APPENDIX

R

PRELIMINARY STREETLIGHTING DESIGN

XX-XXXX-XX

KEY MAP

STREETLIGHT SYMBOLS LEGEND

POLES AND ELECTRICAL CHAMBERS

- EXISTING CONCRETE POLE
- NEW CONCRETE POLE
- TEMPORARY WOOD POLE
- EXISTING WOOD POLE
- EXISTING CIRCULAR SPUN ALUMINUM POLE
- NEW CIRCULAR SPUN ALUMINUM POLE
- EXISTING STEEL POLE
- EXISTING HANDWELL (300mm)
- NEW HANDWELL (300mm)
- EXISTING JUNCTION BOX (450mm)
- NEW JUNCTION BOX (450mm)
- EXISTING MANHOLE (600mm x 600mm)

POLE EQUIPMENT AND CONNECTIONS

- EXISTING LUMINAIRE ON BRACKET
- NEW LUMINAIRE ON BRACKET
- INDICATES REMOVAL
- INDICATES ABANDON
- IN-LINE FUSE
- GROUND PLATE
- BACKGUY
- [TYPE]xx / [POLE #] — STREET LIGHT IDENTIFICATION TAG — [TYPE]: ELP = Existing; SLP = New; R = Removal

POWER CONNECTIONS

- HC / Txxxx — HYDRO ONE BRAMPTON TRANSFORMER WITH IDENTIFICATION NUMBER
- EXISTING POLE-MOUNT TRANSFORMER
- PROPOSED POLE-MOUNT TRANSFORMER
- J — HYDRO-OWNED JUNCTION BOX
- PS / SLxxxx — POLE-MOUNT DISCONNECT WITH STREET LIGHT IDENTIFICATION NUMBER
- SLxxxx — POWER PEDESTAL WITH STREET LIGHT IDENTIFICATION NUMBER
- 50A / SLxxxx — 50A IN-POLE BREAKER
- 2P-50A / SLxxxx — DOUBLE 50A IN-POLE BREAKER

DUCTS

- EXISTING 50mm RIGID PVC DUCT
- NEW 50mm RIGID PVC DUCT
- EXISTING 100mm RIGID PVC DUCT
- NEW 100mm RIGID PVC DUCT
- EXISTING O/H S/L CABLE
- NEW O/H S/L CABLE

WIRING

- EX SL — EXISTING S/L CABLE
- HCU — HYDRO CABLE UNDERGROUND
- HCA — HYDRO CABLE AERIAL
- DENOTES JUNCTION BOX OR HANDWELL ON WIRING DIAGRAM (SIZE CAN VARY)

GENERAL NOTES

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION. THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE OF THEM.

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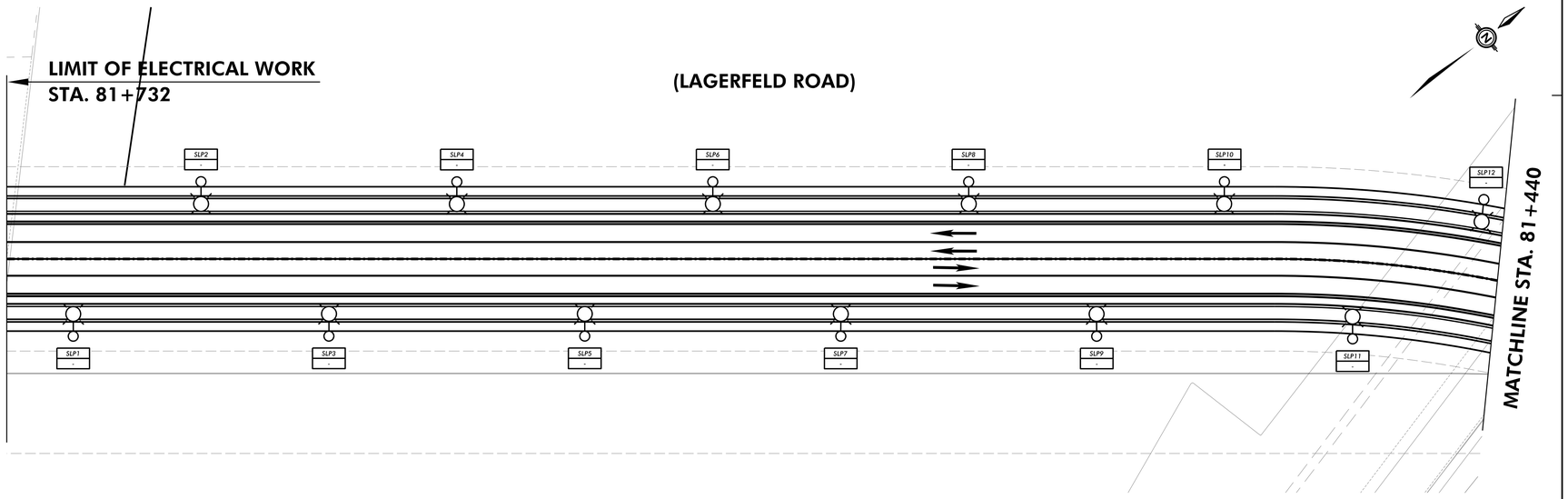

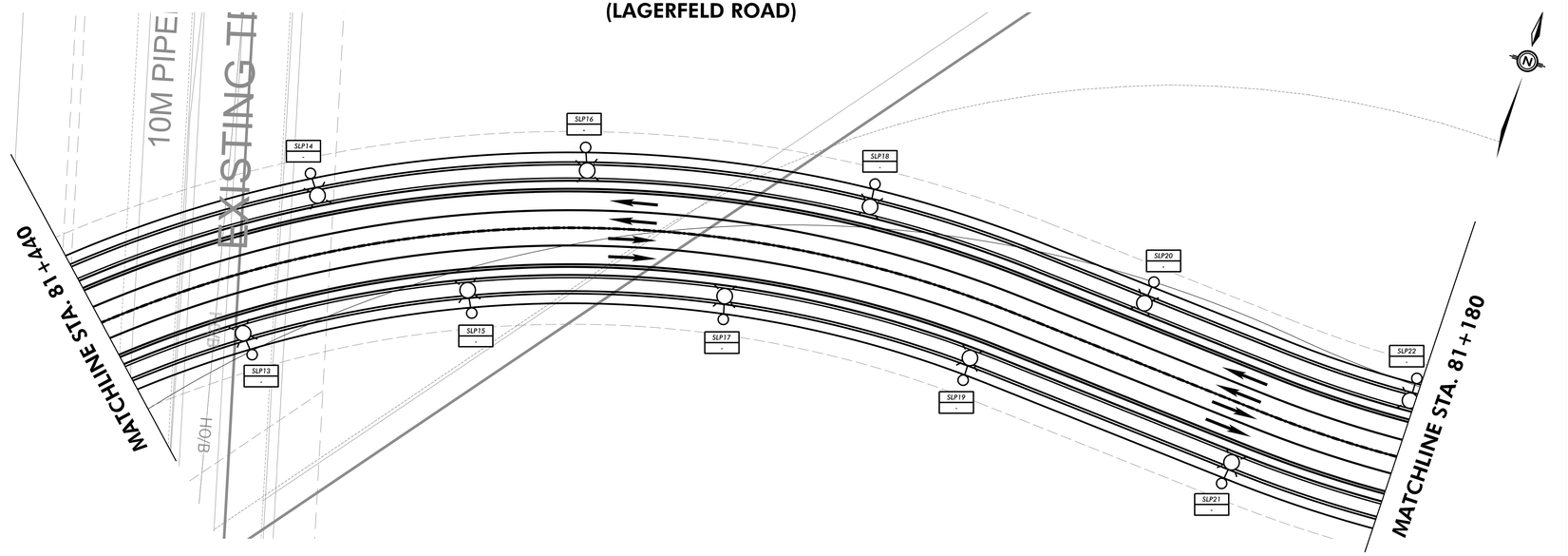

NOTES

1. POLE AND LUMINAIRE TO BE INSTALLED AS PART OF THE TRAFFIC SIGNAL INSTALLATION. SHOWN FOR REFERENCE ONLY.

STREET LIGHT POLE DETAILS

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
SLP1	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP2	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP3	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP4	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP5	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP6	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP7	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP8	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP9	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP10	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP11	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP12	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP13	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
SLP14	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP15	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP16	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP17	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP18	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP19	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP20	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP21	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP22	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-

SCHEDULE OF APPROVALS

NO.	DATE	BY	DESCRIPTION	CHECKED BY
1	SEP. 27/18	R.O'C.	ISSUED FOR REVIEW	M.M.
2	MAR. 2/20	L.S.	RE-ISSUED FOR REVIEW	M.M.

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BRAMPTON Flower City
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Planning and Infrastructure Services
Public Works

SCALE: 1 : 500 | DESIGNED BY: M.M. | CHECKED BY: M.M.

DATE: September 26, 2018 | APPROVAL: _____

CONTRACT NO: 2013-012 | APPROVAL DATE: _____

EAST-WEST CONNECTION ROAD (LAGERFELD ROAD)
MOUNT PLEASANT ROAD TO WEST OF MISSISSAUGA ROAD
PRELIMINARY STREET LIGHTING - LAYOUT I

DWG. NO.: XX-XXXX-XX | **SHT NO.: SL-1**

XX-XXXX-XX

KEY MAP

STREETLIGHT SYMBOLS LEGEND

POLES AND ELECTRICAL CHAMBERS

- EXISTING CONCRETE POLE
- NEW CONCRETE POLE
- TEMPORARY WOOD POLE
- EXISTING WOOD POLE
- EXISTING CIRCULAR SPUN ALUMINUM POLE
- NEW CIRCULAR SPUN ALUMINUM POLE
- EXISTING STEEL POLE
- EXISTING HANDWELL (300mm)
- NEW HANDWELL (300mm)
- EXISTING JUNCTION BOX (450mm)
- NEW JUNCTION BOX (450mm)
- EXISTING MANHOLE (600mm x 600mm)

POLE EQUIPMENT AND CONNECTIONS

- EXISTING LUMINAIRE ON BRACKET
- NEW LUMINAIRE ON BRACKET
- INDICATES REMOVAL
- INDICATES ABANDON
- IN-LINE FUSE
- GROUND PLATE
- BACKGUY
- [TYPE]xx / [POLE #] — STREET LIGHT IDENTIFICATION TAG — [TYPE]: ELP = Existing; SLP = New; R = Removal

POWER CONNECTIONS

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- SLxxxx — POWER PEDESTAL WITH STREET LIGHT IDENTIFICATION NUMBER
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- 2P-50A / SLxxxx — DOUBLE 50A IN-POLE BREAKER

DUCTS

- EXISTING 50mm RIGID PVC DUCT
- NEW 50mm RIGID PVC DUCT
- EXISTING 100mm RIGID PVC DUCT
- NEW 100mm RIGID PVC DUCT
- EXISTING O/H S/L CABLE
- NEW O/H S/L CABLE

WIRING

- EX SL — EXISTING S/L CABLE
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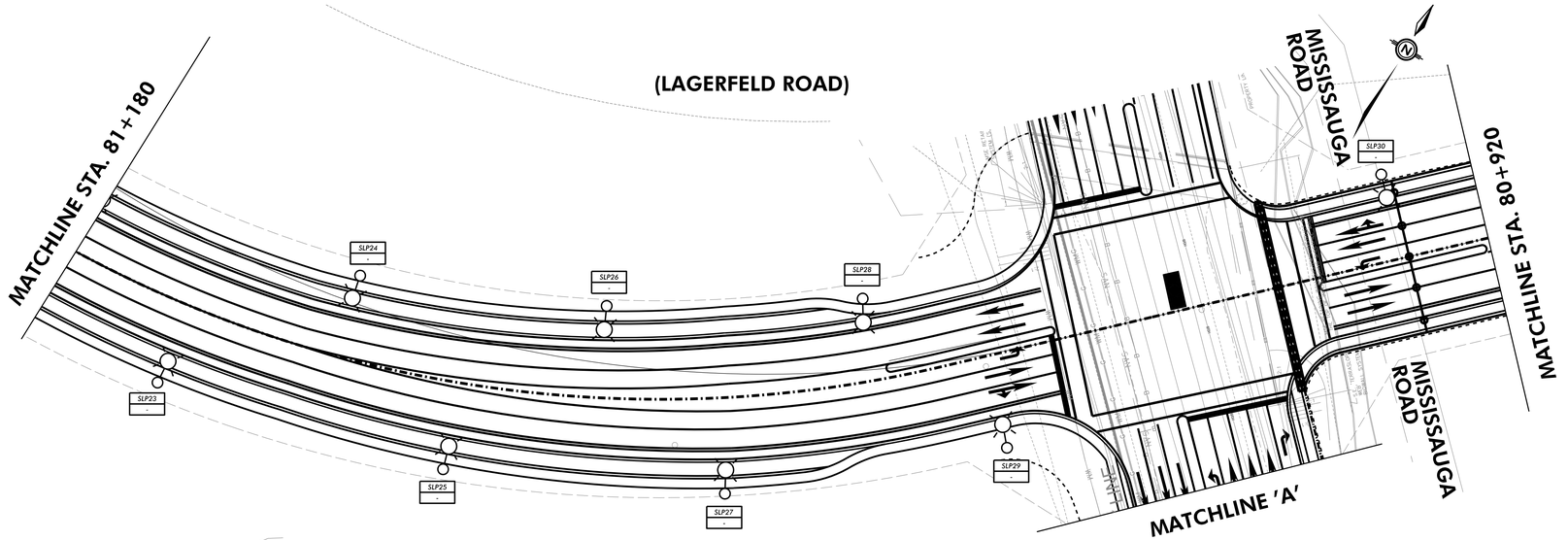

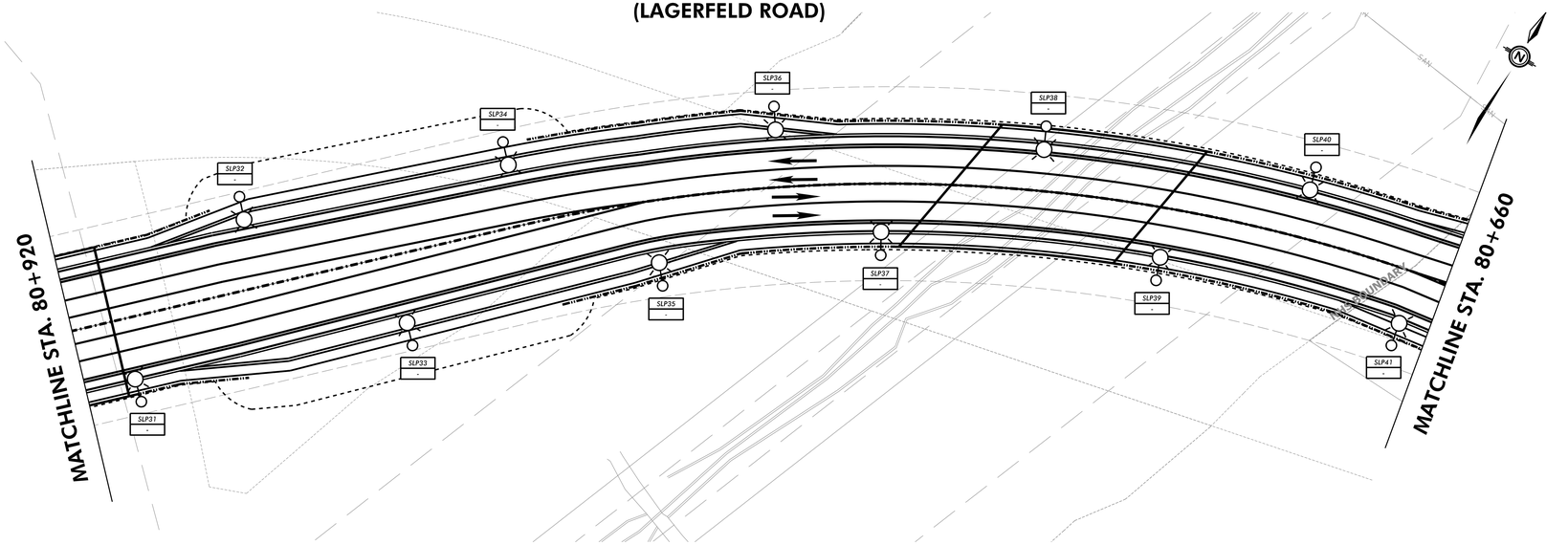

NOTES

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STREET LIGHT POLE DETAILS

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
SLP23	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP24	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP25	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP26	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP27	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP28	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP29	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP30	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP31	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP32	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP33	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP34	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP35	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
SLP36	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP37	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP38	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP39	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP40	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP41	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-

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Planning and Infrastructure Services
Public Works

SCALE: 1 : 500 | DESIGNED BY: M.M. | CHECKED BY: M.M.

DATE: September 26, 2018 | APPROVAL: _____

CONTRACT NO: 2013-012 | APPROVAL DATE: _____

EAST-WEST CONNECTION ROAD (LAGERFELD ROAD)
MOUNT PLEASANT ROAD TO WEST OF MISSISSAUGA ROAD
PRELIMINARY STREET LIGHTING - LAYOUT II

DWG. NO.: XX-XXXX-XX | **SHT NO.: SL-2**

XX-XXXX-XX

KEY MAP

STREETLIGHT SYMBOLS LEGEND

POLES AND ELECTRICAL CHAMBERS

- EXISTING CONCRETE POLE
- NEW CONCRETE POLE
- TEMPORARY WOOD POLE
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- NEW JUNCTION BOX (450mm)
- EXISTING MANHOLE (600mm x 600mm)

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- NEW 100mm RIGID PVC DUCT
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- NEW O/H S/L CABLE

WIRING

- EX SL — EXISTING S/L CABLE
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- DENOTES JUNCTION BOX OR HANDWELL ON WIRING DIAGRAM (SIZE CAN VARY)

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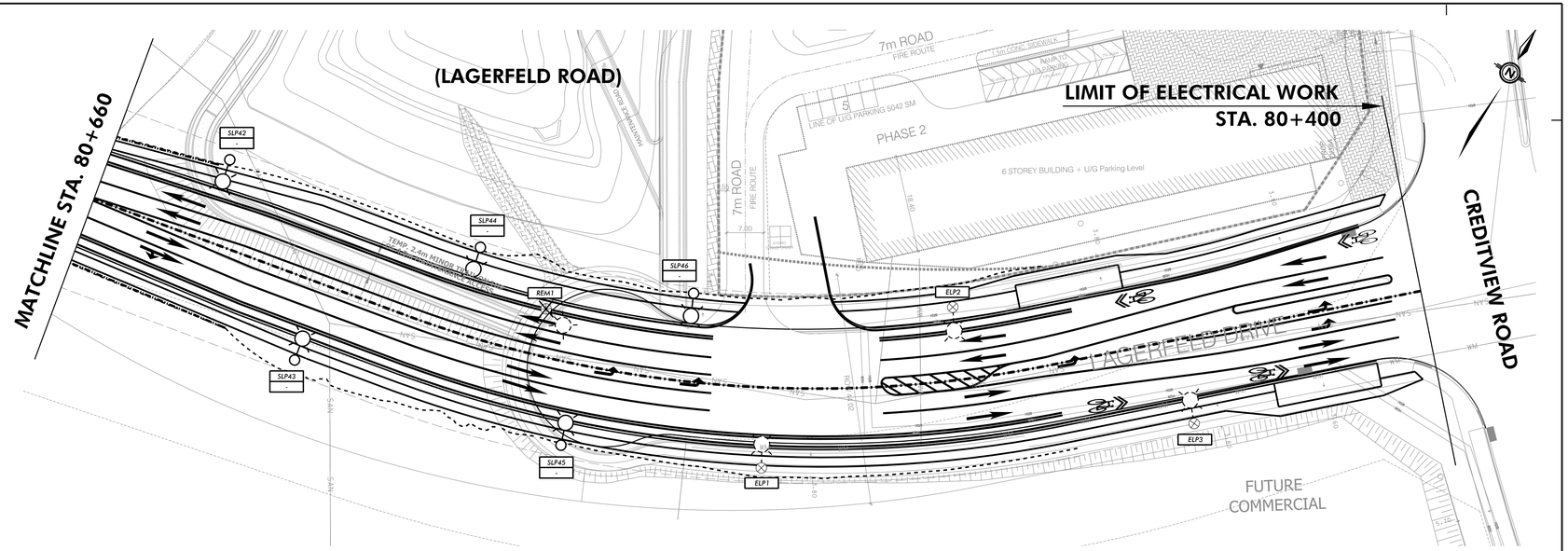

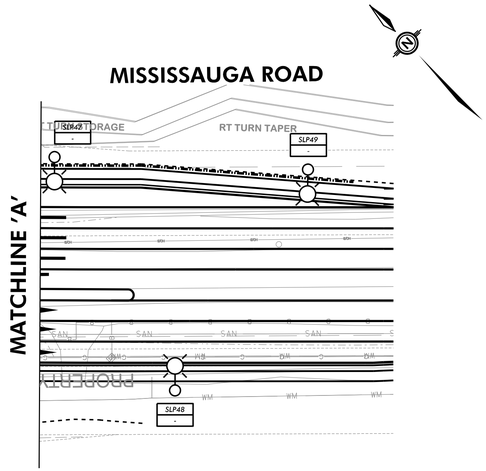

NOTES

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STREET LIGHT POLE DETAILS

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
SLP42	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP43	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP44	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP45	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP46	-	-	-	CONCRETE	12.0m	2.4m	92W	-	-
SLP47	-	-	-	CONCRETE	15.2m	3.7m	143W	-	-
SLP48	-	-	-	CONCRETE	15.2m	3.7m	143W	-	-
SLP49	-	-	-	CONCRETE	15.2m	3.7m	143W	-	-

I.D.	POLE #	OFFSET FROM EP	STATION	STREET LIGHT POLE TYPE / MATERIAL	STREET LIGHT POLE HEIGHT	ARM & HEAD BRACKET	ARM & HEAD WATTAGE	GROUND ROD	IN-POLE BREAKER
ELP1	-	-	-	CONCRETE	12.2m	EX. 2.4m	EX. 284W	YES	NO
ELP2	-	-	-	CONCRETE	12.2m	EX. 2.4m	EX. 284W	YES	YES
ELP3	-	-	-	CONCRETE	12.2m	EX. 2.4m	EX. 284W	YES	YES
REM1	-	-	-	CONCRETE	12.2m	EX. 2.4m	EX. 284W	YES	NO

SCHEDULE OF APPROVALS

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Public Works

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DATE: September 26, 2018 | APPROVAL: _____

CONTRACT NO: 2013-012 | APPROVAL DATE: _____

EAST-WEST CONNECTION ROAD (LAGERFELD ROAD)
MOUNT PLEASANT ROAD TO WEST OF MISSISSAUGA ROAD
PRELIMINARY STREET LIGHTING - LAYOUT III

DWG. NO.: XX-XXXX-XX | **SHT NO.: SL-3**

PROJECT DESCRIPTION:

EAST-WEST CONNECTION ROAD

(LAGERFELD ROAD)

MOUNT PLEASANT ROAD TO WEST OF MISSISSAUGA ROAD

LIGHTING CALCULATION NAME:

LC-P-01

SUMMARY:

PRELIMINARY LIGHTING DESIGN

CALCULATION DATE:

SEPTEMBER 2018

PREPARED FOR:

CITY of BRAMPTON

PREPARED BY:

Moon-Matz Ltd.
Consulting Engineers

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DESIGN CRITERIA

DESIGN STANDARD USED: RP-8-14, RP-8-00

FULL ROADWAY ILLUMINATION:

CALC. METHOD: **LUMINANCE**
LOCATION: **NB-1, SB-1, NB-2, AND SB-2**

ROAD AND PEDESTRIAN CONFLICT AREA		MIN. AVG. VALUES	UNIFORMITY RATIO	UNIFORMITY RATIO	VEILING LUMINANCE RATIO
ROAD	PED. CON.	Lavg. (cd/m²)	Lavg./Lmin.	Lmax./Lmin.	Lvmax./Lavg.
MAJOR	**MEDIUM**	**0.9**	**3.0**	**5.0**	**0.3**

CALCULATION RESULTS

FULL ROADWAY ILLUMINATION (ILLUMINANCE):

NB–1
54 points

	A	B
Average	0.92	0.10
Maximum	1.33	0.12
Minimum	0.48	0.08
Avg:Min	1.91	1.19
Max:Min	2.77	1.50
Coef Var	0.26	0.10

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 128.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 128.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.13

SB–1
60 points

	A	B
Average	0.93	0.09
Maximum	1.32	0.12
Minimum	0.69	0.07
Avg:Min	1.35	1.32
Max:Min	1.91	1.71
Coef Var	0.19	0.12

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 312.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 312.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.13

NB–2
76 points

	A	B
Average	1.05	0.10
Maximum	1.33	0.12
Minimum	0.85	0.08
Avg:Min	1.24	1.21
Max:Min	1.56	1.50
Coef Var	0.13	0.09

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 132.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 132.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.11

SB–2
80 points

	A	B
Average	1.04	0.09
Maximum	1.31	0.11
Minimum	0.79	0.08
Avg:Min	1.32	1.16
Max:Min	1.66	1.38
Coef Var	0.13	0.07

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 312.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 312.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.11

FULL ROADWAY ILLUMINATION:

CALC. METHOD: **LUMINANCE**
LOCATION: **WB-1, EB-1, WB-2. AND EB-2**

ROAD AND PEDESTRIAN CONFLICT AREA		MIN. AVG. VALUES	UNIFORMITY RATIO	UNIFORMITY RATIO	VEILING LUMINANCE RATIO
ROAD	PED. CON.	Lavg. (cd/m²)	Lavg./Lmin.	Lmax./Lmin.	Lvmax./Lavg.
COLLECT.	**MEDIUM**	**0.6**	**3.5**	**6.0**	**0.4**

CALCULATION RESULTS

FULL ROADWAY ILLUMINATION (ILLUMINANCE):

WB–1
80 points

	A	B
Average	0.67	0.08
Maximum	0.90	0.11
Minimum	0.59	0.05
Avg:Min	1.14	1.57
Max:Min	1.53	2.20
Coef Var	0.11	0.20

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 231.5 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 231.5 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.16

EB–1
80 points

	A	B
Average	0.67	0.08
Maximum	0.90	0.11
Minimum	0.59	0.05
Avg:Min	1.14	1.58
Max:Min	1.53	2.20
Coef Var	0.11	0.20

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 51.5 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 51.5 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.16

WB–2
44 points

	A	B
Average	0.78	0.07
Maximum	1.05	0.10
Minimum	0.59	0.04
Avg:Min	1.32	1.80
Max:Min	1.78	2.50
Coef Var	0.14	0.21

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 191.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 191.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.13

CALCULATION RESULTS

FULL ROADWAY ILLUMINATION (ILLUMINANCE):

EB–2
44 points

	A	B
Average	0.60	0.07
Maximum	0.80	0.11
Minimum	0.53	0.05
Avg:Min	1.14	1.50
Max:Min	1.51	2.20
Coef Var	0.10	0.16

A ROADWAY LUMINANCE (CD/SQ METER) travel direction 11.0 DEG – CIE_surface_R3 – q0 = 0.070
B VEILING LUMINANCE (CD/SQ METER) travel direction 11.0 DEG

Ratio (Max veiling luminance / Avg road luminance) = 0.18

LUMINAIRE ASSEMBLY

P.M.SL-C9.9-2.4-400 (D) *

- WATTAGE
- ARM LENGTH (m)
- POLE HEIGHT (m) **
- POLE MATERIAL
  - S = STEEL
  - C = CONCRETE
  - W = WOOD
  - A = ALUMINIUM
- POLE TYPE
  - SL = STREET LIGHTING
  - TS = TRAFFIC SIGNAL
  - HP = HYDRO POLE
- LIGHTING OWNER
  - C = CITY
  - T = TOWN
  - R = REGION
- STATUS
  - P = PROPOSED
  - E = EXISTING
  - F = FUTURE
  - T = TEMPORARY
  - R = RELOCATED
  - XR = TO BE RELOCATED
  - X = TO BE REMOVED

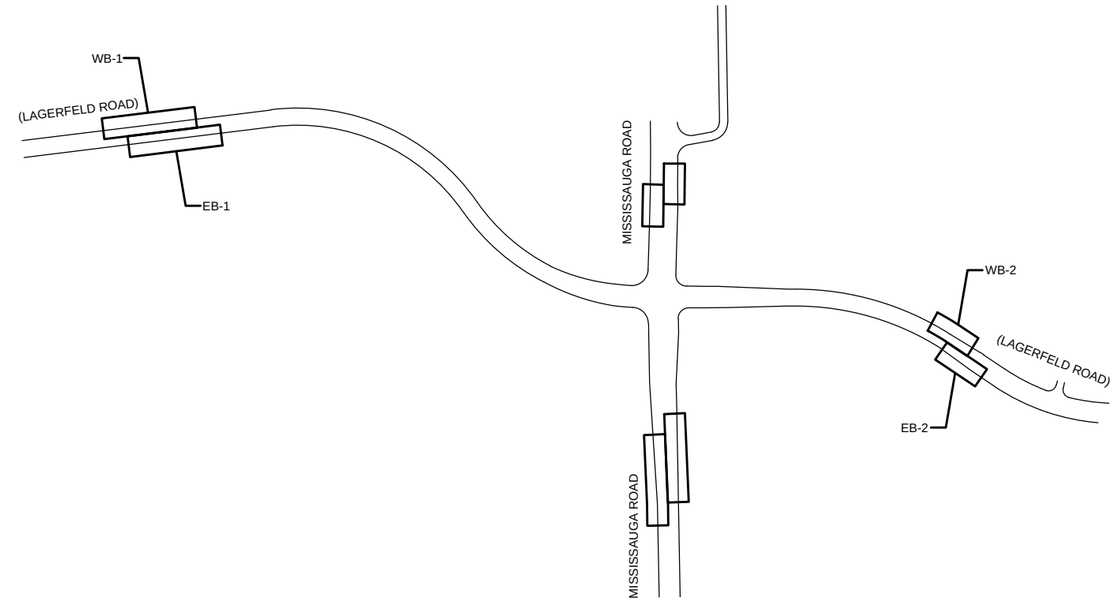
* DENOTES DECORATIVE LUMINAIRE
** LUMINAIRE MOUNTING HEIGHT WHEN ON HYDRO POLES

LEGEND

P.C.SL–C15.2–3.7–143
EATON – STREETWORKS (FORMER COOPER LIGHTING) VERD–G–A02–E–U–T3–AP
INNOVATIONS CENTER–P2 test report no. P175624
lamp(s): XXX
candela file 'VERD–G–A02–E–U–T3–AP.ies'
2 lamp(s) per luminaire, photometry is absolute
Light Loss Factor = 0.850, watts per luminaire = 143
Outreach (from mounting axis to photometric center)= 3700 mm
mounting height= 13.5' m
number locations= 20, number luminaires= 20
kw all locations= 2.9

P.C.SL–C12.0–2.4–92
EATON – STREETWORKS (FORMER COOPER LIGHTING) VERD–A02–E–U–T3–AP
INNOVATIONS CENTER–P2 test report no. P129496
lamp(s): XXX
candela file 'VERD–A02–E–U–T3–AP.ies'
2 lamp(s) per luminaire, photometry is absolute
Light Loss Factor = 0.850, watts per luminaire = 92
Outreach (from mounting axis to photometric center)= 2400 mm
mounting height= 11.3' m
number locations= 46, number luminaires= 46
kw all locations= 4.2

KEYPLAN:



NORTH

STATUS
FOR APPROVAL

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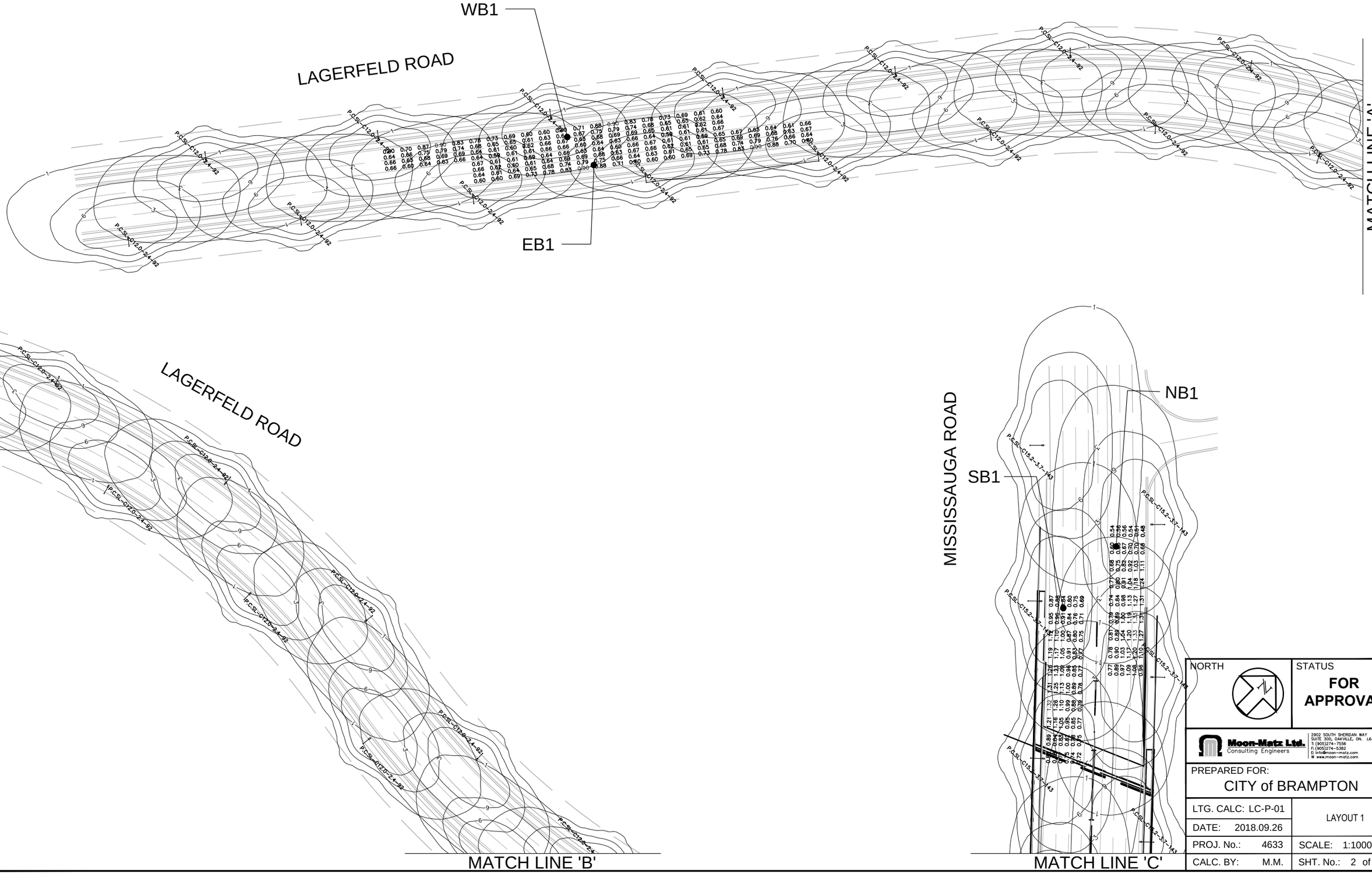
W www.moon–matz.com

PREPARED FOR:
CITY of BRAMPTON

LTG. CALC: LC-P-01	SUMMARY
DATE: 2018.09.26	
PROJ. No.: 4633	SCALE: N.T.S.
CALC. BY: M.M.	SHT. No.: 1 of 4



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PREPARED FOR:

CITY of BRAMPTON

LTG. CALC: LC-P-01	LAYOUT 1
DATE: 2018.09.26	
PROJ. No.: 4633	SCALE: 1:1000
CALC. BY: M.M.	SHT. No.: 2 of 4

MATCH LINE 'B'

MATCH LINE 'C'

LAGERFELD ROAD

LAGERFELD ROAD

MATCH LINE 'D'

MISSISSAUGA ROAD

MATCH LINE 'E'

MATCH LINE 'D'

LAGERFELD ROAD

WB2

EB2

NORTH

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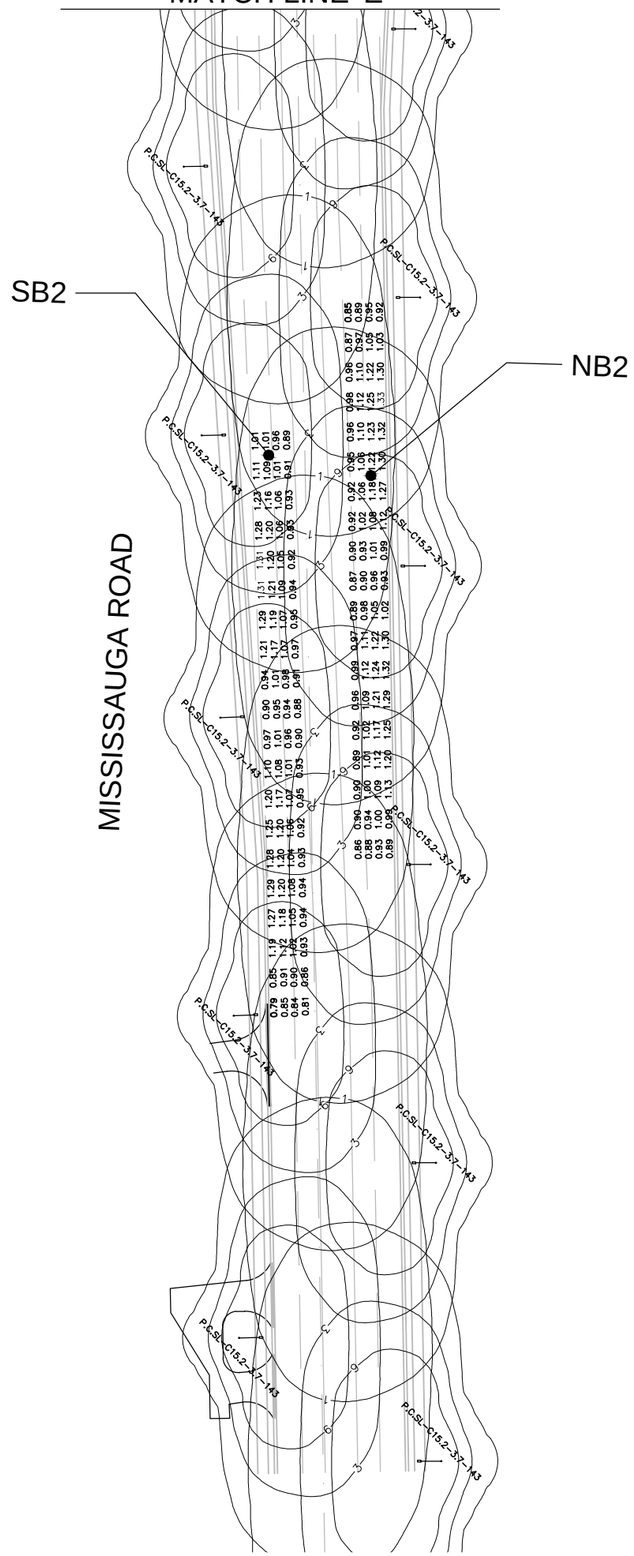
CITY of BRAMPTON

LTG. CALC: LC-P-01	LAYOUT 2
DATE: 2018.09.26	
PROJ. No.: 4633	SCALE: 1:1000
CALC. BY: M.M.	SHT. No.: 3 of 4

MATCH LINE 'E'



NORTH

STATUS

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PREPARED FOR:

CITY of BRAMPTON

LTG. CALC: LC-P-01	LAYOUT 3
DATE: 2018.09.26	
PROJ. No.: 4633	SCALE: 1:1000
CALC. BY: M.M.	SHT. No.: 4 of 4