
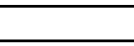


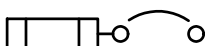

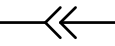






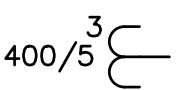


















AAFC Saskatoon Research and Development Center SRDC Greenhouse LED Retrofit

LIST OF PROJECT DRAWINGS

E-1000	Drawings List & Legend
E-1001	Greenhouse A Layout
E-1002	Greenhouse B Layout
E-1003	Greenhouse C Layout
E-1004	Greenhouse D Layout
E-1005	Greenhouse E Layout
E-1006	Crawlspace Plan
E-1007	Crawlspace & Electrical Room Plan
E-1008	Partial Basement & Mechanical Room Plan
E-3001	Compartment Conduit Detail
E-3002	Canopy Lighting Section & Detail
E-3003	Counter Weight Frame Elevation
E-4001	Single Line Diagram & Control Schematic
E-4002	Greenhouse Lighting Wiring Detail
E-8001	GNL1A Panelboard Schedule
E-8002	GNL1B Panelboard Schedule
E-8003	GNL1C Panelboard Schedule
E-8004	GNL1D Panelboard Schedule
E-8005	GNL1E Panelboard Schedule
E-8006	GNL2B Panelboard Schedule
E-8007	GNL1A & GNL1B Cable Schedule
E-8008	GNL1C & GNL1D Cable Schedule
E-8009	GNL1E & GNL2B Cable Schedule
E-8010	Control & Miscellaneous Cable Schedule


LEGEND	
POWER	LIGHTING
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	
	




Public Works and
Government Services
Canada

Travaux publics et
Services gouvernementaux
Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest





ASSOCIATION OF PROFESSIONAL ENGINEERS
& GEOSCIENTISTS OF SASKATCHEWAN
CERTIFICATE OF AUTHORIZATION
AECOM Canada Ltd.
NUMBER C1667
PERMISSION TO CONSULT HELD BY:
DISCIPLINE SASK. REG. NO. SIGNATURE
ELECTRICAL 23238 C.T.

Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Client
**Agriculture and Agri-Food
Canada (AAFC)**

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland

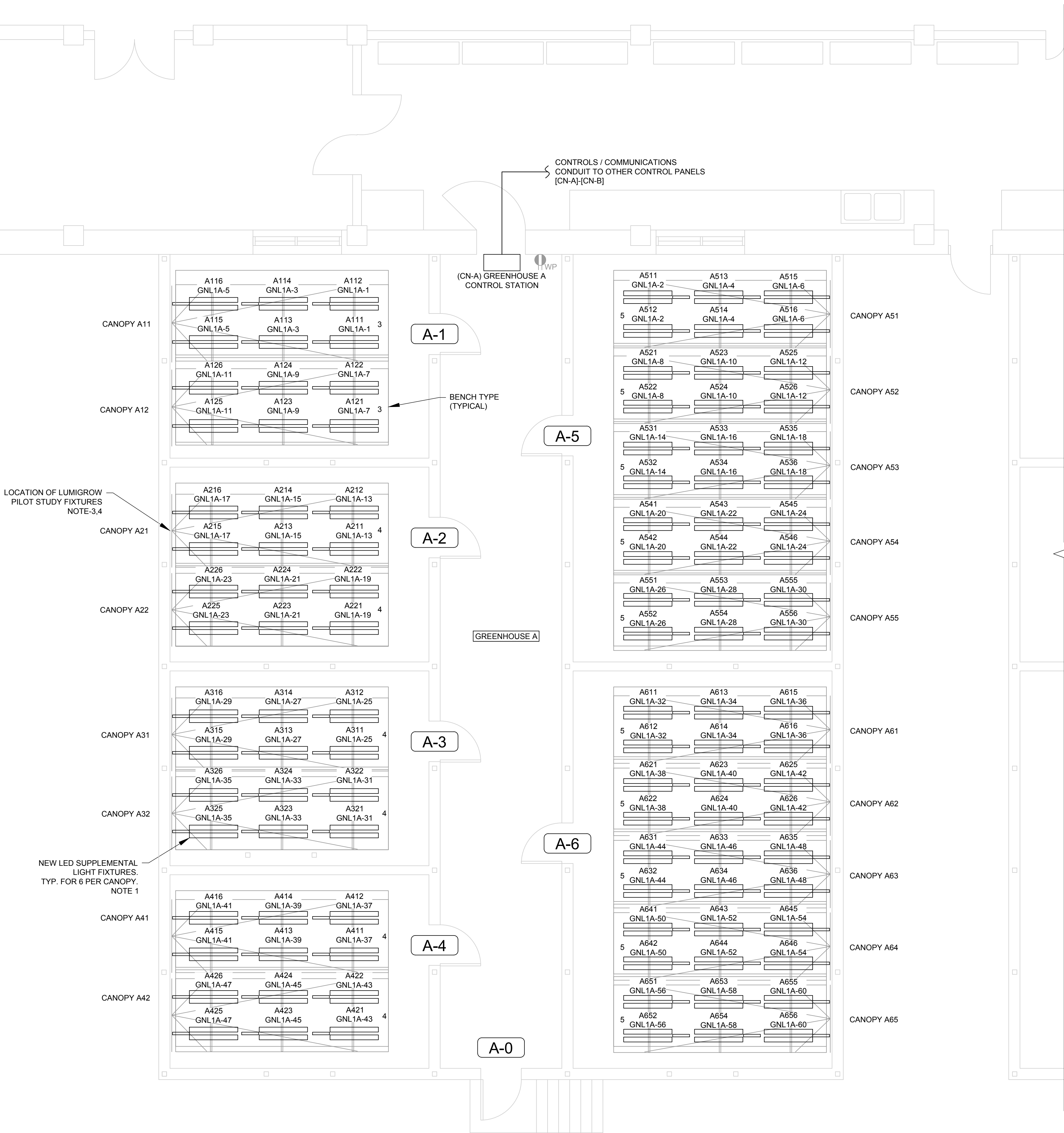
Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Drawing List & Legend**

Project no.	Drawing no.	Revision no.
R.093894.001	E-1000	2

2019/Sep/17, 4:29pm P:\60565108\900-CAD_GIS\010-CAD\20-SHEETS\01\ER_093894_001-E-1000.dwg Layout1 Tareq Shrufl PWGSC

2019/Sep/17, 4:29pm P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\NEIR 093894.001-E-1001.dwg Layout1 Tareg,Shirufi

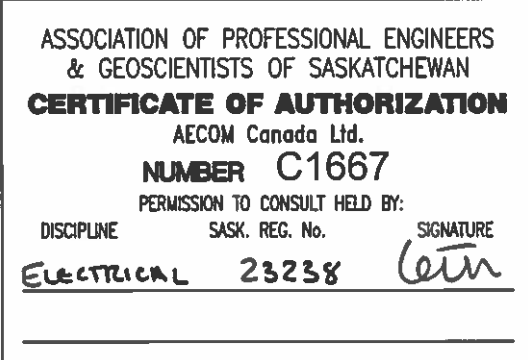
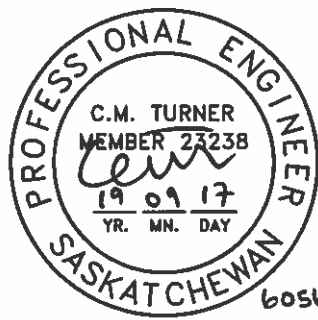
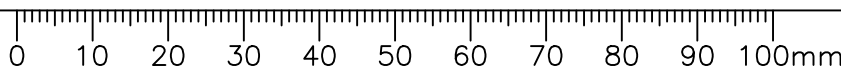
GREENHOUSE A CANOPY SCHEDULE		
BENCH TYPE	BENCH DIMENSIONS	QUANTITY
1	1905 x 4800 mm	0
2	1803 x 4800 mm	0
3	1727 x 4800 mm	2
4	1651 x 4800 mm	6
5	1575 X 4800 mm	10



- NOTES:
- NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.
 - CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING SUPPLEMENTAL LIGHT FIXTURES, WHICH ARE A MIXTURE OF HIGH PRESSURE SODIUM AND T5 FLUORESCENT.
 - EXISTING LED SUPPLEMENTAL LIGHT FIXTURES TO BE REMOVED AND TURNED OVER TO OWNER (SIX FIXTURES).
 - EXISTING LED SUPPLEMENTAL LIGHT FIXTURE CONTROL PANEL TO BE REMOVED AND TURNED OVER TO OWNER (ONE LUMIGROW PANEL).

1 | GREENHOUSE A LAYOUT

Scale 1:50



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food Canada (AAFC)

Project title
AAFC Saskatoon Research and Development Centre (SRDC) Greenhouse LED Retrofit
107 Science Place, Saskatoon, Saskatchewan, S7N 0X2

Designed by
Christopher Turner
Drawn by
Perihan Cengiz
Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland
Drawing title

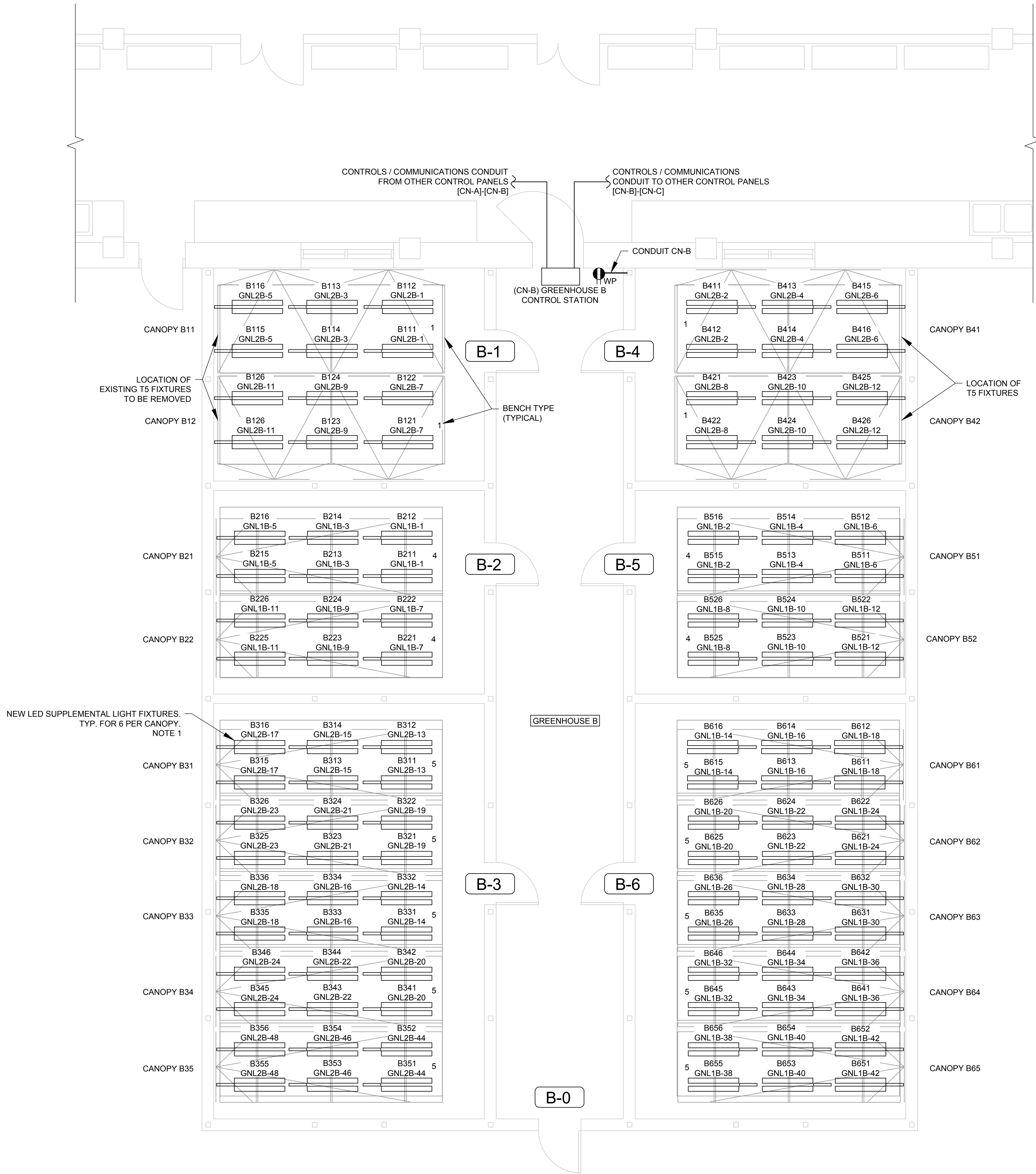
SRDC Greenhouse LED Retrofit Electrical
Greenhouse A Layout

Project no.	Drawing no.	Revision no.
R.093894.001	E-1001	2

2019/Sep/17, 4:29pm Layout1 Tareg,Shruti P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-1002.dwg

PWGSC

GREENHOUSE B CANOPY SCHEDULE		
BENCH TYPE	BENCH DIMENSIONS	QUANTITY
1	1905 x 4800 mm	4
2	1803 x 4800 mm	0
3	1727 x 4800 mm	0
4	1651 x 4800 mm	4
5	1575 X 4800 mm	10

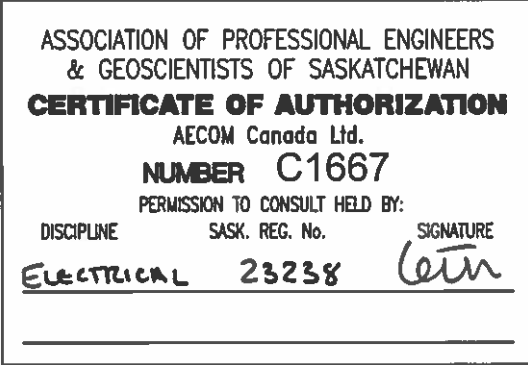
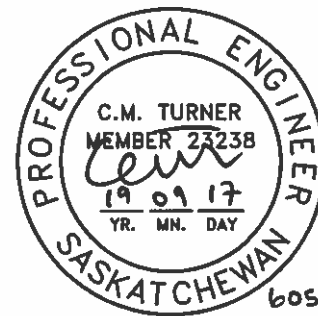


- NOTES:
1. NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.
 2. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING SUPPLEMENTAL LIGHT FIXTURES, WHICH ARE A MIXTURE OF HIGH PRESSURE SODIUM AND T5 FLUORESCENT.

1 | GREENHOUSE B LAYOUT

Scale 1:50

AECOM



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner
Drawn by
Perihan Cengiz
Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland
Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Greenhouse B Layout**

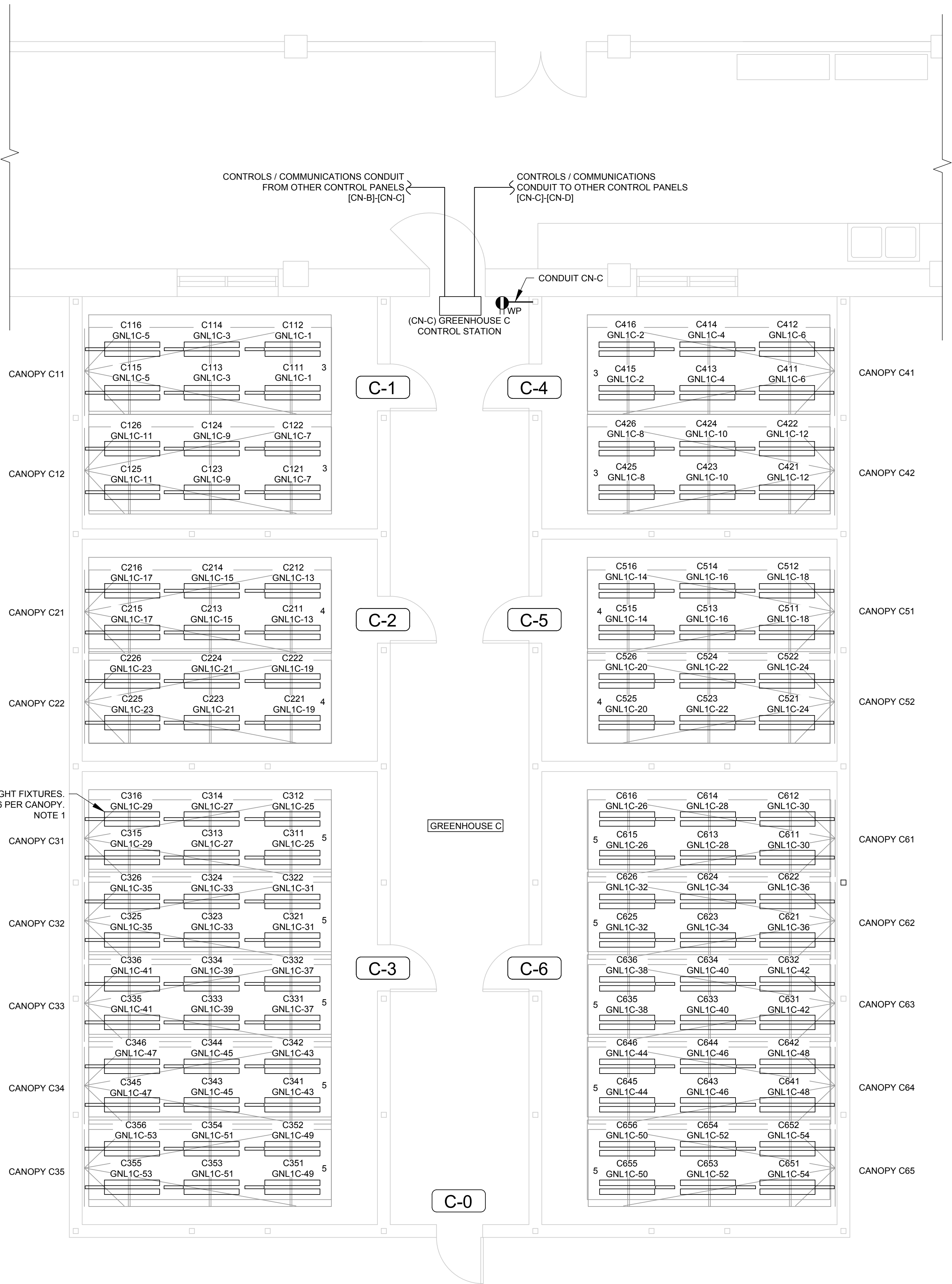
Project no.	Drawing no.	Revision no.
R.093894.001	E-1002	2

2019/Sep/17, 4:29pm Layout1 Tareg,Shruti P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-1003.dwg

GREENHOUSE C CANOPY SCHEDULE		
BENCH TYPE	BENCH DIMENSIONS	QUANTITY
1	1905 x 4800 mm	0
2	1803 x 4800 mm	0
3	1727 x 4800 mm	4
4	1651 x 4800 mm	4
5	1575 X 4800 mm	10

NEW LED SUPPLEMENTAL LIGHT FIXTURES.
TYP. FOR 6 PER CANOPY.
NOTE 1

- NOTES:
- NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.
 - CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING SUPPLEMENTAL LIGHT FIXTURES, WHICH ARE A MIXTURE OF HIGH PRESSURE SODIUM AND T5 FLUORESCENT.

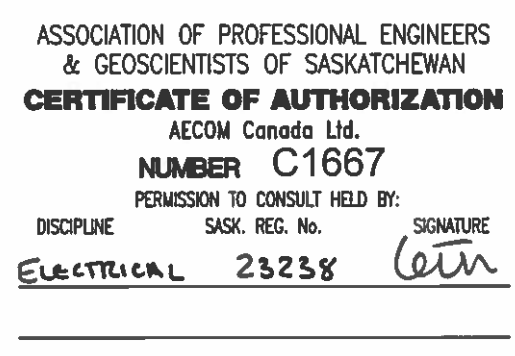
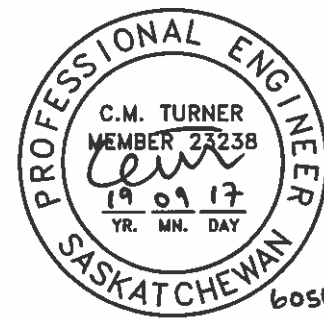


1 | GREENHOUSE C LAYOUT

Scale 1:50

0 10 20 30 40 50 60 70 80 90 100mm

AECOM



Revision	Description	Date
2	Issued for Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Client
**Agriculture and Agri-Food
Canada (AAFC)**

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner
Drawn by
Perihan Cengiz
Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland

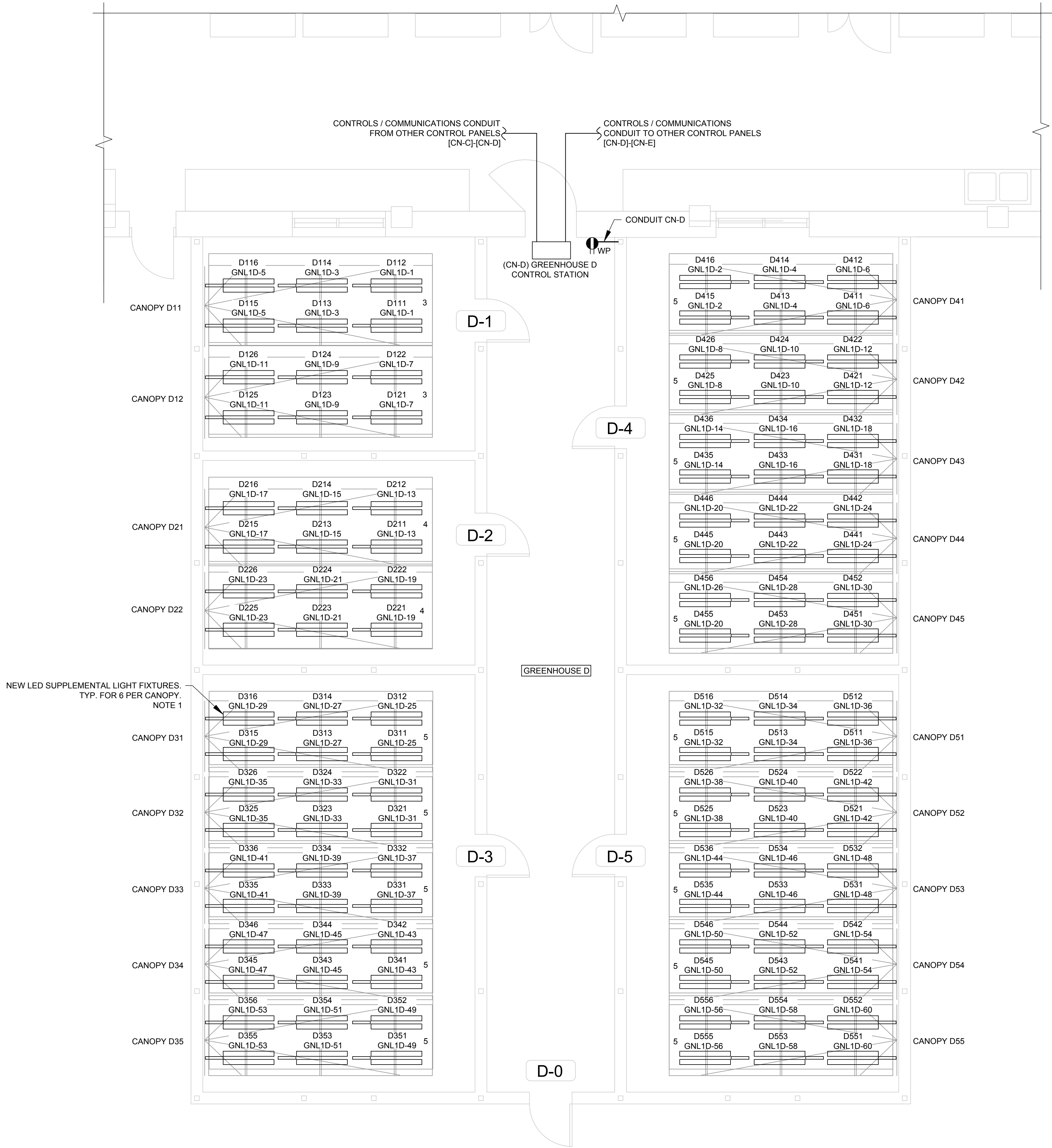
Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Greenhouse C Layout**

Project no.	Drawing no.	Revision no.
R.093894.001	E-1003	2

2019/Sep/17, 4:29pm P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\NEIR\093894.001-E-1004.dwg Tareg,Shirufi Layout1

PWGSC

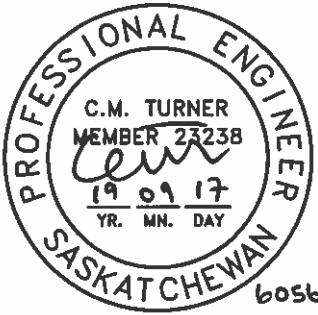
GREENHOUSE D CANOPY SCHEDULE		
BENCH TYPE	BENCH DIMENSIONS	QUANTITY
1	1905 x 4800 mm	0
2	1803 x 4800 mm	0
3	1727 x 4800 mm	2
4	1651 x 4800 mm	2
5	1575 X 4800 mm	15



- NOTES:
1. NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.
 2. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING SUPPLEMENTAL LIGHT FIXTURES, WHICH ARE A MIXTURE OF HIGH PRESSURE SODIUM AND T5 FLUORESCENT.

1 | GREENHOUSE D LAYOUT

Scale 1:50



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

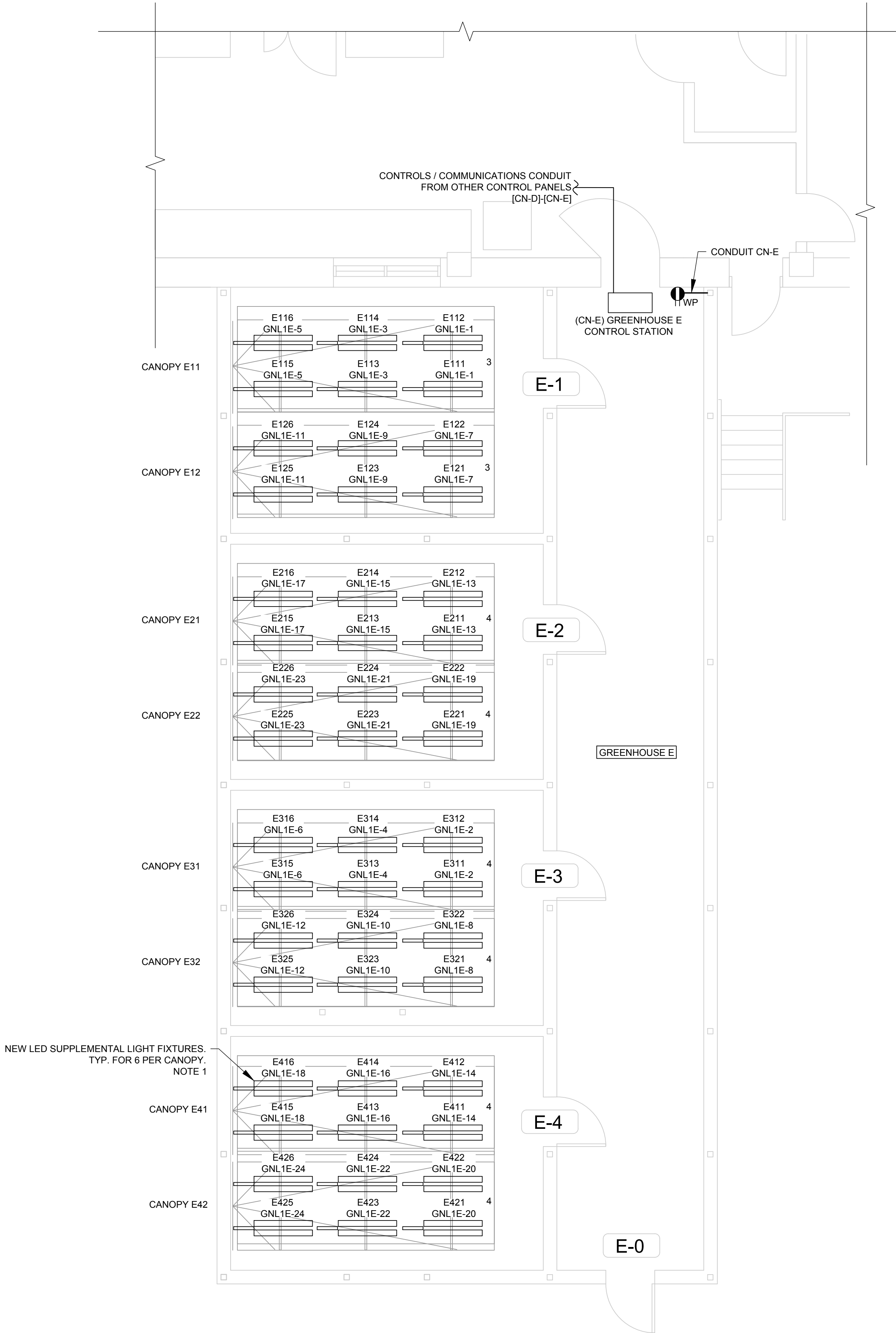
Drawing title

**SRDC Greenhouse LED Retrofit
Electrical
Greenhouse D Layout**

Project no.	Drawing no.	Revision no.
R.093894.001	E-1004	2

2019/Sep/17, 4:29pm Tareg,Shruti Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-1005.dwg

GREENHOUSE E CANOPY SCHEDULE		
BENCH TYPE	BENCH DIMENSIONS	QUANTITY
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2	1803 x 4800 mm	0
3	1727 x 4800 mm	2
4	1651 x 4800 mm	6
5	1575 X 4800 mm	0



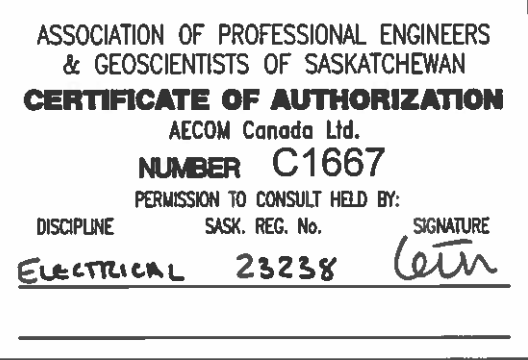
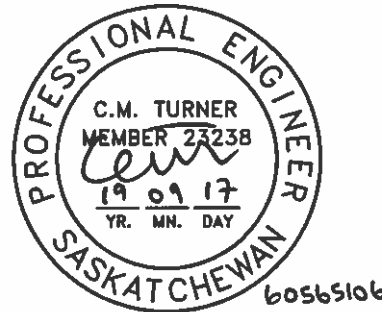
- NOTES:
1. NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.
 2. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING SUPPLEMENTAL LIGHT FIXTURES, WHICH ARE A MIXTURE OF HIGH PRESSURE SODIUM AND T5 FLUORESCENT.

1 | GREENHOUSE E LAYOUT

Scale 1:50

0 10 20 30 40 50 60 70 80 90 100mm

AECOM



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Client
**Agriculture and Agri-Food
Canada (AAFC)**

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

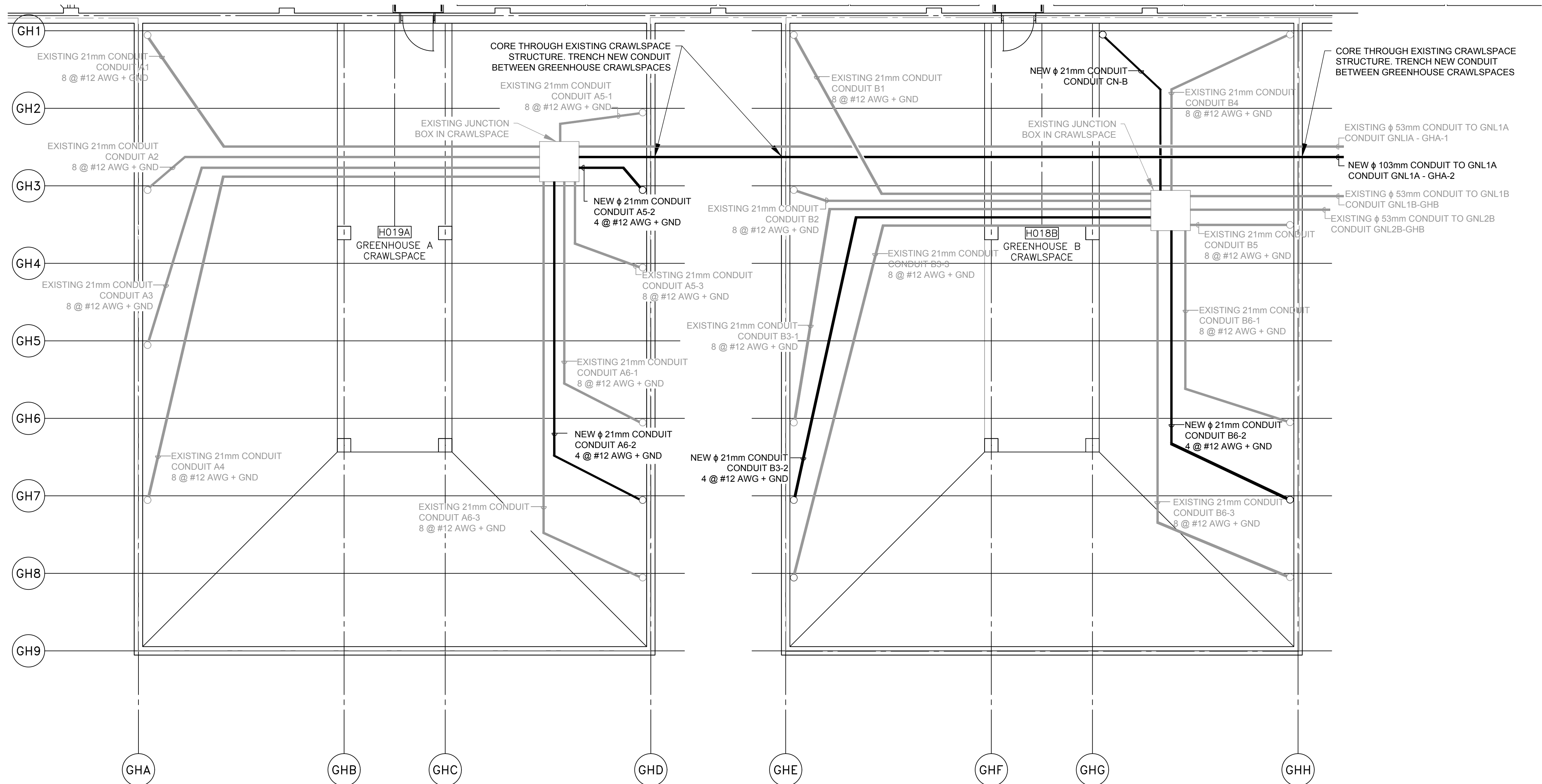
PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Greenhouse E Layout**

Project no.	Drawing no.	Revision no.
R.093894.001	E-1005	2

2019/Sep/17, 4:29pm Tareg.Shirafi Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-1006.dwg

PWGSC

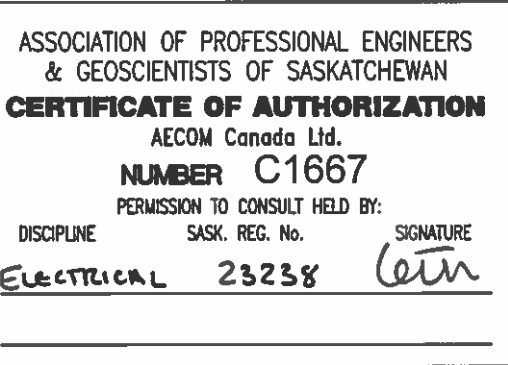


NOTES:

1. NEW CONDUIT TO GENERALLY FOLLOW ROUTES OF EXISTING.
2. RETURN SITE TO SAME CONDITION AFTER TRENCHING WORK.
3. EXISTING JUNCTION BOX LOCATIONS AND CONDUIT ROUTES ARE APPROXIMATE. CONTRACTOR TO CONFIRM ON SITE.
4. CONTRACTOR TO CONFIRM EXISTING CONDUIT SIZE AND FILL % WITH ENGINEER BEFORE INSTALLATION OF NEW CONDUIT.
5. REFER TO SPECIFICATION 26 05 34 FOR ACCEPTABLE CONDUIT MATERIAL TYPE FOR EACH LOCATION.
6. MATERIAL BETWEEN GREEN HOUSES, BELOW LAYER OF CRUSHED ROCK IS UNKNOWN.
7. HYDROVACING IN AREAS BETWEEN GREEN HOUSES IS ACCEPTABLE.

1 CRAWLSPACE PLAN

Scale 1:75



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

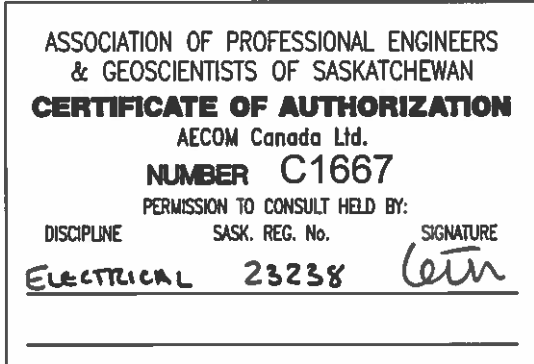
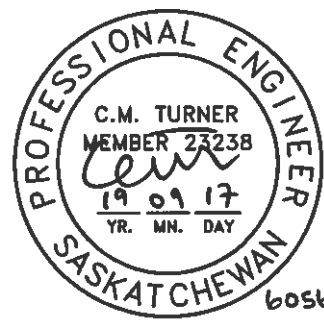
Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Crawlspace Plan**

Project no.	Drawing no.	Revision no.
R.093894.001	E-1006	2



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

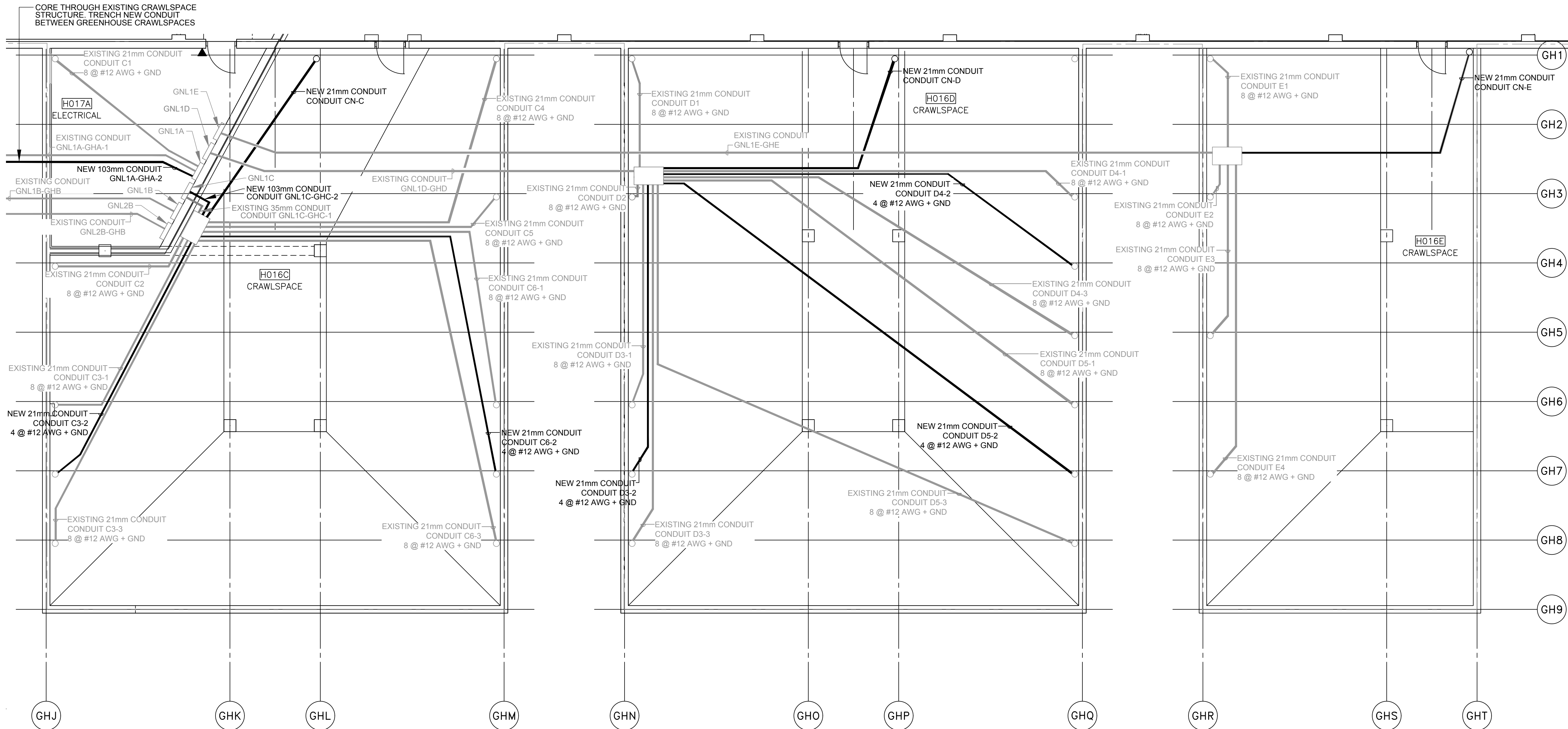
Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Crawlspace & Electrical Room Plan**

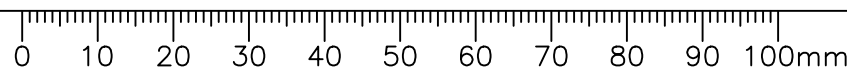
Project no. R.093894.001	Drawing no. E-1007	Revision no. 2
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- NOTES:**
1. NEW CONDUIT TO GENERALLY FOLLOW ROUTES OF EXISTING.
 2. RETURN SITE TO SAME CONDITION AFTER TRENCHING WORK.
 3. EXISTING JUNCTION BOX LOCATIONS AND CONDUIT ROUTES ARE APPROXIMATE. CONTRACTOR TO CONFIRM ON SITE.
 4. CONTRACTOR TO CONFIRM EXISTING CONDUIT SIZE AND FILL % WITH ENGINEER BEFORE INSTALLATION OF NEW CONDUIT.
 5. REFER TO SPECIFICATION 28 05 34 FOR ACCEPTABLE CONDUIT MATERIAL TYPE FOR EACH LOCATION.
 6. MATERIAL BETWEEN GREEN HOUSES, BELOW LAYER OF CRUSHED ROCK IS UNKNOWN.
 7. HYDROVACING IN AREAS BETWEEN GREEN HOUSES IS ACCEPTABLE.

1 CRAWLSPACE AND ELECTRICAL ROOM PLAN

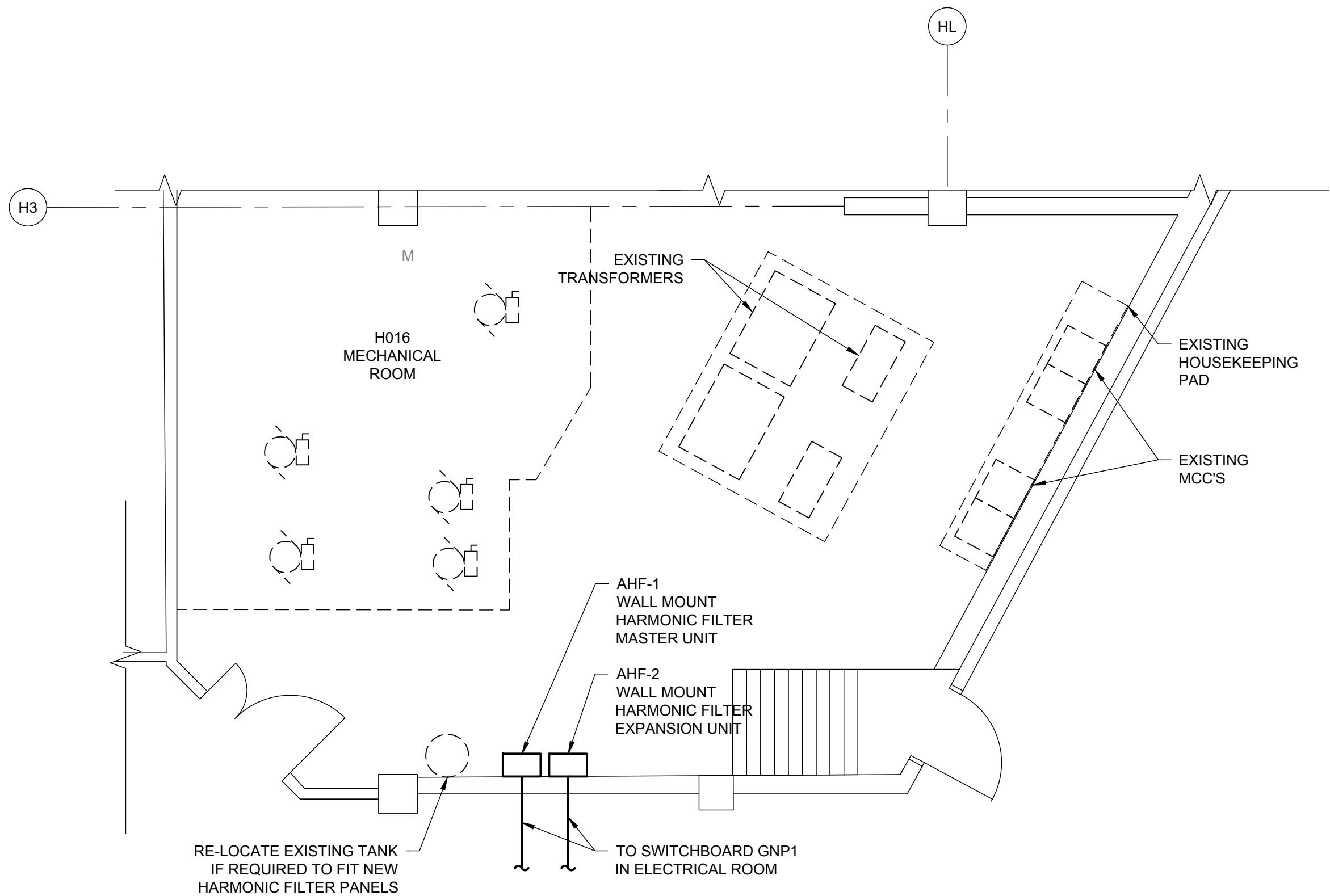
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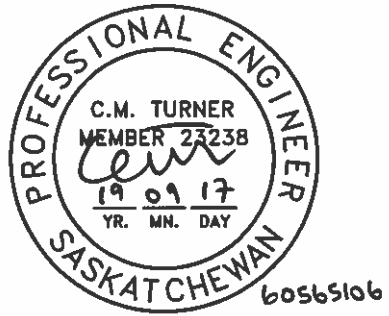
2019/Sep/17, 4:30pm Tareg,Shruti Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-1008.dwg

PWGSC

- NOTES:
1. RELOCATE STORAGE CURRENTLY OCCUPYING AHF-1 & AHF-2 LOCATIONS TO A LOCATION IDENTIFIED BY OWNER.
 2. LOCATION OF EQUIPMENT IS APPROXIMATE. COORDINATE TO SUIT SITE CONDITIONS.
 3. REFER TO SPECIFICATION 26 05 34 FOR ACCEPTABLE CONDUIT MATERIAL TYPE FOR EACH LOCATION.
 4. MATERIAL BETWEEN GREEN HOUSES, BELOW LAYER OF CRUSHED ROCK IS UNKNOWN.
 5. HYDROVACING IN AREAS BETWEEN GREEN HOUSES IS ACCEPTABLE.



1 | MECHANICAL ROOM FLOOR PLAN
MECHANICAL ROOM- H016 Scale 1:50



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

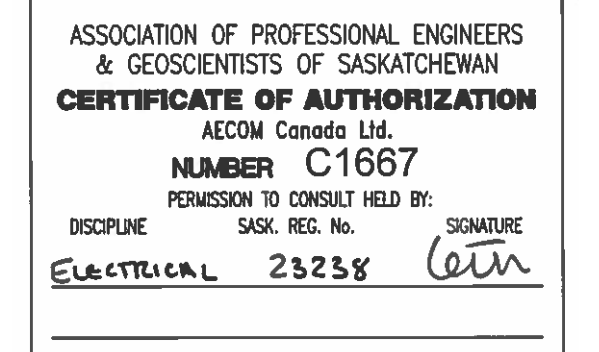
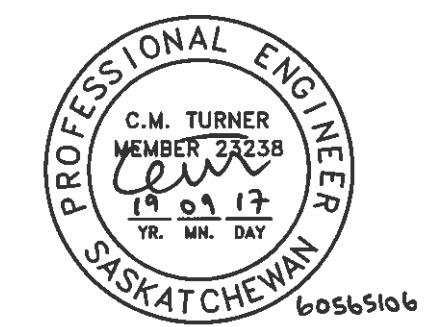
Agriculture and Agri-Food Canada (AAFC)

Project title
AAFC Saskatoon Research and Development Centre (SRDC) Greenhouse LED Retrofit
107 Science Place, Saskatoon, Saskatchewan, S7N 0X2

Designed by
Christopher Turner
Drawn by
Perihan Cengiz
Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland

Drawing title
SRDC Greenhouse LED Retrofit Electrical
Partial Basement & Mechanical Room Plan

Project no.	Drawing no.	Revision no.
R.093894.001	E-1008	2



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

**Agriculture and Agri-Food
Canada (AAFC)**

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

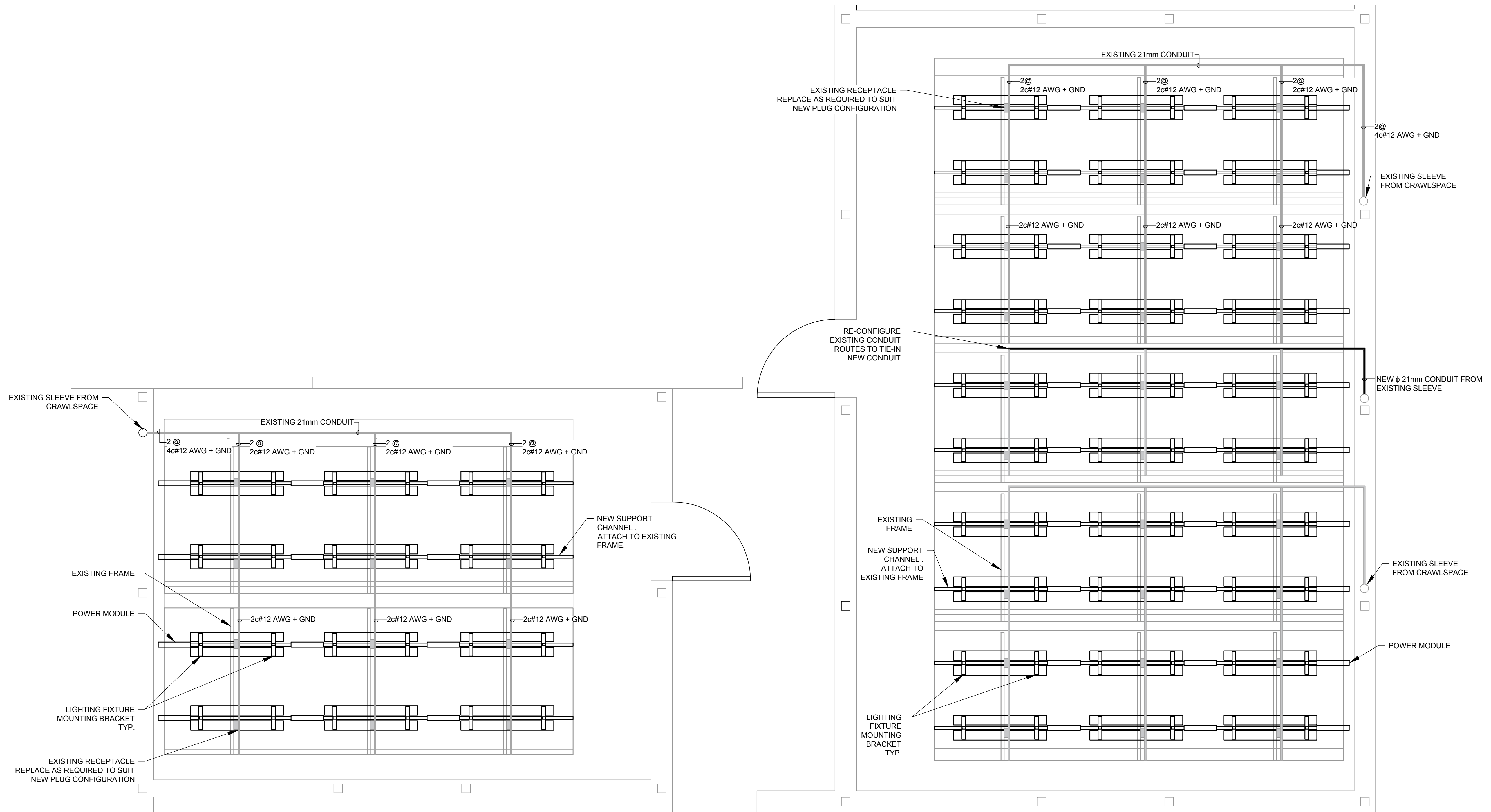
Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Compartment Conduit Detail**

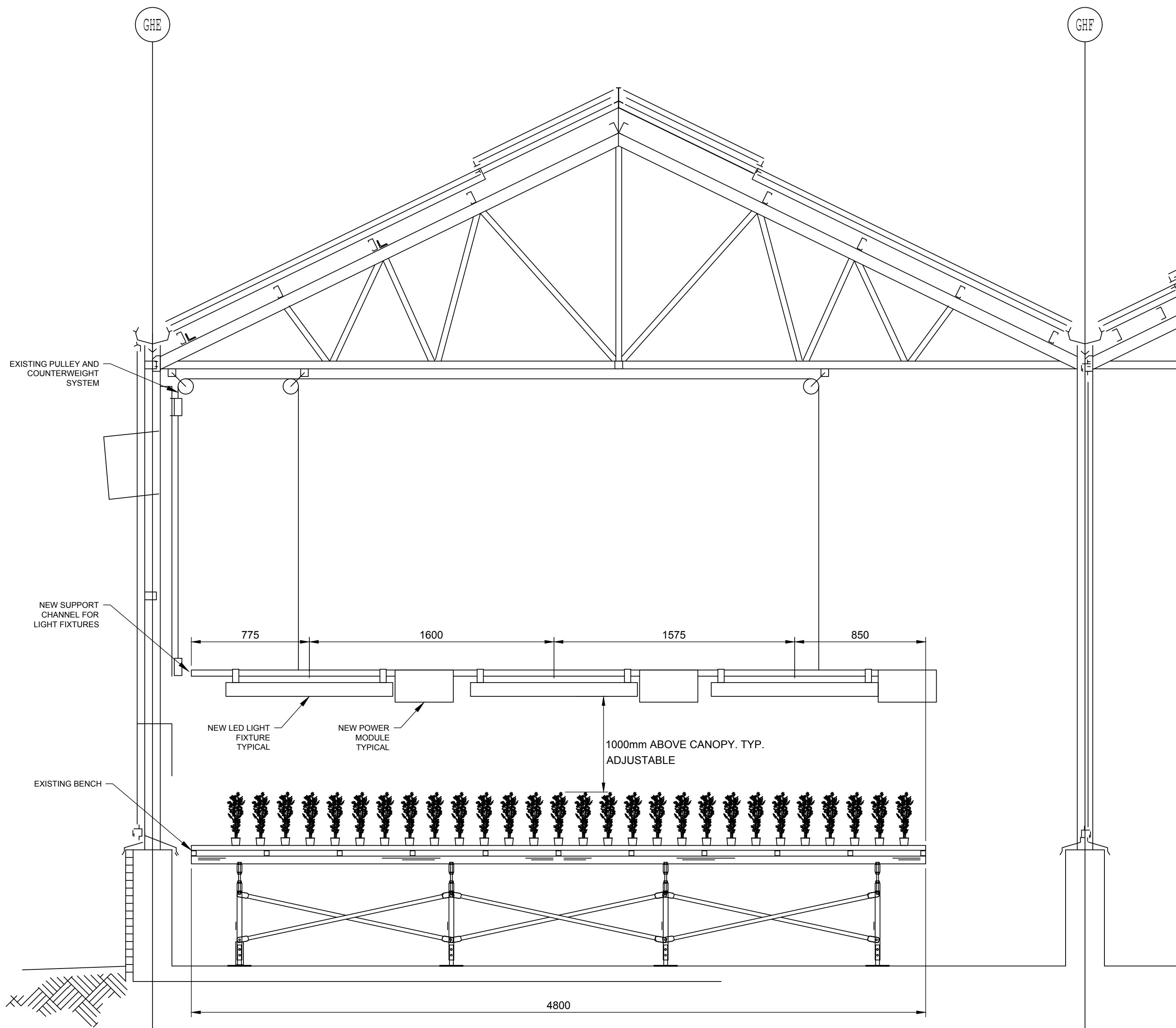
Project no.	Drawing no.	Revision no.
R.093894.001	E3001	2



1 | COMPARTMENT CONDUIT DETAIL
TYPICAL FOR 2-BENCH COMPARTMENTS
Scale 1:25

2 | COMPARTMENT CONDUIT DETAIL
TYPICAL FOR 5-BENCH COMPARTMENTS
Scale 1:25

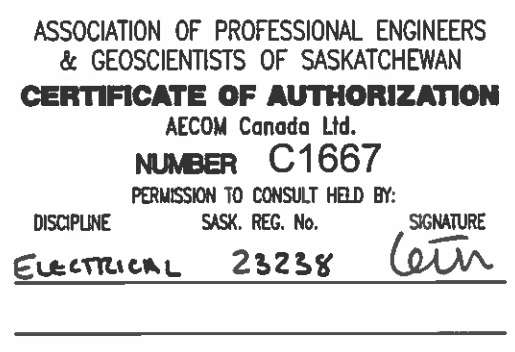
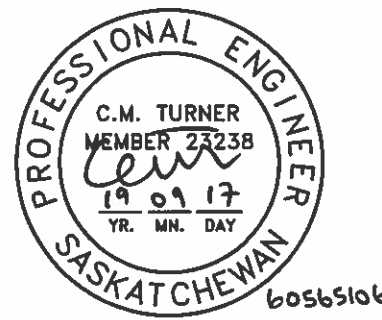
2019/Sep/17, 4:30pm Tareg,Shruti Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\NR.093894.001-E-3002.dwg



NOTES:
1. NUMBER OF FIXTURES IS INDICATIVE. ALTERNATE FIXTURE QUANTITIES MAY BE PROPOSED, PROVIDING PROJECT REQUIREMENTS ARE MET.

Scale 1:20

0 10 20 30 40 50 60 70 80 90 100mm



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

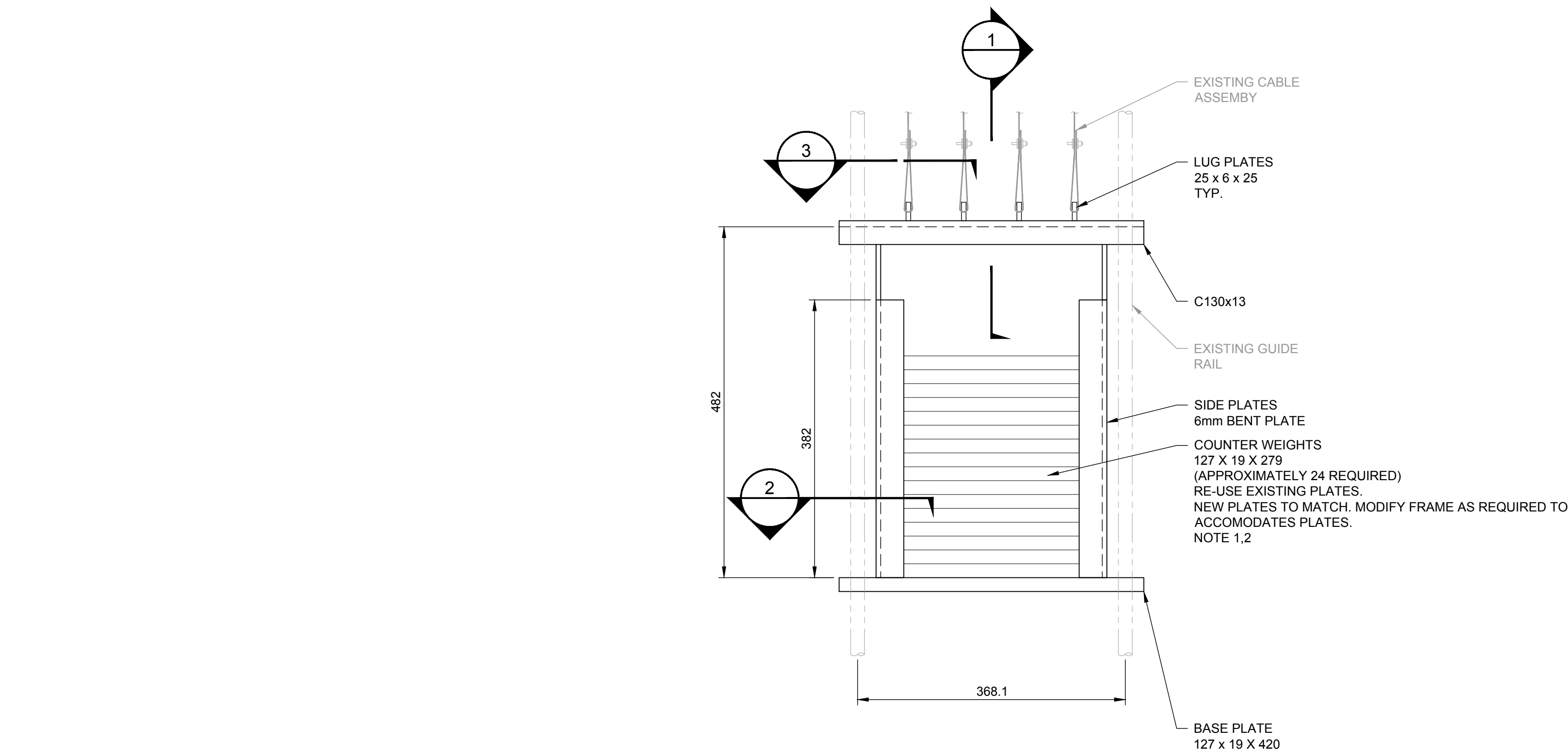
PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Canopy Lighting Section & Detail**

Project no.	Drawing no.	Revision no.
R.093894.001	E-3002	2

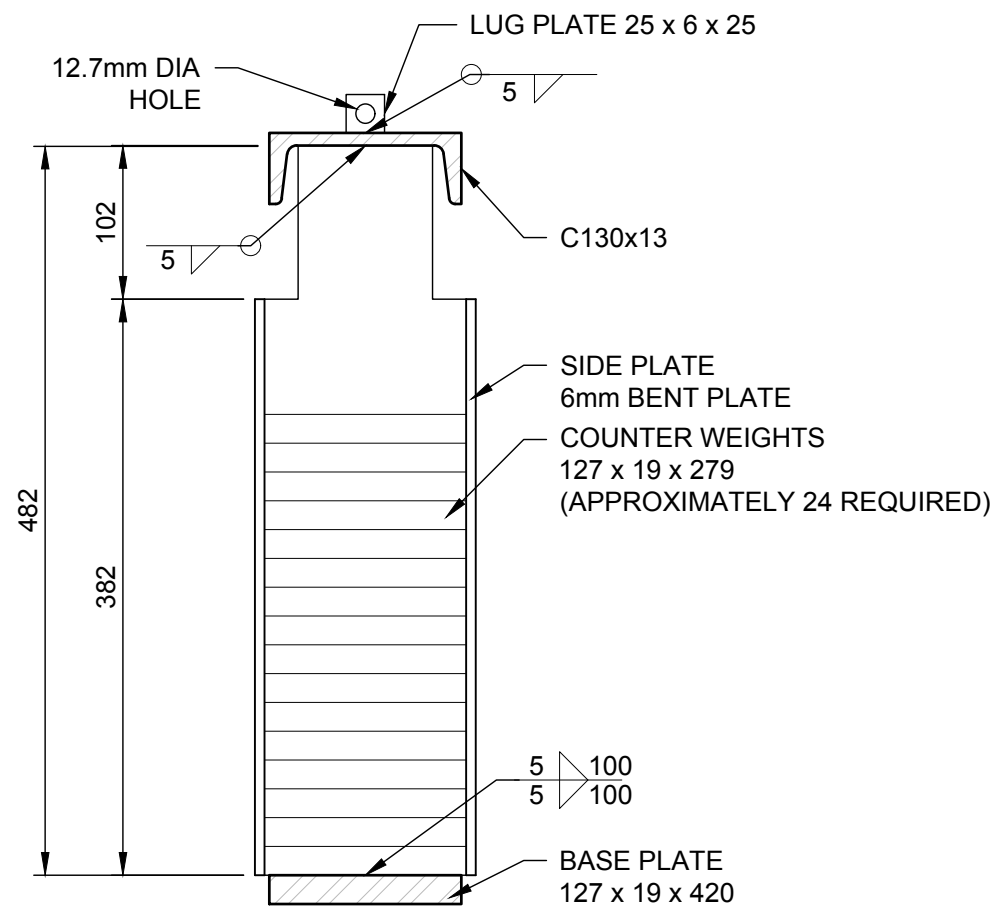
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PWGSC



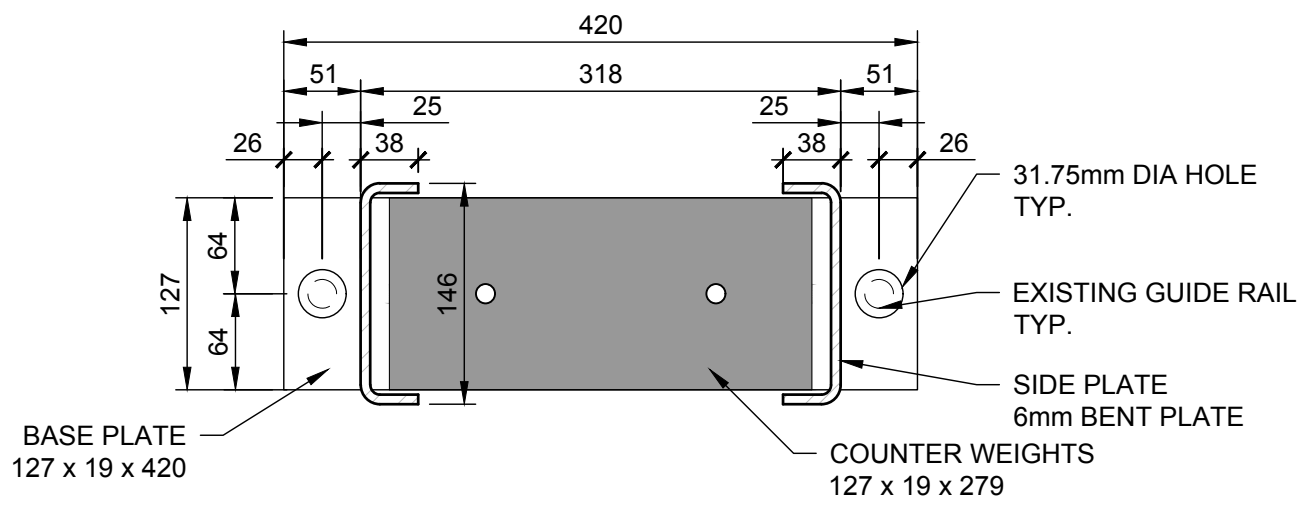
COUNTER WEIGHT FRAME ELEVATION

Scale 1:5



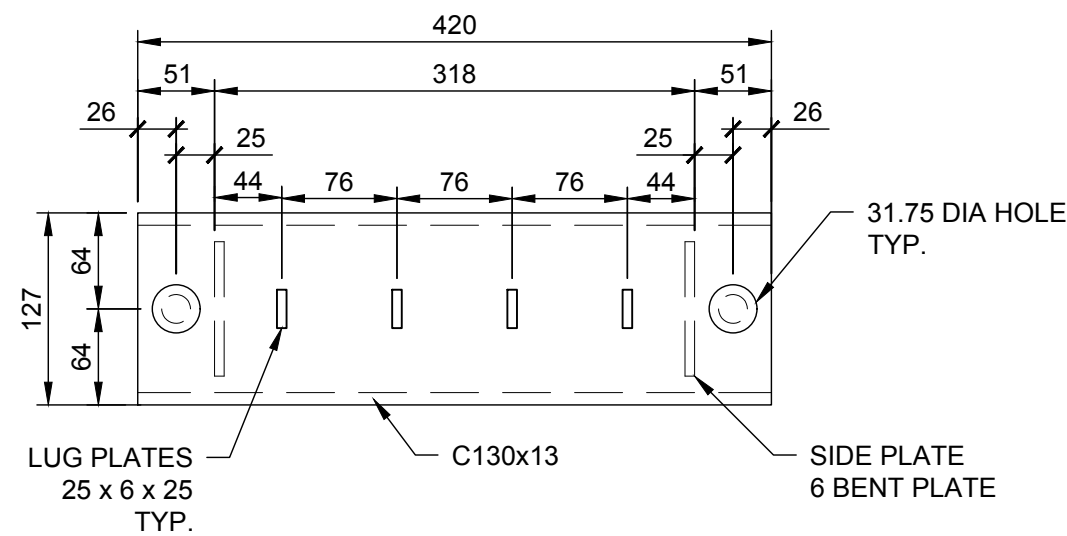
1 | SECTION

Scale 1:5



2 | SECTION

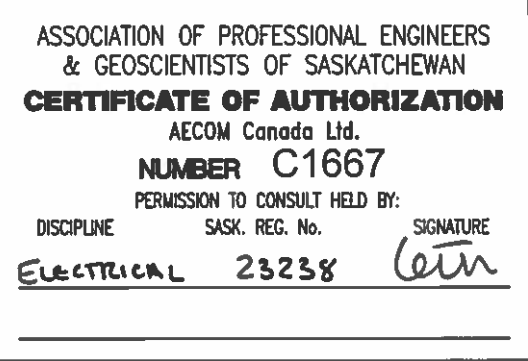
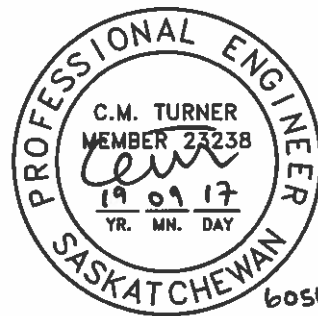
Scale 1:5



3 | PLAN

Scale 1:5

- NOTES:
- CANOPIES WITH EXISTING T5 AND LED LIGHTS HAVE APPROXIMATELY 16 EXISTING PLATES PER FRAME.
 - CANOPIES WITH EXISTING HPS LIGHTS HAVE APPROXIMATELY 8 EXISTING PLATES PER FRAME.
 - COUNTER WEIGHTS ARE STEEL MATERIAL, EACH HAVING AN ESTIMATED WEIGHT OF 5.5 KG.
 - ADJUST NUMBER OF PLATES AND FRAME TO SUIT ACTUAL LIGHT FIXTURE WEIGHTS INCLUDING ALL ACCESSORIES.



Revision	Description	Date
2	Issued for Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Cameron Klemmer

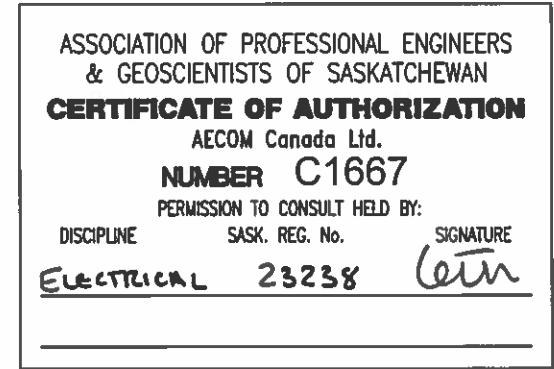
Drawn by
Tareg Shrufi

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Counter Weight Frame Elevation**

Project no.	Drawing no.	Revision no.
R.093894.001	E-3003	2



2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

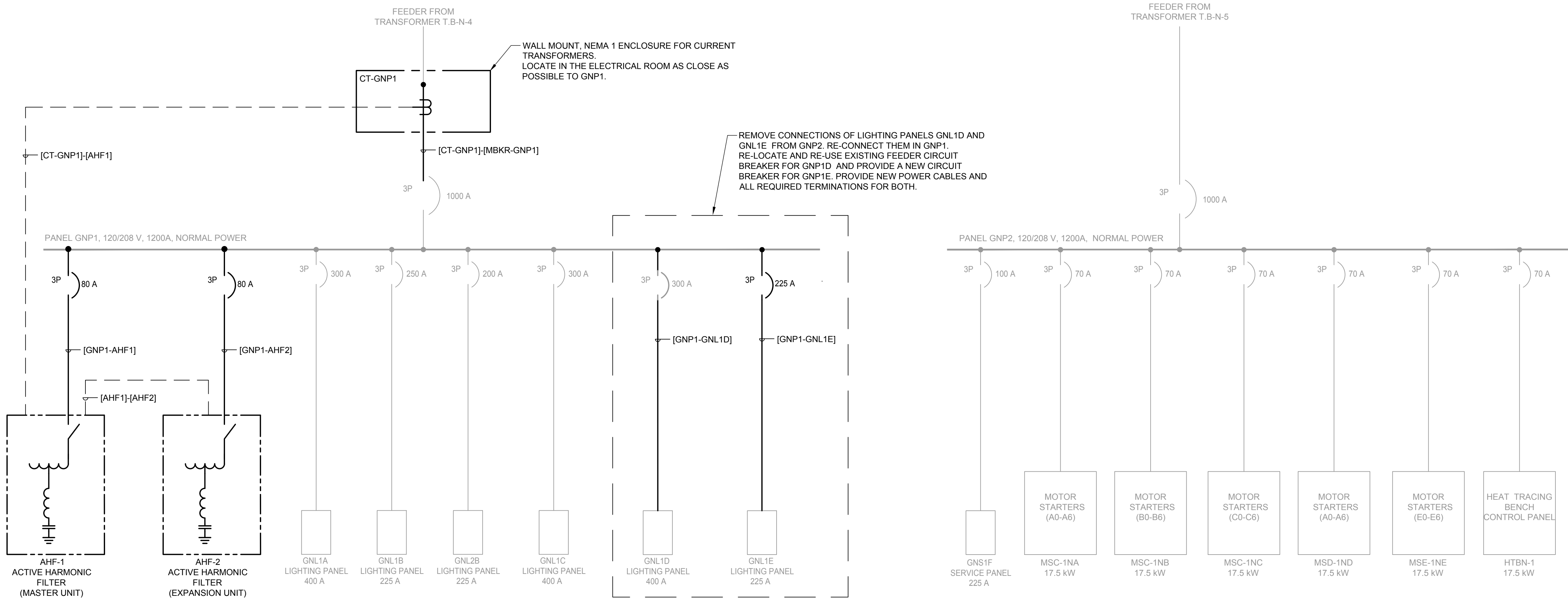
Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit**
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2

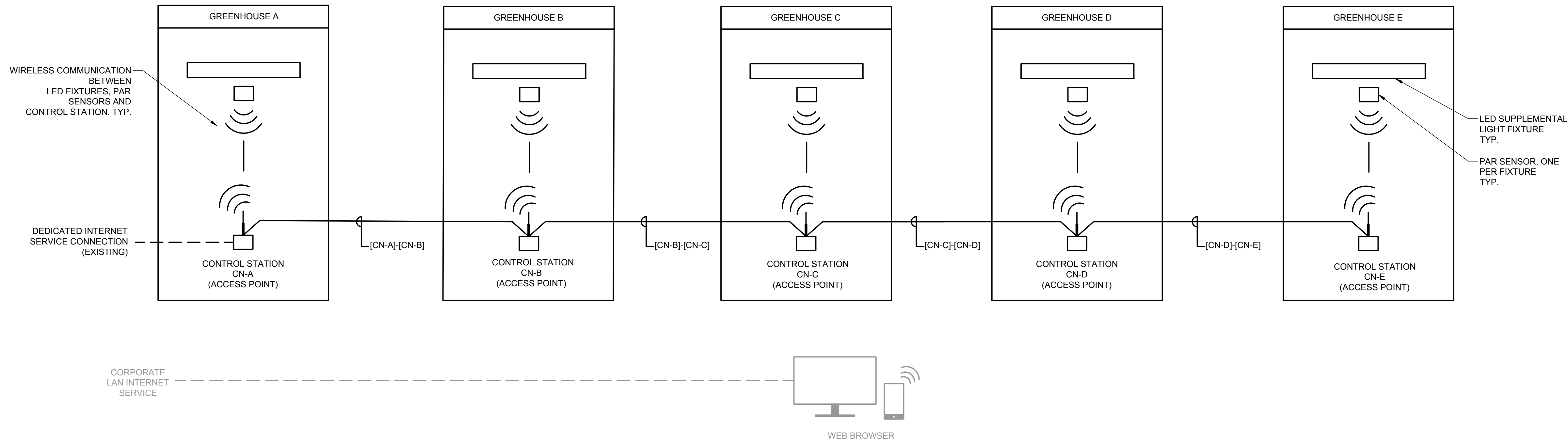
Designed by
Christopher Turner
Drawn by
Perihan Cengiz
Approved by
Brent Wolfater
PWGSC Project Manager
Eric Haaland
Drawing title

**SRDC Greenhouse LED Retrofit
Electrical
Single Line Diagram
Control Schematic**

Project no.	Drawing no.	Revision no.
R.093894.001	E-4001	2

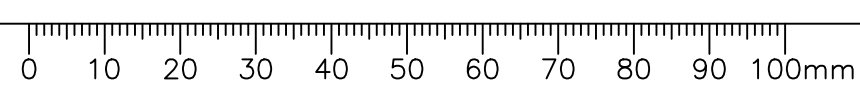


1 | SINGLE LINE DIAGRAM
SWITCHBOARD GNP1 & GNP2



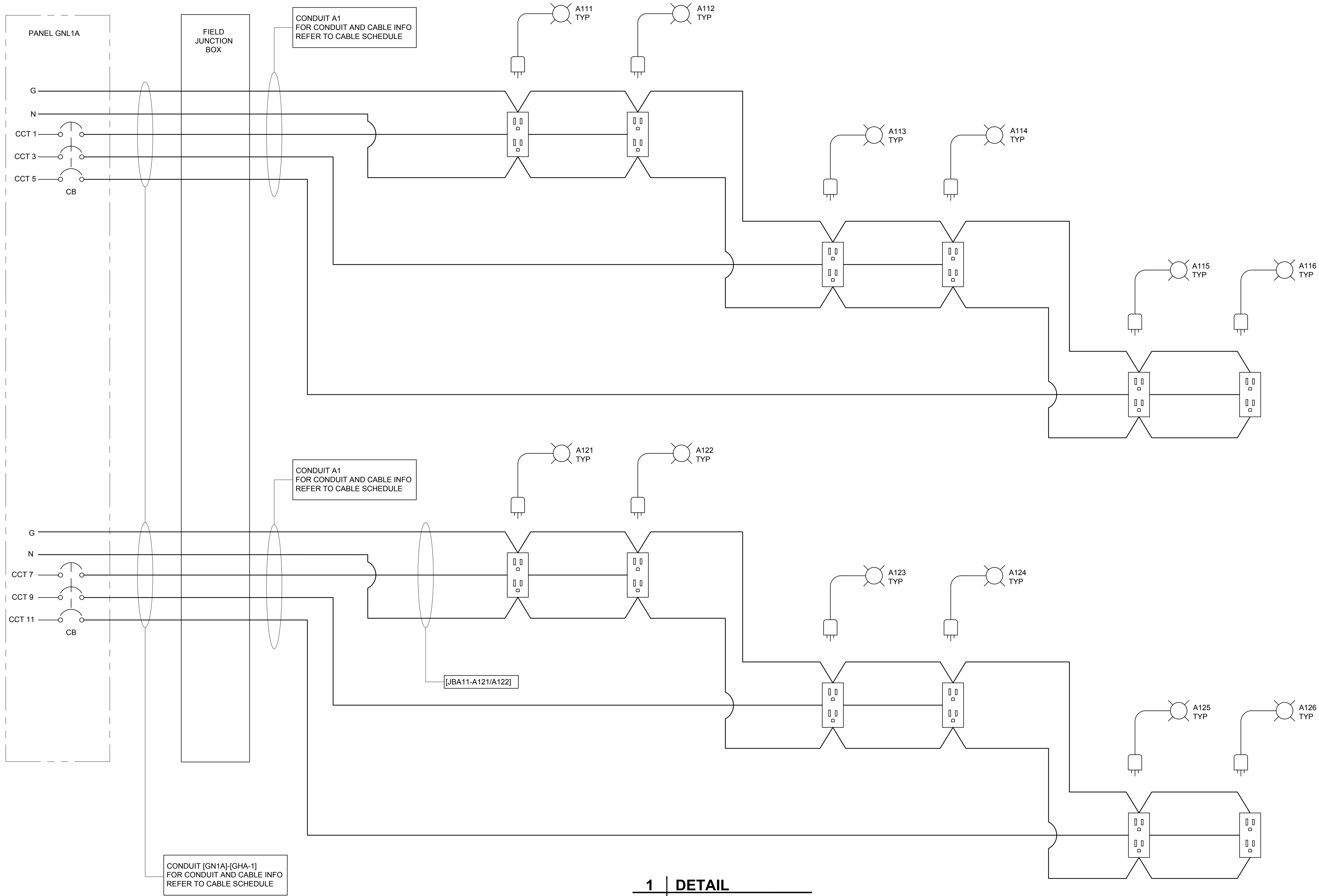
NOTES:
1. COMMUNICATIONS INTERCONNECTIONS ARE INDICATIVE. ALTERNATIVE CONFIGURATIONS MAY BE PROPOSED, PROVIDING THE PROJECT REQUIREMENTS ARE MET.

2 | CONTROL SCHEMATIC

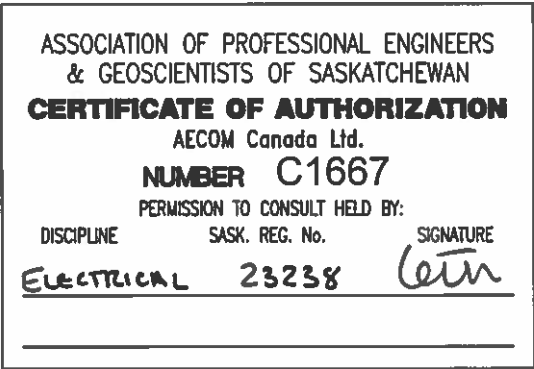
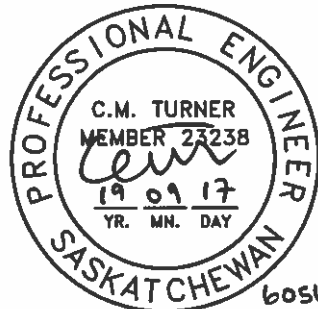
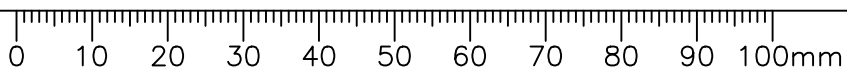


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PWGSC



1 | DETAIL
GREEN HOUSE A1
LIGHTING WIRING DETAIL
TYPICAL FOR ALL



Revision	Description	Date
2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10

Client
**Agriculture and Agri-Food
Canada (AAFC)**

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Green House Lighting
Wiring Details**

Project no.	Drawing no.	Revision no.
R.093894.001	E-4002	2



2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

Agriculture and Agri-Food Canada (AAFC)

Project title

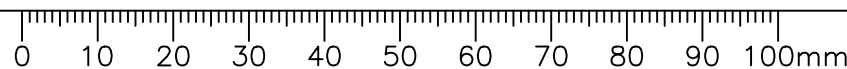
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by Christopher Turner	
Drawn by Perihan Cengiz	
Approved by Brent Wolfater	
WGSC Project Manager Eric Haaland	
Drawing title	

**SRDC Greenhouse LED Retrofit
Electrical
GNL1A Panelboard Schedule**

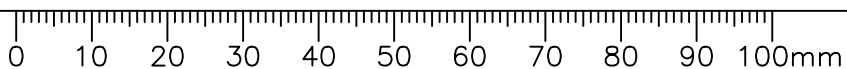
Project no.	Drawing no.	Revision no.
R.093894.001	E-8001	2

PANEL #:	GNL1A (EXISTING)			VOLTAGE				120 / 208 V					
LOCATION:	ELECTRICAL ROOM H107A			CONFIGURATION:				3 PHASE, 4 WIRE					
TYPE:	SURFACE			MAIN BREAKER:				NO					
BUS RATING:	400 A			MAIN LUGS:				YES					
CIRCUIT LOADING			CIRCUIT DESCRIPTION	BKR SIZE	EXIS TING	CIRCUIT NO.		EXIS TING	BKR SIZE	CIRCUIT DESCRIPTION	CIRCUIT LOADING		
A	B	C				1	2				A	B	C
10.6			GREENHOUSE A-1 CANOPY A11 FIXTURES A111 THRU A116	3P 20	Y	1	2	Y	3P 20	GREENHOUSE A-5 CANOPY A51 FIXTURES A511 THRU A516	10.6		
	10.6					3	4					10.6	
		10.6				5	6						10.6
10.6			GREENHOUSE A-1 CANOPY A12 FIXTURES A121 THRU A126	3P 20	Y	7	8	Y	3P 20	GREENHOUSE A-5 CANOPY A52 FIXTURES A521 THRU A526	10.6		
	10.6					9	10					10.6	
		10.6				11	12						10.6
10.6			GREENHOUSE A-2 CANOPY A21 FIXTURES A211 THRU A216	3P 20	Y	13	14	Y	3P 20	GREENHOUSE A-5 CANOPY A53 FIXTURES A531 THRU A536	10.6		
	10.6					15	16					10.6	
		10.6				17	18						10.6
10.6			GREENHOUSE A-2 CANOPY A22 FIXTURES A221 THRU A226	3P 20	Y	19	20	Y	3P 20	GREENHOUSE A-5 CANOPY A54 FIXTURES A541 THRU A546	10.6		
	10.6					21	22					10.6	
		10.6				23	24						10.6
10.6			GREENHOUSE A-3 CANOPY A31 FIXTURES A311 THRU A316	3P 20	Y	25	26	Y	3P 20	GREENHOUSE A-5 CANOPY A55 FIXTURES A551 THRU A556	10.6		
	10.6					27	28					10.6	
		10.6				29	30						10.6
10.6			GREENHOUSE A-3 CANOPY A32 FIXTURES A321 THRU A326	3P 20	Y	31	32	Y	3P 20	GREENHOUSE A-6 CANOPY A61 FIXTURES A611 THRU A616	10.6		
	10.6					33	34					10.6	
		10.6				35	36						10.6
10.6			GREENHOUSE A-4 CANOPY A41 FIXTURES A411 THRU A416	3P 20	Y	37	38	Y	3P 20	GREENHOUSE A-6 CANOPY A62 FIXTURES A621 THRU A626	10		
	10.6					39	40					10	
		10.6				41	42						10
10.6			GREENHOUSE A-4 CANOPY A42 FIXTURES A421 THRU A426	3P 20	Y	43	44	Y	3P 20	GREENHOUSE A-6 CANOPY A63 FIXTURES A631 THRU A636	10.6		
	10.6					45	46					10.6	
		10.6</											



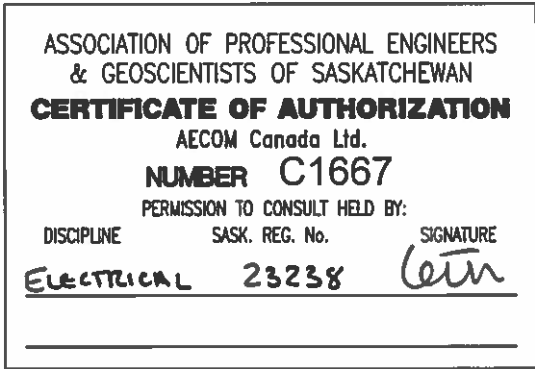
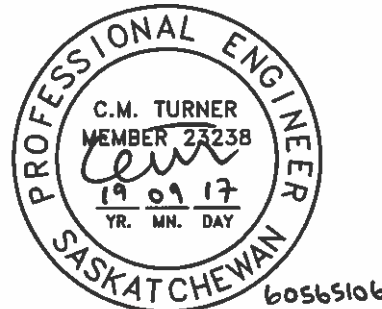
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PWGSC



NOTE: CIRCUIT BREAKER FOR GREENHOUSE B CONTOL PANEL IS NEW IN THE PANEL GNP1B.

PANEL SCHEDULE																			
PANEL #:			GNL1B (EXISTING)			VOLTAGE				120 / 208 V									
LOCATION:			ELECTRICAL ROOM H107A			CONFIGURATION:				3 PHASE, 4 WIRE									
TYPE:			SURFACE			MAIN BREAKER:				NO									
BUS RATING:			400 A			MAIN LUGS:				YES									
CIRCUIT LOADING			CIRCUIT DESCRIPTION			BKR SIZE	EXIS TING	CIRCUIT NO.		EXIS TING	BKR SIZE	CIRCUIT DESCRIPTION		CIRCUIT LOADING					
A	B	C												A	B	C			
10.6			GREENHOUSE B-2 CANOPY B21 FIXTURES B211 THRU B216	3P 20	Y		Y	3P 20	GREENHOUSE B-5 CANOPY B51 FIXTURES B511 THRU B516		10.6								
	10.6													1	2	3	4	5	6
		10.6												7	8	9	10	11	12
10.6			GREENHOUSE B-2 CANOPY B22 FIXTURES B221 THRU B226	3P 20	Y		Y	3P 20	GREENHOUSE B-5 CANOPY B52 FIXTURES B521 THRU B526		10.6								
	10.6													13	14	15	16	17	18
		10.6												19	20	21	22	23	24
			SPARE	3P 20	Y		Y	3P 20	GREENHOUSE B-6 CANOPY B61 FIXTURES B611 THRU B616		10.6								
														25	26	27	28	29	30
														31	32	33	34	35	36
			SPARE	3P 20	Y		Y	3P 20	GREENHOUSE B-6 CANOPY B62 FIXTURES B621 THRU B626		10.6								
														37	38	39	40	41	42
														43	44	45	46	47	48
			SPARE	3P 20	Y		Y	3P 20	GREENHOUSE B-6 CANOPY B63 FIXTURES B631 THRU B636		10.6								
														49	50	51	52	53	54
														55	56	57	58	59	60
			PS-1	2P 15	Y		Y	2P 15	PS-3										
														59	60	61	62	63	64
														65	66	67	68	69	70
			PS-2	2P 15	Y		Y	2P 15	PS-4										
														71	72	73	74	75	76
														77	78	79	80	81	82
			PS-3	2P 15	Y		Y	2P 15	PS-5										
														83	84	85	86	87	88
														89	90	91	92	93	94
2			CN-B GREENHOUSE B CONTROL PANEL	15	N														
23.2	21.2	21.2	SUBTOTAL LEFT (A)								SUBTOTAL RIGHT (A)			74.2	74.2	74.2			
											TOTAL LOADING (A)			97.4	95.4	95.4			



2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

Agriculture and Agri-Food Canada (AAFC)

Project title
AAFC Saskatoon Research and Development Centre (SRDC) Greenhouse LED Retrofit
107 Science Place, Saskatoon, Saskatchewan, S7N 0X2

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

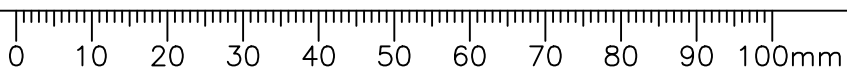
PWGSC Project Manager
Eric Haaland

Drawing title
SRDC Greenhouse LED Retrofit Electrical
GNL1B Panelboard Schedule

Project no.	Drawing no.	Revision no.
R.093894.001	E-8002	2

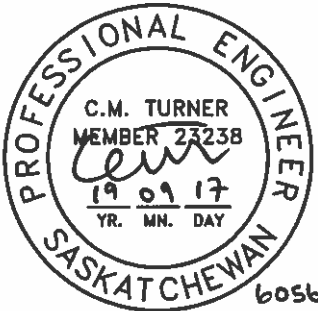
2019/Sep/17, 4:30pm Tareg,Shruti Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-8003.dwg

PWGSC



PANEL SCHEDULE																	
PANEL #:			GNL1C (EXISTING)			VOLTAGE				120 / 208 V							
LOCATION:			ELECTRICAL ROOM H107A			CONFIGURATION:				3 PHASE, 4 WIRE							
TYPE:			SURFACE			MAIN BREAKER:				NO							
BUS RATING:			400 A			MAIN LUGS:				YES							
CIRCUIT LOADING			CIRCUIT DESCRIPTION			BKR SIZE	EXIS TING	CIRCUIT NO.		EXIS TING	BKR SIZE	CIRCUIT DESCRIPTION			CIRCUIT LOADING		
A	B	C													A	B	C
10.6			GREENHOUSE C-1 CANOPY C11 FIXTURES C111 THRU C116			3P 20	Y	1	2	Y	3P 20	GREENHOUSE C-4 CANOPY C41 FIXTURES C411 THRU C416			10.6		
	10.6							3	4							10.6	
		10.6						5	6								10.6
10.6			GREENHOUSE C-1 CANOPY C12 FIXTURES C121 THRU C126			3P 20	Y	7	8	Y	3P 20	GREENHOUSE C-4 CANOPY C42 FIXTURES C421 THRU C426			10.6		
	10.6							9	10							10.6	
		10.6						11	12								10.6
10.6			GREENHOUSE C-2 CANOPY C21 FIXTURES C211 THRU C216			3P 20	Y	13	14	Y	3P 20	GREENHOUSE C-5 CANOPY C51 FIXTURES C511 THRU C516			10.6		
	10.6							15	16							10.6	
		10.6						17	18								10.6
10.6			GREENHOUSE C-2 CANOPY C22 FIXTURES C221 THRU C226			3P 20	Y	19	20	Y	3P 20	GREENHOUSE C-5 CANOPY C52 FIXTURES C521 THRU C526			10.6		
	10.6							21	22							10.6	
		10.6						23	24								10.6
10.6			GREENHOUSE C-3 CANOPY C31 FIXTURES C311 THRU C316			3P 20	Y	25	26	Y	3P 20	GREENHOUSE C-6 CANOPY C61 FIXTURES C611 THRU C616			10.6		
	10.6							27	28							10.6	
		10.6						29	30								10.6
10.6			GREENHOUSE C-3 CANOPY C32 FIXTURES C321 THRU C326			3P 20	Y	31	32	Y	3P 20	GREENHOUSE C-6 CANOPY C62 FIXTURES C621 THRU C626			10.6		
	10.6							33	34							10.6	
		10.6						35	36								10.6
10.6			GREENHOUSE C-3 CANOPY C33 FIXTURES C331 THRU C336			3P 20	Y	37	38	Y	3P 20	GREENHOUSE C-6 CANOPY C63 FIXTURES C631 THRU C636			10.6		
	10.6							39	40							10.6	
		10.6						41	42								10.6
10.6			GREENHOUSE C-3 CANOPY C34 FIXTURES C341 THRU C346			3P 20	Y	43	44	Y	3P 20	GREENHOUSE C-6 CANOPY C64 FIXTURES C641 THRU C646			10.6		
	10.6							45	46							10.6	
		10.6						47	48								10.6
10.6			GREENHOUSE C-3 CANOPY C35 FIXTURES C351 THRU C356			3P 20	Y	49	50	Y	3P 20	GREENHOUSE C-6 CANOPY C65 FIXTURES C651 THRU C656			10.6		
	10.6							51	52							10.6	
		10.6						53	54								10.6
2			CN-C GREENHOUSE C CONTROL PANEL			15	N	55	56								
								57	58								
								59	60								
								61	62								
								63	64								
								65	66								
								67	68								
								69	70								
								71	72								
			PS-1			2P 15	Y	73	74	Y	2P 15	PS-4					
								75	76								
			PS-2			2P 15	Y	77	78	Y	2P 15	PS-5					
								79	80								
			PS-3			2P 15	Y	81	82	Y	2P 15	PS-6					
								83	84								
97.4	95.4	95.4	SUBTOTAL LEFT (A)								SUBTOTAL RIGHT (A)			95.4	95.4	95.4	
											TOTAL LOADING (A)			192.8	190.8	190.8	

NOTE: CIRCUIT BREAKER FOR GREENHOUSE C CONTOL PANEL IS NEW IN THE PANEL GNP1C.



2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz


Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
GNL1C Panelboard Schedule**

Project no. R.093894.001	Drawing no. E-8003	Revision no. 2
------------------------------------	------------------------------	--------------------------




 PROFESSIONAL ENGINEER
 C.M. TURNER
 MEMBER 23238
cm
 19 09 17
 YR. MN. DAY
 SASKATCHEWAN
 b0565106

ASSOCIATION OF PROFESSIONAL ENGINEERS
 & GEOSCIENTISTS OF SASKATCHEWAN
CERTIFICATE OF AUTHORIZATION
 AECOM Canada Ltd.
NUMBER C1667
 PERMISSION TO CONSULT HELD BY:
 DISCIPLINE: SASK. REG. NO.: SIGNATURE:
Electrical 23238 cm

2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

**Agriculture and Agri-Food
Canada (AAFC)**

Project title

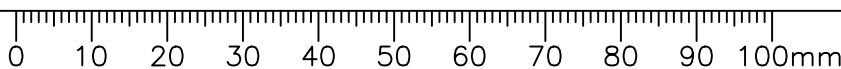
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by Christopher Turner
Drawn by Perihan Cengiz
Approved by Brent Wolfater
WGSC Project Manager Eric Haaland
Drawing title

Project no.	Drawing no.	Revision no.
R.093894.001	E-8004	2

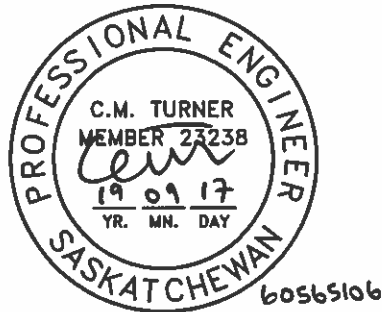
PANEL #:			GNL1D (EXISTING)			VOLTAGE			120 / 208 V						
LOCATION:			ELECTRICAL ROOM H107A			CONFIGURATION:			3 PHASE, 4 WIRE						
TYPE:			SURFACE			MAIN BREAKER:			NO						
BUS RATING:			400 A			MAIN LUGS:			YES						
CIRCUIT LOADING			CIRCUIT DESCRIPTION	BKR SIZE	EXIS TING	CIRCUIT NO.		EXIS TING	BKR SIZE	CIRCUIT DESCRIPTION	CIRCUIT LOADING				
A	B	C				A	B				C				
10.6			GREENHOUSE D-1 CANOPY D11 FIXTURES D111 THRU D116	3P 20	Y	1	2	Y	3P 20	GREENHOUSE D-4 CANOPY D41 FIXTURES D411 THRU D416	10.6				
	10.6					3	4								
		10.6				5	6						10.6		
10.6			GREENHOUSE D-1 CANOPY D12 FIXTURES D121 THRU D126	3P 20	Y	7	8	Y	3P 20	GREENHOUSE D-4 CANOPY D42 FIXTURES D421 THRU D426	10.6				
	10.6					9	10						10.6		
		10.6				11	12						10.6		
10.6			GREENHOUSE D-2 CANOPY D21 FIXTURES D211 THRU D216	3P 20	Y	13	14	Y	3P 20	GREENHOUSE D-4 CANOPY D43 FIXTURES D431 THRU D436	10.6				
	10.6					15	16						10.6		
		10.6				17	18						10.6		
10.6			GREENHOUSE D-2 CANOPY D22 FIXTURES D221 THRU D226	3P 20	Y	19	20	Y	3P 20	GREENHOUSE D-4 CANOPY D44 FIXTURES D441 THRU D446	10.6				
	10.6					21	22						10.6		
		10.6				23	24						10.6		
10.6			GREENHOUSE D-3 CANOPY D31 FIXTURES D311 THRU D316	3P 20	Y	25	26	Y	3P 20	GREENHOUSE D-4 CANOPY D45 FIXTURES D451 THRU D456	10.6				
	10.6					27	28						10.6		
		10.6				29	30						10.6		
10.6			GREENHOUSE D-3 CANOPY D32 FIXTURES D321 THRU D326	3P 20	Y	31	32	Y	3P 20	GREENHOUSE D-5 CANOPY D51 FIXTURES D511 THRU D516	10.6				
	10.6					33	34						10.6		
		10.6				35	36						10.6		
10.6			GREENHOUSE D-3 CANOPY D33 FIXTURES D331 THRU D336	3P 20	Y	37	38	Y	3P 20	GREENHOUSE D-5 CANOPY D52 FIXTURES D521 THRU D526	10.6				
	10.6					39	40						10.6		
		10.6				41	42						10.6		
10.6			GREENHOUSE D-3 CANOPY D34 FIXTURES D341 THRU D346	3P 20	Y	43	44	Y	3P 20	GREENHOUSE D-5 CANOPY D53 FIXTURES D531 THRU D536	10.6				
	10.6					45	46						10.6		
		10.6				47	48						10.6		
10.6			GREENHOUSE D-3 CANOPY D35 FIXTURES D351 THRU D356	3P 20	Y	49	50	Y	3P 20	GREENHOUSE D-5 CANOPY D54 FIXTURES D541 THRU D546	10.6				
	10.6					51	52						10.6		
		10.6				53	54						10.6		
2			CN-D GREENHOUSE D CONTROL PANEL	15	N	55	56	Y	3P 20	GREENHOUSE D-5 CANOPY C55 FIXTURES C551 THRU C556	10.6				
						57	58					10.6			
						59	60					10.6			
						61	62								
						63	64								
						65	66								
						67	68								
						69	70								
						71	72								
			PS-1	2P 15	Y	73	74	Y	2P 15	PS-4					
						75	76								
			PS-2	2P 15	Y	77	78	Y	2P 15	PS-5					
						79	80								
			PS-3	2P 15	Y	81	82	Y	2P 15	PS-6					
						83	84								
97.4	95.4	95.4	SUBTOTAL LEFT (A)							SUBTOTAL RIGHT (A)			106	106	106
										TOTAL LOADING (A)			203.4	201.4	201.4

NOTE: CIRCUIT BREAKER FOR GREENHOUSE D CONTROL PANEL IS NEW IN THE PANEL GNP1D.



2019/Sep/17, 4:30pm Tareg.Shufi Layout1 P:\60565106\900-CAD_GIS\910-CAD\20-SHEETS\01\EIR\093894.001-E-8005.dwg

PWGSC



ASSOCIATION OF PROFESSIONAL ENGINEERS
& GEOSCIENTISTS OF SASKATCHEWAN

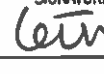
CERTIFICATE OF AUTHORIZATION

AECOM Canada Ltd.

NUMBER C1667

PERMISSION TO CONSULT HELD BY:

DISCIPLINE SASK. REG. No. SIGNATURE

ELECTRICAL 23238 

2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		

Agriculture and Agri-Food
Canada (AAFC)

Project title

**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit**
**107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

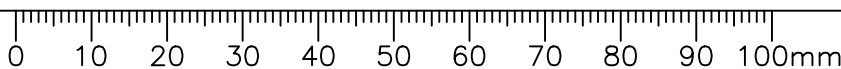
Drawing title

**SRDC Greenhouse LED Retrofit
Electrical
GNL1E Panelboard Schedule**

Project no.	Drawing no.	Revision no.
R.093894.001	E-8005	2

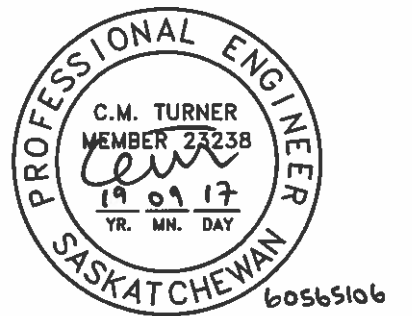
PANEL SCHEDULE													
PANEL #:		GNL1E (EXISTING)			VOLTAGE				120 / 208 V				
LOCATION:		ELECTRICAL ROOM H107A			CONFIGURATION:				3 PHASE, 4 WIRE				
TYPE:		SURFACE			MAIN BREAKER:				NO				
BUS RATING:		400 A			MAIN LUGS:				YES				
CIRCUIT LOADING			CIRCUIT DESCRIPTION	BKR SIZE	EXIS TING	CIRCUIT NO.		EXIS TING	BKR SIZE	CIRCUIT DESCRIPTION	CIRCUIT LOADING		
A	B	C				1	2				A	B	C
10.6			GREENHOUSE E-1 CANOPY E11 FIXTURES E111 THRU E116	3P 20	Y			Y	3P 20	GREENHOUSE E-3 CANOPY E31 FIXTURES E311 THRU E316	10.6		
	10.6					3	4					10.6	
		10.6				5	6						10.6
10.6			GREENHOUSE E-1 CANOPY E12 FIXTURES E121 THRU E126	3P 20	Y	7	8	Y	3P 20	GREENHOUSE E-3 CANOPY E32 FIXTURES E321 THRU E326	10.6		
	10.6					9	10					10.6	
		10.6				11	12						10.6
10.6			GREENHOUSE E-2 CANOPY E21 FIXTURES E211 THRU E216	3P 20	Y	13	14	Y	3P 20	GREENHOUSE E-4 CANOPY E41 FIXTURES E411 THRU E416	10.6		
	10.6					15	16					10.6	
		10.6				17	18						10.6
10.6			GREENHOUSE E-2 CANOPY E22 FIXTURES E221 THRU E226	3P 20	Y	19	20	Y	3P 20	GREENHOUSE E-4 CANOPY E42 FIXTURES E421 THRU E426	10.6		
	10.6					21	22					10.6	
		10.6				23	24						10.6
						25	26						
						27	28						
						29	30						
						31	32						
						33	34						
						35	36						
						37	38						
						39	40						
						41	42						
						43	44						
						45	46						
						47	48	Y	2P 15	PS-2			
						49	50						
			PS-1	2P 15	Y	51	52	Y	2P 15	PS-3			
						53	54						
2			CN-E GREENHOUSE E CONTROL PANEL	15	N	55	56						
						57	58						
						59	60						
44.4	42.4	42.4	SUBTOTAL LEFT (A)						SUBTOTAL RIGHT (A)		42.4	42.4	42.4
									TOTAL LOADING (A)		86.8	84.8	84.8

NOTE: CIRCUIT BREAKER FOR GREENHOUSE-E CONTROL PANEL IS NEW IN THE PANEL GNP1E.





NOTE: CIRCUIT BREAKERS FOR LIGHTING CIRCUITS OF GREENHOUSE B1, B3 AND B4 ARE NEW IN THE PANEL GNP2B.



ASSOCIATION OF PROFESSIONAL ENGINEERS
& GEOSCIENTISTS OF SASKATCHEWAN

CERTIFICATE OF AUTHORIZATION

AECOM Canada Ltd.

NUMBER C1667

PERMISSION TO CONSULT Held BY:

DISCIPLINE	SASK. REG. NO.	SIGNATURE
<u>ELECTRICAL</u>	<u>23238</u>	<u>tein</u>

2	Issued For Tender	2019-09-17
1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision Client	Description	Date

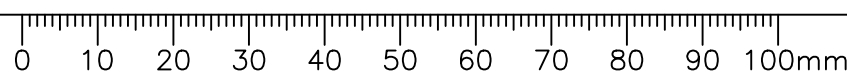
**Agriculture and Agri-Food
Canada (AAFC)**

Project title	AAFC Saskatoon Research and Development Centre (SRDC) Greenhouse LED Retrofit 107 Science Place, Saskatoon, Saskatchewan, S7N 0X2
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Designed by Christopher Turner
Drawn by Perihan Cengiz
Approved by Brent Wolfater
PWGSC Project Manager Eric Haaland

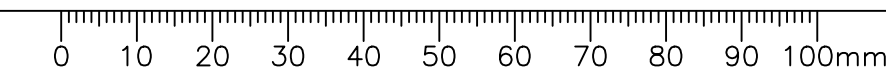
**SRDC Greenhouse LED Retrofit
Electrical
GNL2B Panelboard Schedule**

Project no.	Drawing no.	Revision no.
R.093894.001	E-8006	2



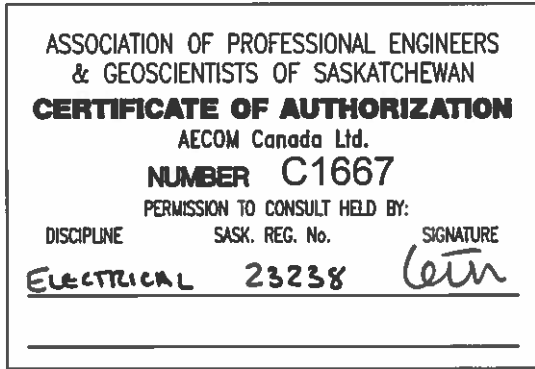
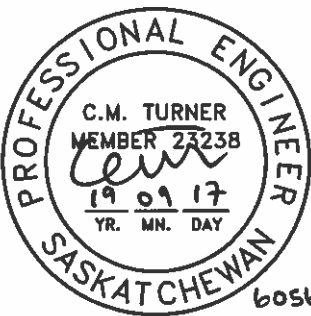
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- NOTES:
- EXISTING WIRING MAY BE RE-USED PROVIDING INSULATION TEST RESULTS ARE SATISFACTORY AND LENGTH IS SUFFICIENT FOR INSTALLATION IN NEW CONDUIT WITHOUT SPLICES.
 - CONTRACTOR TO CONFIRM EXISTING CONDUIT SIZE AND FILL % WITH ENGINEER BEFORE INSTALLATION OF NEW CONDUIT.
 - VOLTAGE DROP IN SOME CASES EXCEEDS 3%. UTILIZATION VOLTAGE IS WITHIN LED FIXTURE LIMITS IN ALL CASES. ADJUST TRANSFORMER TAP AS REQUIRED TO ACHIEVE ACCEPTABLE VOLTAGES AT BOTH ZERO AND FULL LOAD CONDITIONS.



PANELBOARD CABLE SCHEDULE										
SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	PANELBOARD - JUNCTION BOX			JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	CABLE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A11]	A11	CANOPY A11 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND	EXISTING 53 mm CONDUIT GNL1A - GHA-1	30	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A1
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A12]	A12	CANOPY A12 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		30	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A21]	A21	CANOPY A21 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		26	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A2
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A22]	A22	CANOPY A22 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		26	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A31]	A31	CANOPY A31 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		30	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A3
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A32]	A32	CANOPY A32 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND	30	EXISTING		
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A41]	A41	CANOPY A41 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND	NEW 103 mm CONDUIT GNL1A - GHA-2	35	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A4
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A42]	A42	CANOPY A42 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		35	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A51]	A51	CANOPY A51 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		18	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A5-1
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A52]	A52	CANOPY A52 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		18	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A53]	A53	CANOPY A53 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		15	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT A5-2
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A54]	A54	CANOPY A54 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		18	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A5-3
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A55]	A55	CANOPY A55 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		18	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A61]	A61	CANOPY A61 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		22	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A6-1
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A62]	A62	CANOPY A62 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		22	EXISTING	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A63]	A63	CANOPY A63 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND		24	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT A6-2
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A64]	A64	CANOPY A64 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND	26	EXISTING	EXISTING 21 mm CONDUIT CONDUIT A6-3	
GNL1A	GREENHOUSE A PANELBOARD	[GNL1A] - [A65]	A65	CANOPY A65 LIGHTING	37	NON-ARMORED POWER CABLE (RW90) 600V, 4C #8 AWG + #10 AWG GND	26	EXISTING		

PANELBOARD CABLE SCHEDULE										
SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	CABLE PANELBOARD - JUNCTION BOX			CABLE JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	CABLE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B21]	B21	CANOPY B21 LIGHTING	18	EXISTING	EXISTING 53 mm CONDUIT CONDUIT GNL1B - GHB	26	EXISTING	EXISTING 21 mm CONDUIT CONDUIT B2
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B22]	B22	CANOPY B22 LIGHTING	18	EXISTING		26	EXISTING	
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B51]	B51	CANOPY B51 LIGHTING	18	EXISTING		18	EXISTING	EXISTING 21 mm CONDUIT CONDUIT B5
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B52]	B52	CANOPY B52 LIGHTING	18	EXISTING		18	EXISTING	
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B61]	B61	CANOPY B61 LIGHTING	18	EXISTING		22	EXISTING	EXISTING 21mm CONDUIT CONDUIT B6-1
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B62]	B62	CANOPY B62 LIGHTING	18	EXISTING		22	EXISTING	
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B63]	B63	CANOPY B63 LIGHTING	18	EXISTING		24	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT B6-2
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B64]	B64	CANOPY B64 LIGHTING	18	EXISTING		26	EXISTING	EXISTING 21 mm CONDUIT CONDUIT B6-3
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [B65]	B65	CANOPY B65 LIGHTING	18	EXISTING		26	EXISTING	
GNL1B	GREENHOUSE B PANELBOARD	[GNL1B] - [CN-B]	CN-B	GREENHOUSE B CONTROL PANEL	18	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND		18	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND	NEW 21 mm CONDUIT CONDUIT CN-B



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Revision	Description	Date
Client		

Agriculture and Agri-Food
Canada (AAFC)

Project title

**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit**
**107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

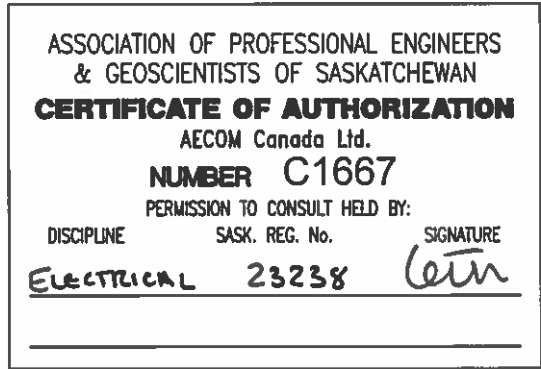
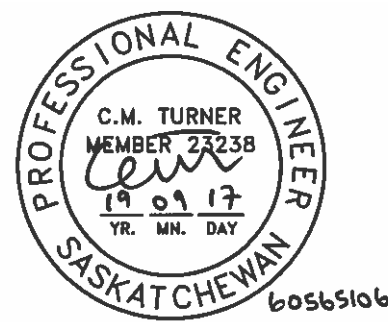
Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title

**SRDC Greenhouse LED Retrofit
Electrical**
GNL1A & GNL1B Cable Schedule

Project no.	Drawing no.	Revision no.
R.093894.001	E-8007	2



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**Agriculture and Agri-Food
Canada (AAFC)**

Project title

**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by

Perlu dan Ceng	
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Approved by
Brent Wolfat

PWGSC Project Manager

Eric Haaland

SRDC Greenhouse LED Retrofit Electrical GNL1C & GNL1D Cable Schedule

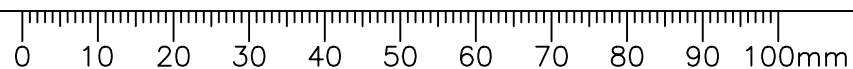
Project no.	Drawing no.	Revision no.
R.093894.001	E-8008	2

SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	PANELBOARD - JUNCTION BOX			JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	TYPE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C11]	C11	CANOPY C11 LIGHTING	5	EXISTING	EXISTING 35 mm CONDUIT GNL1C - GHC-1	20	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C1
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C12]	C12	CANOPY C12 LIGHTING	5	EXISTING		20	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C21]	C21	CANOPY C21 LIGHTING	5	EXISTING		20	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C2
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C22]	C22	CANOPY C22 LIGHTING	5	EXISTING		20	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C31]	C31	CANOPY C31 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	NEW 103 mm CONDUIT GNL1C - GHC-2	34	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C3-1
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C32]	C32	CANOPY C32 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		34	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C33]	C33	CANOPY C33 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		36	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #10 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT C3-2
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C34]	C34	CANOPY C34 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		38	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C3-3
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C35]	C35	CANOPY C35 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		38	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C41]	C41	CANOPY C41 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		20	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C4
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C42]	C42	CANOPY C42 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		20	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C51]	C51	CANOPY C51 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		20	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C5
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C52]	C52	CANOPY C52 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		20	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C61]	C61	CANOPY C61 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		22	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C6-1
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C62]	C62	CANOPY C62 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		22	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C63]	C63	CANOPY C63 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		24	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT C6-2
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C64]	C64	CANOPY C64 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		26	EXISTING	EXISTING 21 mm CONDUIT CONDUIT C6-3
GNL1C	GREENHOUSE C PANELBOARD	[GNL1C] - [C65]	C65	CANOPY C65 LIGHTING	5	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		26	EXISTING	
GNL1C	GREENHOUSE C PANELBOARD	[GNL1B] - [CN-C]	CN-C	GREENHOUSE C CONTROL PANEL	5	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND		20	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND	NEW 21 mm CONDUIT CONDUIT CN-C

SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	PANELBOARD - JUNCTION BOX			JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	CABLE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D11]	D11	CANOPY D11 LIGHTING	12	EXISTING	EXISTING CONDUIT GNL1D - GHD	18	EXISTING	EXISTING CONDUIT CONDUIT D1
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D12]	D12	CANOPY D12 LIGHTING	12	EXISTING		18	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D21]	D21	CANOPY D21 LIGHTING	12	EXISTING		16	EXISTING	EXISTING CONDUIT CONDUIT D2
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D22]	D22	CANOPY D22 LIGHTING	12	EXISTING		16	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D31]	D31	CANOPY D31 LIGHTING	12	EXISTING		24	EXISTING	EXISTING CONDUIT CONDUIT D3-1
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D32]	D32	CANOPY D32 LIGHTING	12	EXISTING		24	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D33]	D33	CANOPY D33 LIGHTING	12	EXISTING		26	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT D3-2
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D34]	D34	CANOPY D34 LIGHTING	12	EXISTING		28	EXISTING	EXISTING CONDUIT CONDUIT D3-3
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D35]	D35	CANOPY D35 LIGHTING	12	EXISTING		28	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D41]	D41	CANOPY D41 LIGHTING	12	EXISTING		28	EXISTING	EXISTING CONDUIT CONDUIT D4-1
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D42]	D42	CANOPY D42 LIGHTING	12	EXISTING		28	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D43]	D43	CANOPY D43 LIGHTING	12	EXISTING		26	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT D4-2
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D44]	D44	CANOPY D44 LIGHTING	12	EXISTING		30	EXISTING	EXISTING CONDUIT CONDUIT D4-3
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D45]	D45	CANOPY D45 LIGHTING	12	EXISTING		30	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D51]	D51	CANOPY D51 LIGHTING	12	EXISTING		34	EXISTING	EXISTING CONDUIT CONDUIT D5-1
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D52]	D52	CANOPY D52 LIGHTING	12	EXISTING		34	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D53]	D53	CANOPY D53 LIGHTING	12	EXISTING		36	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT D5-2
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D54]	D54	CANOPY D54 LIGHTING	12	EXISTING		38	EXISTING	EXISTING CONDUIT CONDUIT D5-3
GNL1D	GREENHOUSE D PANELBOARD	[GNL1D] - [D55]	D55	CANOPY D55 LIGHTING	12	EXISTING		38	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1B] - [CN-D]	CN-D	GREENHOUSE D CONTROL PANEL	12	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND		24	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND	NEW 21 mm CONDUIT CONDUIT CN-D

NOTES:

1. EXISTING WIRING MAY BE RE-USED PROVIDING INSULATION TEST RESULTS ARE SATISFACTORY AND LENGTH IS SUFFICIENT FOR INSTALLATION IN NEW CONDUIT WITHOUT SPLICES.
2. CONTRACTOR TO CONFIRM EXISTING CONDUIT SIZE AND FILL % WITH ENGINEER BEFORE INSTALLATION OF NEW CONDUIT.
3. VOLTAGE DROP IN SOME CASES EXCEEDS 3%. UTILIZATION VOLTAGE IS WITHIN LED FIXTURE LIMITS IN ALL CASES. ADJUST TRANSFORMER TAP AS REQUIRED TO ACHIEVE ACCEPTABLE VOLTAGES AT BOTH ZERO AND FULL LOAD CONDITIONS.




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PANELBOARD CABLE SCHEDULE										
SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	PANELBOARD - JUNCTION BOX			JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	CABLE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E11]	E11	CANOPY E11 LIGHTING	30	EXISTING	EXISTING CONDUIT GNL1E - GHE	16	EXISTING	EXISTING CONDUIT CONDUIT E1
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E12]	E12	CANOPY E12 LIGHTING	30	EXISTING		16	EXISTING	
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E21]	E21	CANOPY E21 LIGHTING	30	EXISTING		16	EXISTING	EXISTING CONDUIT CONDUIT E2
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E22]	E22	CANOPY E22 LIGHTING	30	EXISTING		16	EXISTING	
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E31]	E31	CANOPY E31 LIGHTING	30	EXISTING		20	EXISTING	EXISTING CONDUIT CONDUIT E3
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E32]	E32	CANOPY E32 LIGHTING	30	EXISTING		20	EXISTING	
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E41]	E41	CANOPY E41 LIGHTING	30	EXISTING		24	EXISTING	EXISTING CONDUIT CONDUIT E4
GNL1E	GREENHOUSE E PANELBOARD	[GNL1E] - [E42]	E42	CANOPY E42 LIGHTING	30	EXISTING		24	EXISTING	
GNL1D	GREENHOUSE D PANELBOARD	[GNL1B] - [CN-D]	CN-E	GREENHOUSE E CONTROL PANEL	50	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND		24	NON-ARMORED POWER CABLE (RW90) 600V, 2C #12 AWG + #14 AWG GND	NEW 21 mm CONDUIT CONDUIT CN-E

PANELBOARD CABLE SCHEDULE										
SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	PANELBOARD - JUNCTION BOX			JUNCTION BOX - LIGHT FIXTURE		
					APPROX. LENGTH (m)	CABLE TYPE	CONDUIT	APPROX. LENGTH (m)	CABLE	CONDUIT
GNL2B	GREENHOUSE B PANELBOARD	[GNL2B] - [B11]	B11	CANOPY B11 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	EXISTING 53 mm CONDUIT CONDUIT GNL2B - GHB	30	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	EXISTING 21 mm CONDUIT CONDUIT B1
GNL2B	GREENHOUSE B PANELBOARD	[GNL2B] - [B12]	B12	CANOPY B12 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		30	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	
GNL2B	GREENHOUSE B PANELBOARD	[GNL2B] - [B41]	B41	CANOPY B41 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	EXISTING 21 mm CONDUIT CONDUIT B4
GNL2B	GREENHOUSE B PANELBOARD	[GNL2B] - [B42]	B42	CANOPY B42 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1		18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	
GNL1B	GREENHOUSE B PANELBOARD	[GNL2B] - [B31]	B31	CANOPY B31 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND		34	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	EXISTING 21mm CONDUIT CONDUIT B3-1
GNL1B	GREENHOUSE B PANELBOARD	[GNL2B] - [B32]	B32	CANOPY B32 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND		34	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	
GNL1B	GREENHOUSE B PANELBOARD	[GNL2B] - [B33]	B33	CANOPY B33 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND		36	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	NEW 21 mm CONDUIT CONDUIT B3-2
GNL1B	GREENHOUSE B PANELBOARD	[GNL2B] - [B34]	B34	CANOPY B34 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND		38	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	EXISTING 21 mm CONDUIT CONDUIT B3-3
GNL1B	GREENHOUSE B PANELBOARD	[GNL2B] - [B35]	B35	CANOPY B35 LIGHTING	18	NON-ARMORED POWER CABLE (RW90) 600V, 4C #10 AWG + #12 AWG GND		38	NON-ARMORED POWER CABLE (RW90) 600V, 4C #12 AWG + #12 AWG GND. NOTE 1	


- NOTES:
- EXISTING WIRING MAY BE RE-USED PROVIDING INSULATION TEST RESULTS ARE SATISFACTORY AND LENGTH IS SUFFICIENT FOR INSTALLATION IN NEW CONDUIT WITHOUT SPLICES. RE-USE OF EXISTING WIRING IS ALSO SUBJECT TO MEETING COLOR CODING REQUIREMENTS ONCE CIRCUITS ARE RE-CONFIGURED FROM EXISTING 1P CIRCUITS INTO 3P CIRCUITS.
 - CONTRACTOR TO CONFIRM EXISTING CONDUIT SIZE AND FILL % WITH ENGINEER BEFORE INSTALLATION OF NEW CONDUIT.
 - VOLTAGE DROP IN SOME CASES EXCEEDS 3%. UTILIZATION VOLTAGE IS WITHIN LED FIXTURE LIMITS IN ALL CASES. ADJUST TRANSFORMER TAP AS REQUIRED TO ACHIEVE ACCEPTABLE VOLTAGES AT BOTH ZERO AND FULL LOAD CONDITIONS.

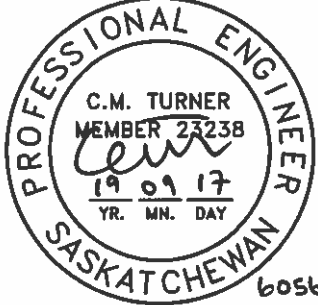


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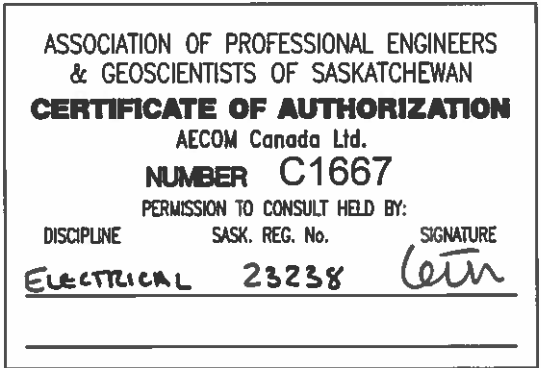
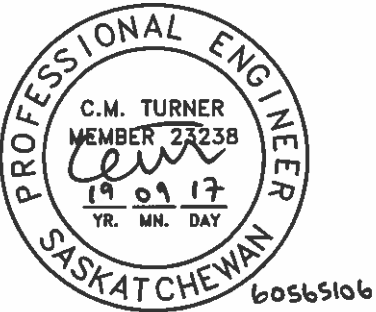


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ASSOCIATION OF PROFESSIONAL ENGINEERS
& GEOSCIENTISTS OF SASKATCHEWAN
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ELECTRICAL 23238 

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1	Issued For Review	2019-08-23
0	Issued For Construction	2018-08-10
Revision	Description	Date
Client		
Agriculture and Agri-Food Canada (AAFC)		
Project title AAFC Saskatoon Research and Development Centre (SRDC) Greenhouse LED Retrofit 107 Science Place, Saskatoon, Saskatchewan, S7N 0X2		
Designed by Christopher Turner		
Drawn by Perihan Cengiz		
Approved by Brent Wolfater		
PWGSC Project Manager Eric Haaland		
Drawing title SRDC Greenhouse LED Retrofit Electrical GNL1E & GNL2B Cable Schedule		
Project no. R.093894.001	Drawing no. E-8009	Revision no. 2

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2	Issued For Tender	2019-09-17
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Agriculture and Agri-Food
Canada (AAFC)

Project title
**AAFC Saskatoon Research and
Development Centre (SRDC)
Greenhouse LED Retrofit
107 Science Place, Saskatoon,
Saskatchewan, S7N 0X2**

Designed by
Christopher Turner

Drawn by
Perihan Cengiz

Approved by
Brent Wolfater

PWGSC Project Manager
Eric Haaland

Drawing title
**SRDC Greenhouse LED Retrofit
Electrical
Control & Miscellaneous
Cable Schedule**

Project no.	Drawing no.	Revision no.
R.093894.001	E-8010	2

CONTROL CABLE SCHEDULE

SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	CABLE TYPE	CONDUIT TYPE	DESCRIPTION
CN-A	GREENHOUSE A CONTROL STATION	[CN-A] - [CN-B]	CN-B	GREENHOUSE B CONTROL STATION	CAT 6	RIGID CONDUIT 21 MM	INTERNET CONNECTION
CN-B	GREENHOUSE B CONTROL STATION	[CN-B] - [CN-C]	CN-C	GREENHOUSE C CONTROL STATION	CAT 6	RIGID CONDUIT 21 MM	INTERNET CONNECTION
CN-C	GREENHOUSE C CONTROL STATION	[CN-C] - [CN-D]	CN-D	GREENHOUSE D CONTROL STATION	CAT 6	RIGID CONDUIT 21 MM	INTERNET CONNECTION
CN-D	GREENHOUSE D CONTROL STATION	[CN-D] - [CN-E]	CN-E	GREENHOUSE E CONTROL STATION	CAT 6	RIGID CONDUIT 21 MM	INTERNET CONNECTION

MISCELLANEOUS CABLE SCHEDULE

SOURCE	SOURCE DESCRIPTION	CABLE TAG	DESTINATION	DESTINATION DESCRIPTION	CABLE TYPE	CONDUIT TYPE	DESCRIPTION
CT-GNP1	SWITCHBOARD GNP1 CT ENCLOSURE	[CT-GNP1] - [MBKR-GNP1]	MBKR-GNP1	SWITCHBOARD GNP1 MAIN BREAKER	NON-ARMORED POWER CABLE (RW90) 600V, 3@ 4C #350 AWG + #3 AWG GND	RIGID CONDUIT 3@ 103 MM	CT ENCLOSURE CONNECTION AT THE UPSTREAM OF THE MAIN BREKAER
GNP1	SWITCHBOARD GNP1	GNP1-GNL1D	GNL1D	GREENHOUSE D LIGHTING PANEL	NON-ARMORED POWER CABLE (RW90) 600V, 4C #350 AWG + #3 AWG GND	RIGID CONDUIT 103 MM	NEW CONNECTION BETWEEN GNL1D AND SWITCHBOARD GNP1
GNP1	SWITCHBOARD GNP1	GNP1-GNL1E	GNL1E	GREENHOUSE E LIGHTING PANEL	NON-ARMORED POWER CABLE (RW90) 600V, 4C #4/0 AWG + #3 AWG GND	RIGID CONDUIT 103 MM	NEW CONNECTION BETWEEN GNL1E AND SWITCHBOARD GNP1
GNP1	SWITCHBOARD GNP1	GNP1-AHF1	AHF1	HARMONIC FILTER PANEL MASTER UNIT	NON-ARMORED POWER CABLE (RW90) 600V, 4C #2 AWG + #6 AWG GND	RIGID CONDUIT 53 MM	POWER CABLE FROM GNP1 IN ELECTRICAL ROOM TO AHF1 IN MECHANICAL ROOM
GNP1	SWITCHBOARD GNP1	GNP1-AHF2	AHF2	HARMONIC FILTER PANEL EXPANSION UNIT	NON-ARMORED POWER CABLE (RW90) 600V, 4C #2 AWG + #6 AWG GND	RIGID CONDUIT 53 MM	POWER CABLE FROM GNP1 IN ELECTRICAL ROOM TO AHF2 IN MECHANICAL ROOM
CT-GNP1	SWITCHBOARD GNP1 CT ENCLOSURE	[CT-GNP1] - [AHF1]	AHF1	HARMONIC FILTER PANEL MASTER UNIT	NON-ARMORED POWER CABLE (RW90) 600V, 8C #14 AWG	RIGID CONDUIT 27 MM	CONTROL CABLE FROM CT ENCLOSURE IN ELECTRICAL ROOM TO AHF2 IN MECHANICAL ROOM
AHF1	HARMONIC FILTER PANEL MASTER UNIT	[AHF1] - [AHF2]	AHF2	HARMONIC FILTER PANEL EXPANSION UNIT	SUPPLIED BY VENDOR	RIGID CONDUIT 27 MM	CONTROL CABLE FROM AHF1 TO AHF2 IN MECHANICAL ROOM

- NOTES:
1. COMMUNICATIONS INTERCONNECTIONS ARE INDICATIVE. ALTERNATIVE CONFIGURATIONS MAY BE PROPOSED, PROVIDING THE PROJECT REQUIREMENTS ARE MET.
 2. REFER TO SPECIFICATION 26 05 34 FOR ACCEPTABLE CONDUIT MATERIAL TYPE FOR EACH LOCATION.

