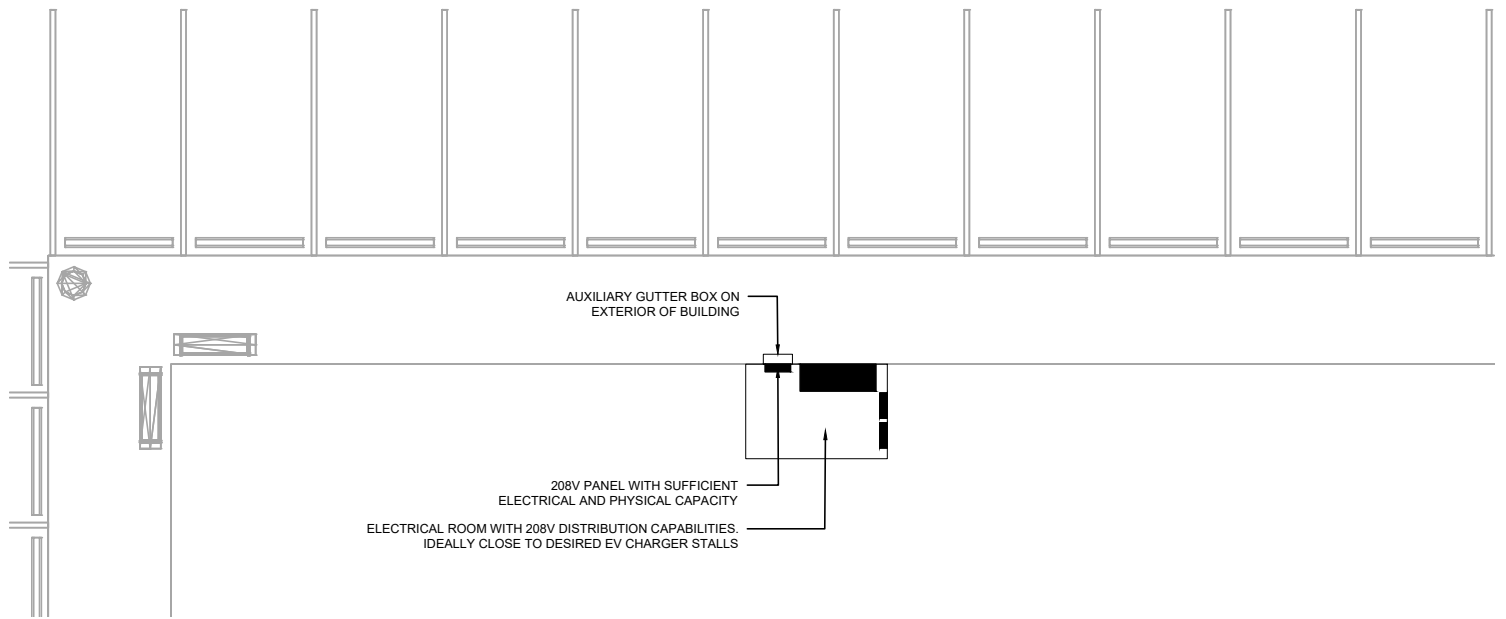
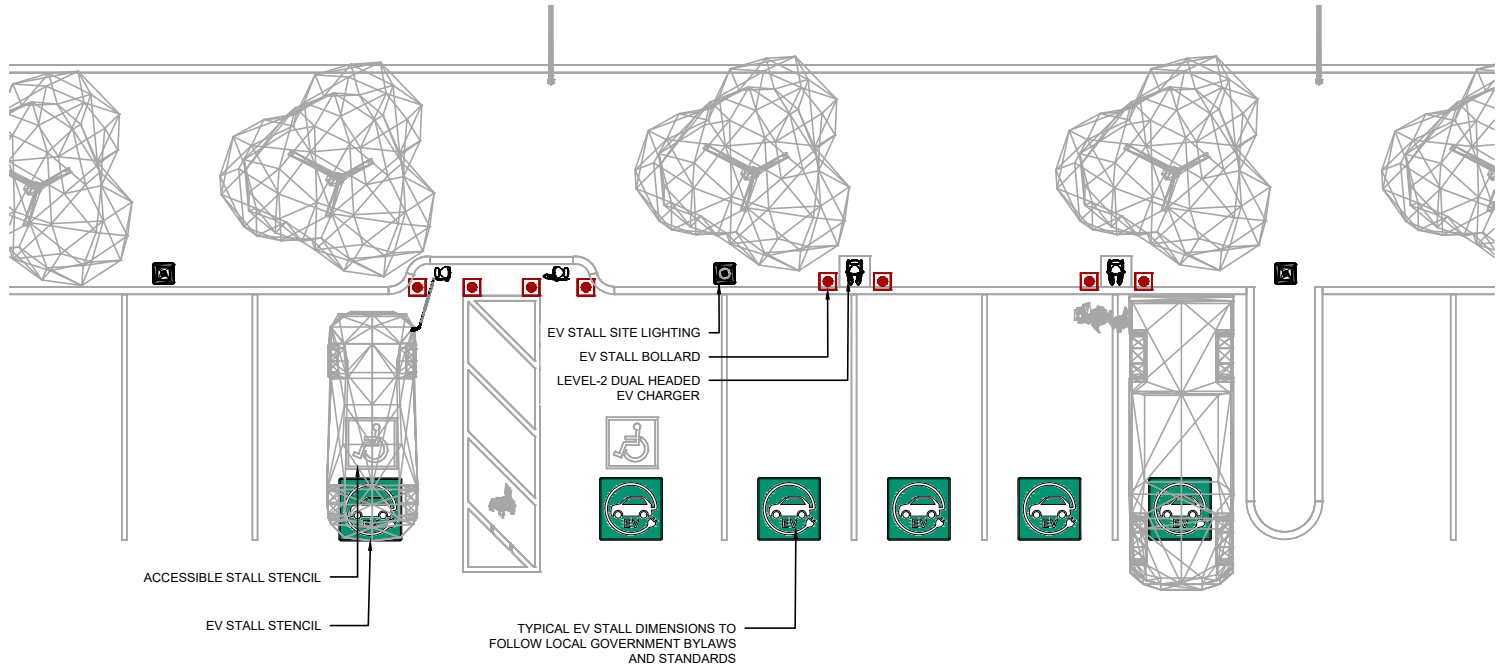




CAPITAL REGION
PUBLIC ELECTRIC VEHICLE
CHARGING ARCHETYPES:
TECHNICAL GUIDELINES

FEBRUARY 2023





1 KEY PLAN
E1.1 SCALE: N.T.S.

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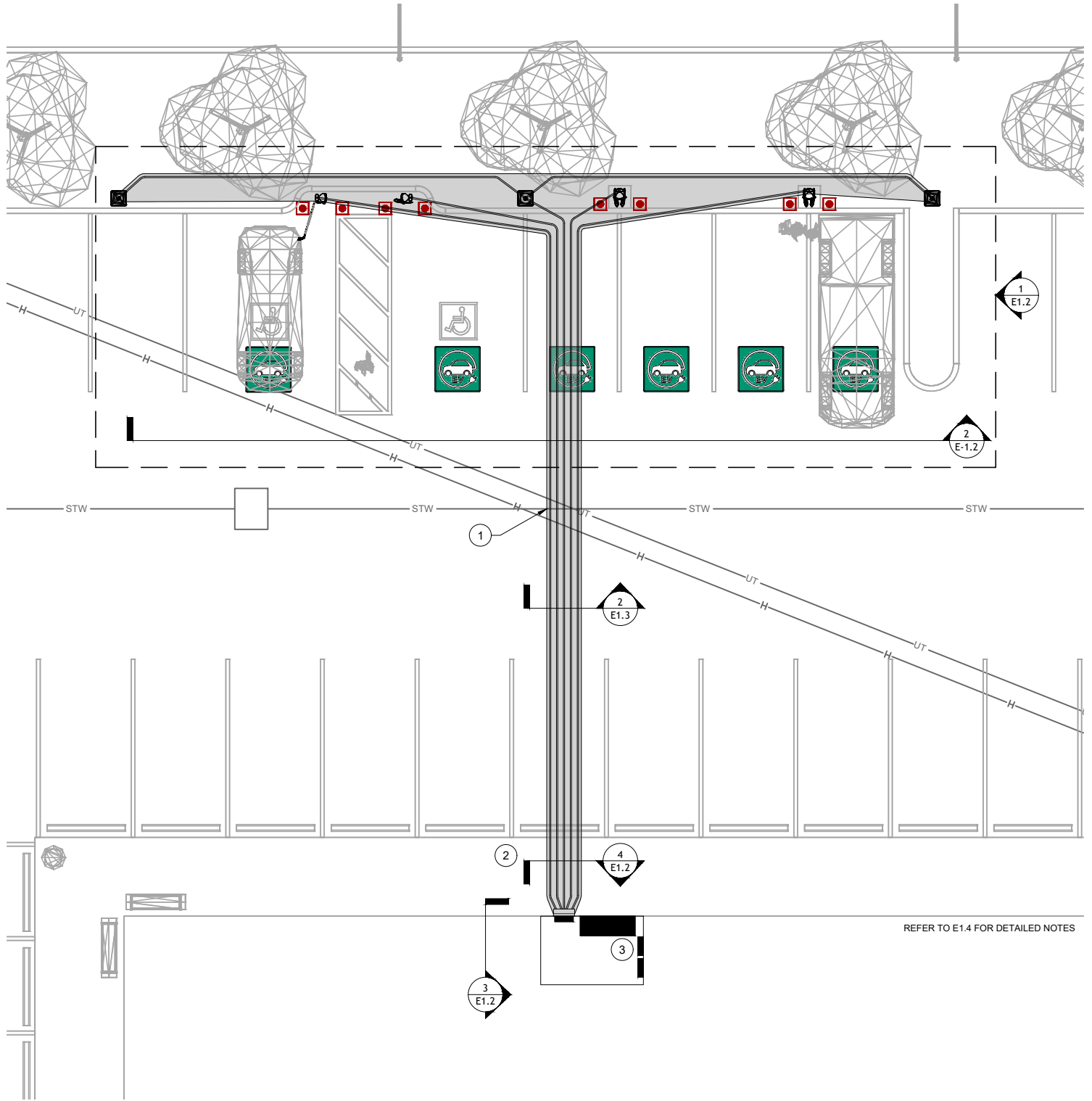
ENGINEER OF RECORD

C. L. FONTAINE
 #47844
 2023-02-16

CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
 ARCHETYPES: TECHNICAL GUIDELINES

ARCHETYPES 1, 2, & 3 OUTDOOR PARKING - KEY PLAN

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REFER TO E1.4 FOR DETAILED NOTES

1 TRENCHING PLAN
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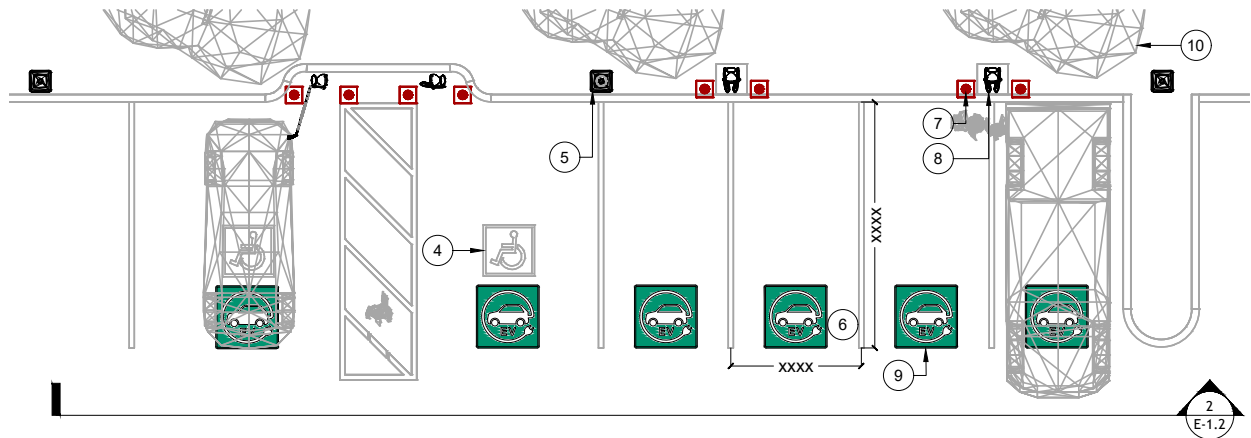
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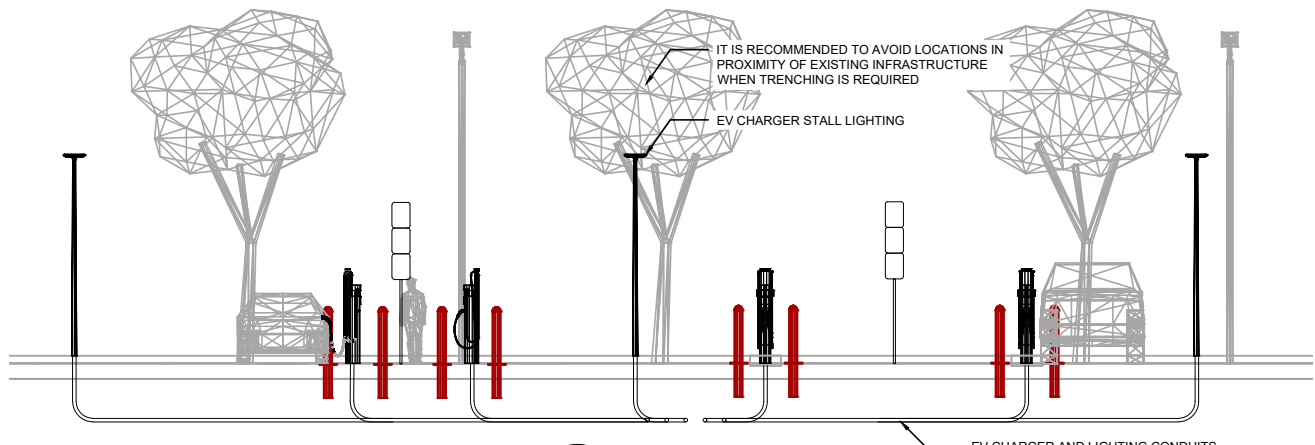
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 ARCHETYPES: TECHNICAL GUIDELINES
 ARCHETYPES 1, 2, & 3 OUTDOOR PARKING -
 TRENCHING PLAN

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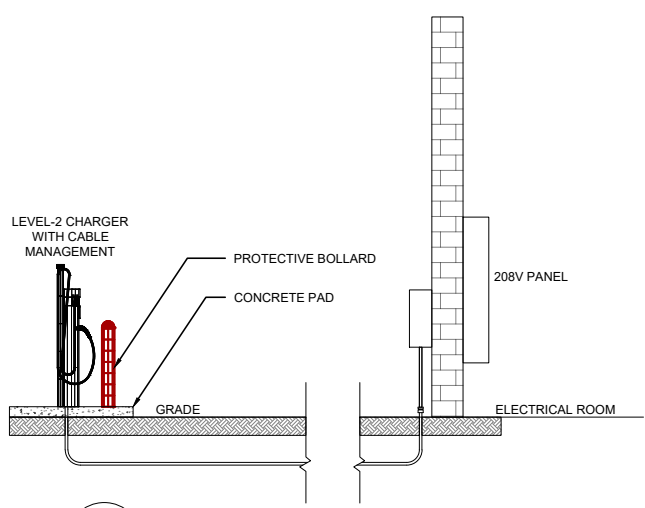


1 SITE PLAN
SCALE: N.T.S.
E1.3

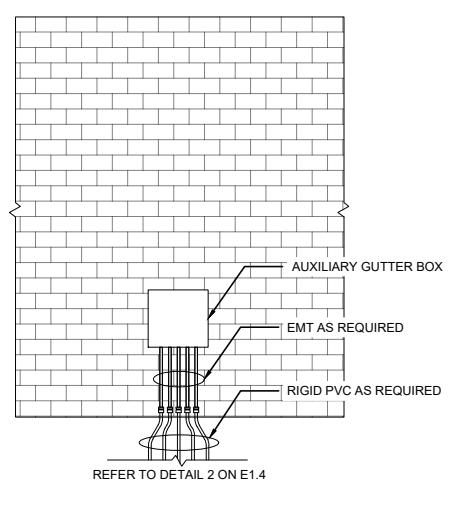
REFER TO E1.4 FOR DETAILED NOTES



2 ELEVATION VIEW
SCALE: N.T.S.
E1.3



3 DUCT PROFILE ELEVATION VIEW
SCALE: N.T.S.
E1.3



4 GUTTER BOX ELEVATION VIEW
SCALE: N.T.S.
E1.3

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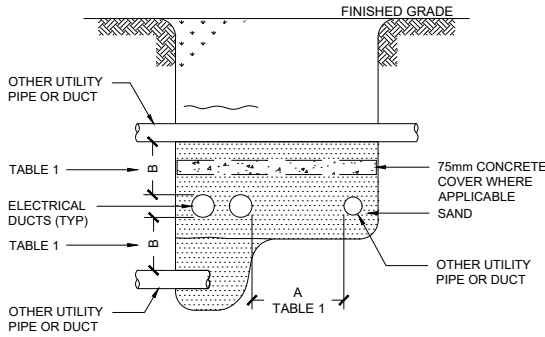
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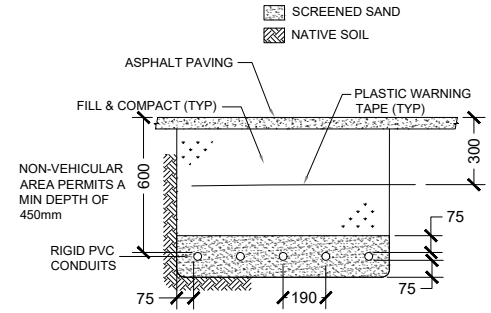
CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
ARCHETYPES: TECHNICAL GUIDELINES

ARCHETYPES 1, 2, & 3 OUTDOOR PARKING - SITE PLAN & DETAILS

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TYPE OF UTILITY PIPE OR DUCT	PER B.C. HYDRO ES54 H4-01 (NOTE 2)		MIN. PER CEC PART 1/ CAN3-C22.3 NO. 7 (NOTE 3)	
	COLUMN NO.: 1	2	3	4
DIMENSION:	A	B	A	B
TELEPHONE OR CABLE TV	300	150	300	300
STREET LIGHTING FROM BCHP DUCTS	900 (NOTE 14)	300	300	150
GAS MAINS STORM SEWERS SANITARY SEWERS WATER FUEL OIL BCH MAINS	900 (NOTE 14)	300	300 MIN 900 PREFERRED	300



1
E1.4 **UNDERGROUND DUCT CLEARANCES**
SCALE: N.T.S.

2
E1.4 **TRENCHING DETAIL**
SCALE: N.T.S.

NOTES:

- WHEN TRENCHING IS NEEDED ON SITE, IT IS RECOMMENDED TO LOCATE THE EXISTING SERVICES UNDERGROUND SUCH AS PIPING, CONDUITS, AND TREE ROOTS. IF THE WORK IS ENTIRELY ON PRIVATE PROPERTY, THE LOCATION OF UNDERGROUND SERVICES MAY BE ON RECORD DRAWINGS AND/OR CONSTRUCTION DRAWINGS. IF NOT, OR IF ADDITIONAL DETAIL IS DESIRED, A CIVIL CONSULTANT MAY BE ENGAGED TO PERFORM AN UNDERGROUND SERVICES STUDY OF THE AREA. IF TREES OR LANDSCAPING ARE IN PROXIMITY AND ARE OF CONCERN DURING CONSTRUCTION, AN ARBORIST CONSULTANT SHOULD BE CONTACTED TO DETERMINE CONDITION OF TREE AND TREE ROOTS. INTERFERENCE OF EXISTING UNDERGROUND SERVICES MAY PROVE TO BE COSTLY FOR CERTAIN SITES AND RESULT IN NOT BEING ECONOMICALLY FEASIBLE. REFER TO DETAIL 1 ON E1.4 FOR ADDITIONAL INFORMATION.
- IT IS RECOMMENDED THAT PASSENGER WALKWAYS NOT BE IMPACTED THROUGHOUT AND POST CONSTRUCTION OF EV CHARGER INSTALLATIONS. COVERINGS OVER TRENCHES AND SMALL DETOURS SHOULD BE PUT IN PLACE WHEN REQUIRED.
- STALLS IN PROXIMITY OF AN ELECTRICAL ROOM COULD REDUCE CONSTRUCTION COSTS AND TIME. ENSURE THE PROPER VOLTAGE DISTRIBUTION IS PRESENT IN THE CHOSEN ELECTRICAL ROOM. FOR LEVEL-2 EV CHARGERS, 208V IS REQUIRED. IF THERE ARE EXISTING 208V PANELS, IT SHOULD BE DETERMINED IF THERE IS SUFFICIENT SPARE CAPACITY ON THE PANELS (AMPERAGE). IF NOT, AN ADDITIONAL PANEL MAY BE REQUIRED. TO DETERMINE SPARE CAPACITY, A CONTRACTOR MAY BE ABLE TO MEASURE THE AMPERAGE WITH DEVICES, OR AN ELECTRICAL ENGINEER MAY BE ABLE TO PERFORM A ROUGH LOAD CALCULATION.
- ACCESSIBLE PARKING STALLS SHOULD BE CONSIDERED. ENSURE THAT PROPER STALL DIMENSIONS AND LAYOUTS ARE FOLLOWED PER THE LOCAL GOVERNMENT BYLAWS AND APPROPRIATE CODES. REFER TO THE ACCESSIBLE STALL LAYOUT ON DRAWING E1.5 FOR ADDITIONAL INFORMATION.
- IT IS RECOMMENDED TO INSTALL EV CHARGER STALL LIGHTING DURING THE EV CHARGER CONSTRUCTION, IF NOT ALREADY EXISTING. A LIGHT SOURCE OVER THE STALLS WILL PROVIDE SAFETY, SECURITY, VISIBILITY, AND USABILITY TO IMPROVE THE USER EXPERIENCE. A SUITABLE LIGHT SOURCE SHALL BE SELECTED THAT DOES NOT CONTRIBUTE A SIGNIFICANT AMOUNT OF LIGHT POLLUTION. INTEGRATED OCCUPANCY SENSOR MAY BE SELECTED TO REDUCE POWER CONSUMPTION WHEN NOT IN USE AND COMPLY WITH LOCAL GOVERNMENT BYLAWS AND STANDARDS.
- ENSURE THAT TYPICAL STALL DIMENSIONS ARE FOLLOWED PER LOCAL GOVERNMENT BYLAWS. ENSURE DRIVE AISLE WIDTHS ARE NOT REDUCED BELOW THE MINIMUM REQUIREMENTS DURING CONSTRUCTION. PROVIDE EV CHARGER SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS. SEVERAL ARRANGEMENTS EXIST FOR CHARGER STALLS; ALLOW FOR ALL AISLES, WALKWAYS, AND CLEARANCES REQUIRED FOR A COMPLETE INSTALLATION.
- IT IS RECOMMENDED TO PROVIDE EITHER BOLLARDS, WHEELSTOPS, OR WALL-MOUNTED RUBBER STOPPERS FOR PROTECTION OF EV CHARGERS, IF EXISTING CONDITIONS DO NOT PROVIDE SUFFICIENT PROTECTION SUCH AS CURBS. ENSURE THAT EV CHARGER PLUGS, INTERFACES, AND MAINTENANCE AREAS ARE STILL ACCESSIBLE. EV CHARGER CUTSHEETS MAY HAVE A RECOMMENDED BOLLARD LAYOUT AND SPACING. WHEELSTOP PLACEMENTS ARE TO FOLLOW LOCAL GOVERNMENT BYLAWS.
- INSTALL LEVEL-2 EV CHARGERS CLOSE TO CURB AND PER MANUFACTURER RECOMMENDATIONS. IT IS ENCOURAGED TO INSTALL DUAL-HEADED CHARGERS TO REDUCE CONSTRUCTION AND MATERIAL COSTS. PROVIDE PEDESTALS AND HARDWARE THAT IS COMPATIBLE WITH THE DESIRED CHARGERS. PROVIDE CONCRETE PADS THAT ARE FLUSH WITH THE SURFACE AND STUB-UPS, AS REQUIRED. IT IS RECOMMENDED TO INSTALL CABLE MANAGEMENT SYSTEMS TO IMPROVE THE USER EXPERIENCE AND APPEARANCE WHILE REDUCING DAMAGE TO THE CABLES. LOAD-SHARING OF CHARGING CIRCUITS IS POSSIBLE. IF DESIRED, PROVIDE COMMUNICATIONS GATEWAY FOR CHARGERS, IF REQUIRED. RECOMMENDED CHARGER HEIGHT IS BETWEEN 1067mm AND 1219mm. DEPENDING ON THE SITE AND AVAILABLE BUDGET, DC FAST CHARGERS COULD BE INSTALLED TO PROVIDE THE FASTEST CHARGING TIMES AVAILABLE.
- PROVIDE EV CHARGER STALL STENCILS AS PER LOCAL GOVERNMENT BYLAWS AND JURISDICTIONS, AS INDICATED. RECOMMENDED STALL STENCIL IS TO FOLLOW CAPITAL REGION LOCAL GOVERNMENT ELECTRIC VEHICLE (EV) + ELECTRIC BIKE (E-BIKE) INFRASTRUCTURE PLANNING GUIDE. REFER TO DOCUMENT FOR DIMENSIONS AND EXISTING EXAMPLES.
- IT IS RECOMMENDED TO SELECT LOCATIONS FOR EV CHARGERS WHERE THE UNDERGROUND CONDUITS WILL NOT NEGATIVELY IMPACT TREES BY DISRUPTING THE ROOTS. IF A DESIRED LOCATION IS CLOSE TO TREES, AN ARBORIST CONSULTANT MAY BE ENGAGED TO PROVIDE INSIGHT ON CONDITION OF TREE AND TREE ROOTS.
- DESIGNS SHALL SUPPORT EV READY PLANS AND EV READY BYLAWS WHERE APPLICABLE. IT IS ENCOURAGED TO PLAN AHEAD AND INSTALL THE APPLICABLE ELECTRICAL INFRASTRUCTURE FOR FUTURE CHARGERS DURING THE INITIAL CONSTRUCTION. THIS WILL PROVE TO BE COST EFFECTIVE IF AN AMOUNT OF CHARGERS IS CURRENTLY DESIRED WITH THE POSSIBILITY OF EXPANDING IN THE FUTURE FOR WHEN MORE ELECTRIC VEHICLES ARE ON THE ROAD.
- DETAIL 1 ON E1.4 IS BASED ON B.C. HYDRO STANDARD ES54 H4-01.02, REV. 4, DATED JUN 1980 AND CSA STANDARD CAN3-C22.3 NO. 7-M86. PRIOR TO PROCEEDING WITH THE WORK, CONFIRM THAT THE FOREGOING STANDARDS ARE CURRENT AND VALID FOR THE APPLICATION. COMPLY WITH ADDITIONAL REQUIREMENTS OF CAN3-C22.3 NO. 7 FOR CABLES OPERATING AT VOLTAGES UP TO 22kV.
- CLEARANCE MAY BE REDUCED TO 300mm (ABSOLUTE MINIMUM) BY OBTAINING WRITTEN APPROVAL FROM B.C. HYDRO.
- WHERE CLEARANCES OF TABLE 1 CANNOT BE OBTAINED DUE TO SITE CONDITIONS, CONCRETE ENCASING THE AFFECTED PORTIONS OF DUCTS MAY IMPROVE CLEARANCES.
- DETAIL 2 ON E1.4 IS APPLICABLE FOR SYSTEM VOLTAGES UP TO AND INCLUDING 600V.
- DUCT COVER DIMENSIONS ARE MINIMUM VALUES FOR DETAIL 2 ON E1.4.

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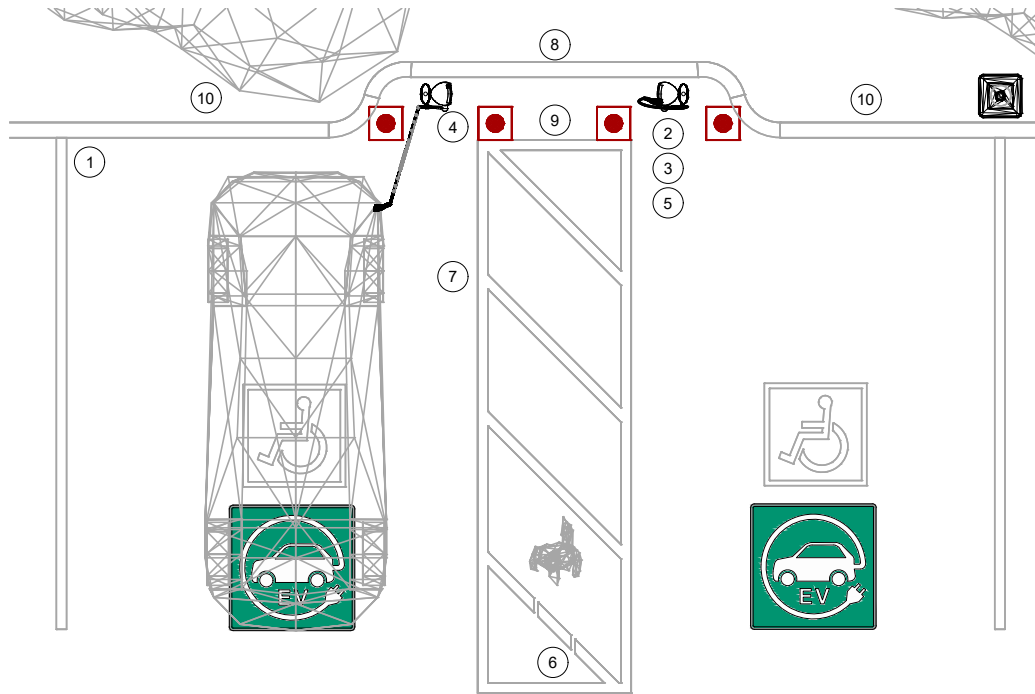
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 B.C. HYDRO LICENSE #1001785
 2023-02-16

CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING ARCHETYPES: TECHNICAL GUIDELINES

ARCHETYPES 1, 2, & 3 OUTDOOR PARKING - DETAILS AND NOTES

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NB	CF	E1.4	FEB 2023	3	4 OF 12



1 ACCESSIBLE STALL LAYOUT
SCALE: N.T.S.

ACCESSIBLE STALL NOTES:

1. ENSURE THAT PROPER ACCESSIBLE STALL DIMENSIONS AND LAYOUTS ARE FOLLOWED PER LOCAL GOVERNMENT BYLAWS AND APPROPRIATE CODES.
2. INSTALL THE EV CHARGER HEADS BETWEEN 1067mm AND 1220mm ABOVE GRADE.
3. CHARGER HEADS ARE USEABLE WITH ONE HAND OR LIMITED MOBILITY AND DOES NOT REQUIRE GRASPING, PINCHING, OR TWISTING.
4. INCLUDE CABLE MANAGEMENT TO AUTO-RECOIL CABLES AND IMPROVE THE USABILITY OF THE ACCESSIBLE CHARGER. CABLE MANAGEMENT WILL REDUCE TRIP HAZARDS AND OBSTACLES TO THE CHARGER HEAD LOCATION.
5. ENSURE REACH RANGE TO ALL REQUIRED AND OPERABLE PARTS IS POSSIBLE FROM A WHEELCHAIR.
6. ALLOW FOR WALKWAYS OR ACCESS AISLES PER LOCAL GOVERNMENT BYLAWS AND APPROPRIATE CODES.
7. ENSURE ALL FLOOR SURFACES BETWEEN THE STALLS AND THE EV CHARGERS ARE SMOOTH AND FREE FROM HAZARDS AND OBSTRUCTIONS THAT WOULD RESTRICT ACCESSIBILITY.
8. RAMPED CURBS OR CURB-CUTS MUST BE ACCESSIBLE TO ALLOW FOR OPERATION OF CHARGING STATION.
9. MINIMIZE ALL POTENTIAL BARRIERS/OBSTRUCTIONS TO THE USER, INCLUDING WHEELSTOPS.
10. PROVIDE EV CHARGER AND ACCESSIBLE PARKING SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS.

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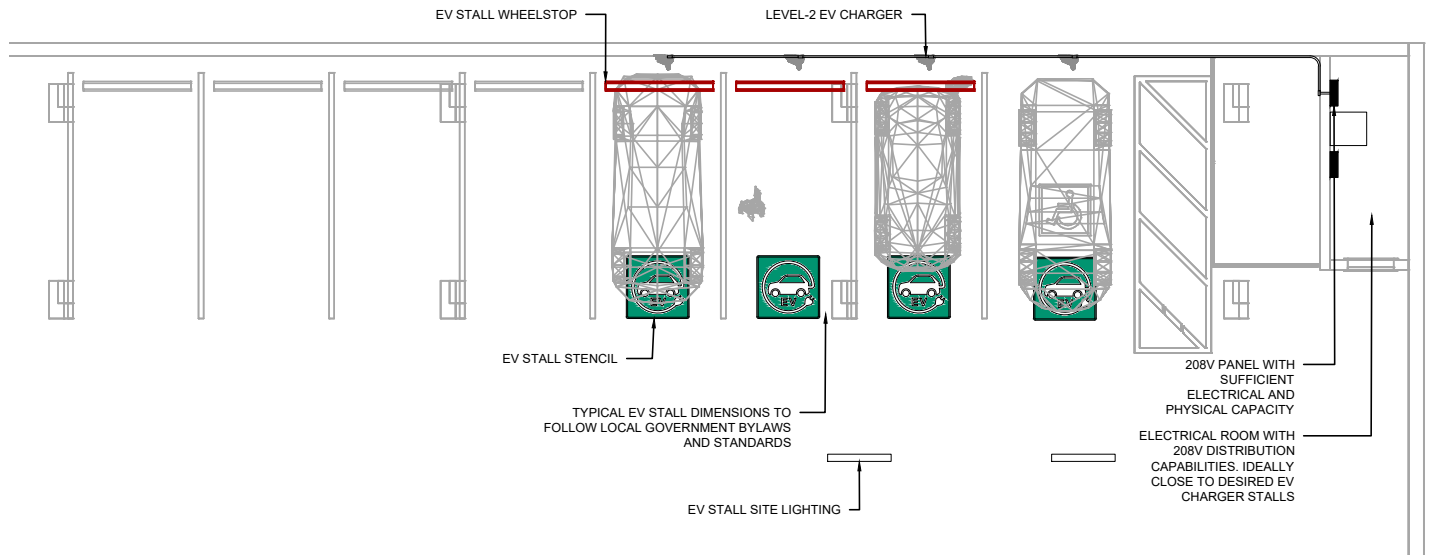
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CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
ARCHETYPES: TECHNICAL GUIDELINES
**ARCHETYPES 1, 2, & 3 OUTDOOR PARKING -
ACCESSIBILITY & NOTES**

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1
E2.1

KEY PLAN
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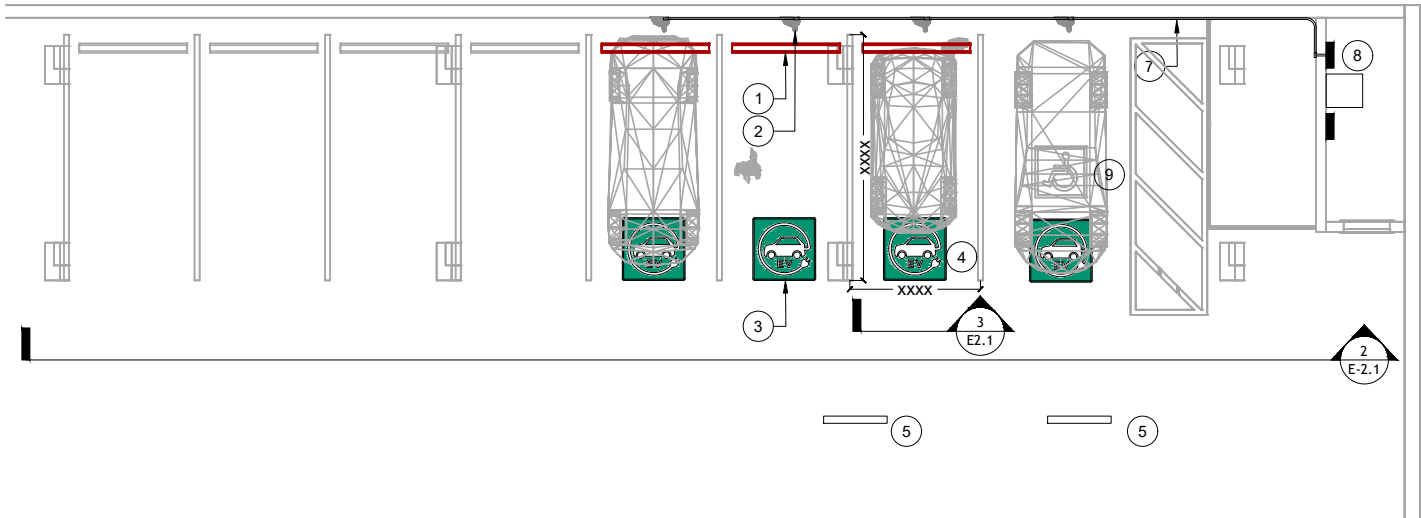
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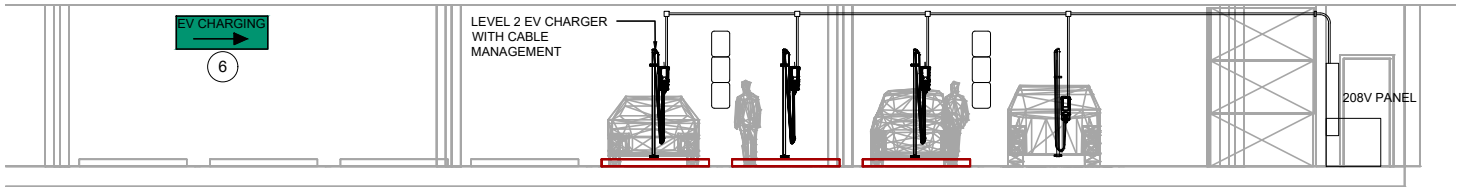
CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
ARCHETYPES: TECHNICAL GUIDELINES

ARCHETYPE 4 UNDERGROUND PARKING - KEY PLAN

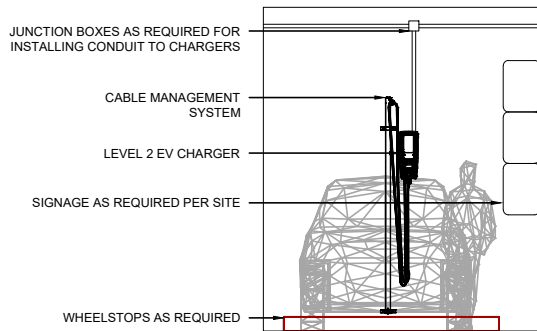
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NB	CF	E2.1	FEB 2023	3	6 OF 12



1 **SITE PLAN**
E2.2 SCALE: N.T.S.



2 **ELEVATION PLAN**
E2.2 SCALE: N.T.S.



3 **TYPICAL ELEVATION STALL VIEW**
E2.2 SCALE: N.T.S.

ENGINEER OF RECORD



CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
 ARCHETYPES: TECHNICAL GUIDELINES
**ARCHETYPE 4 UNDERGROUND PARKING - SITE
 PLAN & DETAILS**

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NB	CF	E2.2	FEB 2023	3	7 OF 12

NOTES:

1. IT IS RECOMMENDED TO PROVIDE EITHER BOLLARDS, WHEELSTOPS, OR WALL-MOUNTED BOLLARDS FOR PROTECTION OF EV CHARGERS. ENSURE THAT EV CHARGER PLUGS, INTERFACES, AND MAINTENANCE AREAS ARE STILL ACCESSIBLE. EV CHARGER CUTSHEETS MAY HAVE A RECOMMENDED BOLLARD LAYOUT AND SPACING. WHEELSTOPS PLACEMENTS ARE TO FOLLOW LOCAL GOVERNMENT BYLAWS , BUT ARE RECOMMENDED TO BE A MINIMUM OF 900mm OFFSET FROM THE WALL WHERE THE CHARGER IS INSTALLED.
2. INSTALL LEVEL-2 EV CHARGER AS PER MANUFACTURER RECOMMENDATIONS. CHARGERS MAY BE INSTALLED ON PEDESTALS OR DIRECTLY TO THE WALL. PROVIDE HARDWARE THAT IS COMPATIBLE WITH THE DESIRED CHARGERS. IT IS RECOMMENDED TO INSTALL CABLE MANAGEMENT SYSTEMS TO IMPROVE THE USER EXPERIENCE AND APPEARANCE WHILE REDUCING DAMAGE TO THE CABLES. LOAD-SHARING OF CHARGING CIRCUITS IS POSSIBLE TO REDUCE ELECTRICAL CAPACITY REQUIREMENTS AND COSTS, IF DESIRED. PROVIDE COMMUNICATIONS GATEWAY FOR CHARGERS, IF REQUIRED. RECOMMENDED CHARGER HEIGHT IS BETWEEN 1067mm AND 1219mm.
3. PROVIDE EV CHARGER STALL STENCILS AS PER LOCAL GOVERNMENT BYLAWS AND JURISDICTIONS, AS INDICATED. RECOMMENDED STALL STENCIL IS TO FOLLOW CAPITAL REGION LOCAL GOVERNMENT ELECTRIC VEHICLE (EV) + ELECTRIC BIKE (E-BIKE) INFRASTRUCTURE PLANNING GUIDE. REFER TO DOCUMENT FOR DIMENSIONS AND EXISTING EXAMPLES.
4. ENSURE THAT TYPICAL EV CHARGER STALL DIMENSIONS ARE FOLLOWED PER THE LOCAL GOVERNMENT BYLAWS , INCLUDING HEIGHT. ENSURE DRIVE AISLE WIDTHS ARE NOT REDUCED BELOW THE MINIMUM REQUIREMENTS DURING CONSTRUCTION. PROVIDE EV CHARGER SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS.
5. IT IS RECOMMENDED TO INSTALL EV CHARGER STALL LIGHTING IN ADHERENCE TO LOCAL GOVERNMENT BYLAWS AND STANDARDS DURING THE EV CHARGER CONSTRUCTION, IF NOT ALREADY EXISTING. A LIGHT SOURCES OVER THE STALLS WILL PROVIDE SAFETY, SECURITY, VISIBILITY, AND USABILITY TO IMPROVE THE USER EXPERIENCE. INTEGRATED OCCUPANCY SENSORS OR CONNECTING TO THE BASE BUILDING CONTROLS MAY BE SELECTED TO REDUCE POWER CONSUMPTION WHEN NOT IN USE.
6. SIGNAGE IN UNDERGROUND PARKING APPLICATIONS IS STRONGLY RECOMMENDED TO IMPROVE THE USER EXPERIENCE AND THE FLOW OF TRAFFIC. SIGNS SHALL DIRECT THE USER FROM THE ENTRANCES OF THE PARKING AND AT EACH CORNER UNTIL THE CHARGERS ARE REACHED.
7. PROVIDE CONDUITS AND JUNCTION BOXES AS NECESSARY. CONDUIT RUNS SHALL NOT CONFLICT WITH EXISTING SYSTEMS SUCH AS PLUMBING AND HVAC. ENSURE PROPER RULES ARE FOLLOWED PER CSA C22.1-18.
8. STALLS IN CLOSE PROXIMITY OF AN ELECTRICAL ROOM COULD REDUCE CONSTRUCTION COSTS AND TIME. ENSURE THE PROPER VOLTAGE DISTRIBUTION IS PRESENT IN THE CHOSEN ELECTRICAL ROOM. FOR LEVEL-2 EV CHARGERS, 208V IS REQUIRED. IF THERE ARE EXISTING 208V PANELS, IT SHOULD BE DETERMINED IF THERE IS SUFFICIENT SPARE CAPACITY ON THE PANELS (AMPERAGE), IF NOT AN ADDITIONAL PANEL MAY BE REQUIRED. TO DETERMINE SPARE CAPACITY, A CONTRACTOR MAY BE ABLE TO MEASURE THE AMPERAGE WITH DEVICES, OR AN ELECTRICAL ENGINEER MAY BE ABLE TO PERFORM A LOAD CALCULATION.
9. ACCESSIBLE PARKING STALLS SHOULD BE CONSIDERED. ENSURE THAT PROPER STALL DIMENSIONS AND LAYOUTS ARE FOLLOWED PER THE LOCAL GOVERNMENT BYLAWS AND APPROPRIATE CODES. REFER TO THE ACCESSIBLE STALL LAYOUT ON DRAWING E2.4 FOR ADDITIONAL INFORMATION.
10. DESIGNS SHALL SUPPORT EV READY PLANS AND EV READY BYLAWS WHERE APPLICABLE. IT IS ENCOURAGED TO PLAN AHEAD AND INSTALL THE APPLICABLE ELECTRICAL INFRASTRUCTURE FOR FUTURE CHARGERS DURING THE INITIAL CONSTRUCTION. THIS WILL PROVE TO BE COST EFFECTIVE IF A SPECIFIC OF CHARGERS IS CURRENTLY DESIRED WITH THE POSSIBILITY OF EXPANDING IN THE FUTURE FOR WHEN MORE EVS ARE ON THE ROAD.



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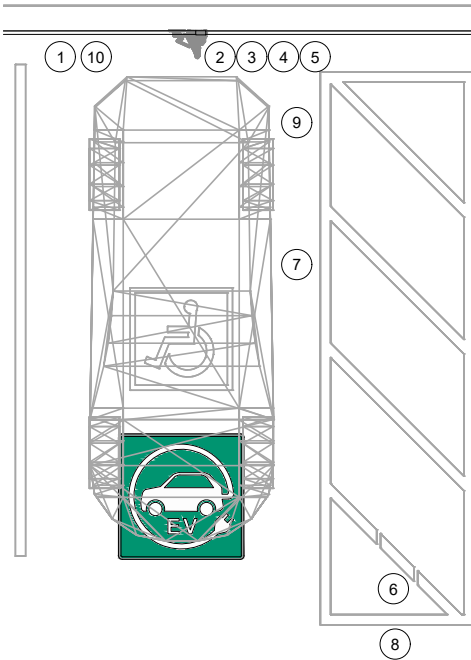


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CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
 ARCHETYPES: TECHNICAL GUIDELINES
 ARCHETYPE 4 UNDERGROUND PARKING - NOTES

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NB	CF	E2.3	FEB 2023	3	8 OF 12



1 INDOOR ACCESSIBLE STALL LAYOUT
 SCALE: N.T.S.

ACCESSIBLE STALL NOTES:

1. ENSURE THAT PROPER ACCESSIBLE STALL DIMENSIONS AND LAYOUTS ARE FOLLOWED PER LOCAL GOVERNMENT BYLAWS AND APPROPRIATE CODES.
2. INSTALL THE EV CHARGER HEADS BETWEEN 1067mm AND 1220mm ABOVE GRADE.
3. CHARGER HEADS ARE USEABLE WITH ONE HAND OR LIMITED MOBILITY AND DOES NOT REQUIRE GRASPING, PINCHING, OR TWISTING.
4. INCLUDE CABLE MANAGEMENT TO AUTO-RECOIL CABLES AND IMPROVE THE USABILITY OF THE ACCESSIBLE CHARGER. CABLE MANAGEMENT WILL REDUCE TRIP HAZARDS AND OBSTACLES TO THE CHARGER HEAD LOCATION.
5. ENSURE REACH RANGE TO ALL REQUIRED AND OPERABLE PARTS IS POSSIBLE FROM A WHEELCHAIR.
6. ALLOW FOR WALKWAYS OR ACCESS AISLES PER LOCAL BYLAW AND APPROPRIATE CODES.
7. ENSURE ALL FLOOR SURFACES BETWEEN THE STALLS AND THE EV CHARGERS ARE SMOOTH AND FREE FROM HAZARDS AND OBSTRUCTIONS THAT WOULD RESTRICT ACCESSIBILITY.
8. RAMPED CURBS OR CURB-CUTS MUST BE ACCESSIBLE TO ALLOW FOR OPERATION OF CHARGING STATION.
9. MINIMIZE ALL POTENTIAL BARRIERS/OBSTRUCTIONS TO THE USER, INCLUDING WHEELSTOPS. IF REQUIRED, RUBBER WALL STOPS MAY BE AN OPTION.
10. PROVIDE EV CHARGER AND ACCESSIBLE PARKING SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS.

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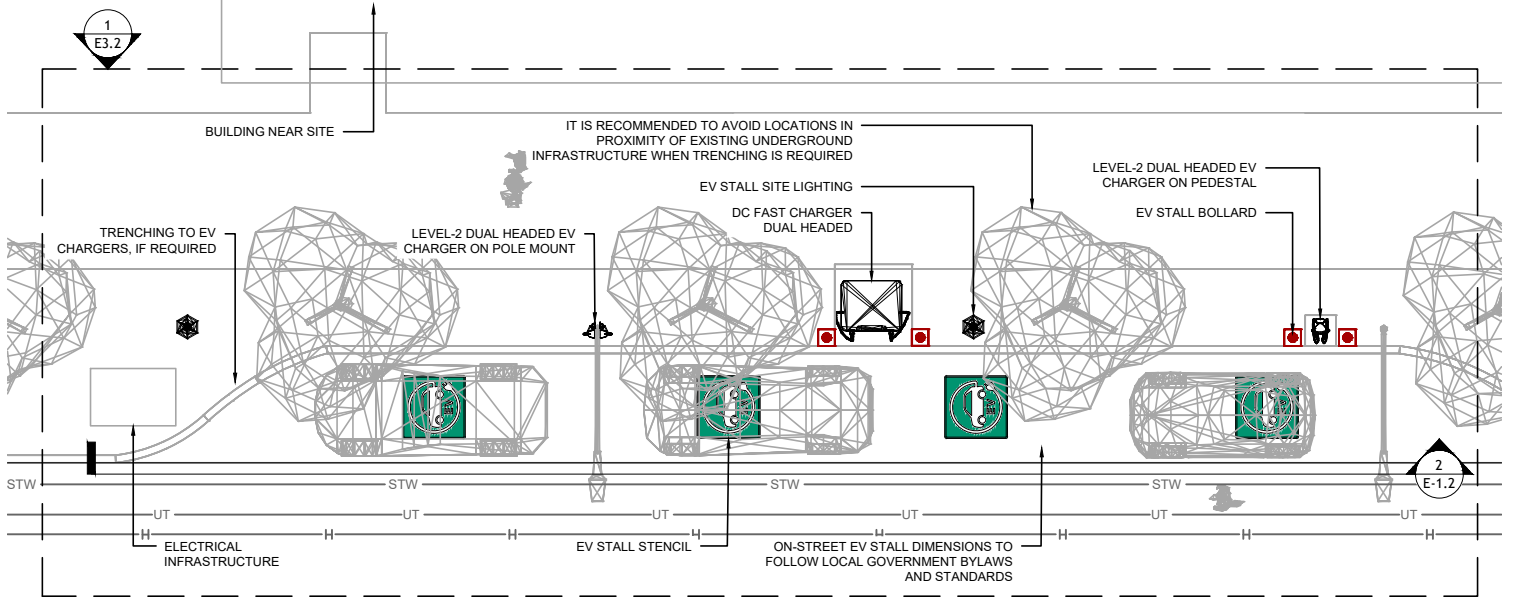
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CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING
 ARCHETYPES: TECHNICAL GUIDELINES

**ARCHETYPE 4 UNDERGROUND PARKING -
 ACCESSIBILITY & NOTES**

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E3.1 KEY PLAN
SCALE: N.T.S.

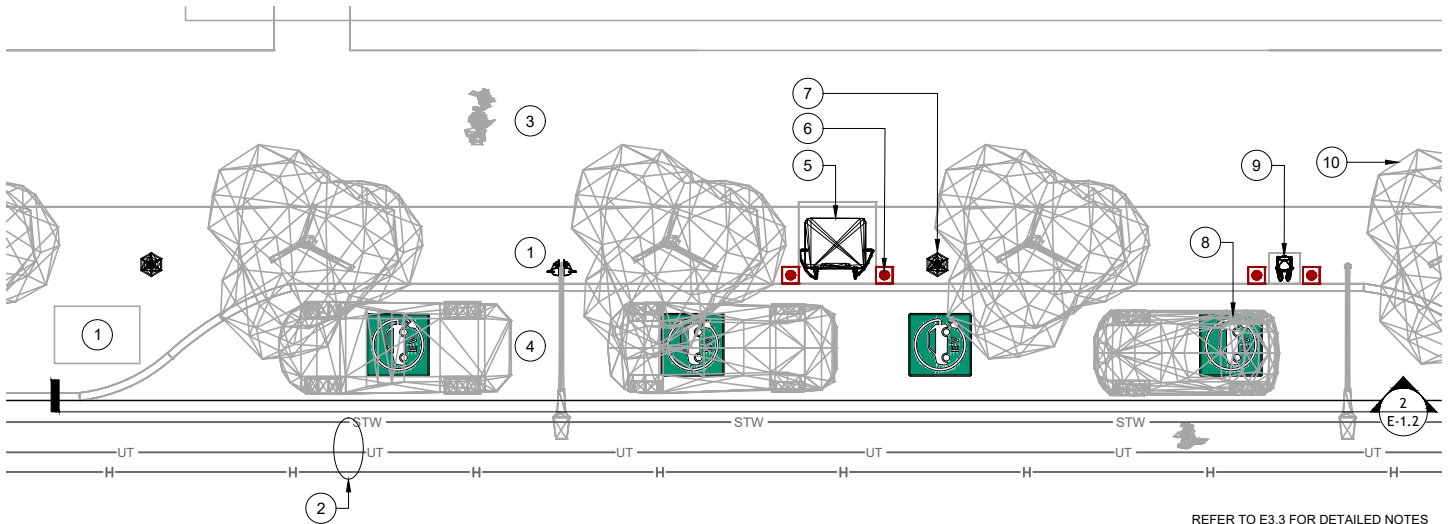
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ARCHETYPES: TECHNICAL GUIDELINES

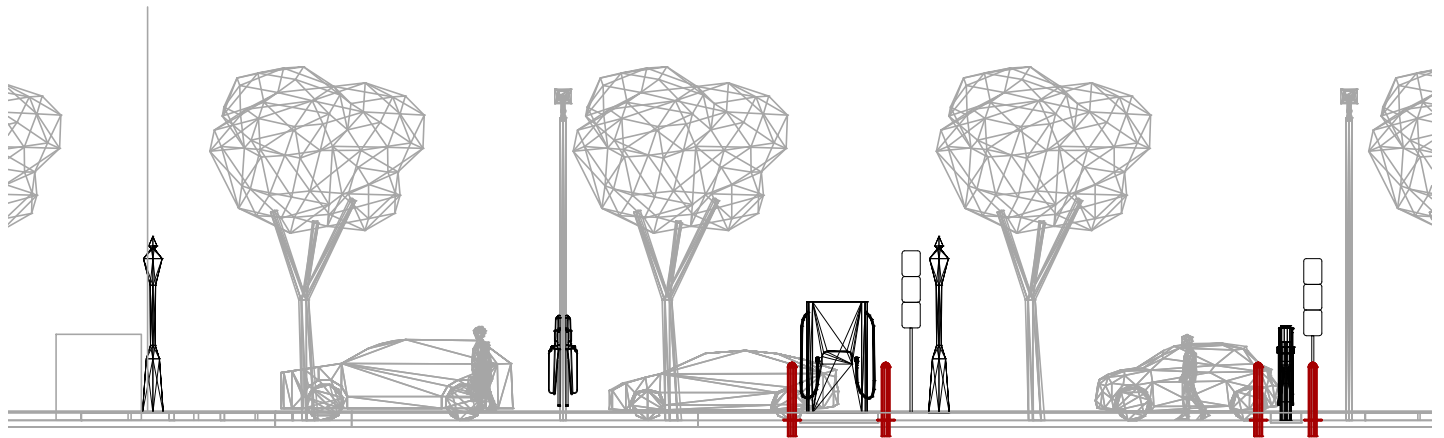
**ARCHETYPE 5 & 6 OUTDOOR ON-STREET PARKING -
KEY PLAN**

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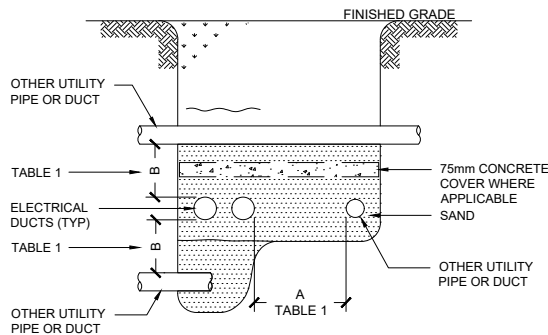


REFER TO E3.3 FOR DETAILED NOTES

1 SITE PLAN
SCALE: N.T.S.



2 ELEVATION VIEW
SCALE: N.T.S.



TYPE OF UTILITY PIPE OR DUCT	PER B.C. HYDRO ES54 H4-01 (NOTE 2)		MIN. PER CEC PART 1/ CAN3-C22.3 NO. 7 (NOTE 3)	
	1	2	3	4
COLUMN NO.:	1	2	3	4
DIMENSION:	A	B	A	B
TELEPHONE OR CABLE TV	300	150	300	300
STREET LIGHTING FROM BCHP DUCTS (NOTE 14)	900	300	300	150
GAS MAINS STORM SEWERS SANITARY SEWERS WATER FUEL OIL BCH MAINS	900 (NOTE 14)	300	300 MIN 900 PREFERRED	300

3 UNDERGROUND DUCT CLEARANCES
SCALE: N.T.S.

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SUSTAINABLE DESIGN + PLANNING

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CAPITAL REGION PUBLIC ELECTRIC VEHICLE CHARGING ARCHETYPES: TECHNICAL GUIDELINES

ARCHETYPE 5 & 6 OUTDOOR ON-STREET PARKING - SITE PLAN

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NOTES:

1. ELECTRICAL INFRASTRUCTURE WILL BE REQUIRED; HOWEVER, IT IS LARGELY SITE SPECIFIC. ONCE A DESIRED CHARGING METHOD IS CHOSEN, AN ELECTRICAL CONSULTANT SHOULD BE ENGAGED TO WORK CLOSELY WITH THE LOCAL GOVERNMENTS AND BC HYDRO TO CONFIRM INSTALLATION OF KIOSKS / METERING AND DELIVER THE FINAL PRODUCT. BELOW ARE SOME ADDITIONAL CONSIDERATIONS.
 - A. DCFC: FOR DC FASTER CHARGERS OR LEVEL-3 CHARGERS, A 600V SERVICE WILL BE REQUIRED WHICH OFTEN REQUIRES A DEDICATED SERVICE COMPLETE WITH A PAD MOUNT TRANSFORMER AND A KIOSK FROM BC HYDRO. THIS WILL REQUIRE A FOOTPRINT OF LAND TO PLACE THE ELECTRICAL EQUIPMENT AND MAY INCREASE THE TOTAL INSTALLATION TIME DUE TO THE INVOLVEMENT OF THE UTILITY. ADDITIONALLY, DUE TO THE NATURE OF THE INSTALLATION, TRENCHING WILL BE REQUIRED TO CONNECT THE DCFCs TO THE KIOSK. THIS MAY PROVE TO BE DIFFICULT NEAR EXISTING ABOVE GROUND AND UNDERGROUND INFRASTRUCTURE, INCLUDING TREES.
 - B. LEVEL-2: THERE ARE TWO APPROACHES FOR LEVEL-2 CHARGERS. THE FIRST OPTION IS TO INSTALL A DUAL-HEADED CHARGER TO A CURBSIDE POLE. THE CHARGERS ARE TO BE FED FROM THE SAME BREAKER AS THE LIGHT/LIGHTING CONTROLS. THIS INSTALLATION DOES NOT REQUIRE ANY TRENCHING OR ADDITIONAL FOOTPRINTS WHICH TYPICALLY ENTAILS A LESS EXPENSIVE ALTERNATIVE. THE SECOND OPTION IS TO INSTALL A DUAL-HEADED CHARGER ON A PEDESTAL. THE CHARGERS ARE TO BE FED FROM A 208V KIOSK NEARBY. ADDITIONALLY, DUE TO THE NATURE OF THE INSTALLATION, TRENCHING WILL BE REQUIRED TO CONNECT THE LEVEL-2S TO THE KIOSK. THIS MAY PROVE TO BE DIFFICULT NEAR EXISTING ABOVE GROUND AND UNDERGROUND INFRASTRUCTURE, INCLUDING TREES.
2. WHEN TRENCHING IS NEEDED ON SITE, IT IS RECOMMENDED TO LOCATE THE EXISTING UNDERGROUND SERVICES SUCH AS PIPING, CONDUITS, AND TREES. A CIVIL CONSULTANT SHOULD BE ENGAGED TO PERFORM AN UNDERGROUND SERVICES STUDY OF THE AREA. IF TREES OR LANDSCAPING ARE IN PROXIMITY AND ARE OF CONCERN DURING CONSTRUCTION, AN ARBORIST CONSULTANT SHOULD BE CONTACTED TO DETERMINE CONDITION OF TREE AND TREE ROOTS. INTERFERENCE OF EXISTING UNDERGROUND DUCTS AND EXISTING INFRASTRUCTURE SUCH AS TREE ROOTS MAY PROVE TO BE COSTLY FOR CERTAIN SITES AND RESULT IN NOT BEING ECONOMICALLY FEASIBLE. REFER TO DETAIL 3 ON E3.1 FOR ADDITIONAL INFORMATION.
3. IT IS RECOMMENDED THAT PASSENGER WALKWAYS, BIKE LANES, AND BOULEVARDS NOT BE IMPACTED THROUGHOUT AND POST CONSTRUCTION OF EV CHARGER INSTALLATIONS. COVERINGS OVER TRENCHES AND SMALL DETOURS SHOULD BE PUT IN PLACE WHEN REQUIRED AND RESTORED TO PRE-CONSTRUCTION ONCE COMPLETED. IT IS RECOMMENDED TO INSTALL CABLE MANAGEMENT SYSTEMS TO AVOID INTERFERENCE WITH OTHERS AND REDUCE POSSIBLE TRIPPING HAZARDS. REFER TO THE BC ACTIVE TRANSPORTATION DESIGN GUIDE FOR MORE INFORMATION.
4. ENSURE THAT TYPICAL EV CHARGER STALL DIMENSIONS ARE FOLLOWED PER THE LOCAL GOVERNMENT BYLAWS AND STANDARDS. ADDITIONALLY, IT IS RECOMMENDED THAT THE EV STALL DIMENSIONS ARE SUFFICIENT FOR THE TYPICAL EV IN THE AREA. PROVIDE EV CHARGER SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS. ACCESSIBLE PARKING STALLS MAY BE AN OPTION AND SHOULD BE CONSIDERED FOR ALL SITES. ACCESSIBLE STALLS STANDARDS SHALL BE APPLIED PER LOCAL GOVERNMENT BYLAWS, CODES, AND STANDARDS. IT IS RECOMMENDED TO INSTALL THE ACCESSIBLE CHARGER HEADS BETWEEN 1067mm AND 1220mm ABOVE GRADE. PROVIDE RAMPED CURBS, AND MINIMIZE OBSTRUCTIONS AND BARRIERS WHERE POSSIBLE. PROVIDE EV CHARGER SIGNAGE PER LOCAL GOVERNMENT BYLAWS AND STANDARDS. ANGLED STALL SITES ARE ALSO A POSSIBILITY; HOWEVER, THEY HAVE ADDITIONAL CHALLENGES DUE TO DO THE ARRANGEMENT OF CARS AND LOCATION OF CHARGER PORTS RELATIVE TO THE CHARGER LOCATION.
5. INSTALL DC FAST CHARGERS CLOSE TO CURBS AND PER MANUFACTURER RECOMMENDATIONS. PROVIDE HARDWARE THAT IS COMPATIBLE WITH THE DESIRED CHARGERS. PROVIDE CONCRETE PADS THAT ARE FLUSH WITH THE SURFACE AND STUB-UPS, AS REQUIRED. IT IS RECOMMENDED TO INSTALL CABLE MANAGEMENT SYSTEMS TO IMPROVE THE USER EXPERIENCE AND APPEARANCE WHILE REDUCING DAMAGE TO THE CABLES. PROVIDE COMMUNICATIONS CHARGERS, WHERE REQUIRED.
7. IT IS RECOMMENDED TO PROVIDE BOLLARDS FOR PROTECTION OF EV CHARGERS. IF EXISTING CONDITIONS DO NOT PROVIDE SUFFICIENT PROTECTION SUCH AS CURBS. ENSURE THAT EV CHARGER PLUGS, INTERFACES, AND MAINTENANCE AREAS ARE STILL ACCESSIBLE. EV CHARGER CUTSHEETS MAY HAVE A RECOMMENDED BOLLARD LAYOUT AND SPACING.
8. IT IS RECOMMENDED TO INSTALL EV CHARGER STALL LIGHTING IN ADHERENCE WITH LOCAL GOVERNMENT BYLAWS AND STANDARDS DURING THE EV CHARGER CONSTRUCTION. IF NOT ALREADY EXISTING, A LIGHT SOURCES OVER THE STALLS WILL PROVIDE SAFETY, SECURITY, VISIBILITY, AND USABILITY TO IMPROVE THE USER EXPERIENCE. A SUITABLE LIGHT SOURCE SHALL BE SELECTED THAT DOES NOT CONTRIBUTE A SIGNIFICANT AMOUNT OF LIGHT POLLUTION. INTEGRATED OCCUPANCY SENSOR MAY BE SELECTED TO REDUCE POWER CONSUMPTION WHEN NOT IN USE.
9. PROVIDE EV CHARGER STALL STENCILS AS PER LOCAL GOVERNMENT BYLAWS AND JURISDICTIONS, AS INDICATED. RECOMMENDED STALL STENCIL IS TO FOLLOW CAPITAL REGION LOCAL GOVERNMENT ELECTRIC VEHICLE (EV) + ELECTRIC BIKE (E-BIKE) INFRASTRUCTURE PLANNING GUIDE. REFER TO DOCUMENT FOR DIMENSIONS AND EXISTING EXAMPLES.
10. INSTALL LEVEL-2 EV CHARGERS CLOSE TO CURB AND PER MANUFACTURER RECOMMENDATIONS. IT IS ENCOURAGED TO INSTALL DUAL-HEADED CHARGERS TO REDUCE CONSTRUCTION AND MATERIAL COSTS. PROVIDE PEDESTALS AND HARDWARE THAT IS COMPATIBLE WITH THE DESIRED CHARGERS. PROVIDE CONCRETE PADS THAT ARE FLUSH WITH THE SURFACE AND STUB-UPS, AS REQUIRED. IT IS RECOMMENDED TO INSTALL CABLE MANAGEMENT SYSTEMS TO IMPROVE THE USER EXPERIENCE AND APPEARANCE WHILE REDUCING DAMAGE TO THE CABLES. LOAD-SHARING OF CHARGING CIRCUITS IS POSSIBLE, IF DESIRED. PROVIDE COMMUNICATIONS GATEWAY FOR CHARGERS.
11. IT IS RECOMMENDED TO SELECT LOCATIONS FOR EV CHARGERS WHERE THE UNDERGROUND CONDUITS WILL NOT NEGATIVELY IMPACT TREES BY DISRUPTING THE ROOTS. IF A DESIRED LOCATION IS CLOSE TO TREES, AN ARBORIST CONSULTANT MAY BE ENGAGED TO PROVIDE INSIGHT ON CONDITION OF TREE AND TREE ROOTS.
12. DESIGNS SHALL SUPPORT EV READY PLANS AND EV READY BYLAWS WHERE APPLICABLE. IT IS ENCOURAGED TO PLAN AHEAD AND INSTALL THE APPLICABLE ELECTRICAL INFRASTRUCTURE FOR FUTURE CHARGERS DURING THE INITIAL CONSTRUCTION. THIS WILL PROVE TO BE COST EFFECTIVE IF AN AMOUNT OF CHARGERS IS CURRENTLY DESIRED WITH THE POSSIBILITY OF EXPANDING IN THE FUTURE FOR WHEN MORE ELECTRIC VEHICLES ARE ON THE ROAD.
13. DETAIL 1 ON E1.3 IS BASED ON B.C. HYDRO STANDARD ES54 H4-01.02, REV. 4, DATED JUN 1980 AND CSA STANDARD CAN3-C22.3 NO. 7-M86. PRIOR TO PROCEEDING WITH THE WORK, CONFIRM THAT THE FOREGOING STANDARDS ARE CURRENT AND VALID FOR THE APPLICATION. COMPLY WITH ADDITIONAL REQUIREMENTS OF CAN3-C22.3 NO. 7 FOR CABLES OPERATING AT VOLTAGES UP TO 22kV.
14. CLEARANCE MAY BE REDUCED TO 300mm (ABSOLUTE MINIMUM) BY OBTAINING WRITTEN APPROVAL FROM B.C. HYDRO.
15. WHERE CLEARANCES OF TABLE 1 CANNOT BE OBTAINED DUE TO SITE CONDITIONS, CONCRETE ENCASING THE AFFECTED PORTIONS OF DUCTS MAY IMPROVE CLEARANCES.
16. DETAIL 2 ON E1.3 IS APPLICABLE FOR SYSTEM VOLTAGES UP TO AND INCLUDING 600V.
17. DUCT COVER DIMENSIONS ARE MINIMUM VALUES FOR DETAIL 2 ON E1.3.




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ARCHETYPES: TECHNICAL GUIDELINES

**ARCHETYPE 5 & 6 OUTDOOR ON-STREET PARKING -
NOTES**

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