Smith + Andersen
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CONTEMPLATED CHANGE NOTICE (CCN)

PROJECT NAME: NRC CCAMM

COMPANY: Diamond Schmitt Architects

ATTENTION: Eric Lucassen

PROJECT NO.: 16158.000.E.006 DATE: 2019-06-14

CCN NO.: E-X ISSUED BY: Jeffrey Ng / Adriana Htoo

THESE ITEMS ARE CONTEMPLATED CHANGES TO THE CONTRACT FOR THIS PROJECT. WORK IS NOT TO PROCEED UNTIL AUTHORIZED BY A CHANGE ORDER. ALL MATERIAL AND WORKMANSHIP ARE TO BE AS DESCRIBED IN THE CONTRACT DOCUMENTS UNLESS OTHERWISE STATED. PLEASE SUBMIT AN ITEMIZED QUOTATION FOR CHANGES TO THE CONTRACT VALUE AND/OR THE PROJECT SCHEDULE.

TITLE: LAB BENCHES AND FUME HOODS

1.0 SCHEDULES

1.1 Refer to panel schedule RP-1A (included herein)

1.1.1 Refer to attachment, all revisions are in bold.

1.2 Refer to panel schedule RP-1B (included herein)

1.2.1 Refer to attachment, all revisions are in bold.

1.3 Refer to panel schedule RP-1C (included herein)

1.3.1 Refer to attachment, all revisions are in bold.

1.4 Refer to panel schedule RP-1D (included herein)

1.4.1 Refer to attachment, all revisions are in bold.

1.5 Refer to panel schedule RP-1E (included herein)

1.5.1 Refer to attachment, all revisions are in bold.

1.6 Refer to panel schedule RP-1F (included herein)

1.6.1 Refer to attachment, all revisions are in bold.

1.7 Refer to panel schedule RP-1G (included herein)

1.7.1 Refer to attachment, all revisions are in bold.

1.8 Refer to panel schedule RP-1EA (included herein)

1.8.1 Refer to attachment, all revisions are in bold.

1.9 Refer to panel schedule RP-1EB (included herein)

1.9.1 Refer to attachment, all revisions are in bold.

2.0 DRAWINGS

2.1 Refer to E200 – SINGLE LINE DIAGRAM (included herein)

2.1.1 Add a new feed through 225A, 120/208V, 3-phase panel, RP-1EB in the Electrical Rooms as bubbled.

2.2 Refer to E300 – LEVEL 1 POWER AND SYSTEMS (included herein)

2.2.1 Delete all wall mounted wire mold and replace with junction boxes for future Waldner raceway connections for normal power, emergency power and data outlets as bubbled.

2.2.2 Re-pull existing ceiling mounted junction boxes for normal, emergency and data outlets to the locations as shown with the indicated number of circuits. Revise wire sizes as necessary.

2.2.3 Provide new junction boxes for normal, emergency and data outlets for future Waldner raceway connections as bubbled. Circuit as shown.

2.2.4 Add two (2) direct connection in the Dry/Wet Lab 105 for Motorized Benchess. Circuit to RP-1A.33 and RP-1A.35 as shown.

2.3 Refer to E400 – LEVEL 1 – LIGHTING (included herein)

2.3.1 Delete temporary eight (8) Type L1 light fixtures shown on CCN E-32 dated May 29, 2019.

2.3.2 Add the original ceiling mounted devices: forty (40) Type L1 lighting fixtures, one (1) exit signs, eight (8) ocuupancy sensors and four (4) daylight sensors in the Labs 105,106,107,108 to accommodate to the installation of the new Waldner ceiling grid. Obtain devices back from owner. Existing circuits to be reused as bubbled.

2.4 Refer to E500 – ROOM DETAILS (included herein)

2.4.1 Add new panel RP-1EB in the Electrical Room as bubbled.

3.0 REASON FOR CHANGE

3.1.1 To coordinate with future provisions of Waldner lab furniture and systems as discussed in multiple meetings and emails.

END OF ELECTRICAL CCN

PANEL: RP-1A
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION:

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacle**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC	**Lab Receptacle**	100	300	300	20	**3**	**B**	**4**	20	300	300	100	**Lab Receptacle**	REC
REC	**Lab Receptacle**	100	300	300	20	**5**	**C**	**6**	20	300	300	100	**Lab Receptacle**	REC
REC	**Lab Receptacle**	100	300	300	20	**7**	**A**	**8**	20	300	300	100	**Lab Receptacle**	REC
REC	**Lab Receptacle**	100	300	300	20	**9**	**B**	**10**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Lab Receptacle**	100	300	300	20	**11**	**C**	**12**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Lab Receptacle**	100	300	300	20	**13**	**A**	**14**	20	300	300	100	**Lab Receptacle**	GFCI
REC		100	300	300	3P	**15**	**B**	**16**	20	300	300	100	**Lab Receptacle**	
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**17**	**C**	**18**	20	150	150	100	Gas Shut Off	
REC		100	300	300	30	**19**	**A**	**20**	20	150	150	100	Motorized Blinds	D.C
D.C		100	300	300	3P	**21**	**B**	**22**	2P	150	150	100		
	Fume Hood 208V Equipment	100	300	300	↓	**23**	**C**	**24**	3P	300	300	100		
D.C		100	300	300	30	**25**	**A**	**26**	↓	300	300	100	**Fume Hood 208V Equipment**	
	Lab Receptacle	100	300	300	2P	**27**	**B**	**28**	30	300	300	100		
REC	**Lab Receptacle**	100	300	300	20	**29**	**C**	**30**	3P	300	300	100		
	Lab Receptacle	100	300	300	20	**31**	**A**	**32**	↓	300	300	100	**Fume Hood 208V Equipment**	
	Motorized Benches	100	300	300	15	**33**	**B**	**34**	30	300	300	100		
	Motorized Benches	100	300	300	15	**35**	**C**	**36**	20	300	300	100	**Lab Receptacle**	
		100				**37**	**A**	**38**	20	300	300	100	**Lab Receptacle**	
		100				**39**	**B**	**40**	20	300	300	100	**Lab Receptacle**	
		100				**41**	**C**	**42**				100		

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	3.75
LOAD B [KW]:	3.75
LOAD C [KW]:	3.45
TOTAL [KW]:	11
CURRENT A [A]:	31
CURRENT B [A]:	31
CURRENT C [A]:	29

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1B
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION:

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacles**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC	**Lab Receptacles**	100	300	300	20	**3**	**B**	**4**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**5**	**C**	**6**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**7**	**A**	**8**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**9**	**B**	**10**	20			100		GFCI
REC	**Lab Receptacles**	100	300	300	20	**11**	**C**	**12**	20			100		GFCI
REC	**Lab Receptacles**	100	300	300	20	**13**	**A**	**14**	20			100		GFCI
REC	**Lab Receptacles**	100	300	300	20	**15**	**B**	**16**	20			100		
REC	**Lab Receptacles**	100	300	300	20	**17**	**C**	**18**	20	150	150	100	Gas Shut Off	
REC	**Lab Receptacles**	100	300	300	20	**19**	**A**	**20**	20	150	150	100	Motorized Blinds	D.C
D.C	**Lab Receptacles**	100	300	300	20	**21**	**B**	**22**	2P	150	150	100		
	Lab Receptacles	100	300	300	2P	**23**	**C**	**24**	20			100		REC
D.C	**Lab Receptacles**	100	300	300	20	**25**	**A**	**26**	20			100		REC
	Lab Receptacles	100	300	300	2P	**27**	**B**	**28**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**29**	**C**	**30**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**31**	**A**	**32**	20			100		REC
REC		100			20	**33**	**B**	**34**				100		
		100			20	**35**	**C**	**36**				100		
		100				**37**	**A**	**38**				100		
		100				**39**	**B**	**40**				100		
		100				**41**	**C**	**42**				100		

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	2.25
LOAD B [KW]:	1.65
LOAD C [KW]:	1.65
TOTAL [KW]:	5.55
CURRENT A [A]:	19
CURRENT B [A]:	14
CURRENT C [A]:	14

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1C
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION:
FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacle**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC	**Lab Receptacle**	100	300	300	20	**3**	**B**	**4**	20	300	300	100	Lab Lighting	LTS
REC		100	300	300	3P	**5**	**C**	**6**	20	300	300	100	**Lab Receptacle**	REC
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**7**	**A**	**8**	20	300	300	100	**Lab Receptacle**	REC
REC		100	300	300	30	**9**	**B**	**10**	20	300	300	100	**Lab Receptacle**	REC
REC		100	300	300	3P	**11**	**C**	**12**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**13**	**A**	**14**	20	300	300	100	**Lab Receptacle**	GFCI
REC		100	300	300	30	**15**	**B**	**16**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Fume Hood Receptacle**	100	150	150	20	**17**	**C**	**18**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Fume Hood Receptacle**	100	150	150	20	**19**	**A**	**20**	20	150	150	100	Gas Shut Off	
REC	**Lab Receptacle**	100	300	300	20	**21**	**B**	**22**	20	300	300	100	**Lab Receptacle**	
REC	**Lab Receptacle**	100	300	300	20	**23**	**C**	**24**	20	150	150	100	Motorized Blinds	D.C
REC	**Lab Receptacle**	100	300	300	20	**25**	**A**	**26**	2P	150	150	100		
REC	**Lab Receptacle**	100	300	300	20	**27**	**B**	**28**	20	150	150	100	Motorized Blinds	D.C
REC	**Lab Receptacle**	100	300	300	20	**29**	**C**	**30**	2P	150	150	100		
REC	**Lab Receptacle**	100	300	300	20	**31**	**A**	**32**	20	300	300	100	**Lab Receptacle**	D.C
REC	**Lab Receptacle**	100	300	300	20	**33**	**B**	**34**	3P	300	300	100		
REC	**Lab Receptacle**	100	300	300	20	**35**	**C**	**36**	↓	300	300	100	**Fume Hood 208V Equipment**	D.C
REC	**Lab Receptacle**	100	300	300	20	**37**	**A**	**38**	30	300	300	100		
REC	**Lab Receptacle**	100	300	300	20	**39**	**B**	**40**	3P	300	300	100		REC
REC	**Lab Receptacle**	100	300	300	20	**41**	**C**	**42**	↓	300	300	100	**Fume Hood 208V Equipment**	REC
REC	**Lab Receptacle**	100	300	300	20	**43**	**A**	**44**	30	300	300	100		REC
REC	**Lab Receptacle**	100	300	300	20	**45**	**B**	**46**	20	150	150	100	**Fume Hood Receptacle**	REC
REC	**Lab Receptacle**	100	300	300	20	**47**	**C**	**48**	20	150	150	100	**Fume Hood Receptacle**	REC
REC	**Lab Receptacle**	100	300	300	20	**49**	**A**	**50**	20	300	300	100	**Lab Receptacle**	REC
	Lab Receptacle	100	300	300	20	**51**	**B**	**52**	20	300	300	100	**Lab Receptacle**	REC
	Lab Receptacle	100	300	300	20	**53**	**C**	**54**	20	300	300	100	**Lab Receptacle**	REC
		100			20	**55**	**A**	**56**	20	300	300	100	**Lab Receptacle**	
		100			20	**57**	**B**	**58**	20	300	300	100	**Lab Receptacle**	
		100			20	**59**	**C**	**60**	20	300	300	100	**Lab Receptacle**	
		100			20	**61**	**A**	**62**	20	300	300	100	**Lab Receptacle**	
		100			20	**63**	**B**	**64**	20	300	300	100	**Lab Receptacle**	
		100			20	**65**	**C**	**66**	20	300	300	100	**Lab Receptacle**	

PANEL OPTIONS:

2 :CSA ENCLOSURE RATING
☐ FEED THROUGH
☐ FLUSH
☒ SURFACE

LOAD A [KW]: 5.55
LOAD B [KW]: 5.7
LOAD C [KW]: 5.4

PHASE VOLTAGE [V]: 120
LINE VOLTAGE [V]: 208
PHASE: 3Φ

6/11/2019

PANEL: RP-1C	LOCATION:	Smith + Andersen
PROJECT NAME: NRC MISSISAUGA		
PROJECT #: 16158.E.000	FED FROM:	

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
☐	SUB-FEED	X	BOLT-ON BREAKER		TOTAL [KW]:				16.7				WIRE:	4
☐	MAIN BREAKER	☐	SPD										MAINS [A]:	225
☐	200% RATED NEUTRAL BUS	☐			CURRENT A [A]:				46				MAIN BREAKER [A]:	
☐	ISOLATED GROUND BUS	☐			CURRENT B [A]:				48				I.C. [kA]:	10
					CURRENT C [A]:				45					

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1D
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION:

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacle**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC		100	300	300	3P	**3**	**B**	**4**	20	300	300	100	**Lab Receptacle**	REC
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**5**	**C**	**6**	20	300	300	100	**Lab Receptacle**	REC
REC		100	300	300	30	**7**	**A**	**8**	20	300	300	100	**Lab Receptacle**	REC
REC		100	300	300	3P	**9**	**B**	**10**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**11**	**C**	**12**	20	300	300	100	**Lab Receptacle**	GFCI
REC		100	300	300	30	**13**	**A**	**14**	20	300	300	100	**Lab Receptacle**	GFCI
REC	**Fume Hood Receptacle**	100	150	150	20	**15**	**B**	**16**	20	300	300	100	**Lab Receptacle**	
REC	**Fume Hood Receptacle**	100	150	150	20	**17**	**C**	**18**	20	150	150	100	Gas Shut Off	
REC	**Lab Receptacle**	100	300	300	20	**19**	**A**	**20**	20	150	150	100	Motorized Blinds	D.C
	Lab Receptacle	100	300	300	20	**21**	**B**	**22**	2P	150	150	100		
D.C		100	300	300	3P	**23**	**C**	**24**	20	300	300	100	**Lab Receptacle**	REC
	Fume Hood 208V Equipment	100	300	300	↓	**25**	**A**	**26**	20	300	300	100	**Lab Receptacle**	REC
		100	300	300	30	**27**	**B**	**28**	20	300	300	100	**Lab Receptacle**	REC
REC		100	300	300	3P	**29**	**C**	**30**	20	300	300	100	**Lab Receptacle**	REC
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**31**	**A**	**32**	20			100		REC
REC		100	300	300	30	**33**	**B**	**34**	20			100		
D.C	**Fume Hood Receptacle**	100	150	150	20	**35**	**C**	**36**	20			100		
	Fume Hood Receptacle	100	150	150	20	**37**	**A**	**38**	20			100		
	Lab Receptacle	100	300	300	20	**39**	**B**	**40**	20			100		
	Lab Receptacle	100	300	300	20	**41**	**C**	**42**	20			100		

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	3.3
LOAD B [KW]:	3.3
LOAD C [KW]:	3.15
TOTAL [KW]:	9.75
CURRENT A [A]:	28
CURRENT B [A]:	28
CURRENT C [A]:	26

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1E

PROJECT NAME: NRC MISSISAUGA

PROJECT #: 16158.E.000

LOCATION:

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacles**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC	**Lab Receptacles**	100	300	300	20	**3**	**B**	**4**	20	300	300	100	**Lab Receptacle**	REC
REC	**Lab Receptacles**	100	300	300	20	**5**	**C**	**6**	3P	300	300	100		REC
REC		100	300	300	3P	**7**	**A**	**8**	↓	300	300	100	**Fume Hood 208V Equipment**	REC
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**9**	**B**	**10**	30	300	300	100		GFCI
REC		100	300	300	30	**11**	**C**	**12**	3P	300	300	100		GFCI
REC		100	300	300	3P	**13**	**A**	**14**	↓	300	300	100	**Fume Hood 208V Equipment**	GFCI
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**15**	**B**	**16**	30	300	300	100		
REC		100	300	300	30	**17**	**C**	**18**	20	150	150	100	Gas Shut Off	
REC	**Lab Receptacles**	100	300	300	20	**19**	**A**	**20**	20	150	150	100	Motorized Blinds	D.C
D.C	**Lab Receptacles**	100	300	300	20	**21**	**B**	**22**	2P	150	150	100		
	Lab Receptacles	100	300	300	2P	**23**	**C**	**24**	20	300	300	100	**Lab Receptacle**	REC
D.C	**Lab Receptacles**	100	300	300	20	**25**	**A**	**26**	20	300	300	100	**Lab Receptacle**	REC
	Lab Receptacles	100	300	300	2P	**27**	**B**	**28**	20	300	300	100	**Lab Receptacle**	REC
REC	**Lab Receptacles**	100	300	300	20	**29**	**C**	**30**	20			100		REC
REC	**Lab Receptacles**	100	300	300	20	**31**	**A**	**32**				100		
REC	**Lab Receptacles**	100	300	300	20	**33**	**B**	**34**				100		
REC	**Lab Receptacles**	100	300	300	20	**35**	**C**	**36**				100		
REC	**Lab Receptacles**	100	300	300	20	**37**	**A**	**38**				100		
REC	**Lab Receptacles**	100	300	300	20	**39**	**B**	**40**				100		
	Lab Receptacles	100				**41**	**C**	**42**				100		

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	3.45
LOAD B [KW]:	3.45
LOAD C [KW]:	2.85
TOTAL [KW]:	9.75
CURRENT A [A]:	29
CURRENT B [A]:	29
CURRENT C [A]:	24

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1F
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION:

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
REC	**Lab Receptacles**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
REC		100	300	300	3P	**3**	**B**	**4**	20	300	300	100	**Lab Receptacles**	REC
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**5**	**C**	**6**	20	300	300	100	**Lab Receptacles**	REC
REC		100	300	300	30	**7**	**A**	**8**	20	300	300	100	**Lab Receptacles**	REC
REC		100	300	300	3P	**9**	**B**	**10**	20	300	300	100	**Lab Receptacles**	GFCI
REC	**Fume Hood 208V Equipment**	100	300	300	↓	**11**	**C**	**12**	20	300	300	100	**Lab Receptacles**	GFCI
REC		100	300	300	30	**13**	**A**	**14**	20	300	300	100	**Lab Receptacles**	GFCI
REC	**Lab Receptacles**	100	300	300	20	**15**	**B**	**16**	20	300	300	100	**Lab Receptacles**	
REC	**Lab Receptacles**	100	300	300	20	**17**	**C**	**18**	20	150	150	100	Gas Shut Off	
REC	**Lab Receptacles**	100	300	300	20	**19**	**A**	**20**	20	150	150	100	Motorized Blinds	D.C
D.C	**Lab Receptacles**	100	300	300	20	**21**	**B**	**22**	2P	150	150	100		
	Lab Receptacles	100	300	300	2P	**23**	**C**	**24**	20	300	300	100	**Lab Receptacles**	REC
D.C	**Lab Receptacles**	100	300	300	20	**25**	**A**	**26**	3P	300	300	100		REC
	Lab Receptacles	100	300	300	2P	**27**	**B**	**28**	↓	300	300	100	**Fume Hood 208V Equipment**	REC
REC	**Lab Receptacles**	100	300	300	20	**29**	**C**	**30**	30	300	300	100		REC
REC	**Lab Receptacles**	100	300	300	20	**31**	**A**	**32**	3P	300	300	100		REC
REC	**Lab Receptacles**	100	300	300	20	**33**	**B**	**34**	↓	300	300	100	**Fume Hood 208V Equipment**	REC
REC	**Lab Receptacles**	100	300	300	20	**35**	**C**	**36**	30	300	300	100		REC
REC	**Lab Receptacles**	100	300	300	20	**37**	**A**	**38**	20	300	300	100	**Lab Receptacles**	REC
REC	**Lab Receptacles**	100	300	300	20	**39**	**B**	**40**	20	300	300	100		REC
REC	**Lab Receptacles**	100	300	300	20	**41**	**C**	**42**	20	300	300	100		REC

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	4.05
LOAD B [KW]:	4.05
LOAD C [KW]:	4.05
TOTAL [KW]:	12.2
CURRENT A [A]:	34
CURRENT B [A]:	34
CURRENT C [A]:	34

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1G
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: LAB CORRIDOR 119
FED FROM: PP-1A

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
LTS	Receptacles	100	300	300	20	**1**	**A**	**2**	20	300	300	100	Lab Lighting	LTS
	Receptacles	100	300	300	20	**3**	**B**	**4**	20	300	300	100	Lab Lighting	
	Receptacles	100	300	300	20	**5**	**C**	**6**	20	300	300	100	Lighting - Machine Room	
	Receptacles	100	300	300	20	**7**	**A**	**8**	20	150	150	100	Gas Shut off	
	Receptacles	100	300	300	20	**9**	**B**	**10**	3P	300	300	100		
	Receptacles	100	300	300	20	**11**	**C**	**12**	↓	300	300	100	**Fume Hood 208V Equipment**	
	Receptacles	100	300	300	20	**13**	**A**	**14**	30	300	300	100		
	Receptacles	100	300	300	20	**15**	**B**	**16**	20	300	300	100	**Fume Hood Receptacle**	
	Receptacles	100	300	300	20	**17**	**C**	**18**	3P	300	300	100		
	Receptacles - Lab Bench	100	300	300	20	**19**	**A**	**20**	↓	300	300	100	**Fume Hood 208V Equipment**	
	Receptacles - Lab Bench	100	300	300	2	**21**	**B**	**22**	30	300	300	100		
	Receptacles - Lab Bench	100	300	300	2	**23**	**C**	**24**	20	150	150	100	**Fume Hood Receptacle**	
	Receptacles - Lab Bench	100	300	300	20	**25**	**A**	**26**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Bench	100	300	300	20	**27**	**B**	**28**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Bench	100	300	300	20	**29**	**C**	**30**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Bench	100	300	300	20	**31**	**A**	**32**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Bench	100	300	300	20	**33**	**B**	**34**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Entry	100	300	300	20	**35**	**C**	**36**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Support	100	300	300	20	**37**	**A**	**38**	20	300	300	100	**Lab Receptacle**	
	Receptacles - Lab Support	100	300	300	20	**39**	**B**	**40**	20	300	300	100	**Lab Receptacle**	
	Receptacles (GFCI)	100	300	300	20	**41**	**C**	**42**	20	300	300	100	**Lab Receptacle**	
	Fume Hood Receptacle	100	150	150	20	**43**	**A**	**44**	20	300	300	100	**Lab Receptacle**	
	Fume Hood Receptacle	100	150	150	20	**45**	**B**	**46**	20	300	300	100	**Lab Receptacle**	
	Lab Receptacles	100	300	300	20	**47**	**C**	**48**	3P	300	300	100		
	Lab Receptacles	100	300	300	20	**49**	**A**	**50**	↓	300	300	100	**Fume Hood 208V Equipment**	
	Lab Receptacles	100	300	300	20	**51**	**B**	**52**	30	300	300	100		
	Lab Receptacles	100	300	300	20	**53**	**C**	**54**	3P			100		
	Lab Receptacles	100	300	300	20	**55**	**A**	**56**	↓			100	Overhead Door	
	Lab Receptacles	100	300	300	20	**57**	**B**	**58**	20			100		
	Lab Receptacles	100	300	300	20	**59**	**C**	**60**	3P	300	300	100		
	Lab Receptacles	100	300	300	20	**61**	**A**	**62**	↓	300	300	100	**208V Equipment**	
	Lab Receptacles	100	300	300	20	**63**	**B**	**64**	30	300	300	100		
	Lab Receptacles	100	300	300	20	**65**	**C**	**66**	3P	300	300	100		
	Lab Receptacles	100	300	300	20	**67**	**A**	**68**	↓	300	300	100	**208V Equipment**	
	Lab Receptacles	100	300	300	20	**69**	**B**	**70**	30	300	300	100		
	Lab Receptacles	100	300	300	20	**71**	**C**	**72**	20	300	300	100	**Lab Receptacle**	
	Lab Receptacles	100	300	300	20	**73**	**A**	**74**	20	300	300	100	**Lab Receptacle**	

PANEL: RP-1G
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: LAB CORRIDOR 119

FED FROM: PP-1A

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
		100	300	300	3P	**75**	**B**	**76**	3P	300	300	100		
	Fume Hood 208V Equipment	100	300	300	↓	**77**	**C**	**78**	↓	300	300	100	**Fume Hood 208V Equipment**	
		100	300	300	30	**79**	**A**	**80**	30	300	300	100		
	Lab Receptacles	100	300	300	20	**81**	**B**	**82**	20	300	300	100	**Lab Receptacle**	
	Lab Receptacles	100	300	300	20	**83**	**C**	**84**	20	300	300	100	**Lab Receptacle**	

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	9.9
LOAD B [KW]:	10.1
LOAD C [KW]:	10.1
TOTAL [KW]:	30
CURRENT A [A]:	83
CURRENT B [A]:	84
CURRENT C [A]:	84

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1EA
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: ELECTRICAL ROOM 103
FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
LTS	Receptacles - Comms Room.	100	600	600	20	1	A	2	20	300	300	100	Security Panel	LTS
	L5-20 Receptacle - Telecomm Room.	100	150	150	20	3	B	4	20	300	300	100	**Lab Receptacle**	
	Receptacle - First Aid	100	150	150	20	5	C	6	20	300	300	100	**Lab Receptacle**	
	L5-20 Receptacle - Telecomm Room.	100	150	150	20	7	A	8	20	120	120	100	Gas Monitoring	
	L5-20 Receptacle - Telecomm Room.	100	150	150	20	9	B	10	20	696	696	100	EF-01-01	
	L5-20 Receptacle - Telecomm Room.	100	150	150	20	11	C	12	20	150	150	100	**Lab Receptacle**	
	filtration	100	167	167	20	13	A	14	20	696	696	100	EF-01-03	
	EF-01-02	100	696	696	20	15	B	16	20	167	167	100	Pre-Action System (Flammable Gas Storage)	
	Pre-Action System (Flammable Liquid Storage)	100	167	167	20	17	C	18	20	1440	1440	100	FFH-01-02 (Stairwell)	
	Lab Receptacle	100	150	150	20	19	A	20	20	333	333	100	ADO - Office Area	
	FFH-01-01 (stairwell)	100	1440	1440	20	21	B	22	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	23	C	24	20	150	150	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	25	A	26	20	150	150	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	27	B	28	20	150	150	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	29	C	30	2P	167	167	100	Other	
	Lab Receptacle	100	300	300	20	31	A	32	30	167	167	100		
	Lab Receptacle	100	300	300	20	33	B	34	20	1000	1000	100	Fume Hood Receptacle	
	Lab Receptacle	100	300	300	20	35	C	36	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	37	A	38	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	39	B	40	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	41	C	42	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	43	A	44	20	300	300	100	**Lab Receptacle**	
	Fume Hood Receptacle	100	300	300	20	45	B	46	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	47	C	48	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	49	A	50	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	51	B	52	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	53	C	54	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	55	A	56	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	57	B	58	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	59	C	60	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	61	A	62	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	63	B	64	20	300	300	100	**Lab Receptacle**	
	Fume Hood Receptacle	100	300	300	20	65	C	66	20	300	300	100	**Lab Receptacle**	
	Hazmat Drum	100	167	167	20	67	A	68	3P	167	167	100		
	Hazmat Drum	100	167	167	20	69	B	70	↓	167	167	100	Generator	
	Elevator E1	100	400	400	20	71	C	72	60	167	167	100		
	Elevator E2	100	400	400	20	73	A	74	20	300	300	100	**Lab Receptacle**	

PANEL: RP-1EA
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: ELECTRICAL ROOM 103
FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
	Lab Receptacle	100	300	300	20	**75**	**B**	**76**	20	167	167	100	L1 BAS	
	Lab Receptacle	100	300	300	20	**77**	**C**	**78**	20	167	167	100	L2 BAS	
	Lab Receptacle	100	300	300	20	**79**	**A**	**80**	20	300	300	100	**Fume Hood Receptacle**	
	Lab Receptacle	100	300	300	20	**81**	**B**	**82**	20	300	300	100	**Lab Receptacle**	
	Lab Receptacle	100	300	300	20	**83**	**C**	**84**	20	300	300	100	**Lab Receptacle**	

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	8.07
LOAD B [KW]:	10.1
LOAD C [KW]:	8.51
TOTAL [KW]:	26.6
CURRENT A [A]:	67
CURRENT B [A]:	84
CURRENT C [A]:	71

PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.

PANEL: RP-1EB
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: ELECTRICAL ROOM 103

FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
LTS	**LAB RECEPTACLE**	100	300	300	20	**1**	**A**	**2**	20	300	300	100	**LAB RECEPTACLE**	LTS
	LAB RECEPTACLE	100	300	300	20	**3**	**B**	**4**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**5**	**C**	**6**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**7**	**A**	**8**	20	300	300	100	**LAB RECEPTACLE**	
	FUME HOOD RECEPTACLE	100	150	150	20	**9**	**B**	**10**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**11**	**C**	**12**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**13**	**A**	**14**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**15**	**B**	**16**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**17**	**C**	**18**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**19**	**A**	**20**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**21**	**B**	**22**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**23**	**C**	**24**	20	300	300	100	**LAB RECEPTACLE**	
	LAB RECEPTACLE	100	300	300	20	**25**	**A**	**26**	20			100		
	LAB RECEPTACLE	100	300	300	20	**27**	**B**	**28**	20			100		
		100			20	**29**	**C**	**30**	20			100		
		100			20	**31**	**A**	**32**	20			100		
		100			20	**33**	**B**	**34**	20			100		
		100			20	**35**	**C**	**36**	20			100		
		100			15	**37**	**A**	**38**	20			100		
		100			15	**39**	**B**	**40**	20			100		
		100			15	**41**	**C**	**42**	20			100		
		100			15	**43**	**A**	**44**	15			100		
		100			15	**45**	**B**	**46**	15			100		
		100			15	**47**	**C**	**48**	15			100		
		100			15	**49**	**A**	**50**	15			100		
		100			15	**51**	**B**	**52**	15			100		
		100			15	**53**	**C**	**54**	15			100		
		100			15	**55**	**A**	**56**	15			100		
		100			15	**57**	**B**	**58**	15			100		
		100			15	**59**	**C**	**60**	15			100		
		100			15	**61**	**A**	**62**	15			100		
		100			15	**63**	**B**	**64**	15			100		
		100			15	**65**	**C**	**66**	15			100		
		100			15	**67**	**A**	**68**	15			100		
		100			15	**69**	**B**	**70**	15			100		
		100			15	**71**	**C**	**72**	15			100		
		100			15	**73**	**A**	**74**	15			100		

PANEL: RP-1EB
PROJECT NAME: NRC MISSISAUGA
PROJECT #: 16158.E.000

LOCATION: ELECTRICAL ROOM 103
FED FROM:

Smith + Andersen

TYPE/ INFO	DESCRIPTION	D.F [%]	CONN. LOAD [W]	DEMAND LOAD [W]	BKR [A]	CCT NO.	Φ	CCT NO.	BKR [A]	DEMAND LOAD [W]	CONN. LOAD [W]	D.F [%]	DESCRIPTION	TYPE/ INFO
		100			15	**75**	**B**	**76**	15			100		
		100			15	**77**	**C**	**78**	15			100		
		100			15	**79**	**A**	**80**	15			100		
		100			15	**81**	**B**	**82**	15			100		
		100			15	**83**	**C**	**84**	15			100		

PANEL OPTIONS:

2	:CSA ENCLOSURE RATING	☐	FLUSH
☐	FEED THROUGH	☒	SURFACE
☐	SUB-FEED	☒	BOLT-ON BREAKER
☐	MAIN BREAKER	☐	SPD
☐	200% RATED NEUTRAL BUS	☐	
☐	ISOLATED GROUND BUS	☐	

LOAD A [KW]:	2.7
LOAD B [KW]:	2.55
LOAD C [KW]:	2.4
TOTAL [KW]:	7.65
CURRENT A [A]:	23
CURRENT B [A]:	21
CURRENT C [A]:	20

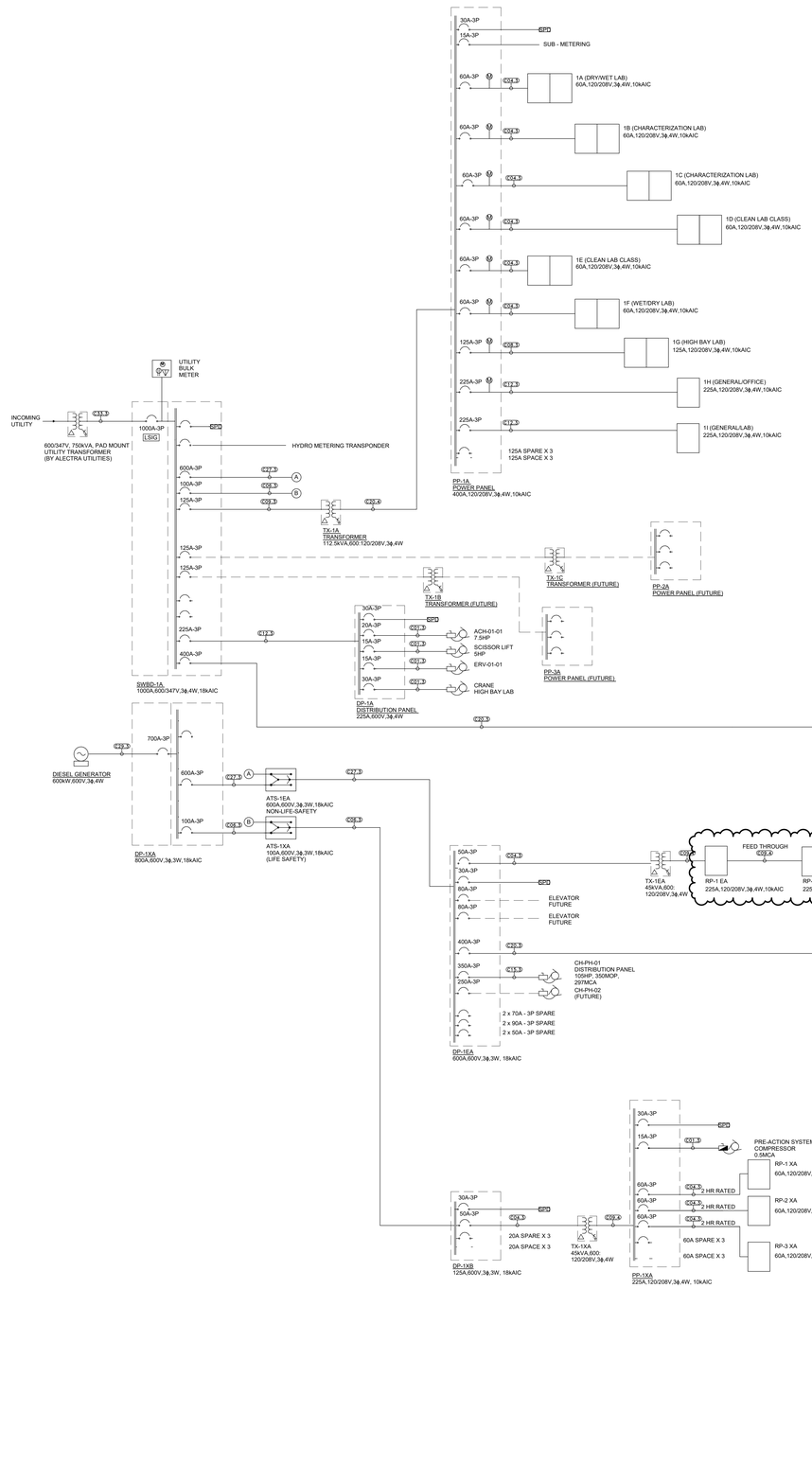
PHASE VOLTAGE [V]:	120
LINE VOLTAGE [V]:	208
PHASE:	3Φ
WIRE:	4
MAINS [A]:	225
MAIN BREAKER [A]:	
I.C. [kA]:	10

LEGEND:

BAS-Building Automation System	R.C-Relay Controlled	LTS-Lighting
GFCI-Ground Fault Circuit Interrupter	M-Motor	HID-High Intensity Discharge Lighting Breaker
AFCI-Arc Fault Circuit Interrupter	D.F-Demand Factor	
SPD - Surge Protection Device	REC-Receptacle	D.C-Direct Connection
BLO-Breaker Lock-On Device		

NOTES:

1. Panel Enclosure To Be Sprinklerproof.
2. Panels greater than 66 circuits to be double tub.
3. Surge Protection Device (SPD) to be in a separate barriered enclosure with separate cover.
4. Terminate circuits for BAS in 4"x4" junction box 10' from panel.



COPPER FEEDER SCHEDULE (PER TABLE 2 CEC (2015), 75C AND TABLE 6B, 1000V WITHOUT JACKET)						
X00.0 — C-COPPER, A-ALUMINUM; FEEDER NUMBER; 3-(3WIRE+BOND), 4-(4WIRE+BOND), 5-(5WIRE+BOND)						
* WHERE NO. 12 AND NO. 10 AWG ARE PROTECTED BY AN OVERCURRENT DEVICE, THE AMPACITY RATINGS ARE 20A AND 30A RESPECTIVELY.						
			MAXIMUM CIRCUIT CAPACITY (PER 75°C COLUMN)			MAXIMUM CIRCUIT CAPACITY (PER 75°C/90°C COLUMN)
FEEDER NO.	NO. OF RUNS	CONDUCTOR SIZE + BONDING CONDUCTOR SIZE [AWG OR KCMIL] PER RUN	FEEDER AMPACITY FOR 3 AND 4 WIRE SYSTEMS	3 WIRE+BONDING CONDUCTOR CONDUIT SIZE PER RUN	4 WIRE+BONDING CONDUCTOR CONDUIT SIZE PER RUN	FEEDER AMPACITY FOR 5 WIRE SYSTEMS	5 WIRE (DOUBLE NEUTRAL)+BONDING CONDUCTOR (HARMONIC MITIGATING TRANSFORMERS) CONDUIT SIZE PER RUN
C01	1	#12 AWG + #12 AWG	25*	21 (¾")	21 (¾")	24*	21 (¾")
C02	1	#10 AWG + #12 AWG	35*	21 (¾")	27 (1")	32*	27 (1")
C03	1	#8 AWG + #10 AWG	50	27 (1")	27 (1")	44	27 (1")
C04	1	#6 AWG + #8 AWG	65	27 (1")	35 (1¼")	60	35 (1¼")
C05	1	#4 AWG + #8 AWG	85	35 (1¼")	41 (1½")	76	41 (1½")
C06	1	#3 AWG + #6 AWG	100	35 (1¼")	41 (1½")	92	53 (2")
C07	1	#2 AWG + #6 AWG	115	41 (1½")	41 (1½")	104	53 (2")
C08	1	#1 AWG + #6 AWG	130	53 (2")	53 (2")	116	53 (2")
C09	1	#1/0 AWG + #6 AWG	150	53 (2")	53 (2")	136	63 (2½")
C10	1	#2/0 AWG + #6 AWG	175	53 (2")	63 (2½")	156	63 (2½")
C11	1	#3/0 AWG + #4 AWG	200	63 (2½")	63 (2½")	180	78 (3")
C12	1	#4/0 AWG + #4 AWG	230	63 (2½")	78 (3")	208	78 (3")
C13	1	250 KCMIL + #4 AWG	255	63 (2½")	78 (3")	232	78 (3")
C14	1	300 KCMIL + #4 AWG	285	78 (3")	78 (3")	256	91 (3½")
C15	2	#1/0 AWG + #6 AWG	300	53 (2")	53 (2")	272	63 (2½")
C16	1	350 KCMIL + #3 AWG	310	78 (3")	91 (3½")	280	91 (3½")
C17	1	400 KCMIL + #3 AWG	335	78 (3")	91 (3½")	304	103 (4")
C18	2	#2/0 AWG + #6 AWG	350	53 (2")	63 (2½")	312	63 (2½")
C19	1	500 KCMIL + #3 AWG	380	91 (3½")	103 (4")	344	103 (4")
C20	2	#3/0 AWG + #4 AWG	400	63 (2½")	63 (2½")	360	78 (3")
C21	1	600 KCMIL + #2 AWG	420	91 (3½")	103 (4")	380	116 (4½")
C22	2	#4/0 AWG + #4 AWG	460	63 (2½")	78 (3")	416	78 (3")
C23	1	750 KCMIL + #2 AWG	475	103 (4")	116 (4½")	428	129 (5")
C24	2	250 KCMIL + #4 AWG	510	63 (2½")	78 (3")	464	78 (3")
C25	1	1000 KCMIL + #1 AWG	545	116 (4½")	129 (5")	492	155 (6")
C26	2	300 KCMIL + #4 AWG	570	78 (3")	78 (3")	512	91 (3½")
C27	2	350 KCMIL + #3 AWG	620	78 (3")	91 (3½")	560	91 (3½")
C28	2	400 KCMIL + #3 AWG	670	78 (3")	91 (3½")	608	103 (4")
C29	2	500 KCMIL + #3 AWG	760	91 (3½")	103 (4")	688	103 (4")
C30	3	250 KCMIL + #4 AWG	765	63 (2½")	78 (3")	696	78 (3")
C31	2	600 KCMIL + #2 AWG	840	91 (3½")	103 (4")	760	116 (4½")
C32	3	300 KCMIL + #4 AWG	855	78 (3")	78 (3")	768	91 (3½")
C33	3	350 KCMIL + #3 AWG	930	78 (3")	91 (3½")	840	91 (3½")
C34	2	750 KCMIL + #2 AWG	950	103 (4")	116 (4½")	856	129 (5")
C35	3	400 KCMIL + #3 AWG	1005	78 (3")	91 (3½")	912	103 (4")
C36	4	250 KCMIL + #4 AWG	1020	63 (2½")	78 (3")	928	78 (3")
C37	2	1000 KCMIL + #1 AWG	1090	116 (4½")	129 (5")	984	155 (6")
C38	3	500 KCMIL + #3 AWG	1140	91 (3½")	103 (4")	1032	103 (4")
C39	4	300 KCMIL + #4 AWG	1140	78 (3")	78 (3")	1024	91 (3½")
C40	4	350 KCMIL + #3 AWG	1240	78 (3")	91 (3½")	1120	91 (3½")
C41	3	600 KCMIL + #2 AWG	1260	91 (3½")	103 (4")	1140	116 (4½")
C42	4	400 KCMIL + #3 AWG	1340	78 (3")	91 (3½")	1216	103 (4")
C43	3	750 KCMIL + #2 AWG	1425	103 (4")	116 (4½")	1284	129 (5")
C44	4	500 KCMIL + #3 AWG	1520	91 (3½")	103 (4")	1376	103 (4")
C45	3	1000 KCMIL + #1 AWG	1635	116 (4½")	129 (5")	1476	155 (6")
C46	4	600 KCMIL + #2 AWG	1680	91 (3½")	103 (4")	1520	116 (4½")
C47	4	750 KCMIL + #2 AWG	1900	103 (4")	116 (4½")	1712	129 (5")
C48	4	1000 KCMIL + #1 AWG	2180	116 (4½")	129 (5")	1968	155 (6")

1 SINGLE LINE DIAGRAM
E200 1 : 100

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

GENERAL NOTES

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No.	Description	Date
1	ISSUED FOR CCN-E-X	2019-06-14

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project title
titre du projet
2620 SPEAKMAN DRIVE
MISSISSAUGA, ONTARIO
L5K 2L1
NRC – MISSISSAUGA RESEARCH AND DEVELOPMENT PILOT PLNT FACILITY

SINGLE LINE DIAGRAM

Drawn by: B.S.
Designed by: J.N.
Approved by :
Bid Offer:
Project date: 2017-12-15
Date du project
Project number: PWGSC# R.079554.001 S+A #16158.E.000
no. du project

E200

GENERAL NOTES:

1. ONLY CONDUITS, CABLES, DEVICES AND SERVICES SERVING EXPLOSION PROOF AREAS SHALL ENTER THESE SPACES.
2. ALL LIGHT FIXTURES, DEVICES, CONDUITS, CONNECTS, ETC. INSTALLED IN EXPLOSION PROOF AREAS SHALL BE SEISMIC RESTRAINT AND EXPLOSION PROOF IN ACCORDANCE TO THE NBC, CSA AND CEC AND RATED FOR USE IN A CLASS 2 ENVIRONMENT.

DRAWING NOTES

(N-1) SPEAKER AND SMOKE DETECTOR ON EVERY 3RD FLOOR, RECEPTACLE ON EVERY SECOND FLOOR (REFER TO RISER DIAGRAMS).

(N-2) HIGH BAY LAB AND FLAMMABLE STORAGE ROOMS ARE EXPLOSION PROOF WITH A CLASS 2 HAZARDOUS ZONE DESIGNATION. ALL DEVICES WITHIN THIS ROOM ARE TO BE EXPLOSION PROOF. DEVICES ARE TO BE CLASS 2 FOR HAZARDOUS ENVIRONMENTS AS PER NBC.

(N-3) ALL PANELBOARDS LOCATED IN CORRIDORS SHALL BE RECESSED. SURFACE MOUNTED CONDUITS ARE NOT ACCEPTABLE UNLESS LOCATED IN SERVICE ROOMS OR CONCEALED BEHIND FINISHED CEILING AND WALLS.

(N-4) PROVIDE 120V CONNECTION FOR FLAMMABLE GAS DETECTION; PROVIDE FIRE ALARM TIE-IN FOR MONITORING. TROUBLE SIGNAL WILL BE TRIGGERED UPON DETECTION OF FLAMMABLE VAPOUR.

(N-5) PROVIDE 120V CONNECTION FOR PRE-ACTION SYSTEMS LOCATED IN HAZARDOUS AREAS. PROVIDE FIRE ALARM TIE-IN FOR CONTROL AND MONITORING.

(N-6) PROVIDE #6AWG BONDING TO FLAMMABLE STORAGE CABINET FROM BUS BAR.

(N-7) CONTRACTOR TO PROVIDE NORMAL POWER, EMERGENCY POWER AND DATA CABLES IN CEILING MOUNTED BOXES FOR FUTURE CONNECTION TO LAB WORKSTATIONS. PROVIDE MULTIPLE BOXES OR CSA RATED BARRIERS BETWEEN SERVICES.

(N-8) RESERVED.

(N-9) REFER TO ROOM DETAIL 4/E500 FOR DEVICES LOCATED ABOVE STORAGE ROOMS.

(N-10) REFER TO PANEL SCHEDULE RP-1A FOR TYPICAL LABORATORY ELECTRICAL PANEL SCHEDULE.

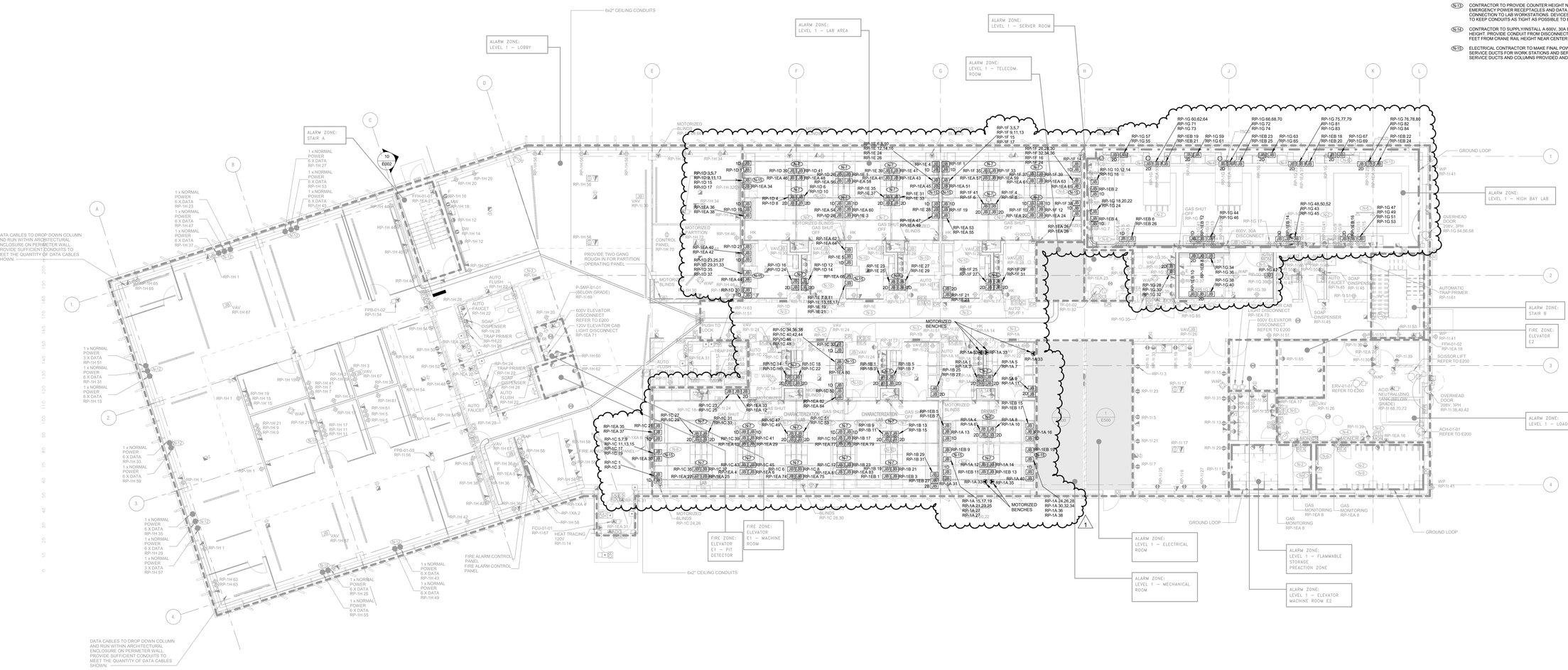
(N-11) PROVIDE DEDICATED 1" CONDUIT DIRECTLY FROM SERVER ROOM TO DIRECTOR'S OFFICE.

(N-12) CONTRACTOR TO PROVIDE SEPARATE CONDUITS FOR NORMAL POWER AND DATA CABLES FOR WALL MOUNTED DEVICES FOR FUTURE SYSTEM FURNITURE. PROVIDE SUFFICIENT CONDUITS TO MEET THE QUANTITY OF CIRCUITS AND ROUGH-IN FOR THE QUANTITY OF DATA CABLES SHOWN. PROVIDE MINIMUM 2" CONDUIT FOR EACH DATA ROUGH-IN LOCATION.

(N-13) CONTRACTOR TO PROVIDE COUNTER HEIGHT NORMAL POWER RECEPTACLES, EMERGENCY POWER RECEPTACLES AND DATA ON EAST WALL FOR FUTURE CONNECTION TO LAB WORKSTATIONS. DEVICES SHALL BE INSTALLED DIAGONALLY TO KEEP CONDUITS AS TIGHT AS POSSIBLE TO EACH OTHER.

(N-14) CONTRACTOR TO SUPPLY/INSTALL A 600V, 30A DISCONNECT SWITCH AT MAN HEIGHT. PROVIDE CONDUIT FROM DISCONNECT TO JUNCTION BOX LOCATED AT 3 FEET FROM CRANE RAIL HEIGHT NEAR CENTER OF RUNWAY LENGTH.

(N-15) ELECTRICAL CONTRACTOR TO MAKE FINAL POWER CONNECTION TO FUMEHOODS, SERVICE DUCTS FOR WORK STATIONS AND SERVICE COLUMNS FOR LAB BENCHES. SERVICE DUCTS AND COLUMNS PROVIDED AND INSTALLED BY OTHERS.



1 / E300 LEVEL 1 – POWER AND SYSTEMS
1 : 100

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

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No.	Description	Date
1	ISSUED FOR CCN-E-X	2019-05-14

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project title
titre du projet
2620 SPEAKMAN DRIVE
MISSISSAUGA, ONTARIO
L5K 2L1

NRC – MISSISSAUGA RESEARCH AND DEVELOPMENT PILOT PLNT FACILITY

LEVEL 1 - POWER AND SYSTEMS

Drawn by: B.S.

Designed by: J.N.

Approved by :

Bid Offer:

Project date: 2017-12-15
Date du project

Project number: PWGSC# R.079554.001 S+A #16158.E.000
no. du project

E300

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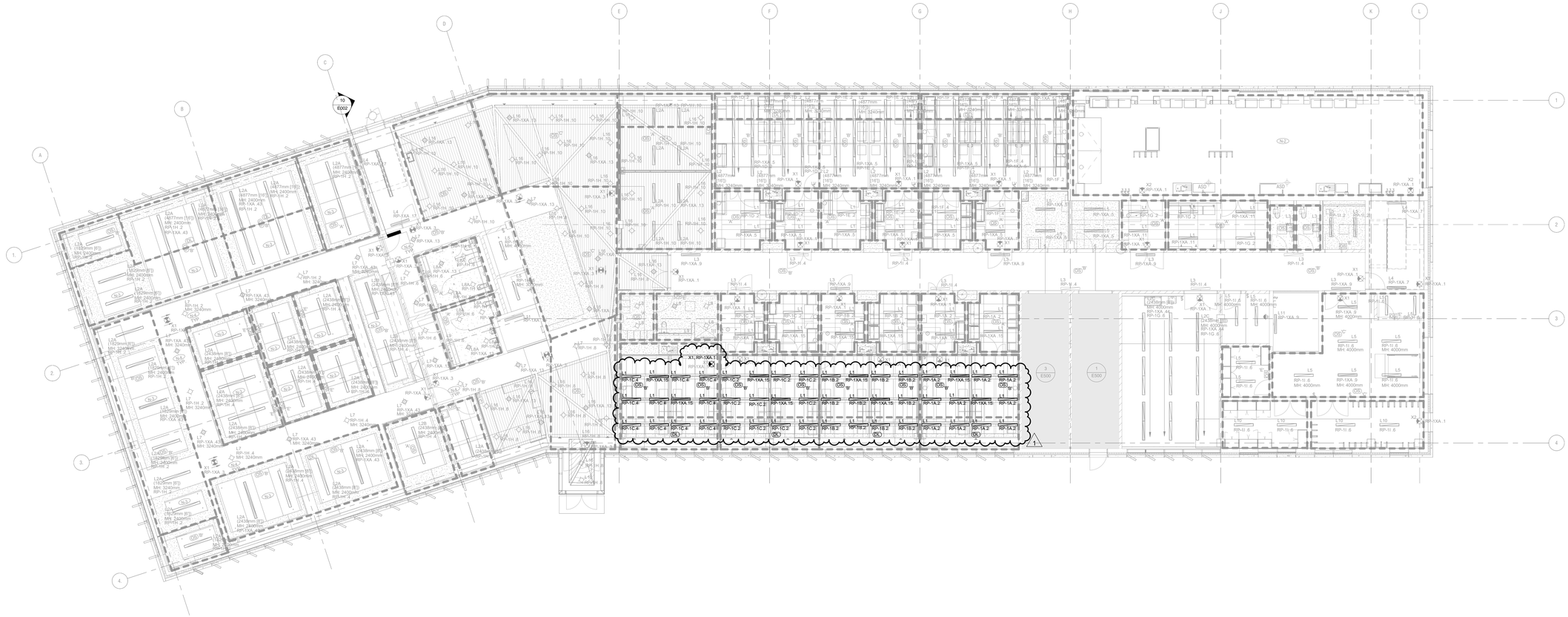
DRAWING NOTES

(N-1) WHEN PARTITION IS CLOSED WITHIN THE LARGE MEETING ROOM, THE TWO SEPARATE CONTROLLERS CAN BE USED TO CONTROL LIGHTS WITHIN ITS RESPECTIVE PARTITION. WHEN THE PARTITION IS OPEN, CONTROL OF THE ENTIRE ROOM CAN BE MADE AT EITHER CONTROLLERS TO CONTROL THE ENTIRE ROOM.

(N-2) HIGH BAY LAB AND FLAMMABLE STORAGE ROOMS ARE EXPLOSION PROOF WITH A CLASS 2 HAZARDOUS ZONE DESIGNATION. ALL DEVICES WITHIN THIS ROOM ARE TO BE EXPLOSION PROOF. DEVICES ARE TO BE CLASS 2 FOR HAZARDOUS ENVIRONMENTS AS PER NBC.

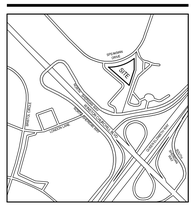
(N-3) FIXTURES TO BE INDEPENDENTLY SUPPORTED FROM CEILING STRUCTURE.

(N-4) FIXTURES TO BE INDEPENDENTLY SUPPORTED FROM CEILING STRUCTURE AND FLUSH WITH FINISHED CEILING.



E400 LEVEL 1 – LIGHTING
1 : 100

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada



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project title
titre du projet

2620 SPEAKMAN DRIVE
MISSISSAUGA, ONTARIO
L5K 2L1

NRC – MISSISSAUGA
RESEARCH AND
DEVELOPMENT PILOT PLNT
FACILITY

LEVEL 1 - LIGHTING

Drawn by: B.S.

Designed by: J.N.

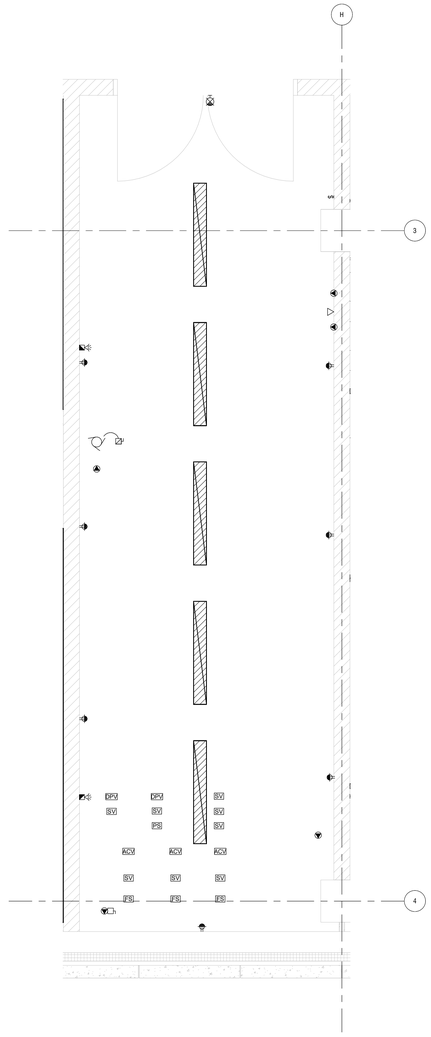
Approved by :

Bid Offer:

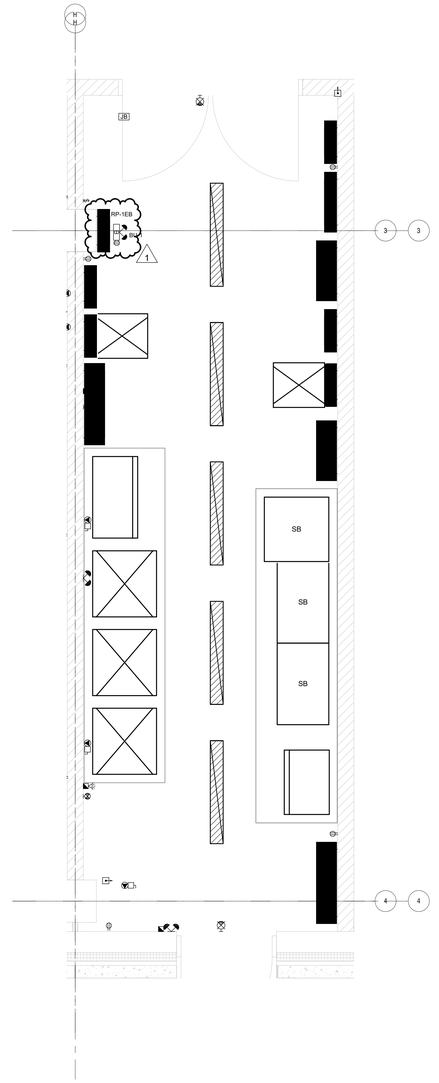
Project date: 2017-12-15
Date du project

Project number: PWGSC# R.079554.001 S+A #16158.E.000
no. du project

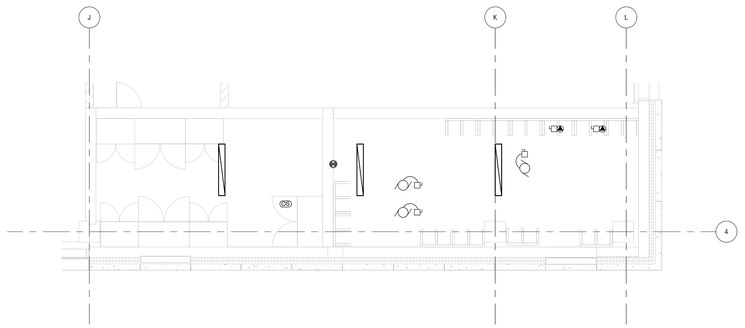
E400



3 / E500 MECHANICAL ROOM
1 : 25

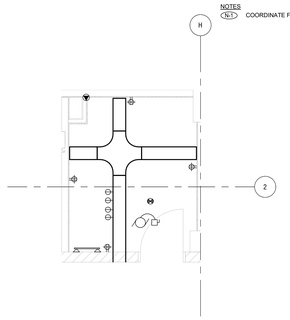


1 / E500 ELECTRICAL ROOM
1 : 25



4 / E500 LOADING AREA – MEZZANINE
1 : 50

NOTES
(N1) COORDINATE FINAL LOCATION ON SITE



NOTES
(N1) PROVIDE 21mm (3/4") PLYWOOD BACKBOARD FOR SECURITY AND COMMUNICATIONS DEVICES.
(N2) COORDINATE EXACT LOCATION OF RECEPTACLE ON BACKBOARD ON SITE PRIOR TO INSTALLATION.
(N3) 305mm x 100mm (12" x 4") LADDER TYPE CABLETRAY INSTALLED AT APPROXIMATELY 2.4m (8 FEET) AFF.
(N4) TELECOMMUNICATIONS GROUNDING BUSBAR AT CABLETRAY HEIGHT.
(N5) 3 x 100mm SLEEVE THROUGH CEILING (28" x 16").
(N6) 2 x LS-20 CABLETRAY MOUNTED RECEPTACLES.
(N7) 5-20 CONVENIENCE RECEPTACLE.

2 / E500 TELECOMM. ROOM
1 : 50

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2620 SPEAKMAN DRIVE
MISSISSAUGA, ONTARIO
L5K 2L1

NRC – MISSISSAUGA
RESEARCH AND
DEVELOPMENT PILOT PLNT
FACILITY

ROOM DETAILS

Drawn by: B.S.

Designed by: J.N.

Approved by :

Bid Offer:

Project date: 2017-12-15
Date du project

Project number: PWGSC# R.079554.001 S+A #18158.E.000
no. du project

E500