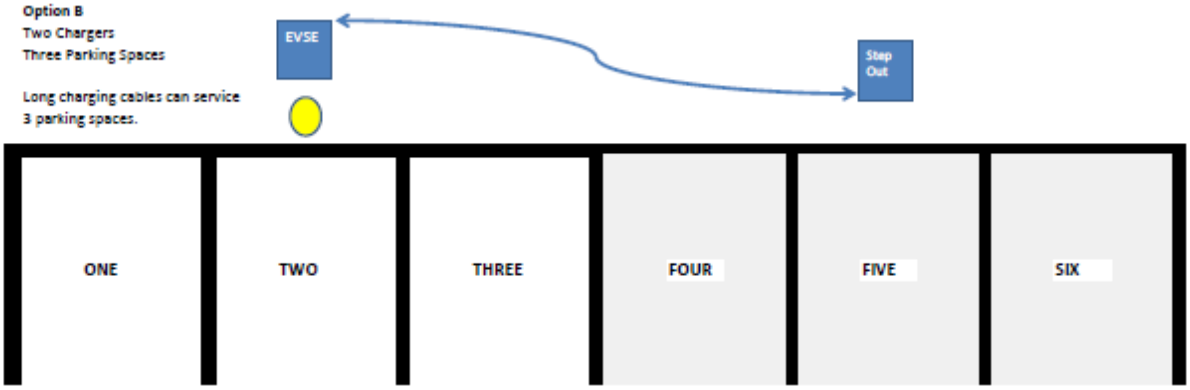
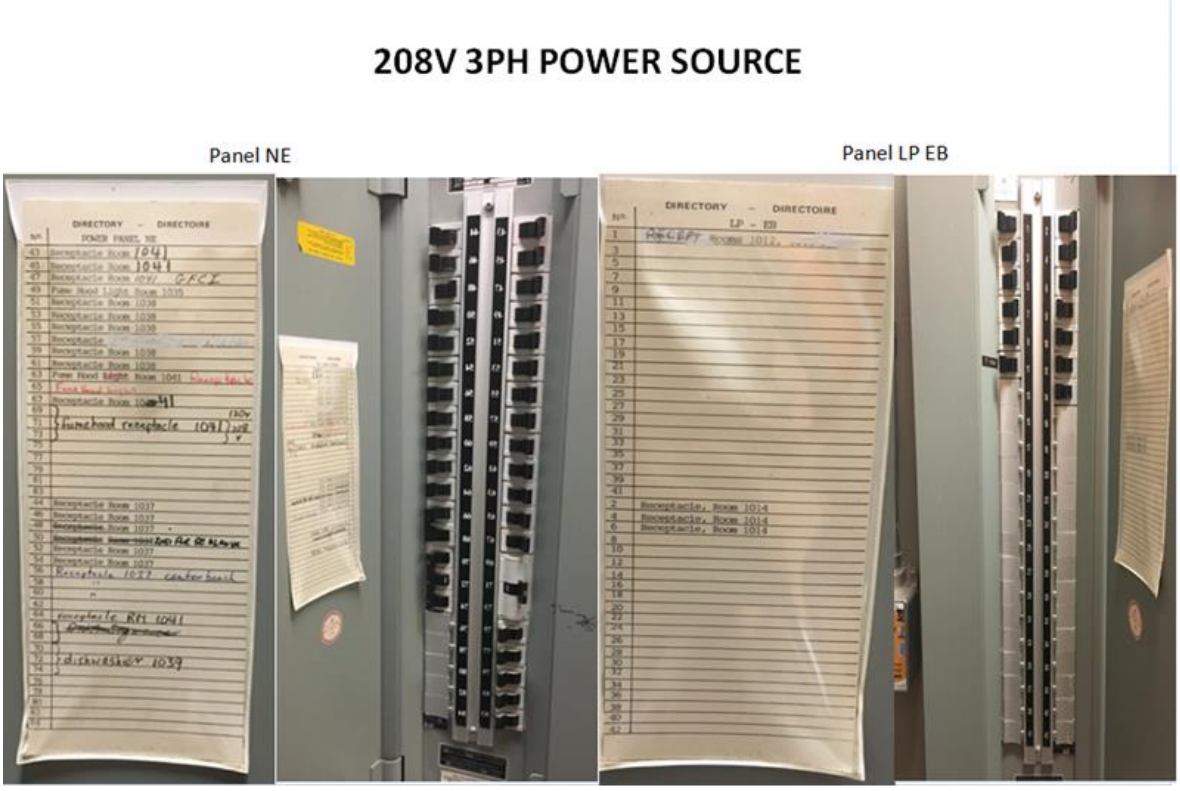
Parking Configuration B



London Power Supply: 208V 3 phase power source located as indicated on aerial view of building.



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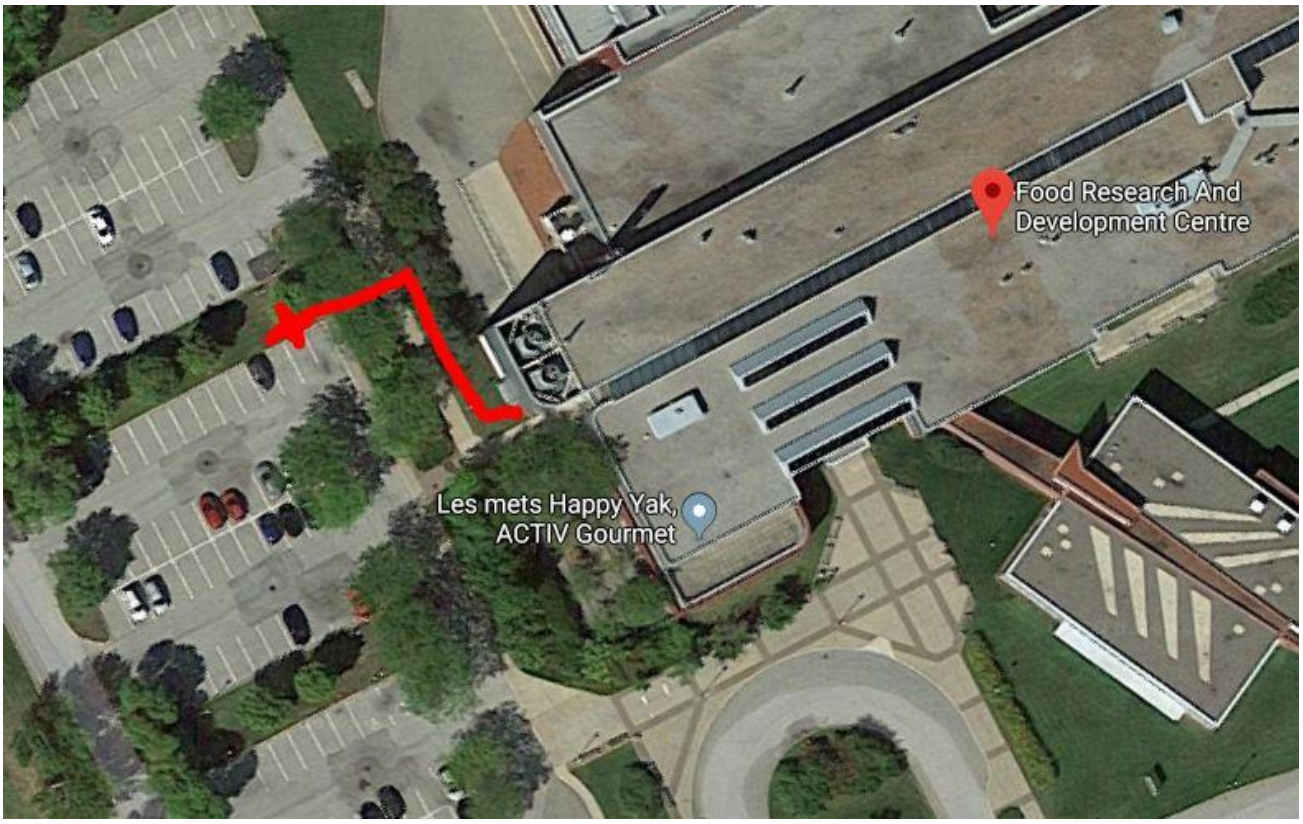
4) Saint-Hyacinthe Research and Development Centre

Power supply located in Main Building



Excavate from Building to parking: sod, under paved walkway.

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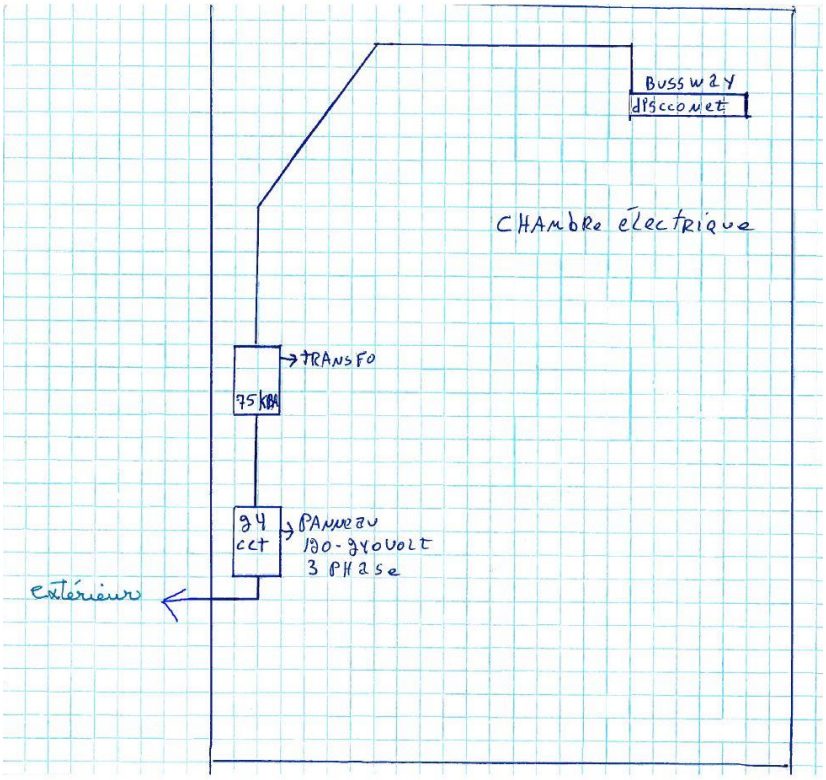
Parking Configuration A

Electrical Room



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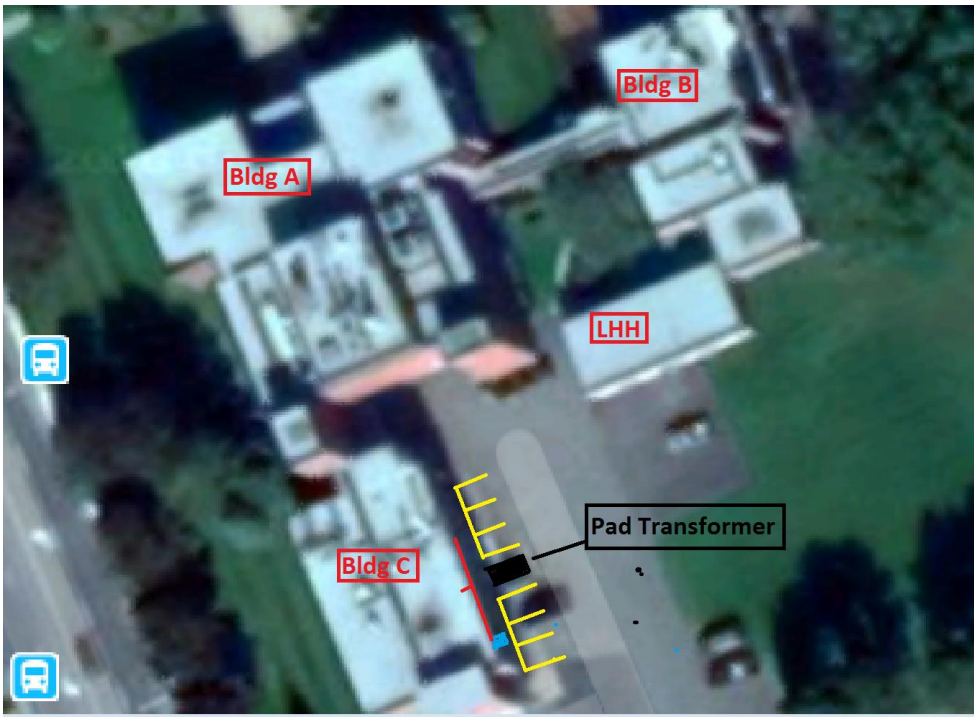
5) Charlottetown Research and Development Centre
Power supply located in Building C



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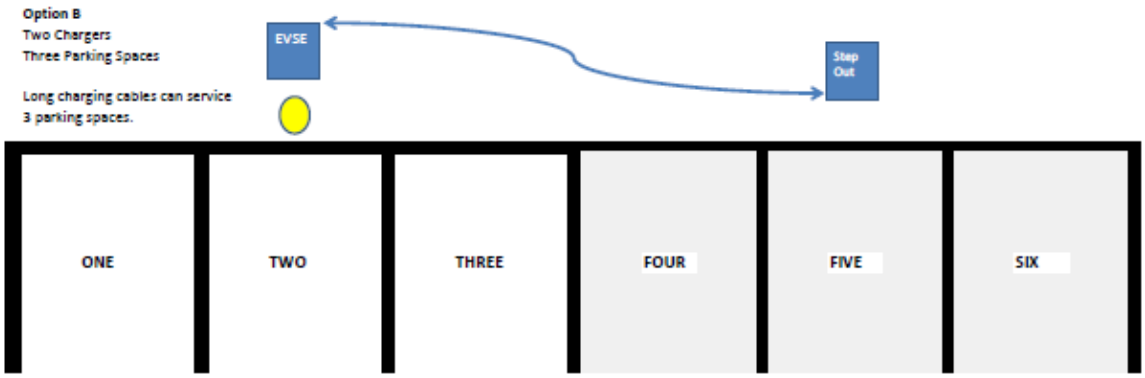
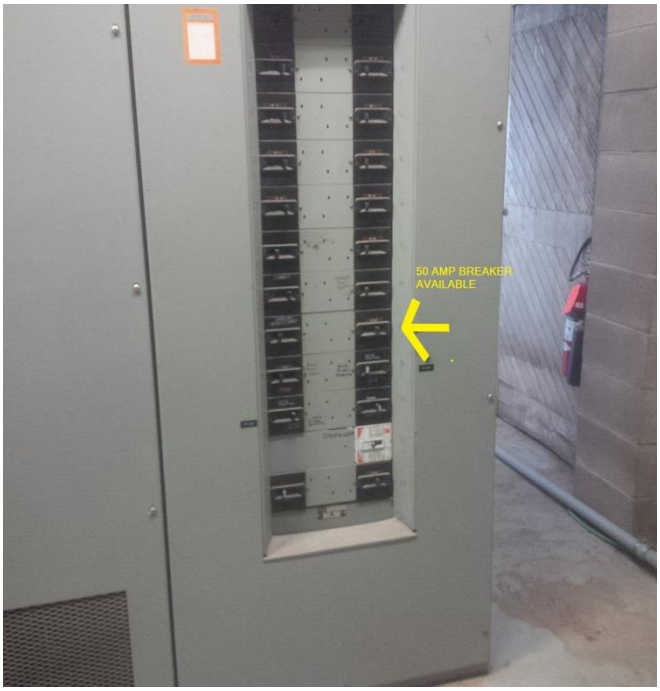
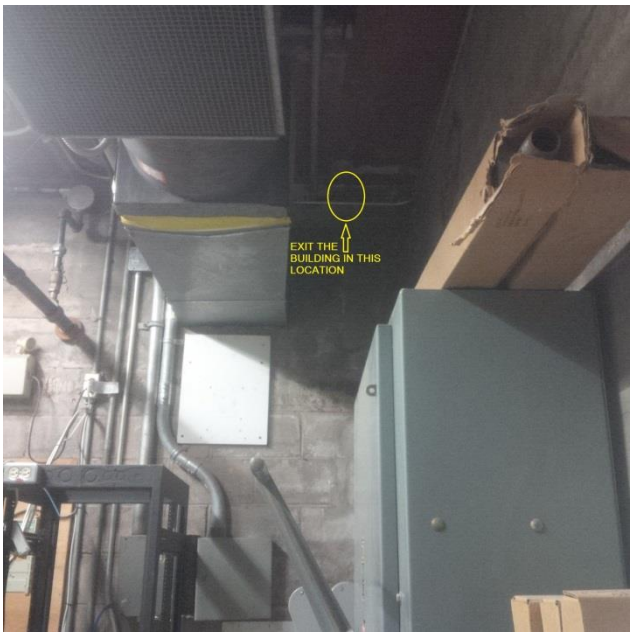
Parking Configuration A







Charlottetown PEI: Additional Site Specific Notes

- Power supply is 208 volts single or 3 phase, 50 amps.
- See pictures regarding locations of electrical panel and conduit.
- Interior wiring to be in EMT conduit.
- Exterior wiring to be in rigid conduit
- All interior and exterior piping to be a minimum of 1 1/4” to allow more wires to be pulled in the same pipe for future EVSE installations (to be determined by contractor).
- Allow a pull box outside for future EVSE wiring.
- All disconnects to be fused for units load requirements. The main breaker feed is 50 amps at 208 single or 3 phase.
- All underground located must be completed before installing the EVSE cement pad.

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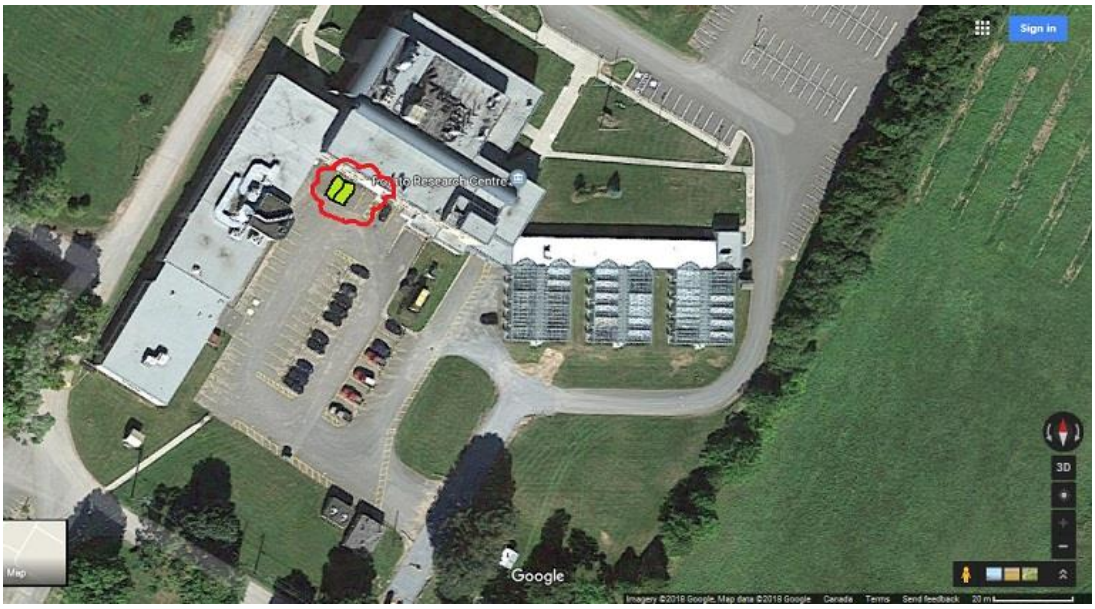
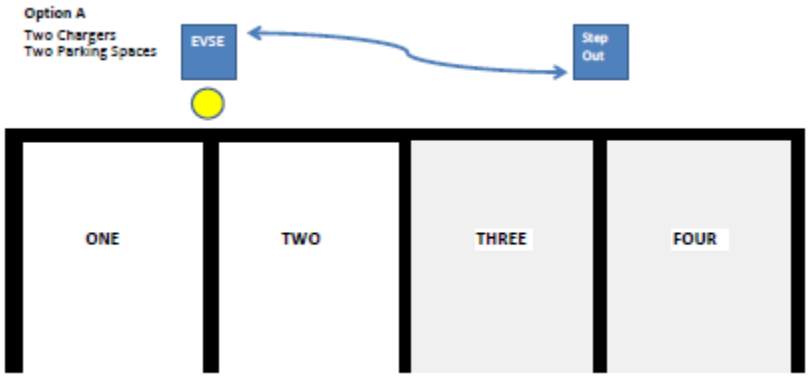
6) Fredericton Research and Development Centre

208V Single Phase Power supply located in basement of Building #1 (Main Building)



Parking Configuration A



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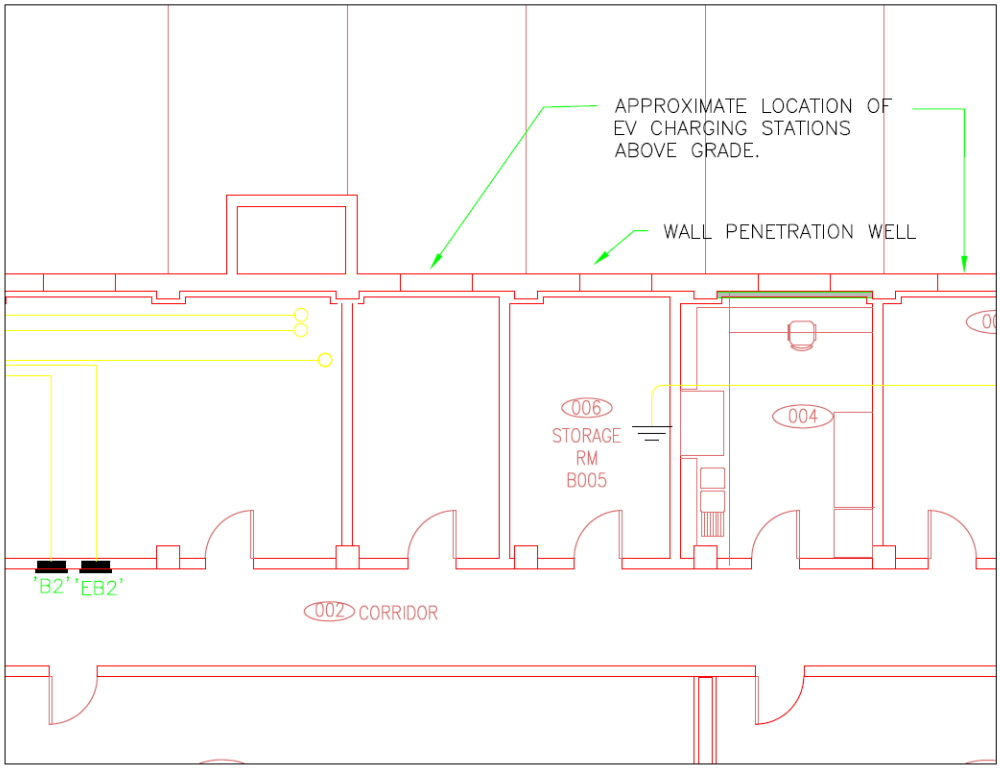
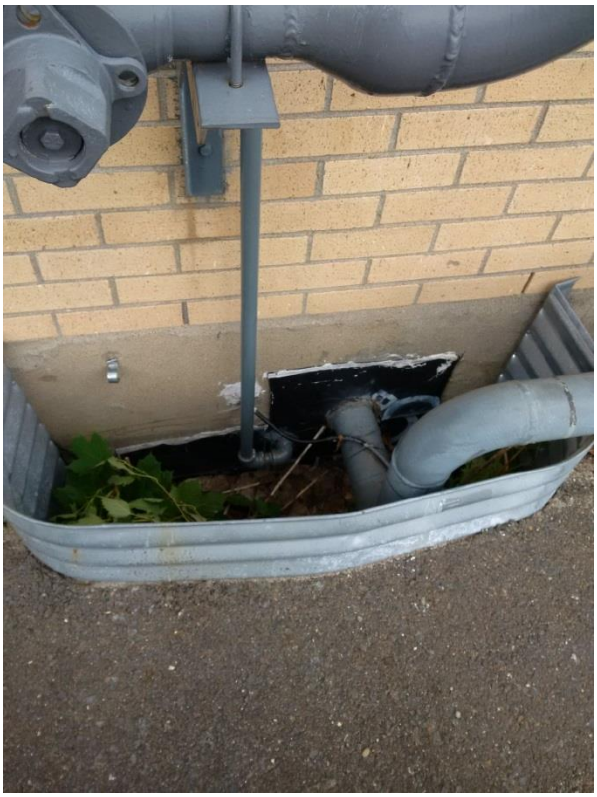


EB2 Panel: Type NBLP 3Ø 4W; 225A Max (Main) 225A (Neutral); 240 Max Volts 22 kA; Main Breaker 42 CCTS
Already piped with two spare ¾" electrical conduits, available for this installation.


EB2


Exterior Wall Penetration

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Fredericton Site Specific Notes:

1. The contractor will mount the new Electric Vehicle (EV) station on a cast in place concrete housekeeping pad measuring (L 90cm x W 60cm x H 20cm). Two such pads will be placed; one pad will be used for a future EV station installation. Final concrete pad locations to be verified with on site by site representative prior to placing concrete. Each pad will be 'pinned' to the asphalt base with four 10mm re-bar pins penetrating 30cm below grade and extending 15cm into the new slab material.
2. Suspend wire mesh reinforcing material designed for the purpose in the middle of the pad elevation. Place kraft paper board (KB Board) between the exterior building surface and the new concrete for isolation. The KB board will act as a form where the slab meets the building. Place 20mil vapour barrier on the underside of slab (where slab meets asphalt).
3. Immediately after floating, broom finish slab surface and round edges with a 10mm radius tool. The finished housekeeping pad will be painted. (colour to be determined by site representative)
4. Contractor to install one concrete bollard centered in front of each concrete pad to protect each EV Station fixture. Bollards will be covered in yellow PVC/plastic covering designed for the intended purpose.
5. Electrical power (208v single phase) to be provided from panel "EB2" located in the basement level of building 1 in proximity to the new EV stations.
6. There are two spare ¾" electrical conduits piped into panel EB2 which are available for this installation. The contractor will connect to these two points and run two new conduits above the existing T-Bar ceiling in the corridor into room B005 which has an open ceiling; one conduit will be left empty for future use.
7. Conduit runs will be EMT and will follow the building lines within the building. Both EMT runs will be terminated at a new junction box(s) placed within 1 meter of the building wall penetration. Tech Cable, one cable for each EV station will be installed between this junction box and the exterior electrical disconnect location.
8. Any wall penetrations within building and at the exterior wall are to match existing with respect to fire sealing and weather sealing, etc.

Cast in place concrete:

a. All concrete work to conform to CAN/CSA-A23.1-00 - Concrete Materials and Methods of Concrete Construction, and CSA A23.3-94 - Design of Concrete Structures, ACI 306.1-90 -Standard Specification for Cold Weather Concreting.
b. Place concrete in accordance with CSA A23.1-00. Obtain owner's representative approval before placing concrete. Provide 24 hours notice prior to placing concrete.
c. The following is a summary of the concrete mix meeting the requirements:

Cement Type: Type 10 Portland cement
Class of Exposure: C-2
Maximum Water-to-Cementing Materials Ratio: 0.45
Specified Concrete Strength: Minimum 32 MPa at 28 days
Maximum Aggregate Size: Crushed stone aggregate not greater than 3/4"Diamond.
Air Content: Category 1, 5-8% at the point of discharge of delivery equipment.
Admixtures: Air-entraining: (ASTM C 260) Daravair 1000 by Grace Construction Products.
Density: Normal
Other: Concrete mix proportions to produce the specified concrete strength.

Concrete Finishes and Control Joints:

Immediately after floating, give the entire slab surface a uniform broom finish to produce regular corrugations not exceeding 2mm deep, by drawing the broom in the direction normal to the center line. Provide round edges, including joints, with 10 mm radius tool.

Concrete Curing:

a. Finish exposed concrete to CSA A 23.1-00. When the air temperature is at or above 25 degrees C, initial curing shall be accomplished by water spray, wet sand or burlap rather than by curing compound in order to use the evaporation cooling. Apply curing compound immediately following the initial curing.

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7) St. John's Research and Development Centre

Power supply located in Building #38 (Greenhouse)

Excavation for underground conduit: Sod area

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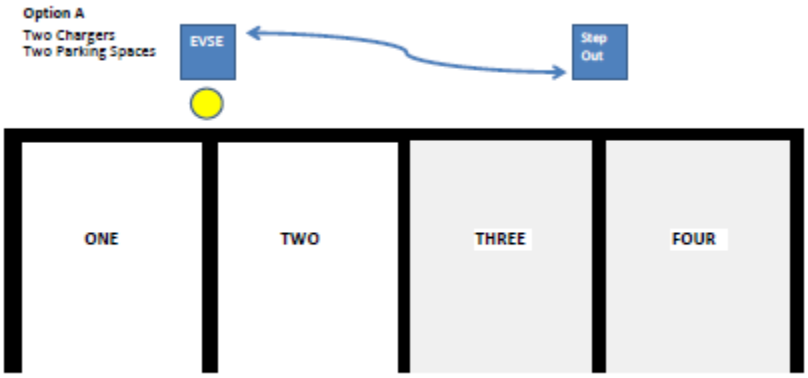
Parking Configuration A



Additional Details specific to St. John's:

Panel "A" 120/208V 3 phase feed is located in building 38 Greenhouse with open attic space to run electrical to outside walls.

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6.0 Site Contacts

6.1 Project Authority: *to be inserted at contract award*

Project Authority:
Phone # (office):
Cell:
Email:

The Project Authority, or his/her authorized representative, is responsible for:

1. All matters concerning the technical content of the Work under the Contract;
2. Defining any proposed changes to the scope of the Work, but any resulting change can only be confirmed by a Contract amendment issued by the Contracting Authority;
3. Review and approve all invoices submitted.
4. Inspection and acceptance of all Work performed as detailed in the Statement of Work and;

6.2 Site Contacts: *to be inserted at contract award*

1) Kentville Research and Development Centre

32 Main Street, Kentville, NS, B4N 1J5

Standard Hours of Operation: 8:00 am – 4:30 pm Atlantic Time
Checking In: The contractor should report to the Heating Plant, building #49 which is East of the Main Research complex, and meet with Facilities staff there. One of the staff will be assigned to work with the contractor.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name:
Phone # (office):
Cell #:
Email:

2) Québec (St. Foy) Research and Development Centre

2560 Hochelaga Boulevard, Québec, Qu G1V 2J3

Standard Hours of Operation: Monday through Friday; 8:00am-4:00pm (Eastern)
Checking In: Visitors must register with the commissionaire upon arrival at the centre. They will be asked to provide one piece of government issued ID. Ask for the Facilities Manager.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name :
Phone # (office) :
Cell:
Email:

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3) London Research and Development Centre

1391 Sandford Street, London, ON N5V 4T3

Standard Hours of Operation: 8:30 am to 4:30 pm Monday to Friday excluding statutory holidays
Checking In: Contractors will follow the signs for Visitors. Report to the commissionaire and sign in at the main entrance front reception desk. Commissionaires will page the Facilities Manager for escort. Whenever leaving the site, contractors will sign out with the commissionaire at the front desk.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name:
Phone # (office):
Cell #:
Email:

4) Saint-Hyacinthe Research and Development Centre

3600 Casavant Blvd W, Saint-Hyacinthe, Qc, J2S 8E3

Standard Hours of Operation: 7:00 am – 3:30 pm
Checking In: Contractors must register at Reception located inside the main entrance and ask for the Facilities Manager. Contractors may park on the West side of the main building.

Primary Contact Name:
Phone # (office) :
Cell:
Email:

Secondary Contact Name :
Phone # (office) :
Cell:
Email:

5) Charlottetown Research and Development Centre

440 University Avenue, Charlottetown, PEI, C1A 4N6

Standard Hours of Operation: Monday through Friday; 8:00am-4:30pm (Atlantic)
Checking In: All visitors are to report and sign in at the commissionaire desk at the Main Building entrance. Arrangements need to be made with the Facilities Manager in advance of arrival.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name:
Phone # (office):
Cell #:
Email:

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6) Fredericton Research and Development Centre

850 Lincoln Road, Fredericton, NB E3B 4Z7

Standard Hours of Operation: Monday through Friday; 8:30am-4:30pm (Atlantic)
Checking In: All visitors are to report and sign in at the commissionaire desk at the building 1 laboratory complex. Arrangements need to be made with the Facilities Manager in advance of arrival.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name:
Phone # (office):
Cell #:
Email:

7) St. John's Research and Development Centre

308 Brookfield Road, St. John's, NL, A1E 0B2

Standard Hours of Operation: 7:45 am – 4:30 pm (Newfoundland)
Checking In: Contractors should park on the left hand side of the main building #25. Enter the front doors of the main building and ring a bell. Staff will answer and then page the Facilities Manager. For ease during the project, appointments can be made in advance with the Facilities Manager.

Primary Contact Name :
Phone # (office) :
Cell:
Email:

Secondary Contact Name:
Phone # (office):
Cell #:
Email: