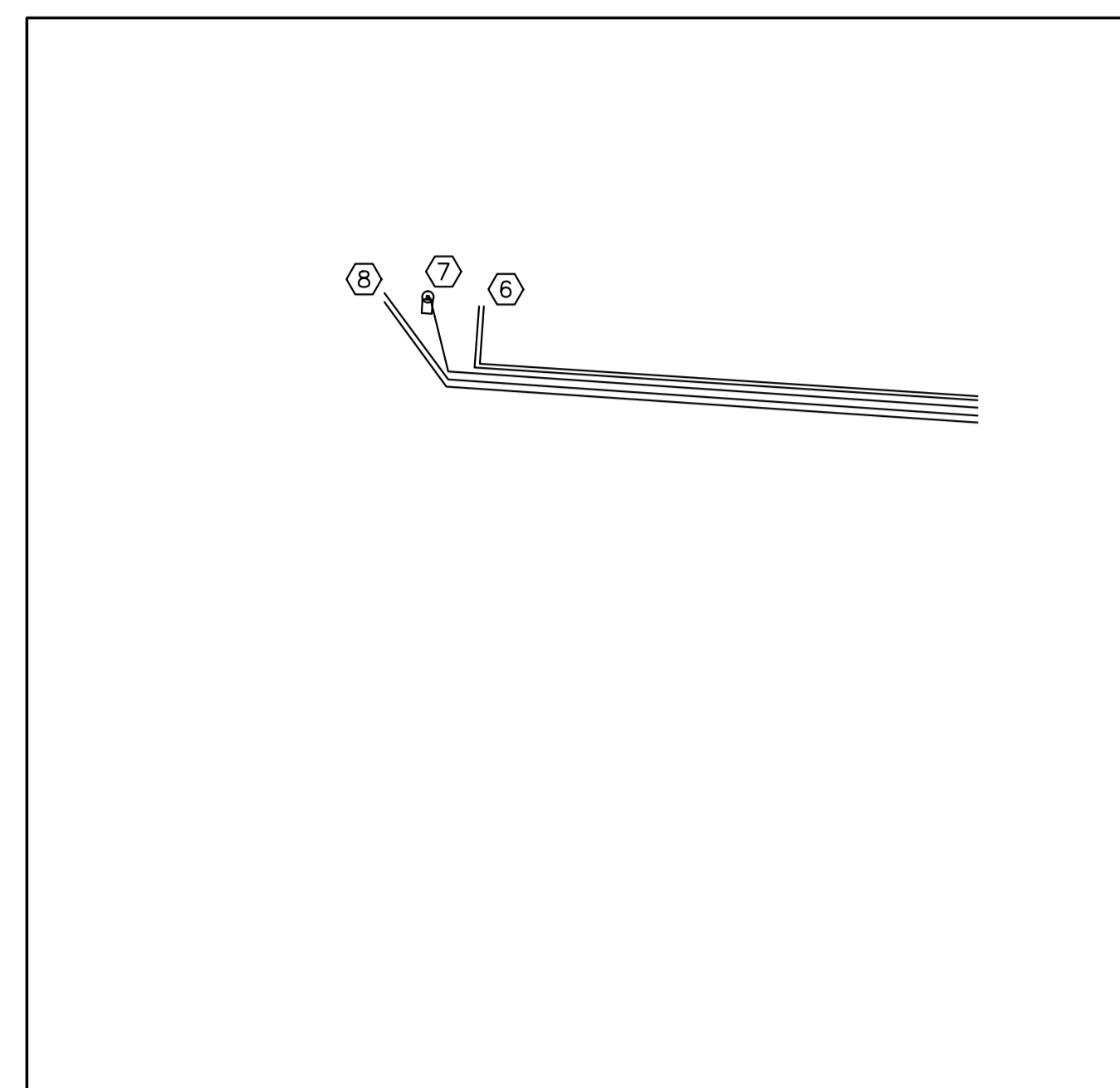
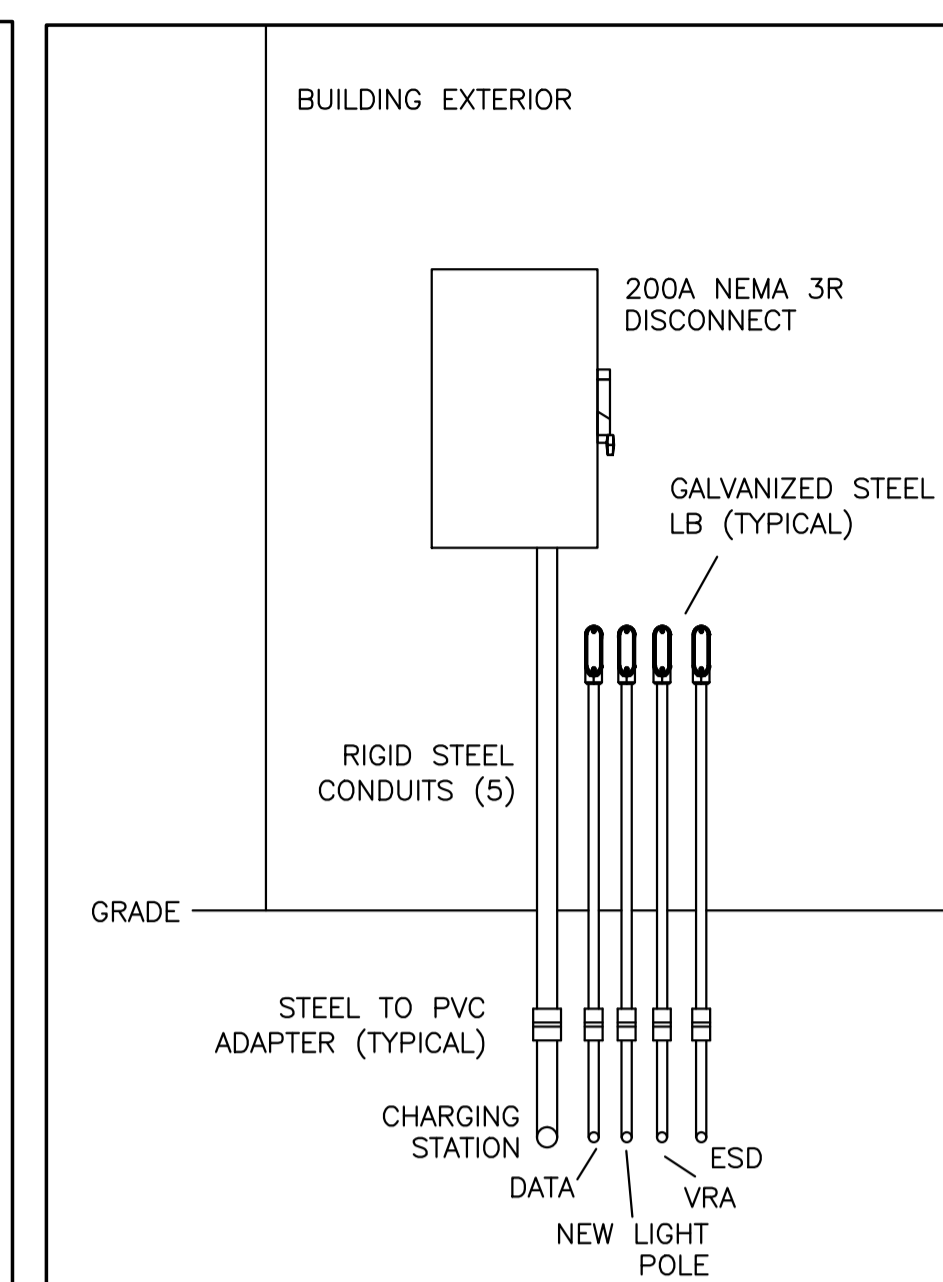


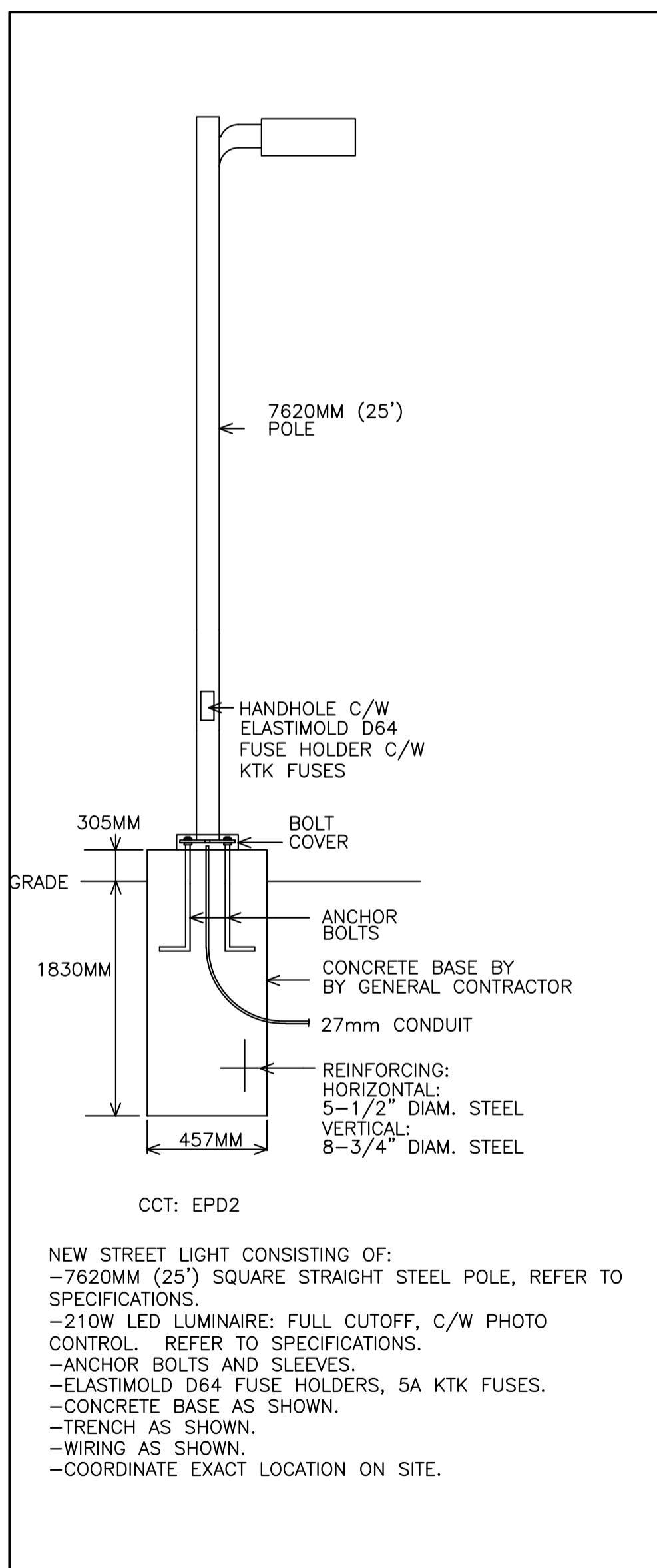
**1** POWER SOURCES INSIDE U-89  
E01 SCALE: 1:200



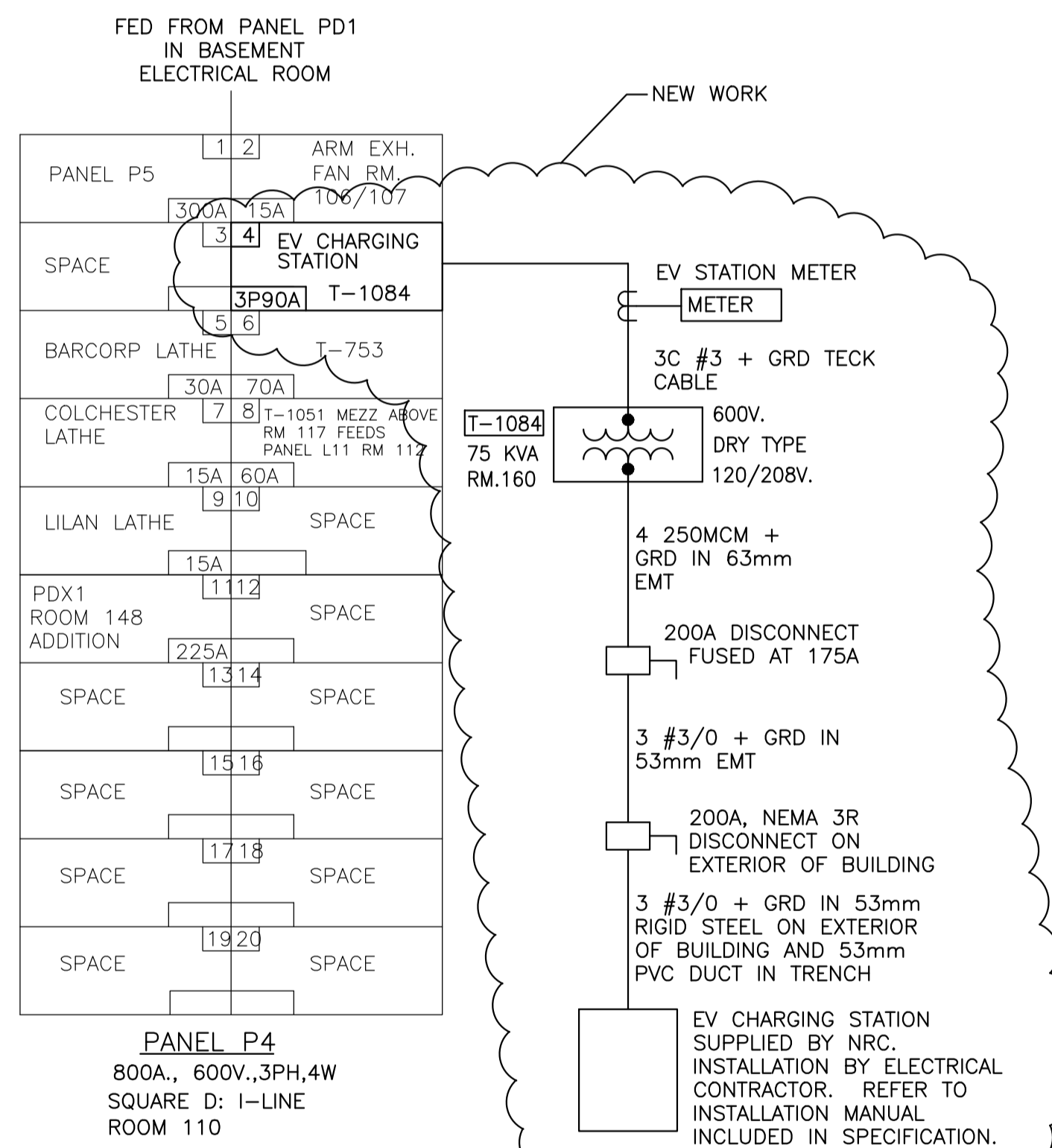
**2** ELECTRICAL SITE WORK  
E01 SCALE: 1:250



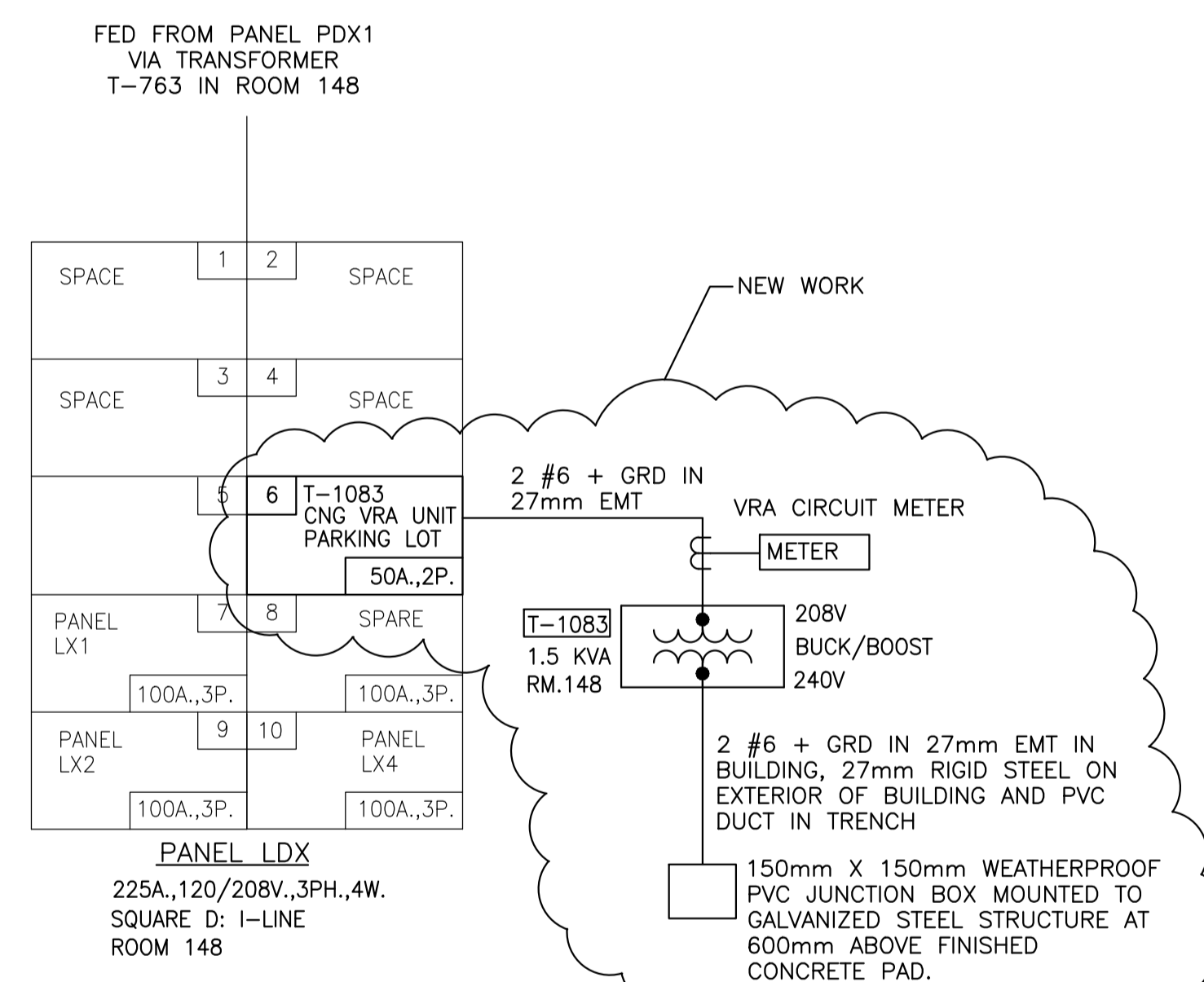
**3** EXTERIOR CONDUIT DETAIL  
E01 SCALE: N.T.S.



**4** LIGHT POST DETAIL  
E01 SCALE: N.T.S.



**5** PARTIAL SINGLELINES  
E01 SCALE: N.T.S.



**DRAWING NOTES**

- 240V CIRCUIT FOR VRA ROUGH-IN ORIGINATING FROM PANEL LDX. REFER TO SINGLELINE. TERMINATE IN 150MMX150MM WEATHERPROOF PVC JUNCTION BOX MOUNTED TO GALVANIZED STEEL STRUCTURE AT 600MM ABOVE FINISHED CONCRETE PAD. REFER TO DETAIL 2/E02.
- 120V CIRCUIT FOR EMERGENCY SHUTDOWN DEVICE (ESD) ROUGH-IN ORIGINATING FROM PANEL LX1. REPLACE ONE EXISTING 1P15A BREAKER WITH TANDEM STYLE BREAKER AND CIRCUIT FROM THERE USING 2 #10 WIRE + GRD IN 27mm EMT ON INTERIOR OF BUILDING, RIGID STEEL ON EXTERIOR AND 27mm PVC CONDUIT UNDERGROUND. TERMINATE IN 150MMX150MM WEATHERPROOF PVC JUNCTION BOX MOUNTED TO GALVANIZED STEEL STRUCTURE AT 600MM ABOVE FINISHED CONCRETE PAD. REFER TO DETAIL 2/E02.
- 208V, 3Ø POWER FOR ELECTRIC VEHICLE CHARGING STATION ORIGINATING IN PANEL P4. REFER TO SINGLELINE.
- EXISTING 347V CIRCUIT FOR EXISTING STREET LIGHTS FED FROM EPD2 IN THIS JUNCTION BOX. NEW LIGHT POLE IS TO BE CIRCUIT FROM THE SAME CIRCUIT. SPLICE INTO CIRCUIT IN THIS LOCATION AND RUN 2 #10 + GRD IN 27mm EMT TO GALVANIZED STEEL LB & CONDUIT AND THEN UNDERGROUND TO NEW LIGHT POLE USING 27mm PVC.
- 75kVA TRANSFORMER LOCATED AT HIGH LEVEL AND FUSED DISCONNECT TO LEVEL 3 EV CHARGING STATION. REFER TO DETAIL 4/E02 FOR TRANSFORMER MOUNTING DETAILS.
- CONCRETE PAD FOR ELECTRIC VEHICLE CHARGING STATION BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR TO ENSURE MOUNTING BOLTS AND CONDUIT FOR CHARGING STATION ARE LOCATED CORRECTLY, PER DETAIL 3/E02.
- NEW LIGHT & POLE. CONCRETE BASE BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR TO ENSURE ANCHOR BOLTS AND CONDUIT ARE LOCATED CORRECTLY, PER THE DETAIL ON DRAWING E01.
- ROUGH-INS FOR VRA AND ESD.
- NEW 27mm CONDUIT. BEGIN RUN NEXT TO EXISTING CABLE TRAY. INSTALL BUSHING AND GROUND LUG ON THIS END. ROUTE TO CHARGING STATION AS SHOWN. EMT INSIDE BUILDING, RIGID STEEL ON EXTERIOR AND PVC IN TRENCH. INSTALL PULL CORD. REFER TO DETAIL 3/E01 FOR EXTERIOR ROUTING DETAIL.
- MOUNT METER AND CTs FOR VRA CIRCUIT ON WALL NEAR PANEL LDX. METER TO MEASURE KWH. TO BE INSTALLED ON PRIMARY SIDE OF TRANSFORMER. LABEL AS "VRA METER". REFER TO SPECIFICATIONS FOR METER, CT AND ENCLOSURE DETAILS.
- MOUNT METER AND CTs FOR EV CHARGING STATION CIRCUIT ON WALL NEAR PANEL P4. METER TO MEASURE KWH. TO BE INSTALLED ON PRIMARY SIDE OF TRANSFORMER. LABEL AS "EV CHARGING STATION METER". REFER TO SPECIFICATIONS FOR METER, CT AND ENCLOSURE DETAILS.
- EXISTING CABLE TRAY.

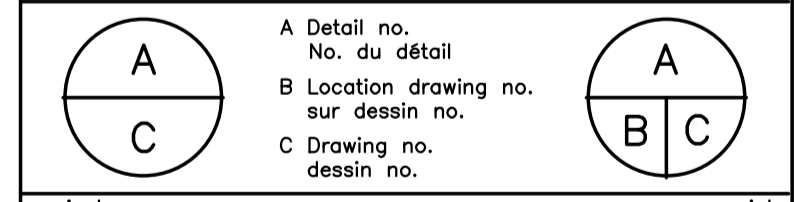


**GENERAL NOTES**

- READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.
- CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO NRC DEPARTMENTAL REPRESENTATIVE.
- CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.
- PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION.
- MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.
- COORDINATE ALL SHUTDOWNS WITH THE NRC DEPARTMENTAL REPRESENTATIVE.
- FILL ALL HOLES, PATCH & PAINT ALL SURFACES IN CONTRACT AREA. COLOUR SCHEME TO MATCH EXISTING.
- REMOVE MEANS REMOVE AND DISPOSE OF OFF SITE UNLESS OTHERWISE NOTED.
- PROVIDE LABELS TO NEW DEVICES TO INDICATE POWER SOURCE. UPDATE PANEL SCHEDULES AFTER JOB COMPLETION.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR FINAL PLACEMENT OF LIGHT FIXTURES.
- ALL WIRE TO BE IN EMT UNLESS OTHERWISE NOTED.

No.	Date	Revision	By:
0	22 04 2014	ISSUED FOR TENDER	DIF

Date Printed: \_\_\_\_\_ Date imprimée: \_\_\_\_\_  
 o Verify all dimensions and site conditions and be responsible for same  
 o Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité



**U-85- CNG FILLING AND ELECTRICAL CHARGING STATIONS**

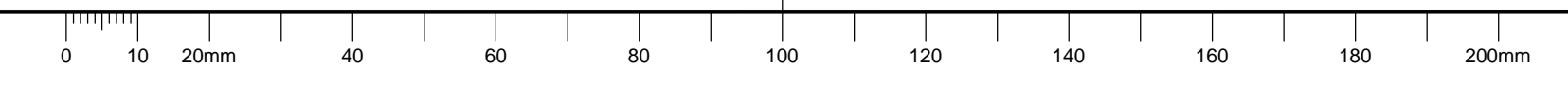
**AST CAMPUS**

drawing: \_\_\_\_\_ dessin: \_\_\_\_\_

ELECTRICAL PLANS AND DETAILS

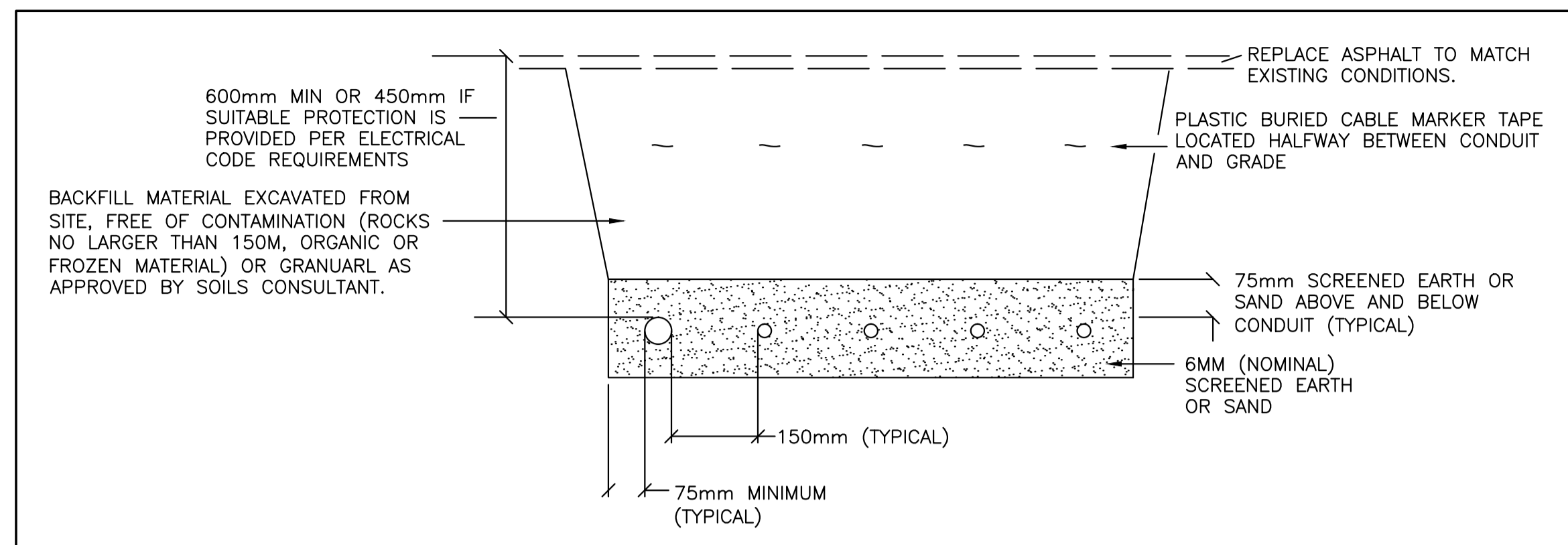
designed	conçu	date	date
DIF		MAR. 2014	
drawn	dessiné	scale	échelle
DIF		AS NOTED	
checked	vérifié	sheet	feuille
C.Y.C.		E01 of/de	2
approved	approuvé	W.O.no.	D.T.no.
B.V.		A1-004334-11	

dwg.no. \_\_\_\_\_ dessin no. \_\_\_\_\_  
**3903-E01**

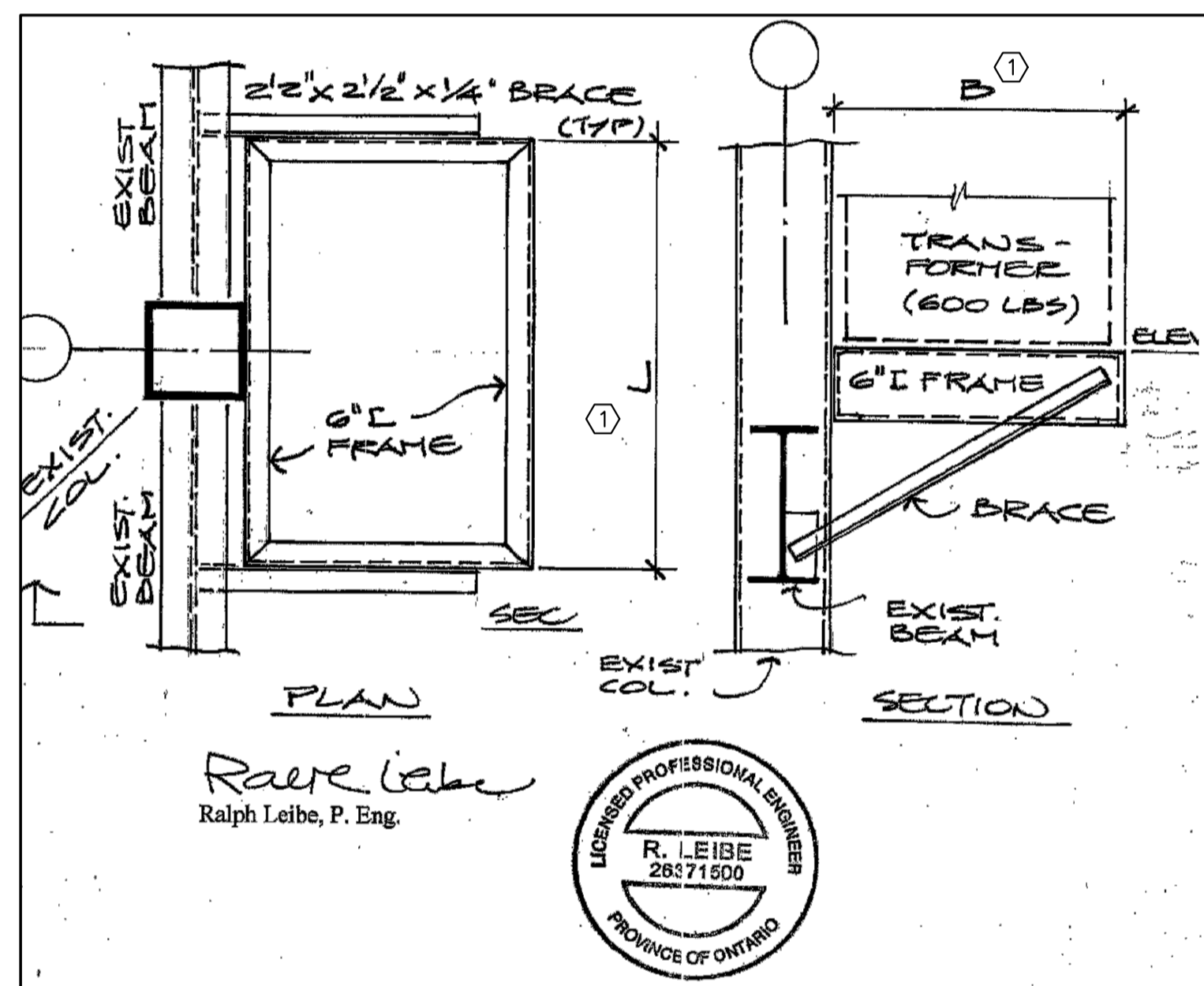


**GENERAL NOTES**

- A READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.
- B CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO NRC DEPARTMENTAL REPRESENTATIVE.
- C CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.
- D PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION.
- E MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.
- F COORDINATE ALL SHUTDOWNS WITH THE NRC DEPARTMENTAL REPRESENTATIVE.
- G FILL ALL HOLES, PATCH & PAINT ALL SURFACES IN CONTRACT AREA. COLOUR SCHEME TO MATCH EXISTING.
- H REMOVE MEANS REMOVE AND DISPOSE OF OFF SITE UNLESS OTHERWISE NOTED.
- I PROVIDE LABELS TO NEW DEVICES TO INDICATE POWER SOURCE. UPDATE PANEL SCHEDULES AFTER JOB COMPLETION.
- J REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR FINAL PLACEMENT OF LIGHT FIXTURES.
- K ALL WIRE TO BE IN EMT UNLESS OTHERWISE NOTED.



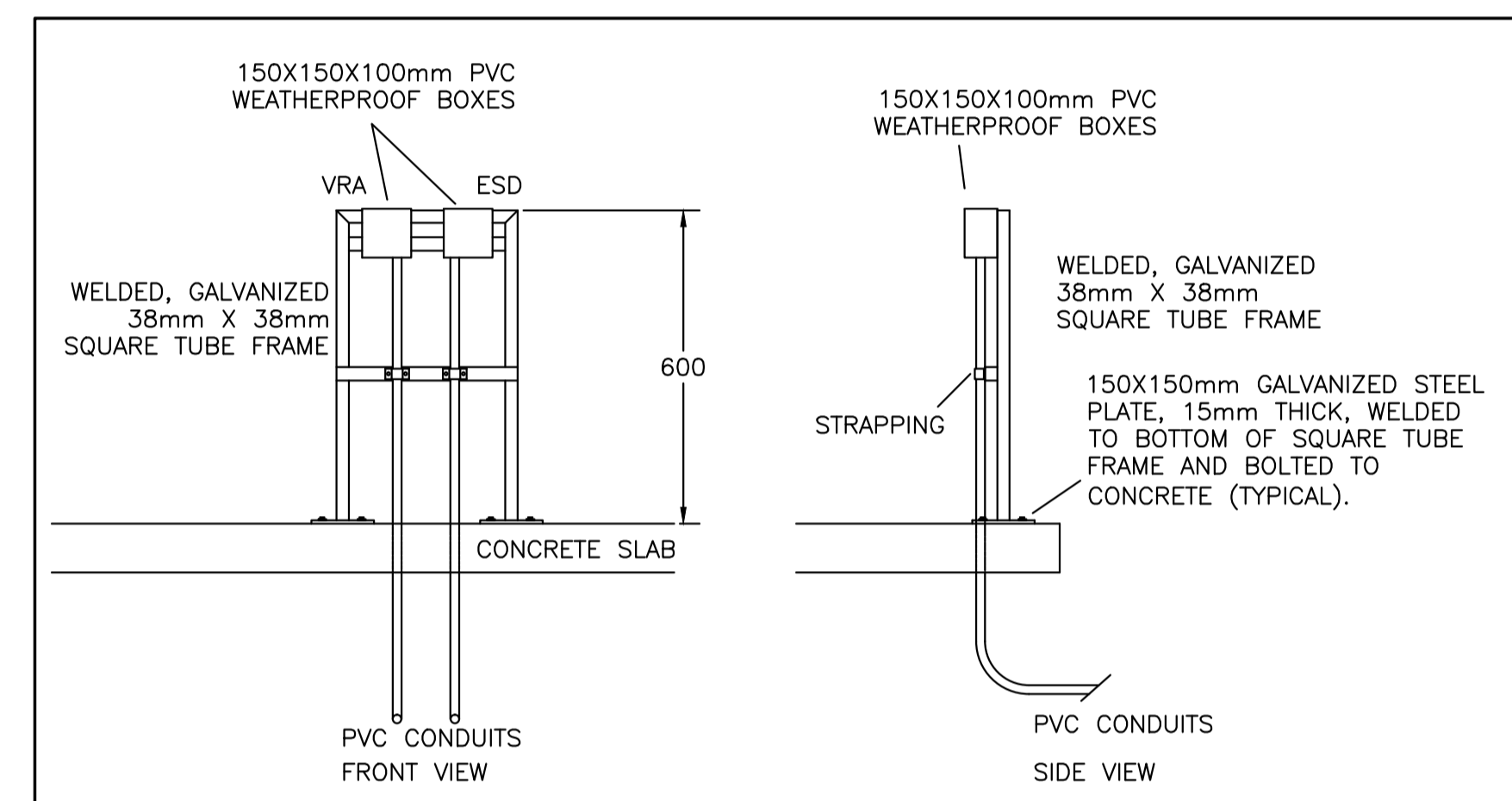
**1**  
**E02** CONDUIT BURIAL DETAIL  
 SCALE: N.T.S.



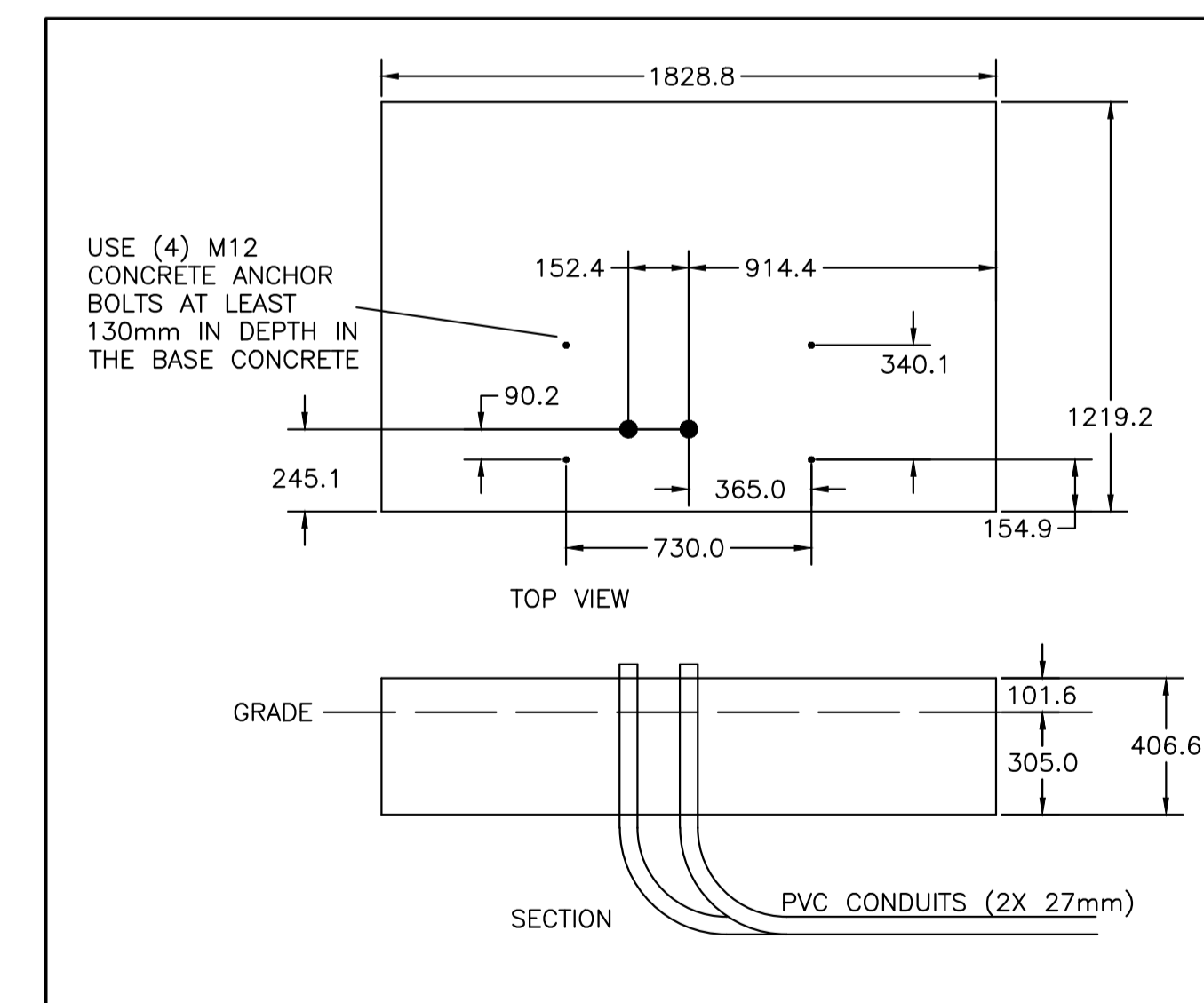
**4**  
**E02** TRANSFORMER BRACKET DETAIL  
 SCALE: N.T.S.

**DRAWING NOTES**

- 1. DIMENSIONS L & B ARE TO MATCH THOSE OF THE TRANSFORMER SUPPLIED.



**2**  
**E02** ESD AND VRA ROUGH-INS  
 SCALE: N.T.S.



**3**  
**E02** EV CHARGING STATION PAD KEY DIMENSIONS  
 SCALE: N.T.S.

No.	Date	Revision	By:	For:
0	22 04 2014	ISSUED FOR TENDER	DIF	

Date Printed: \_\_\_\_\_ Date imprimée: \_\_\_\_\_

- o Verify all dimensions and site conditions and be responsible for same
- o Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité

A	A Detail no. No. du détail	A
C	B Location drawing no. sur dessin no.	B
	C Drawing no. dessin no.	C

project: **U-85- CNG FILLING AND ELECTRICAL CHARGING STATIONS** projet

AST CAMPUS  
 drawing: **ELECTRICAL DETAILS** dessin

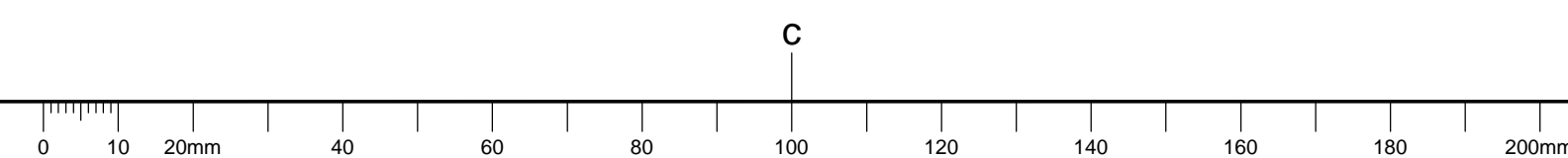
designed: **DIF** conçu: **MAR. 2014** date

drawn: **DIF** dessiné: **AS NOTED** échelle

checked: **C.Y.C.** vérifié: **E01** sheet: **2** of/de: **2** feuille

approved: **B.V.** approuvé: **A1-004334-11** W.O.no. D.T.no.

dwg.no.: **3903-E02** dessin no.



# NR - CMRC

## GENERAL NOTES

- CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO DEPARTMENTAL REPRESENTATIVE.
- CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.
- PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION.
- MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.
- COORDINATE ALL SHUTDOWNS WITH THE DEPARTMENTAL REPRESENTATIVE.
- PROVIDE ALL LABOUR AND MATERIAL REQUIRED TO FORM A COMPLETE, FUNCTIONAL SYSTEM AS DESCRIBED ON DRAWINGS.

## KEY PLAN

0	2014/04/22	ISSUED FOR TENDER	JWG
No.	Date	Revision	By: Parc

Date Printed DD MM YYYY Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité

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C	B Location drawing no. sur dessin no.	B
	C Drawing no. dessin no.	C

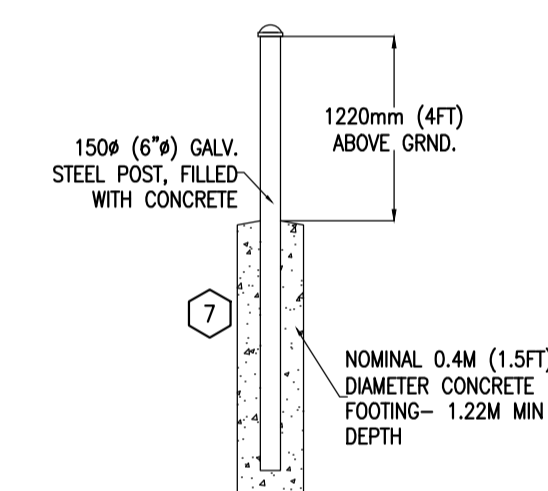
project U-85- CNG FILLING AND ELECTRICAL CHARGING STATIONS  
 AST CAMPUS  
 drawing GENERAL SITE PLAN, FENCE DETAIL AND DESCRIPTION OF WORK

designed	JWG	conçu	date	APR. 2014	date
drawn	JWG	dessiné	scale	AS INDICATED	échelle
checked	--	vérifié	sheet	1 of/de 1	feuille
approved	BV	approuvé	W.O.no.	A1-004334-11	D.T.no.

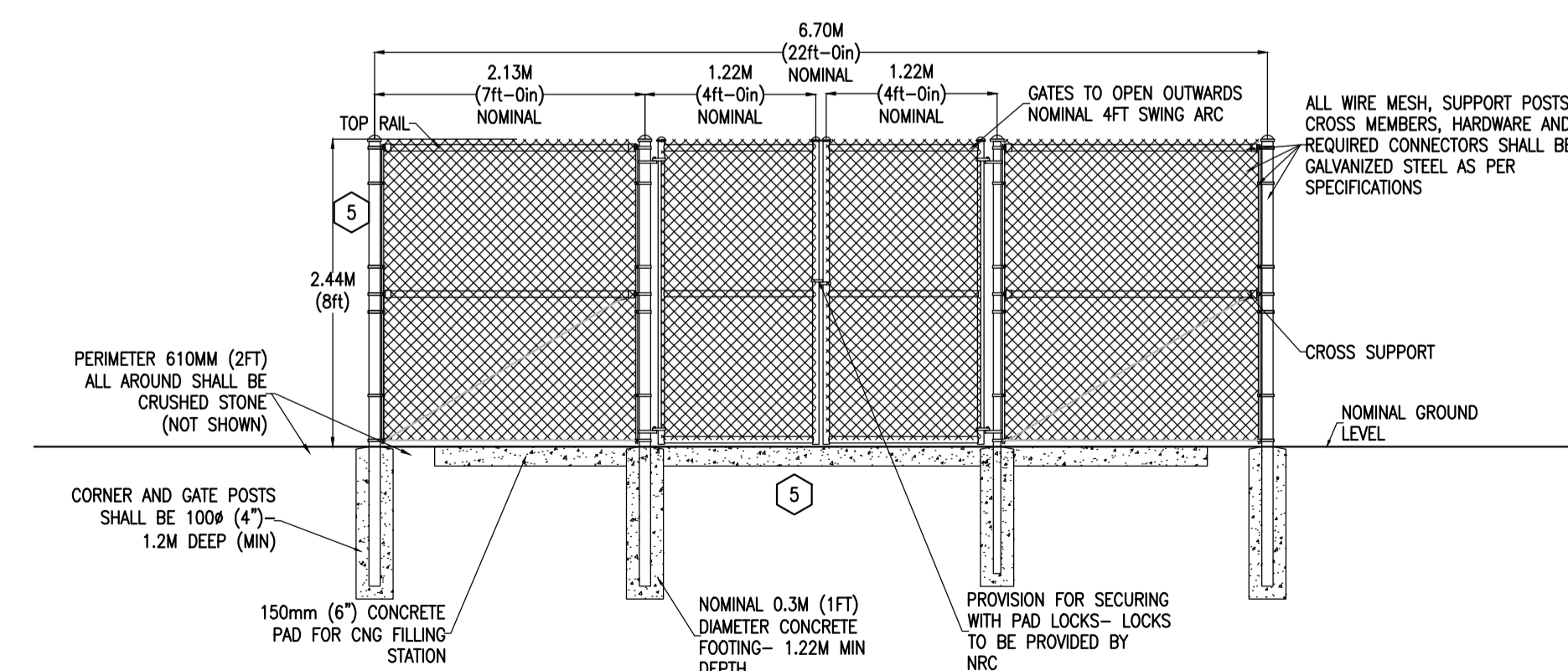
dwg.no. 3903-G01 dessin no.

## GENERAL WORK: (X)

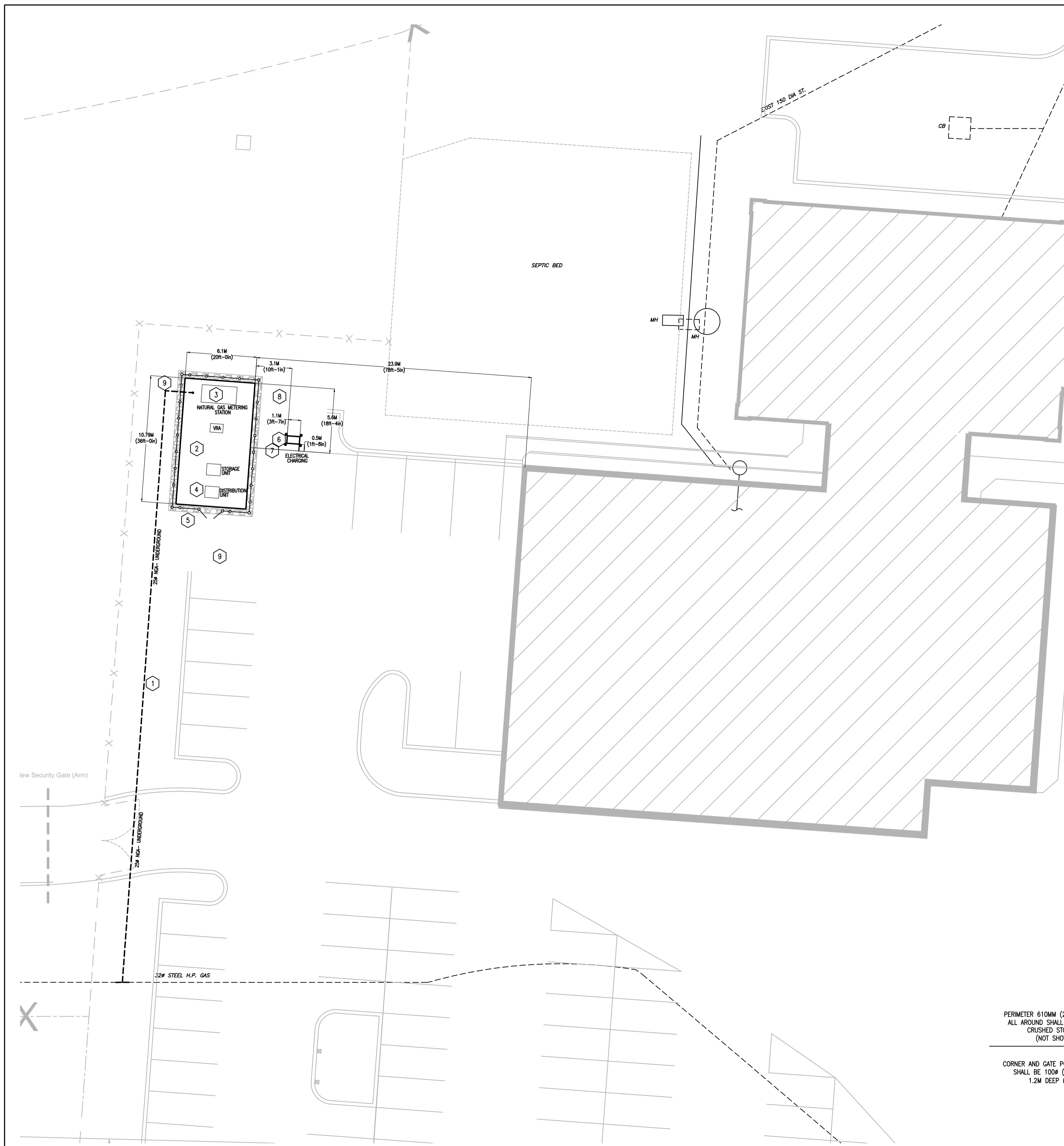
- NEW UNDERGROUND NATURAL GAS PIPING FROM EXISTING UNDERGROUND NATURAL GAS SUPPLY MAIN. ALL NATURAL GAS WORK SHALL BE PERFORMED BY ENBRIDGE GAS DISTRIBUTION INC. AND THEIR SUB CONTRACTORS. UNDERGROUND PIPING SHOWN FOR REFERENCE ONLY. PIPING STUB UP ON CONCRETE PAD SHALL BE PROVIDED BY CONTRACTOR BEFORE SLAB POUR AND AFTER CONSULTATION WITH ENBRIDGE.
- PROVIDE NEW CONCRETE PAD FOR COMPRESSED NATURAL GAS (CNG) FILLING STATION SIZED AND LOCATED AS INDICATED. REFER TO DRAWING 3903-S01 FOR ADDITIONAL INFORMATION.
- NEW NATURAL GAS METERING STATION PROVIDED AND INSTALLED BY ENBRIDGE. SHOWN FOR REFERENCE PURPOSES ONLY.
- NEW VEHICLE REFUELLING APPLIANCE, STORAGE UNIT AND DISTRIBUTION UNIT TO BE SUPPLIED BY ENBRIDGE. SHOWN FOR REFERENCE PURPOSES ONLY.
- PROVIDE NEW CHAIN LINK FENCE, ACCESS GATE AND SAFETY BOLLARDS FOR CNG FILLING STATION AS INDICATED. THIS WORK SHALL BE PERFORMED AFTER THE INSTALLATION AND INSPECTION OF CNG FILLING STATION. ACCESS GATE SHALL BE TWO (2) NOMINAL 1219mm (4FT) GATES AND SHALL HAVE A LATCHING/LOCKING MECHANISM FOR SECURITY.
- PROVIDE NEW ELECTRICAL CHARGING STATION CONCRETE PAD SIZED AND LOCATED AS INDICATED. REFER TO DRAWING 3903-S01 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW SAFETY BOLLARDS IN 4 LOCATIONS SURROUNDING ELECTRICAL CHARGING STATION AS INDICATED. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
- PROVIDE ANY AND ALL NEW CURBS REQUIRED. REFER TO STRUCTURAL DRAWING 3903-S01 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW ASPHALT SURFACE SIZED AS INDICATED. SURFACE THICKNESS SHALL BE AS PER SPECIFICATIONS.
- PROVIDE NEW DRAINAGE TRENCH ALONG WEST AND SOUTH SIDE OF CNG STATION LOCATION AS INDICATED. REFER TO DRAWING 3903-S01 AND SPECIFICATIONS FOR ADDITIONAL DETAILS.



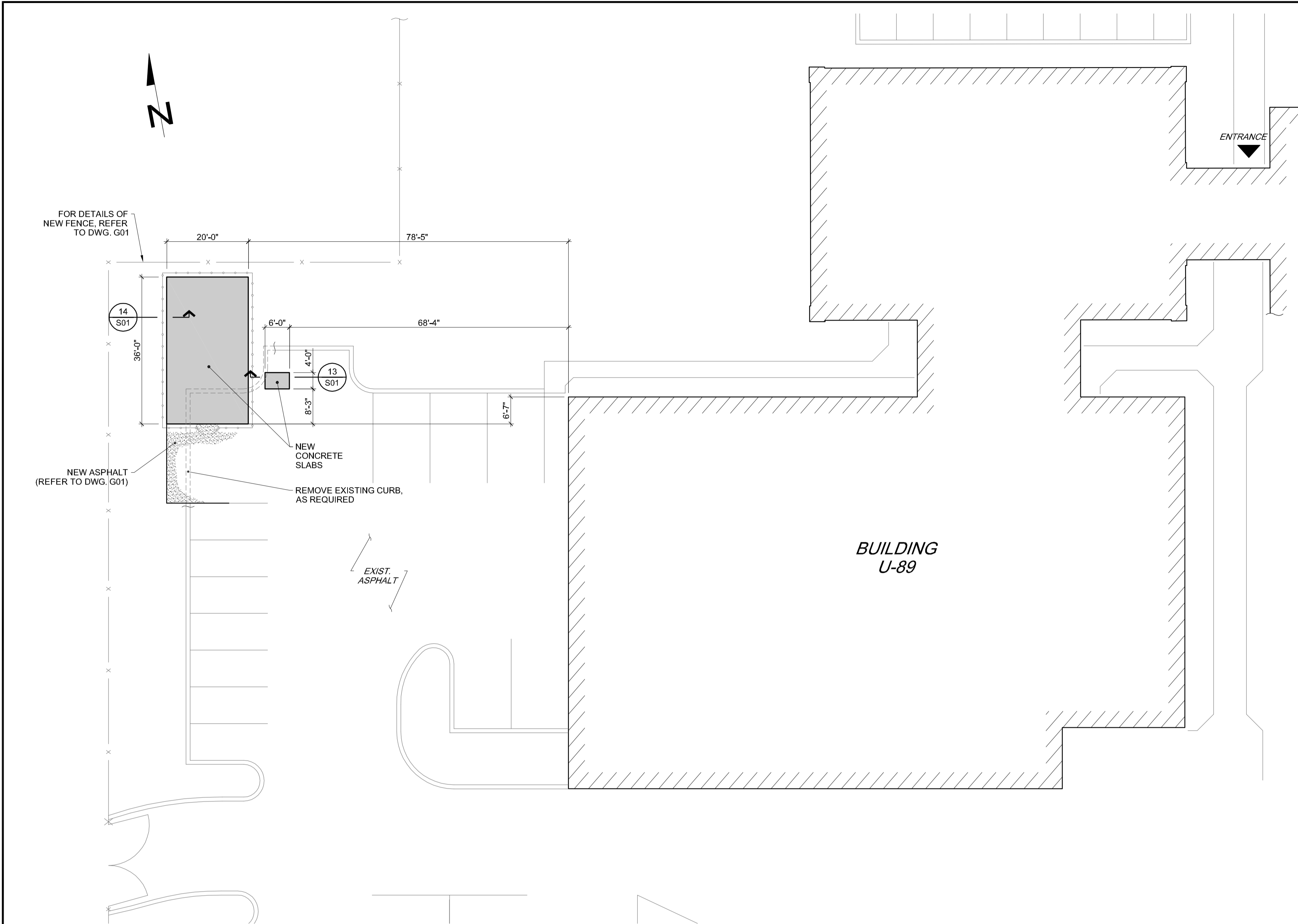
**2**  
G01  
DETAIL OF GUARD POST FOR ELECTRICAL CHARGING STATION  
SCALE- 1:50



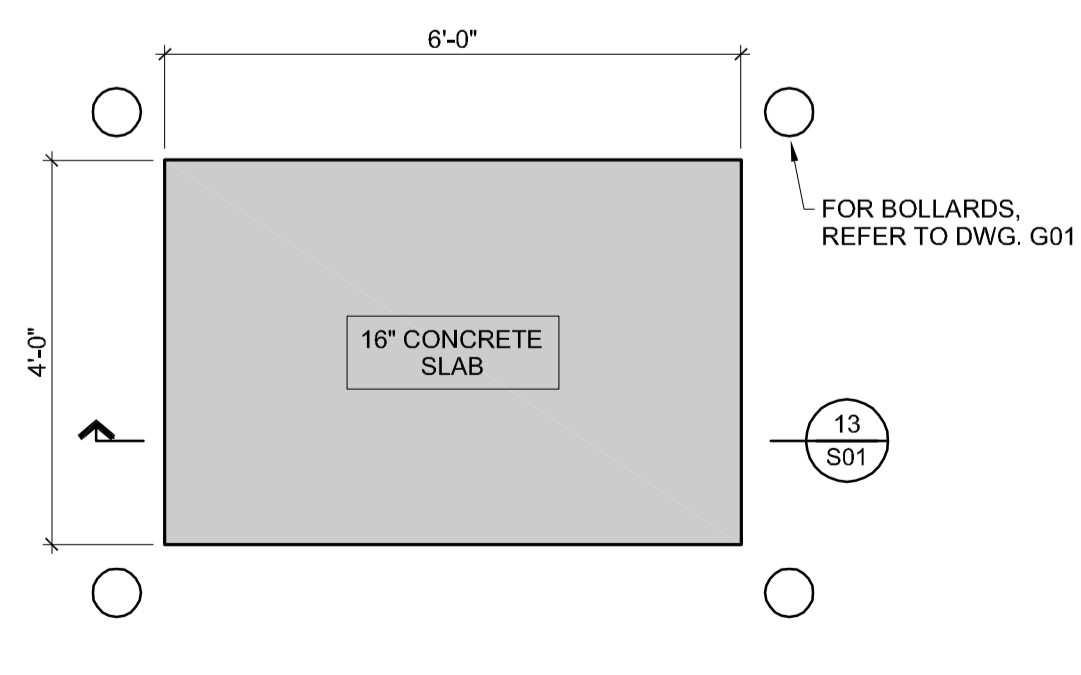
**3**  
G01  
DETAIL OF GATE TO CNG FILLING STATION  
NOTE: REQUIRED SIGNAGE NOT SHOWN  
SCALE- 1:50



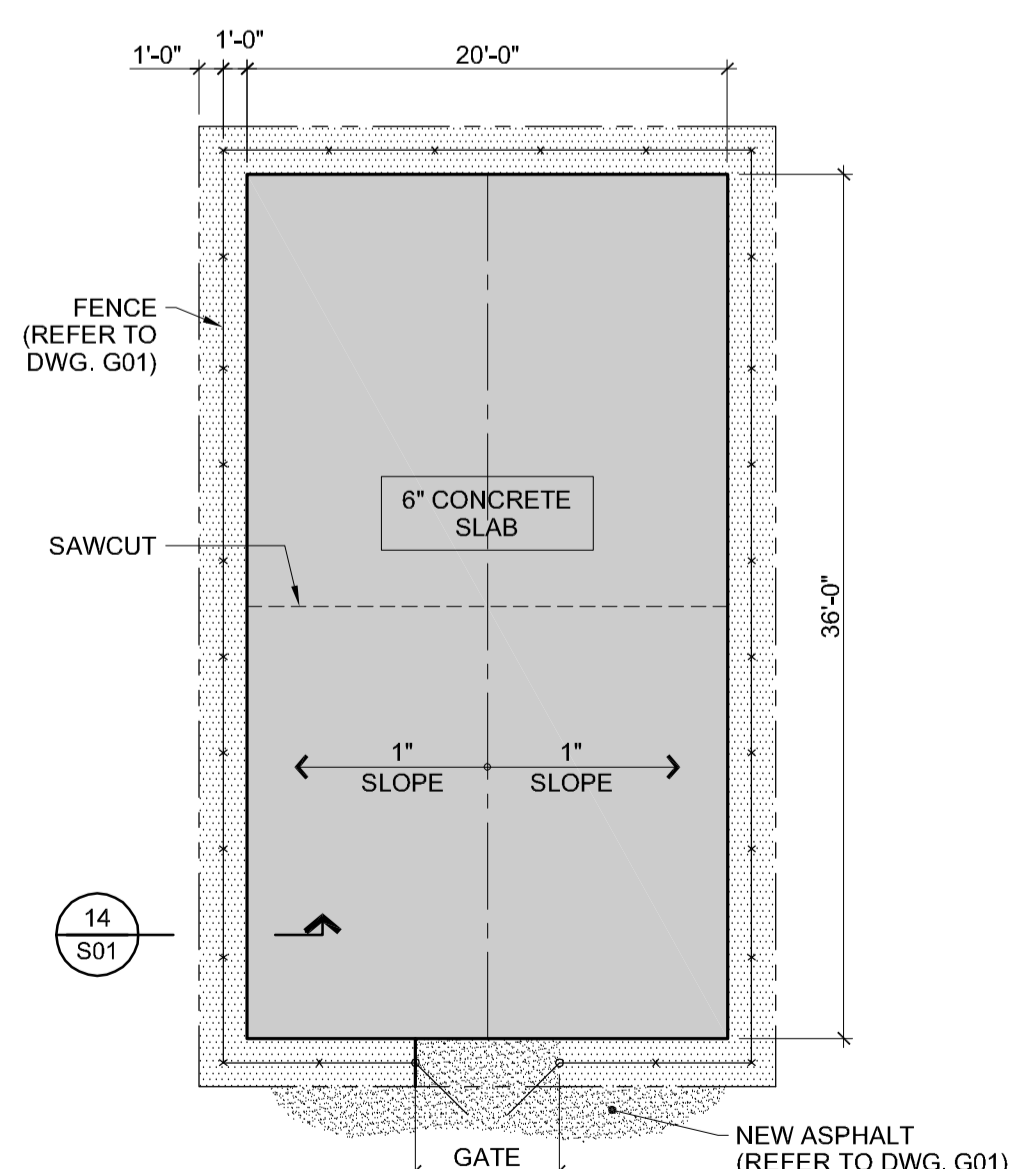
**1**  
G01  
U-85- PARTIAL SITE PLAN- AREA TO WEST OF U-89  
NEW CNG AND ELECTRICAL CHARGING STATIONS  
SCALE- 1:400



**SITE PLAN**  
SCALE: 1/16" = 1'-0"

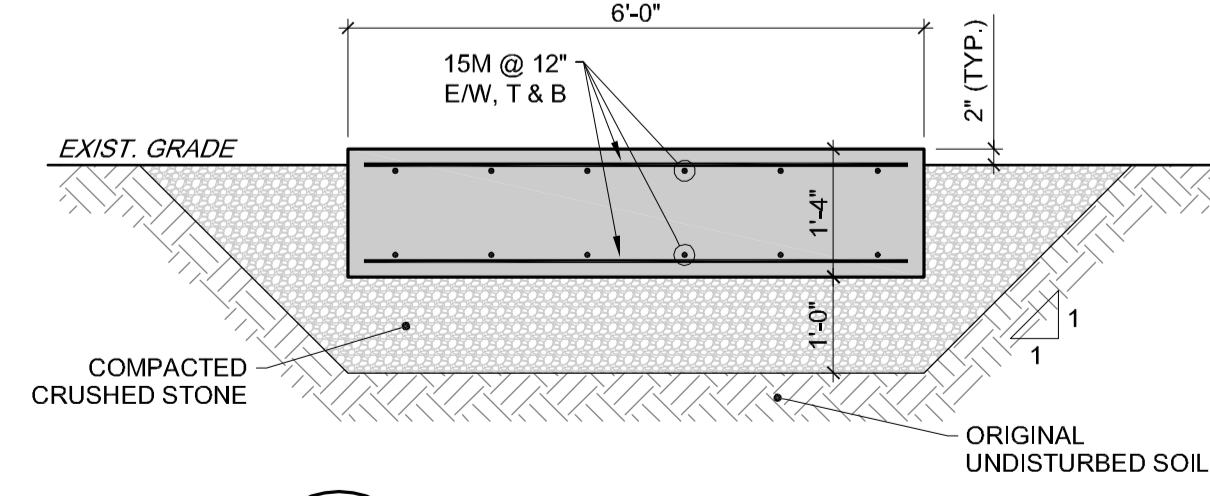


**11 PLAN (ELECTRICAL CHARGING STATION)**  
SCALE: 1/2" = 1'-0"

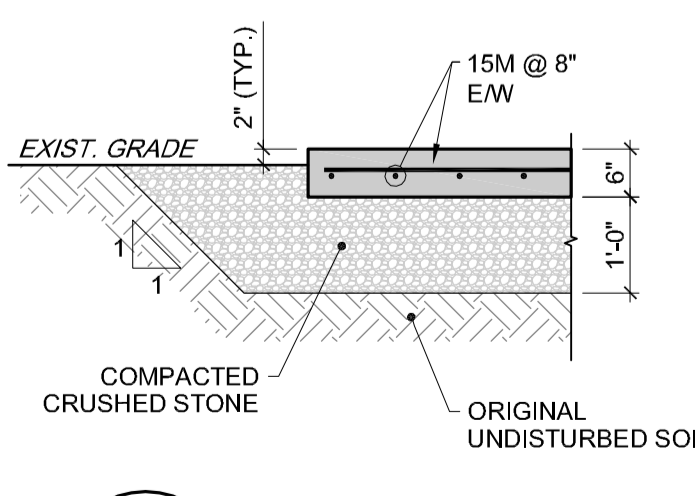


**12 PLAN (CNG FILLING STATION)**  
SCALE: 1/8" = 1'-0"

3/4" CRUSHED STONE  
NEW ASPHALT (REFER TO DWG. G01)



**13 SECTION**  
SCALE: 1/2" = 1'-0"



**14 SECTION**  
SCALE: 1/2" = 1'-0"

**GENERAL NOTES:**

**EXCAVATION AND BACKFILL:**

- CHECK FOR SERVICES.
- REMOVE ALL TOPSOIL, ASPHALT AND CONCRETE CURBS. EXCAVATE TO DEPTH SHOWN ON THE DRAWING.
- PROOF-ROLL THE EXPOSED SUBSOIL CHECKING FOR ANY AREAS OF SOFT MATERIAL AND REPLACE WITH A COMPACTED, WELL-GRADED GRANULAR MATERIAL PLACED IN LIFTS OF 6" MAXIMUM.
- BACKFILL WITH WELL-GRADED CRUSHED STONE COMPACTED TO 95% MODIFIED PROCTOR DRY DENSITY IN MAXIMUM LIFTS OF 6".

**CONCRETE:**

- CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 35 MPa WITH 8% ENTRAINED AIR.
- THE CONTRACTOR SHALL TAKE A SET OF THREE CONCRETE COMPRESSION TEST CYLINDERS FOR EACH CONCRETE POUR. ONE SHALL BE TESTED AT 7 DAYS AND TWO AT 28 DAYS.
- REINFORCING STEEL SHALL CONFORM TO CSA G30.18-09, GRADE 400.
- THE SURFACE OF THE SLABS SHALL SLOPE AS SHOWN ON PLAN, AND RECEIVE A WOOD-FLOAT FINISH.
- SAWCUT CONCRETE 48 HOURS AFTER THE CONCRETE POUR, AS SHOWN ON PLAN.
- THE CONCRETE SLABS SHALL BE WATER-CURED FOR A MINIMUM PERIOD OF 7 DAYS.
- ALL CONCRETE WORK SHALL CONFORM TO CSA A23.1-09 AND CSA A23.2-09.
- NOTIFY THE ENGINEER BEFORE EACH CONCRETE POUR.



No.	Date	Revision	By:	Prac:
1	MAR 31/14	ISSUED FOR TENDER	RL	
0	MAR 12/14	PRELIMINARY	RL	

- Verify all dimensions and site conditions and be responsible for same.
- Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité.

A	A Detail no. No. du détail	A
C	B Location drawing no. sur dessin no.	B
	C Drawing no. dessin no.	C

project: **BUILDING U-85**  
**CNG FILLING AND ELECTRICAL CHARGING STATIONS**  
UPLANDS CAMPUS

drawing: **STRUCTURAL: PLANS AND DETAILS**

designed	conçu	date	date
drawn	dessiné	scale	échelle
checked	vérifié	sheet	feuille
approved	approuvé	W.O.no.	D.T.no.

R.L. MARCH, 2014  
D.M.D. AS SHOWN  
R.L. S01 of S01

dwg. no. **3903-S01** dessin no.