

Downtown Street Lighting and Event Power Recommendations

The following recommendations are based on the previously completed review of the existing street lighting and event power infrastructure in downtown Brantford.

Street Lighting

Improvements to Under-lit Sections:

The following areas require an increase in their light levels to meet the design recommendations in ANSI/IESNA RP-08-21. This work should incorporate all adjacent acceptably lit zones to ensure they remain lit to the level indicated in the standard.

- Wellington Street between West and King including all adjoining intersections
- The intersection of Darling and Clarence
- The intersection of Darling and Charlotte
- The intersection of Nelson and Charlotte
- The intersection of Darling and King

Lighting in Areas of Street Upgrades:

The location and style of lights in areas where the streetscape is to be upgraded are to be reviewed and either relocated or replaced. All work is to maintain the existing light levels and the requirements in ANSI/IESNA RP-08-21. The style of the light fixtures is to be selected in consultation with City staff. Design is to incorporate lights, light poles, and power infrastructure. All power infrastructure modifications to be coordinated with Grandbridge Energy.

Fixture Type Simplification:

There is a wide variety of existing street lighting in the study area. Several types are in various stages of active replacement. Many existing older fixtures will be impacted by street upgrades and will not be available for replacement due to their age. The next stage of design should work with city staff to identify which fixture types will be impacted or replaced by street upgrades throughout the downtown to reduce the overall variety of types for ease of maintenance.

Event Power

Event power requirements and existing infrastructure should be reviewed with City of Brantford events staff. Existing infrastructure in area of work is to be rebuilt to suit street upgrades and changing event needs. Additional infrastructure and rough-in for future infrastructure will be required in the area of work based on discussions with City staff.

Downtown Street Lighting Review

Vince,

We have completed a survey of the existing lighting in the study area for the City of Brantford. This consisted of a combination of visual inspections and information from both the City and manufacturers. Of note, Grandbridge Energy did not provide any details on the fixtures despite requests. The fixture types are listed in the attached drawing package on sheet SL.15. Furthermore, this information is current as of January 2023. Lighting replacements occurred during the time of our study and as such, previous drawings indicating light levels should be disregarded as they no longer reflect the current lighting installation. Any further changes since January 2023 are not reflected in this report.

Based on our survey we have modelled the existing lighting levels for each section of road and intersection. We have compared these to the lighting level recommendations in ANSI/IESNA RP-08-21. Both the recommended levels and the modelled levels are summarized on our drawing SL.14. We have also added our assessment to each roadway and intersection about whether it is under lit, over-lit, or acceptably close to the standard. Below is an expanded commentary on the charts found in drawing SL.14.

Intersections:

The largest group is the over-lit category which may be acceptable to the City as in some cases it is reasonable to light an intersection brighter than recommended. All the intersections that were over-lit had a good uniformity ratio which is key for visibility. We would not recommend changing any of these intersections to be less bright in order to meet the recommended values.

The next largest group is the acceptable group. No changes would be proposed for these intersections.

The smallest group is the under-lit intersections. Typically, there is not a good reason to under light intersections so we would propose fixing them all.

- Darling/Clarence-This intersection needs more light, ideally from an additional light fixture. Replacing one of the existing lights in the area with a brighter head may work as well.
- Darling/Charlotte-This intersection needs more light, ideally from an additional light fixture. Replacing one of the existing lights in the area with a brighter head may work as well.
- Nelson/Charlotte-This intersection needs more light, ideally from replacing an existing older fixture (type TT).

- Darling/King- This intersection needs more light, ideally from an additional light fixture on the north-east corner. Replacing one of the existing older fixtures on Darling would help but likely not be enough to reach an acceptable level.
- Wellington/King- This intersection needs much more light, ideally from two additional light fixtures on the north and west portions. Replacing one of the existing older fixtures on Wellington would help but likely not enough to reach an acceptable level.
- West/Brant- This intersection needs more light, ideally from one or two additional light fixtures on West.
- West/Wellington- This intersection needs more light, ideally from two additional light fixtures on the north and east portions. This also factors into West/Albion.
- West/Albion- This intersection needs more light, ideally from two additional light fixtures on the south and east portions. This also factors into West/Wellington.

Road Sections:

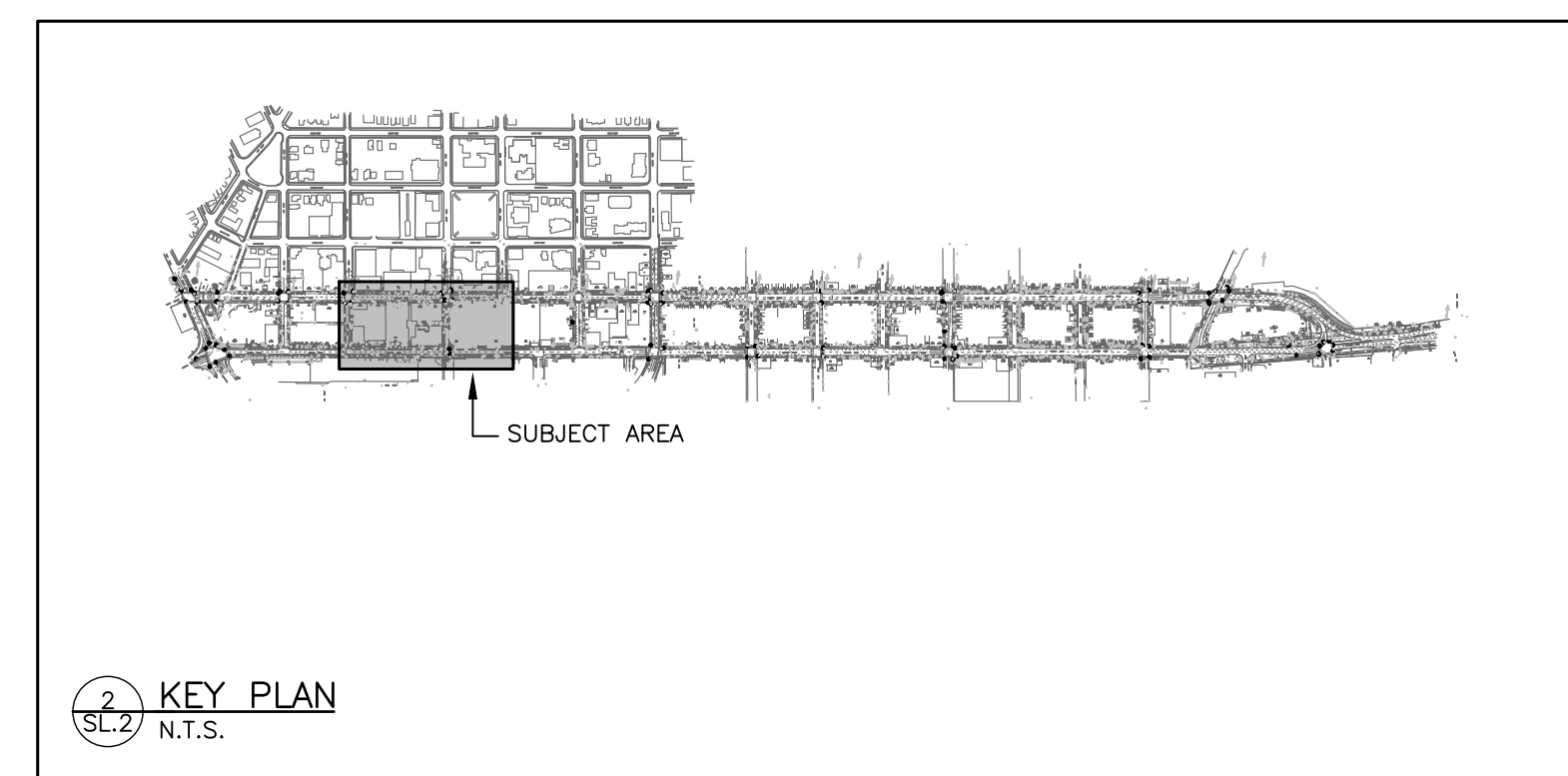
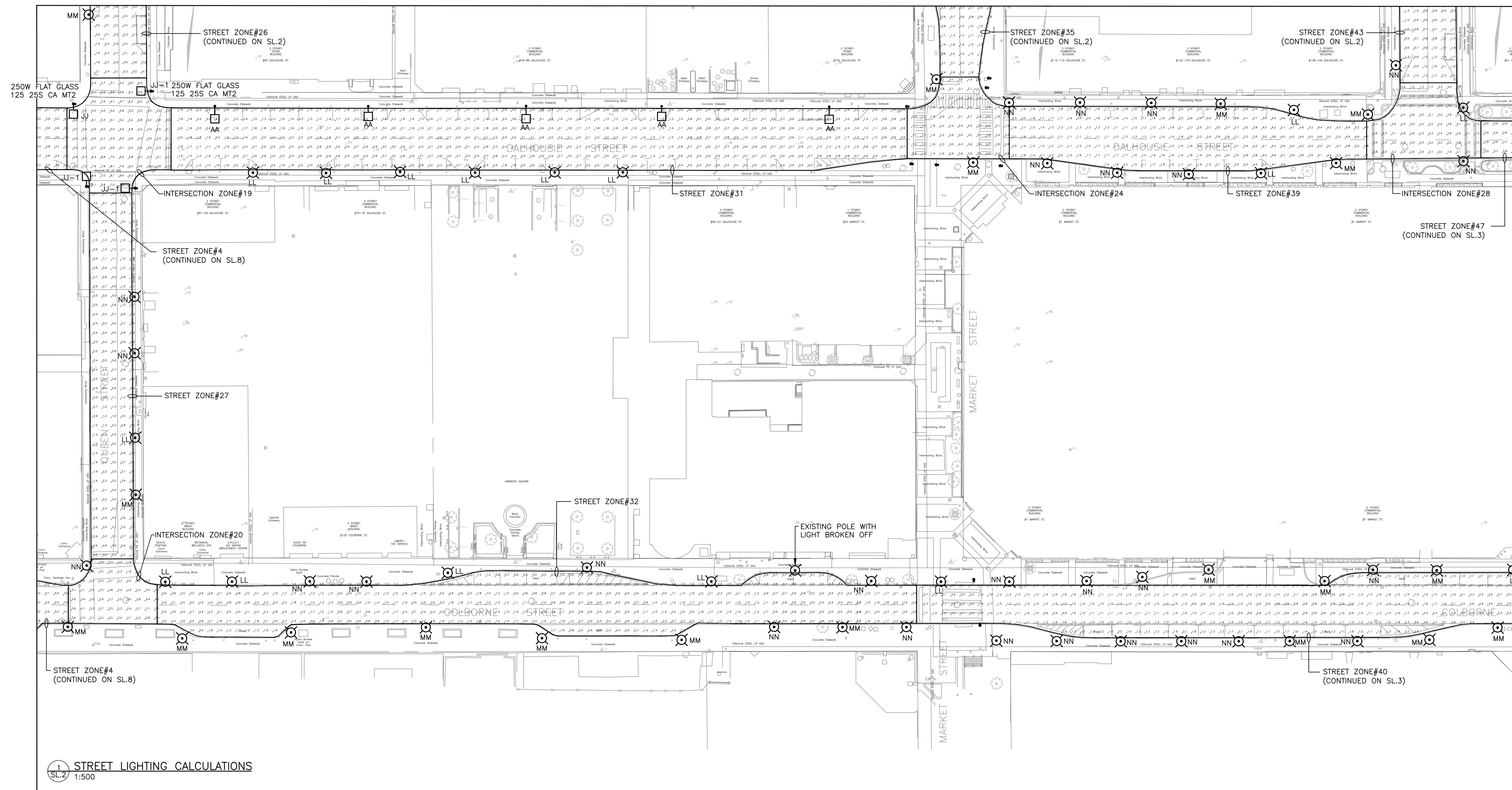
The largest group is the over-lit category which may be acceptable to the City as in some cases it is reasonable to light a road brighter than recommended. All of the road sections that were over-lit had a good uniformity ratio which is key for visibility. We would not recommend changing any of these intersections to be less bright in order to meet the recommended values.

The next largest group is the acceptable group. No changes would be proposed for these road sections.

The smallest group is the under-lit road sections. Typically, there is not a good reason to under light road sections so we would propose fixing them all.

- Wellington Street between West and Bridge- This road section has no lights currently. Fixing this section of roadway would involve adding in one or two lights and should be designed with the above improvements to the nearby under-lit intersections.

In general, the lighting levels are reasonably close to or brighter than standard with the exception of the 10-13 lights proposed above. It will be important to ensure the light levels are maintained in the acceptable portions when other work is done to the street and when older fixtures types are upgraded to LED fixtures.



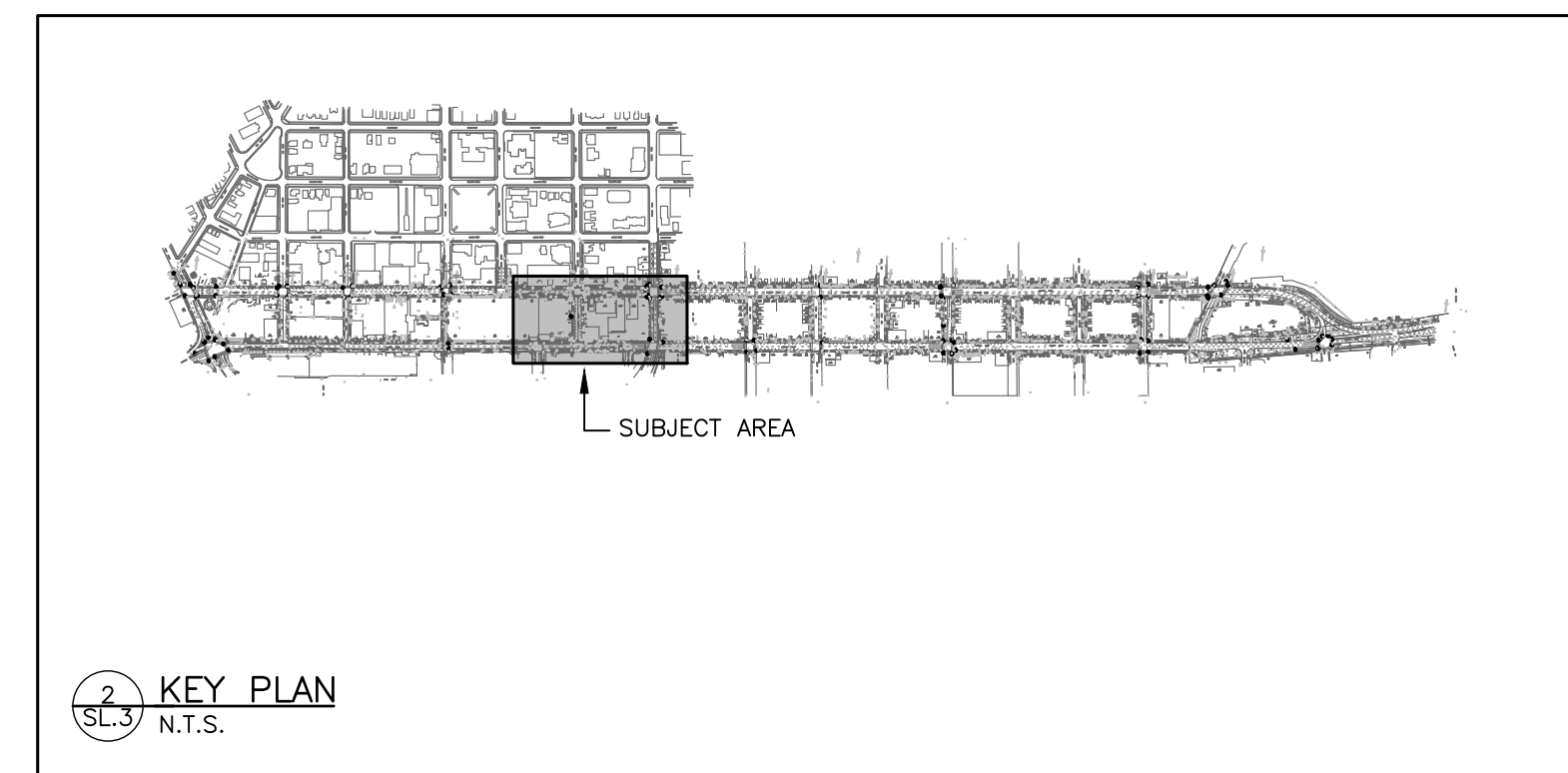
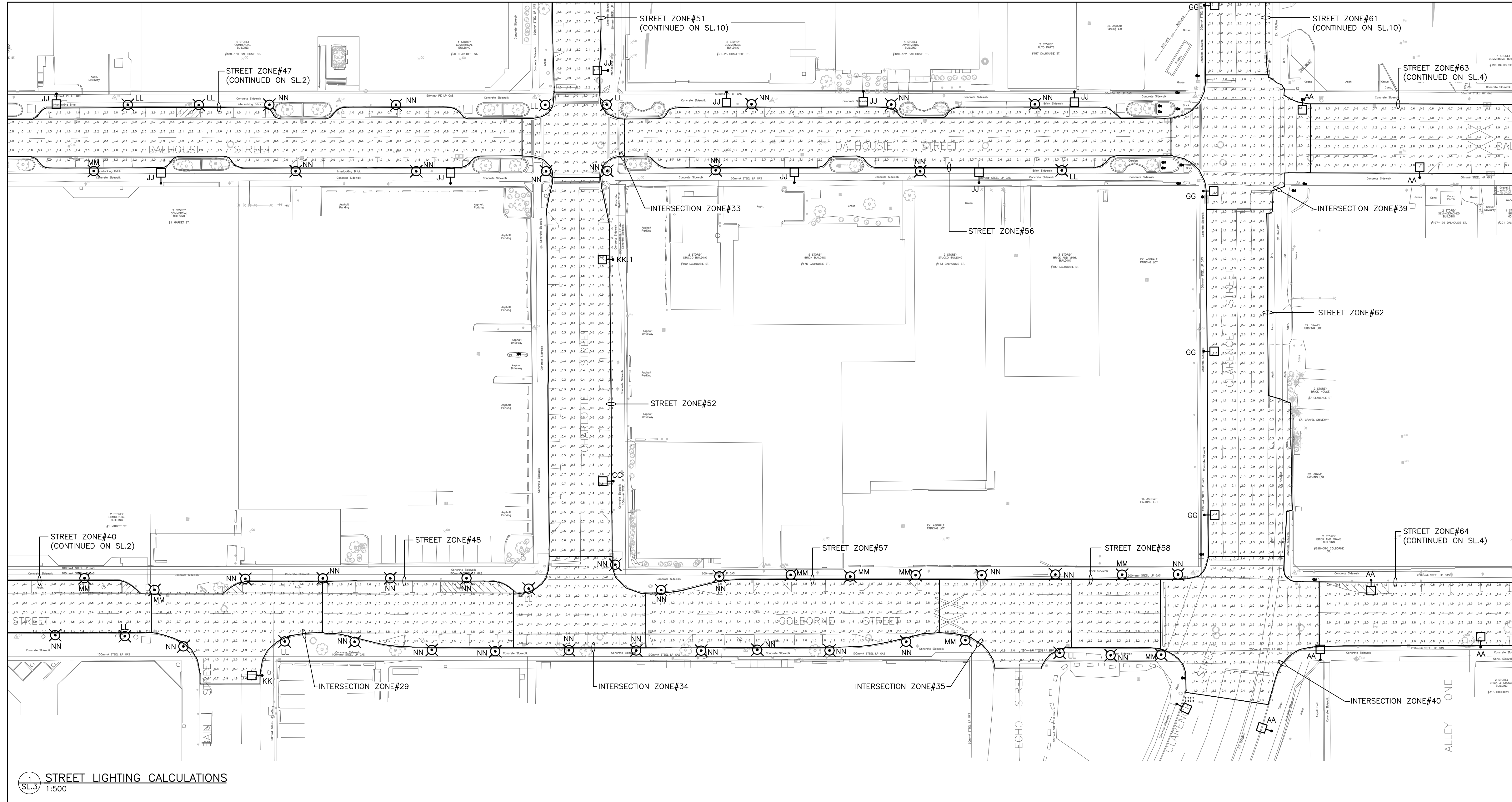
5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL. PH (519) 745-3703
 KITCHENER, ON FAX (519) 745-5081
 N2M 6R9 WEB www.mighton.com

PROJECT TITLE:
 PROPOSED
BRANTFORD STREETS CAPING
 BRANTFORD
 ONTARIO
 DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.2
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

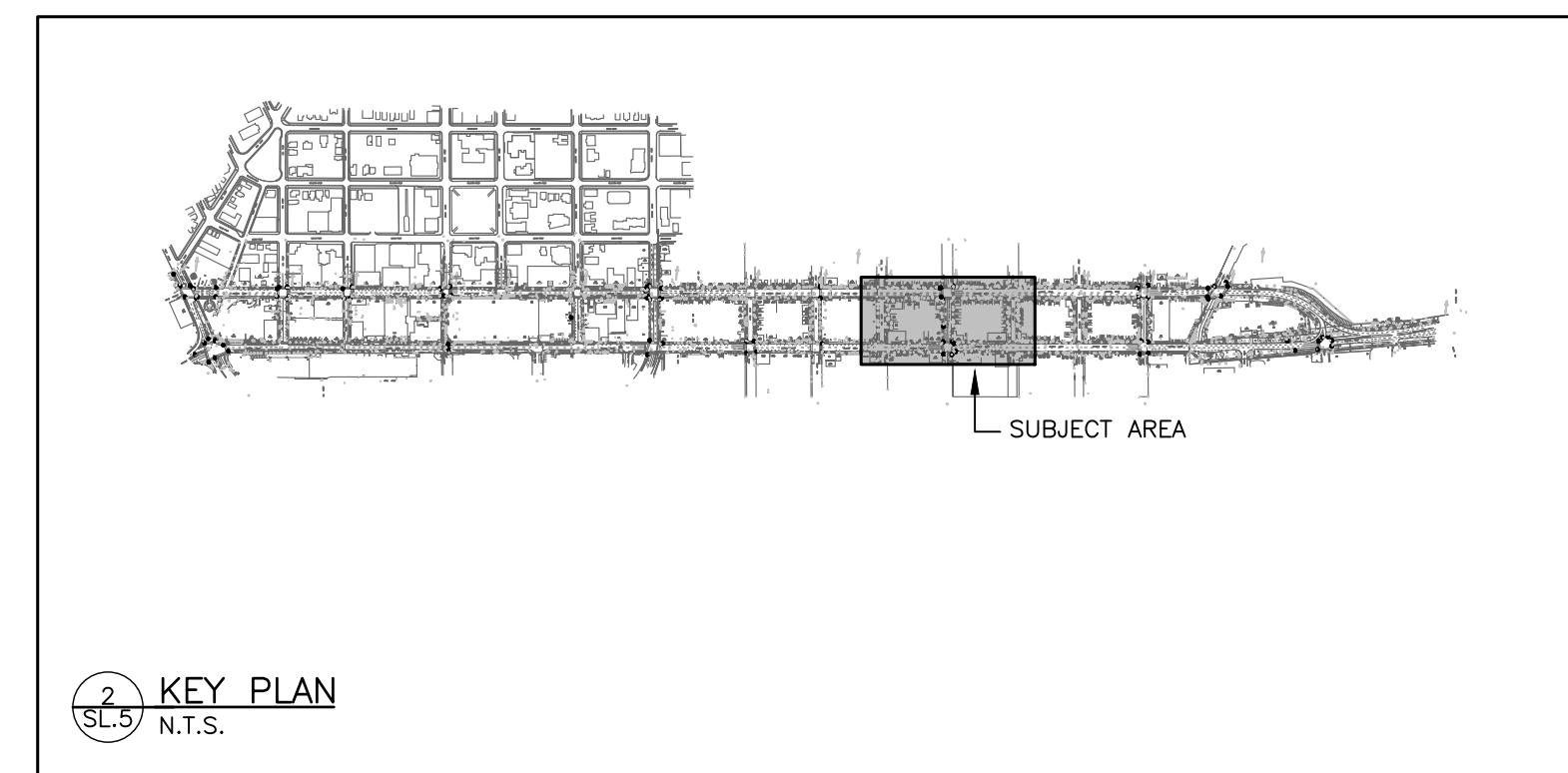
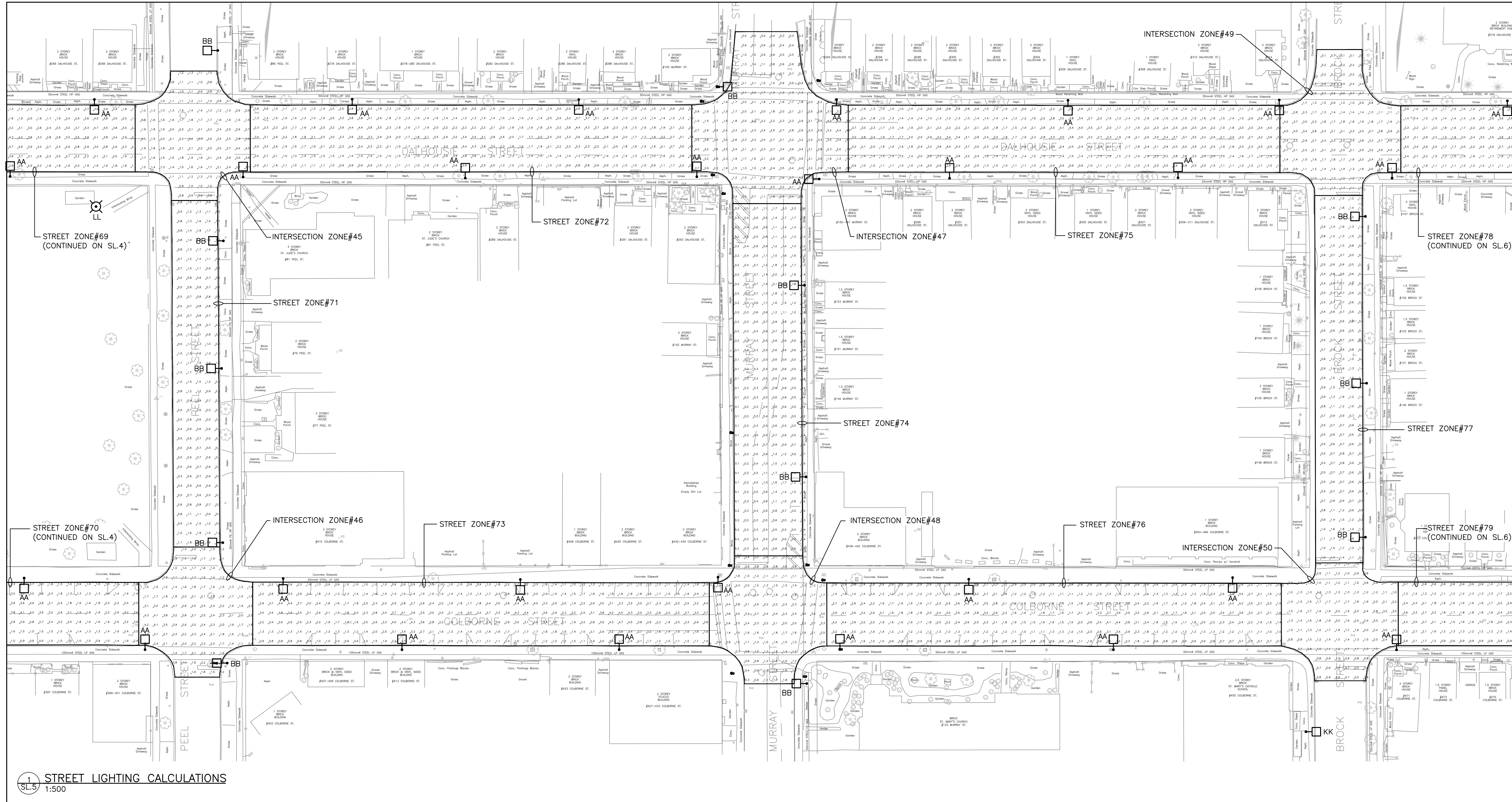
MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2M 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED
BRANTFORD STREETSCAPING
BRANTFORD
ONTARIO
DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.3
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL KITCHENER, ON N2H 6R9 PH (519) 745-3703 FAX (519) 745-5081 WEB www.mighton.com

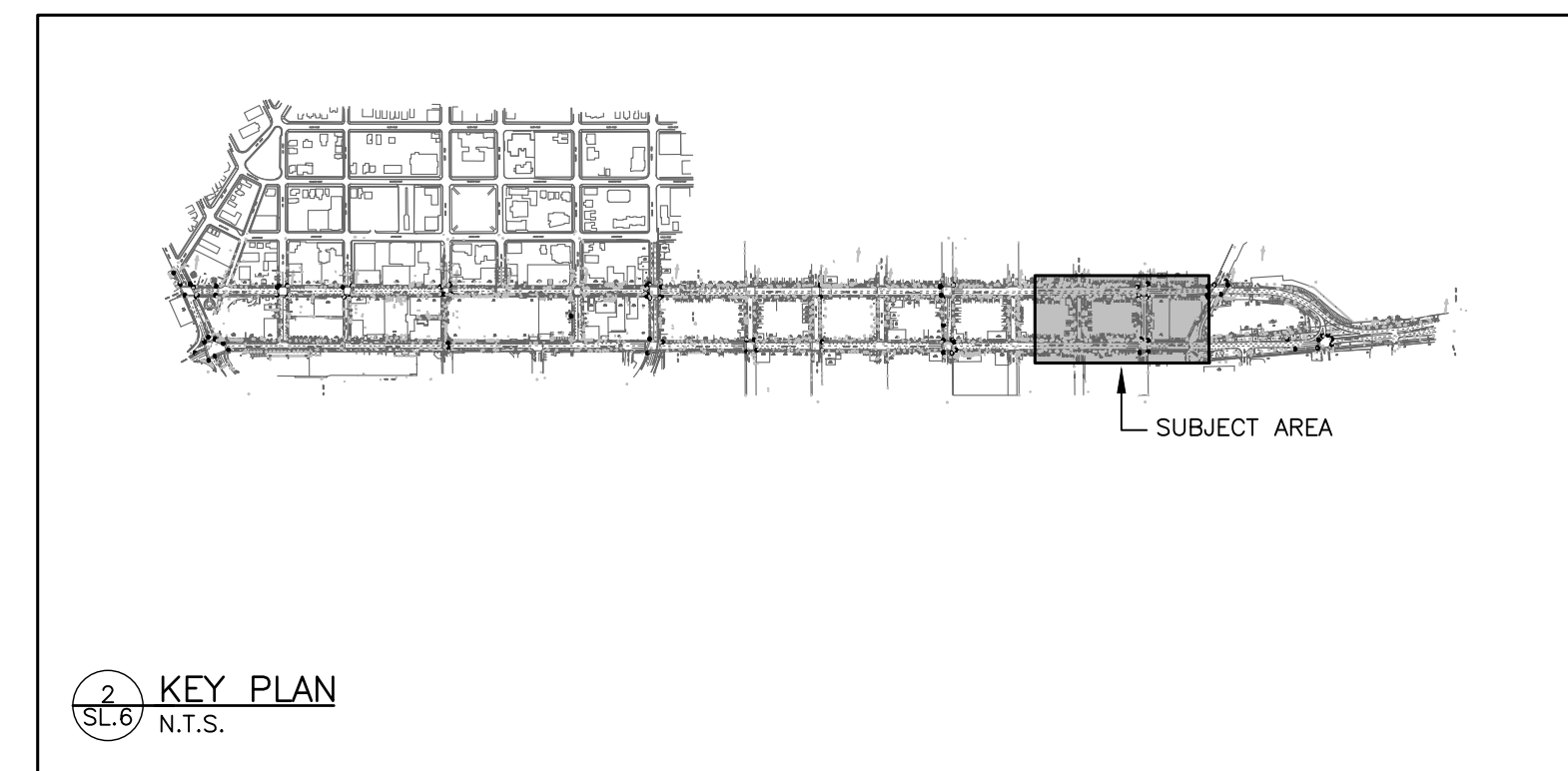
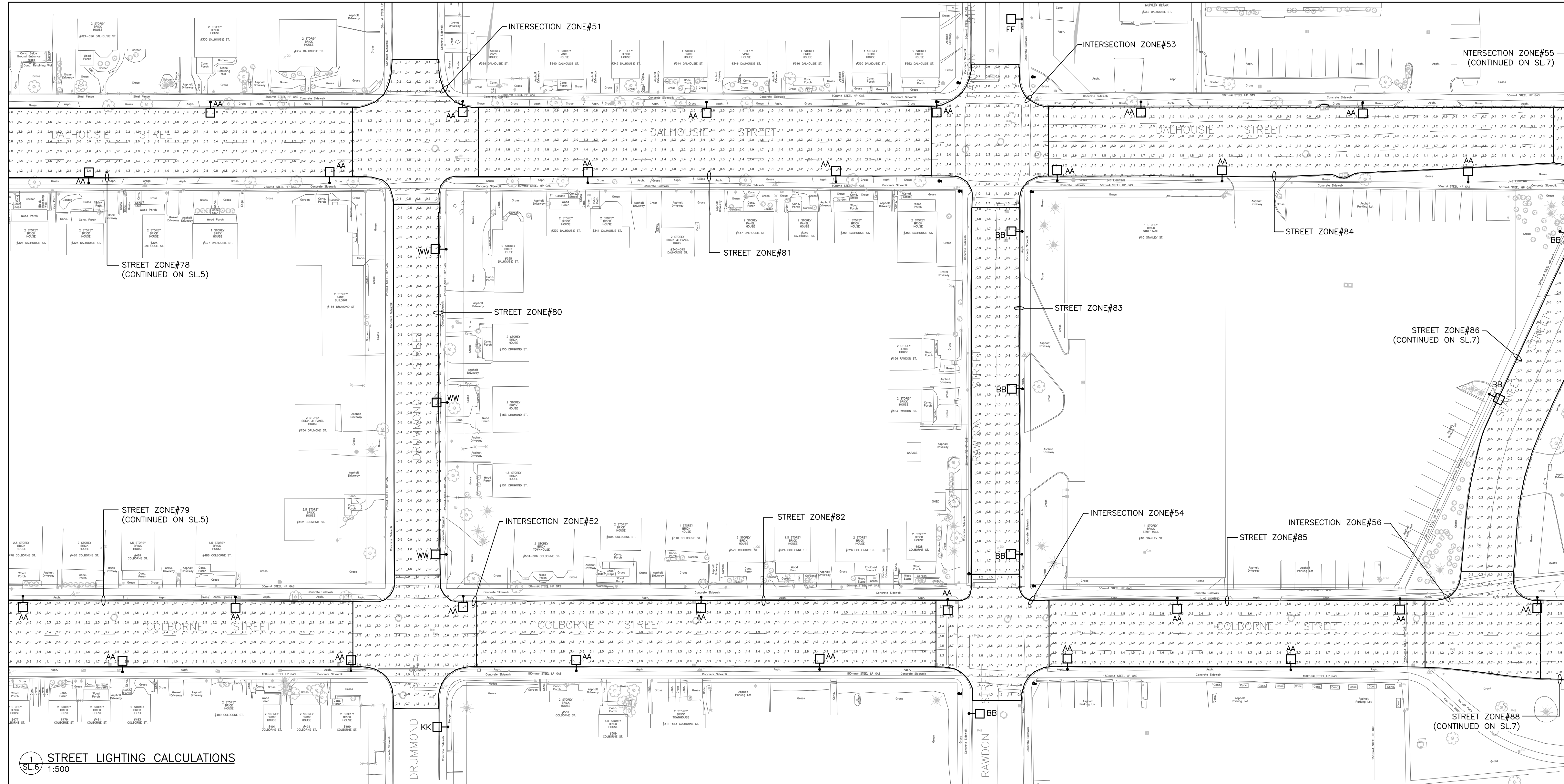
PROJECT TITLE: PROPOSED

BRANTFORD STREETS CAPING

BRANTFORD ONTARIO

DRAWING TITLE: STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.5
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2H 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

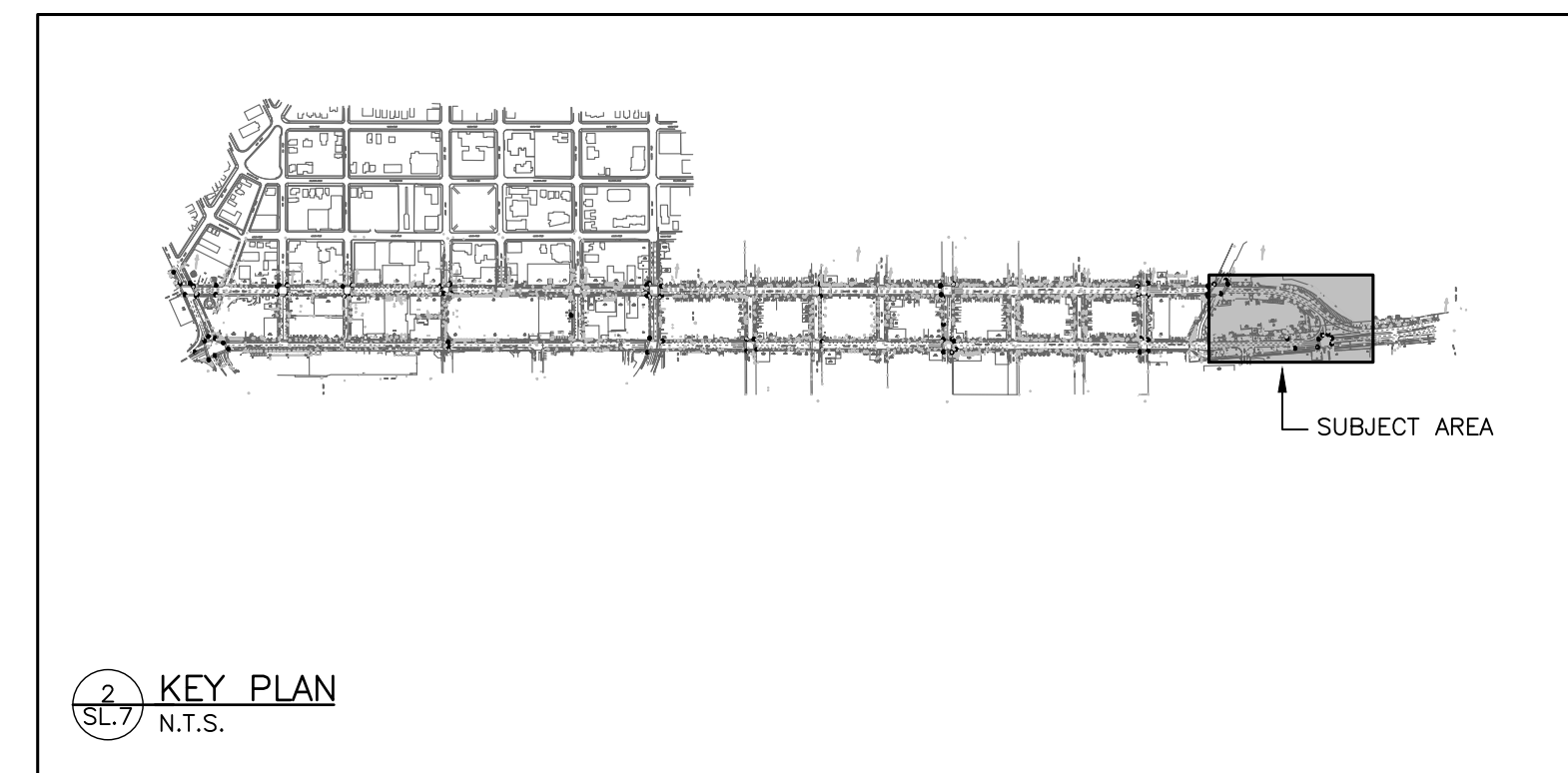
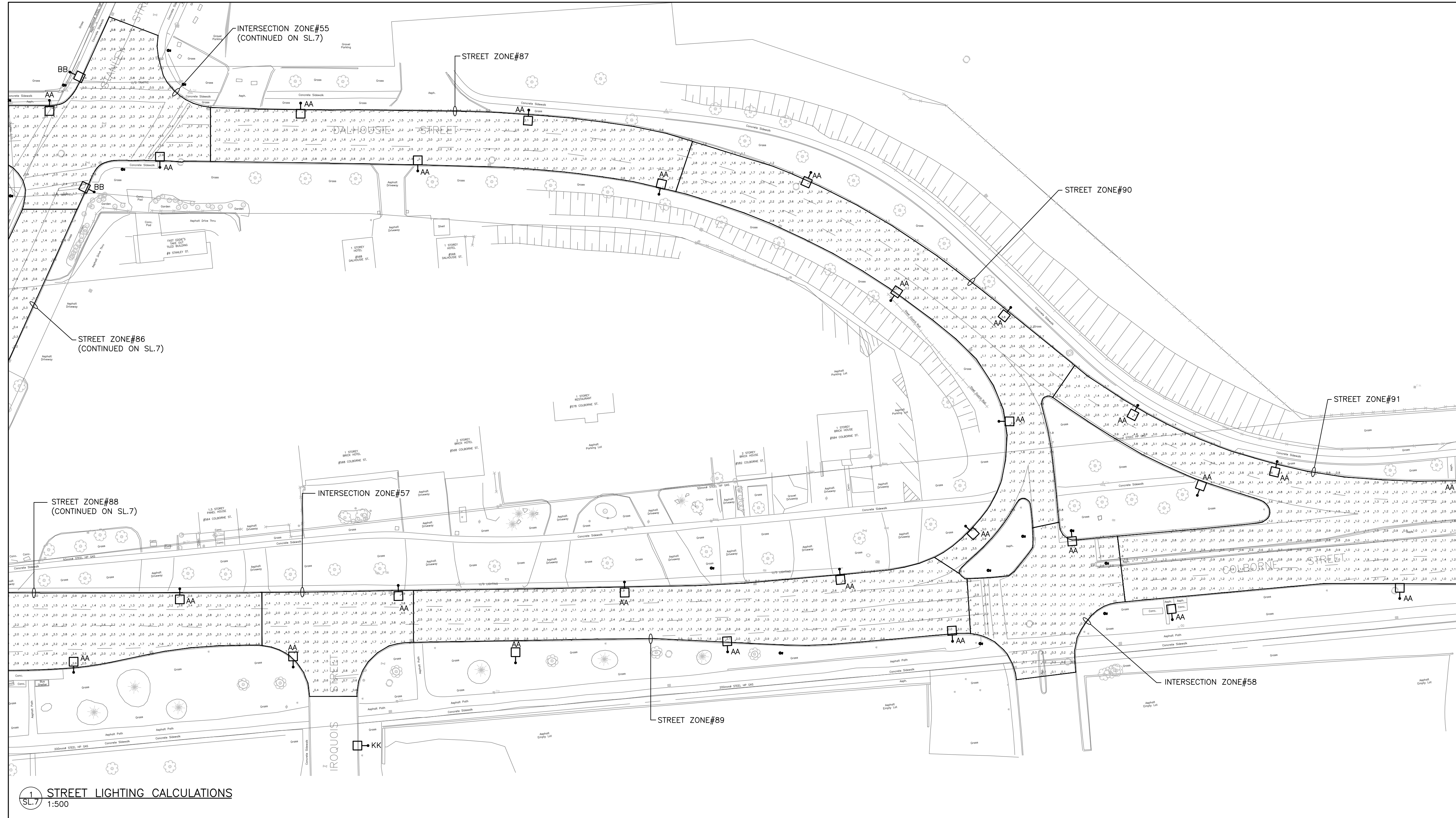
PROJECT TITLE:
PROPOSED

BRANTFORD STREETSCLAPING

BRANTFORD
ONTARIO

DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.6
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

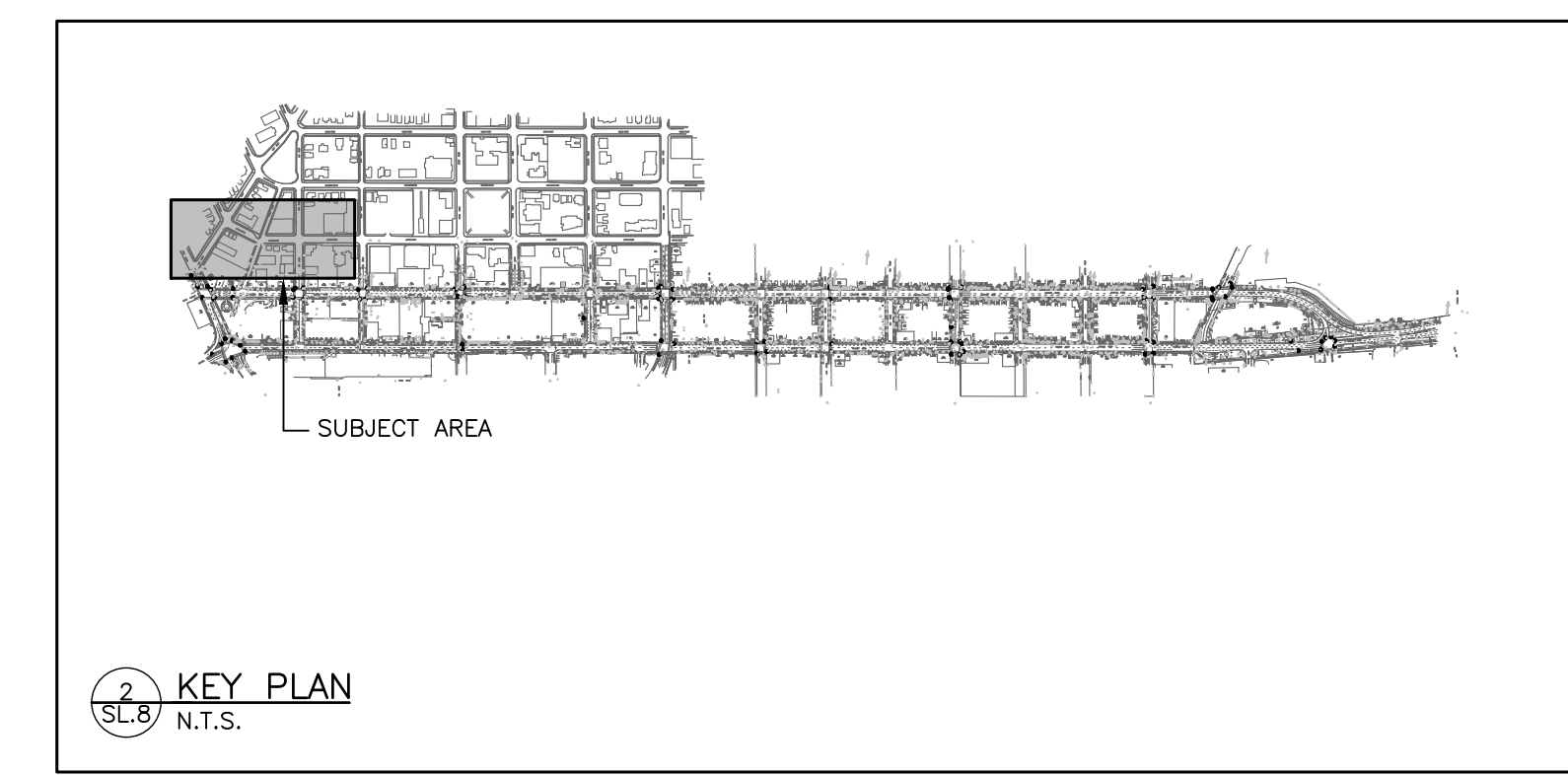
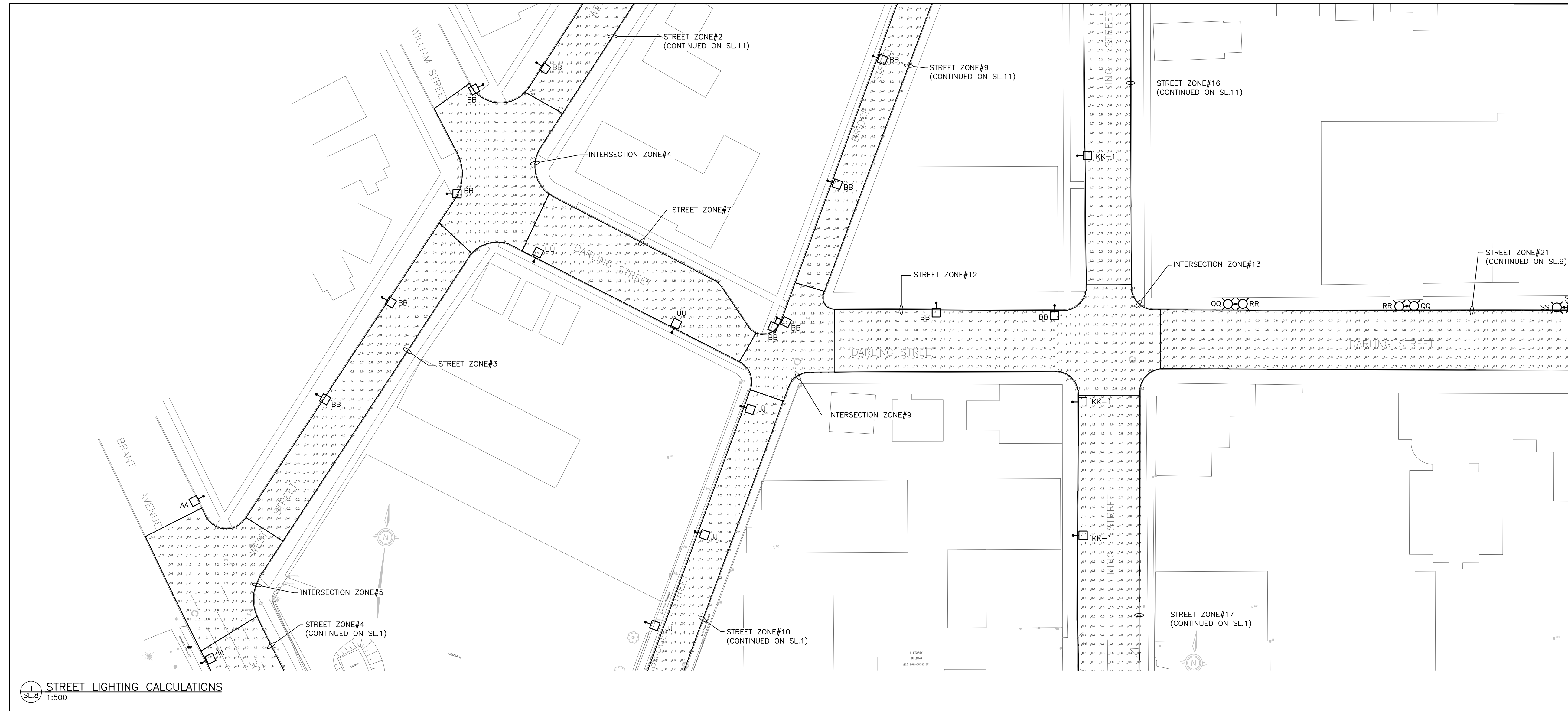
MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2M 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED
BRANTFORD STREETS CAPING
BRANTFORD
ONTARIO
DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.7
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

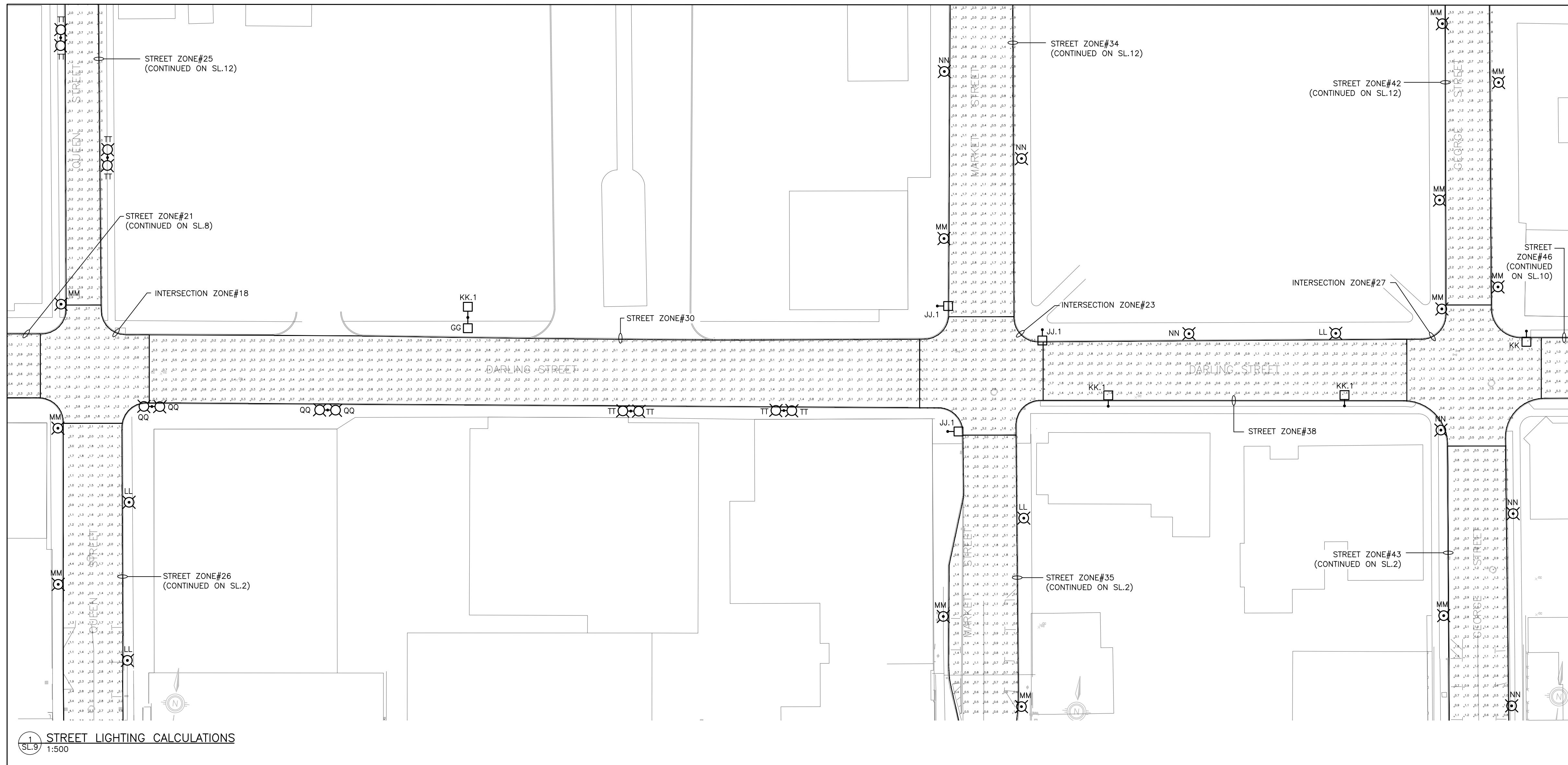
MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2M 6R9

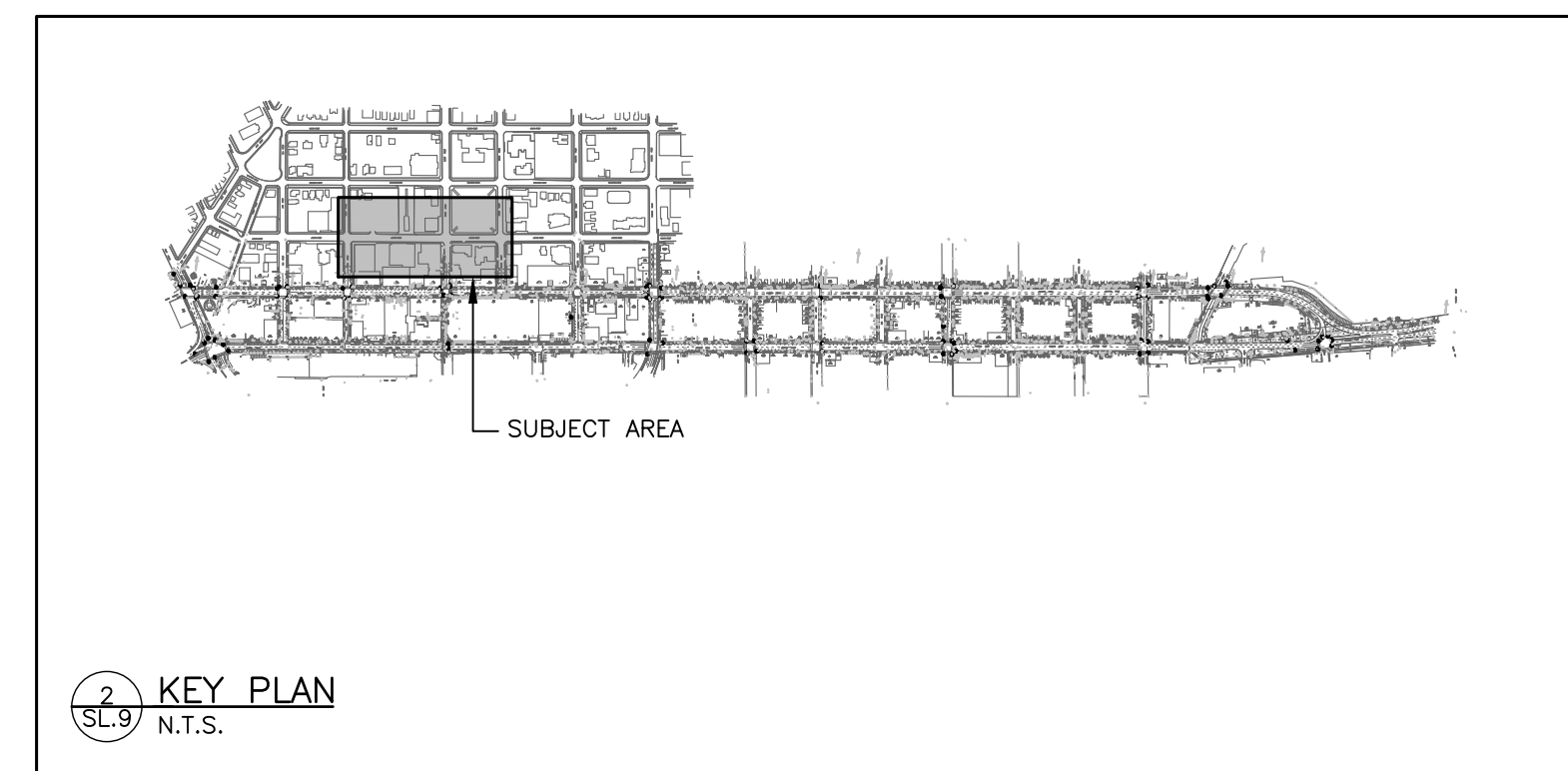
PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED
BRANTFORD STREETS CAPING
BRANTFORD
ONTARIO
DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.8
SCALE: 1:500	



1 STREET LIGHTING CALCULATIONS
SL.9 1:500



2 KEY PLAN
SL.9 N.T.S.

5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

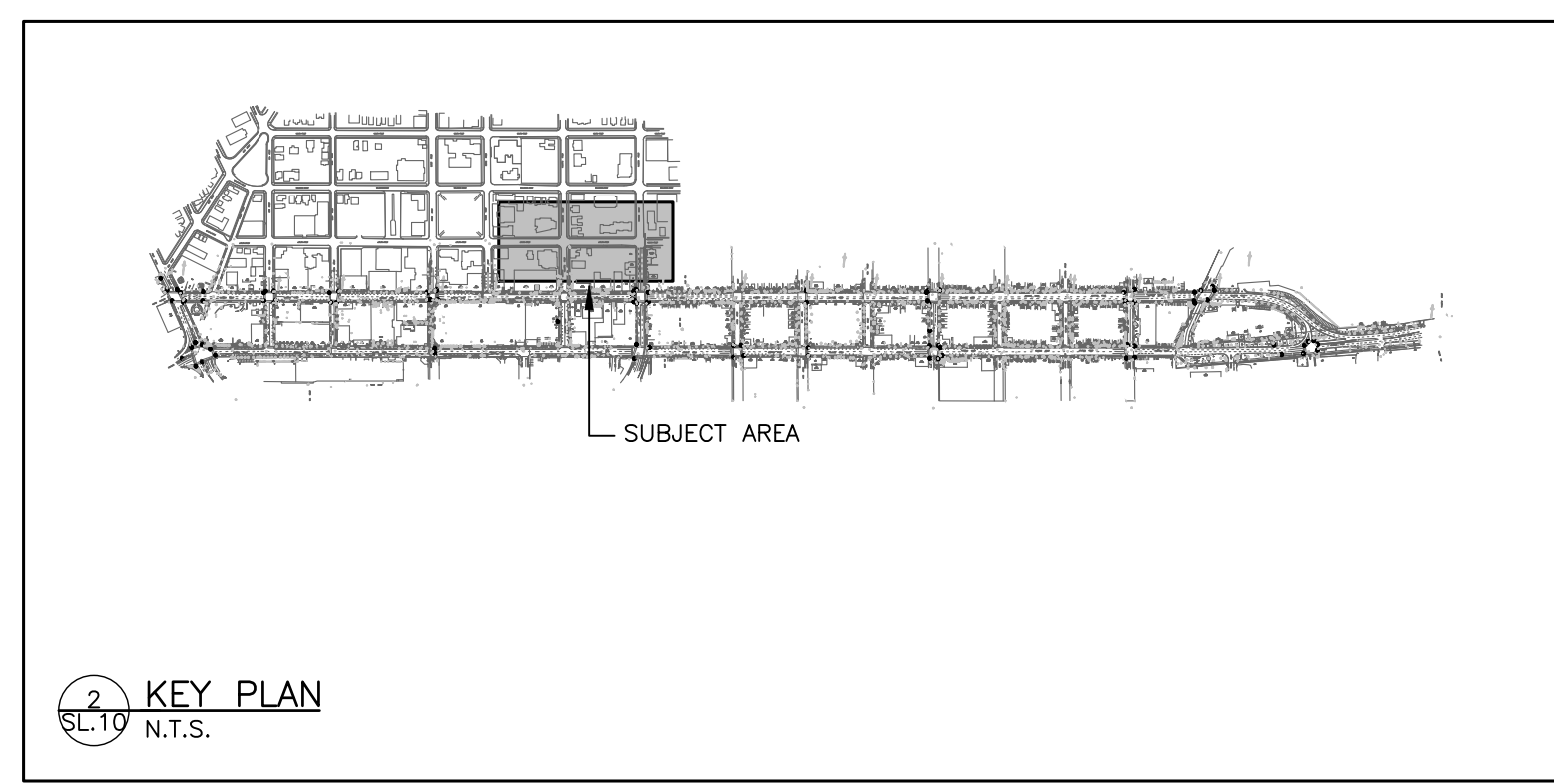
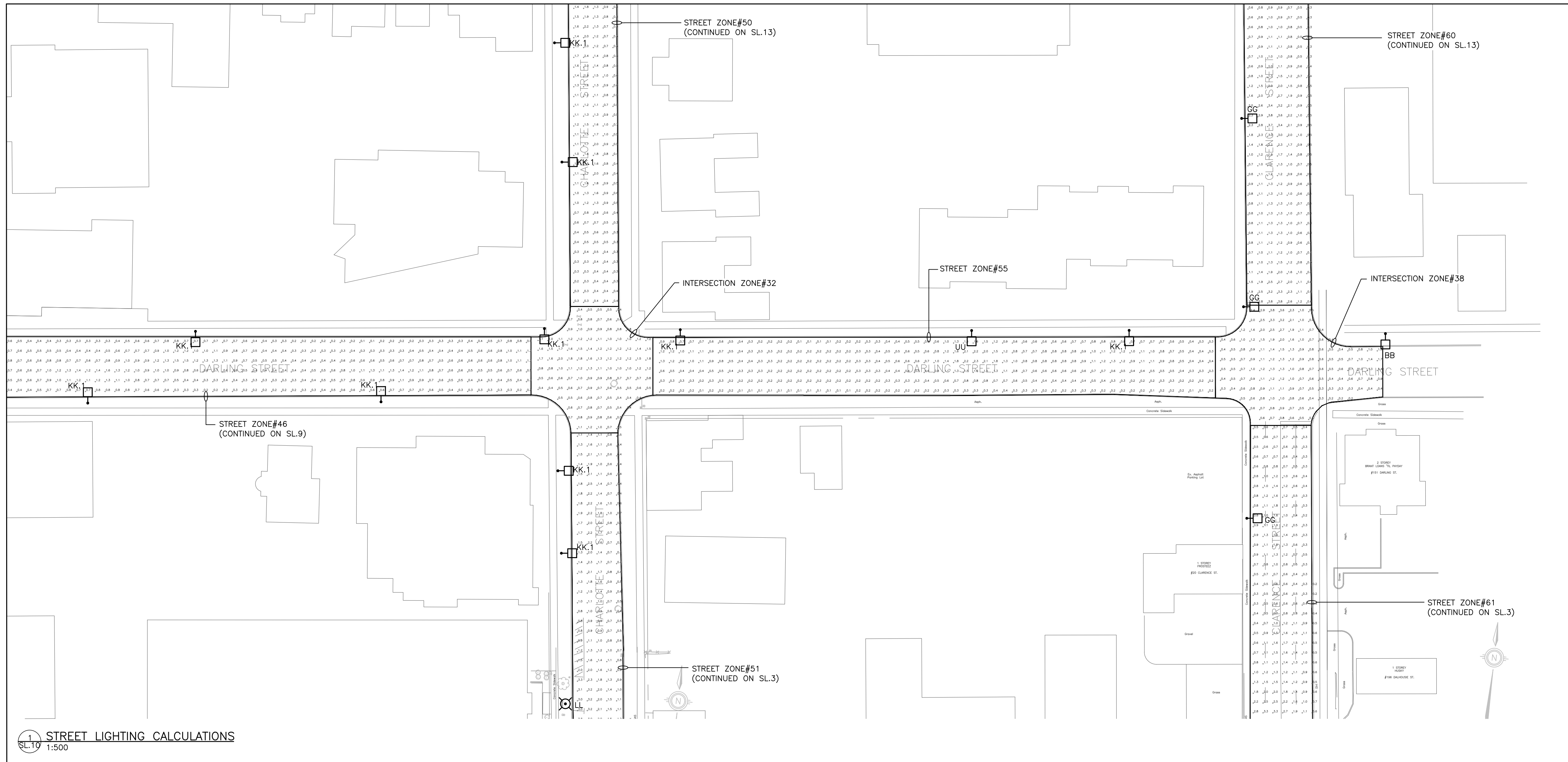
300 VICTORIA ST N, 2ND FL
KITCHENER, ON N2M 6R9
PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED

BRANTFORD STREETS CAPING
BRANTFORD ONTARIO

DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.9
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

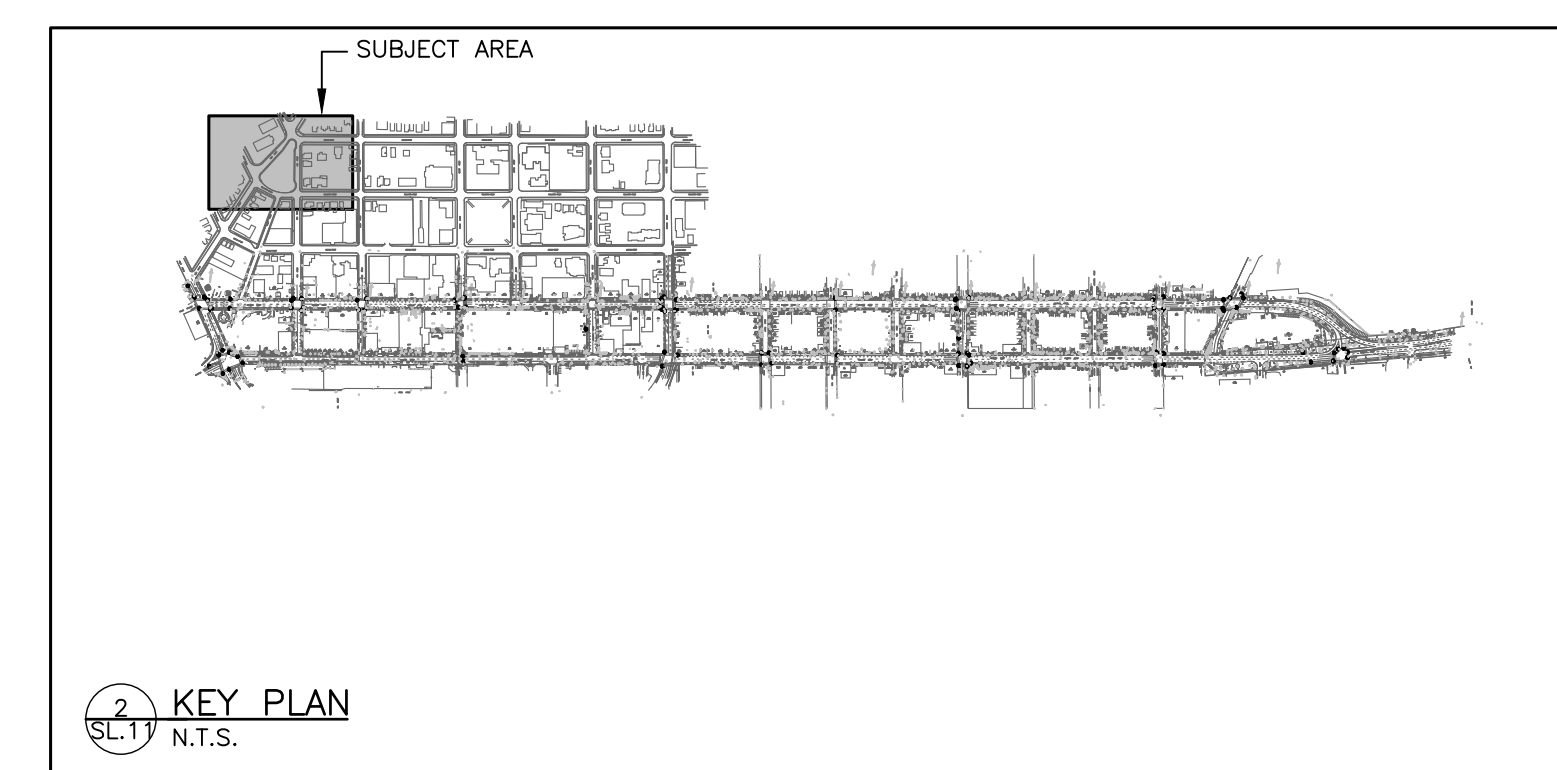
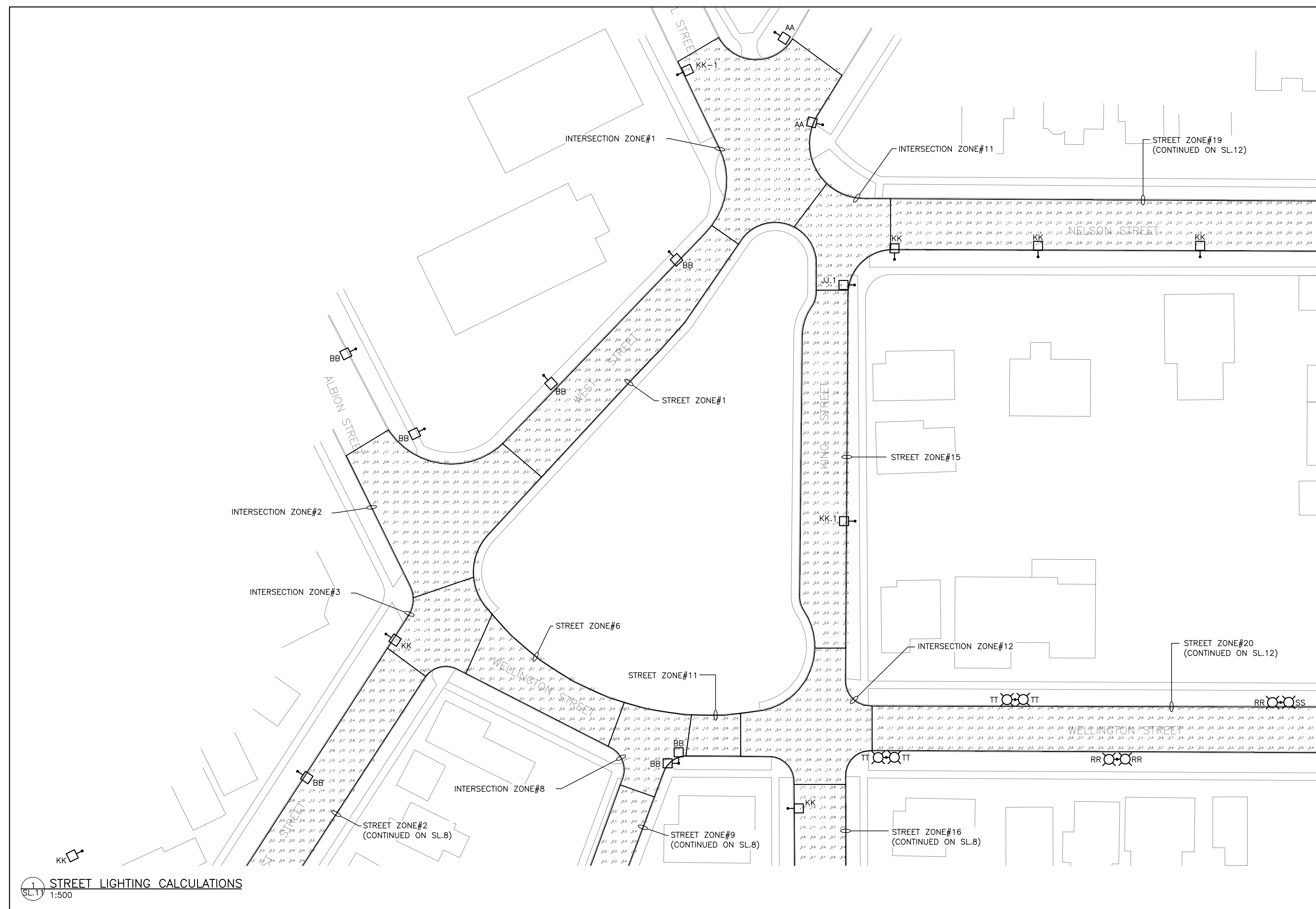
MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2H 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED
BRANTFORD STREETS CAPING
BRANTFORD
ONTARIO
DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.10
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

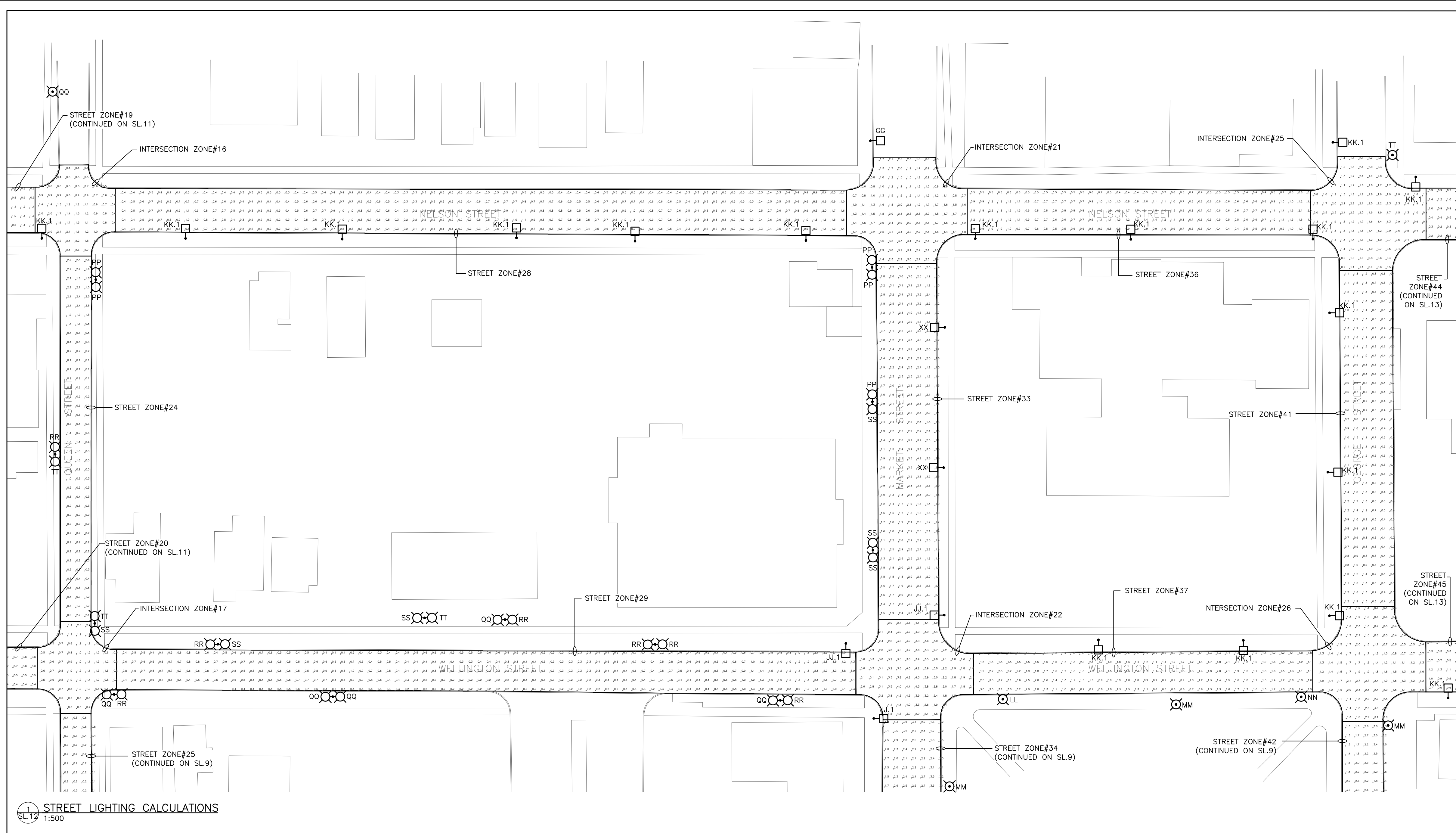
MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2M 6R9

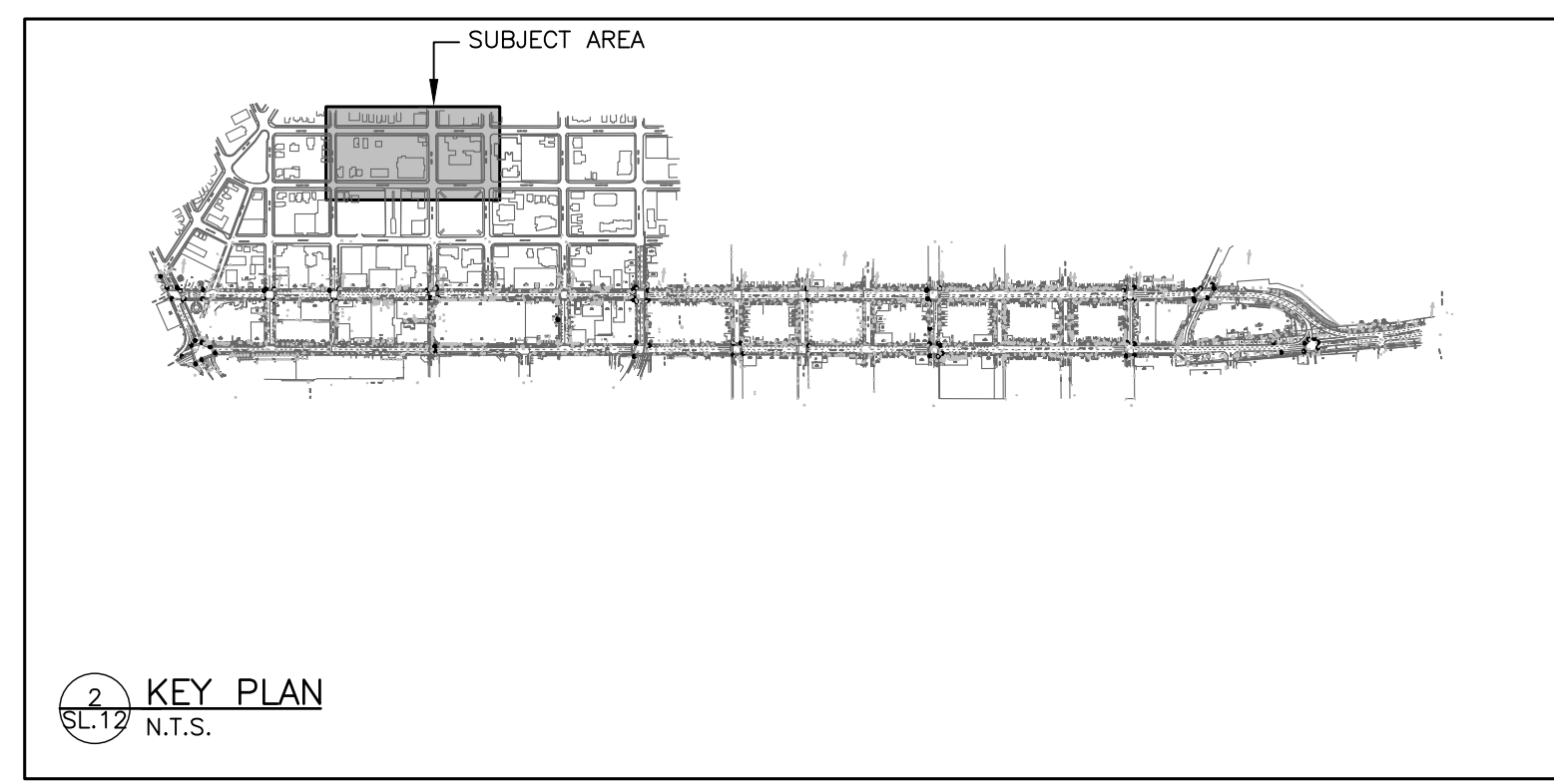
PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED
BRANTFORD STREETSCLAPING
BRANTFORD
ONTARIO
DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.11
SCALE: 1:500	



1 STREET LIGHTING CALCULATIONS
SL.12 1:500



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2M 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

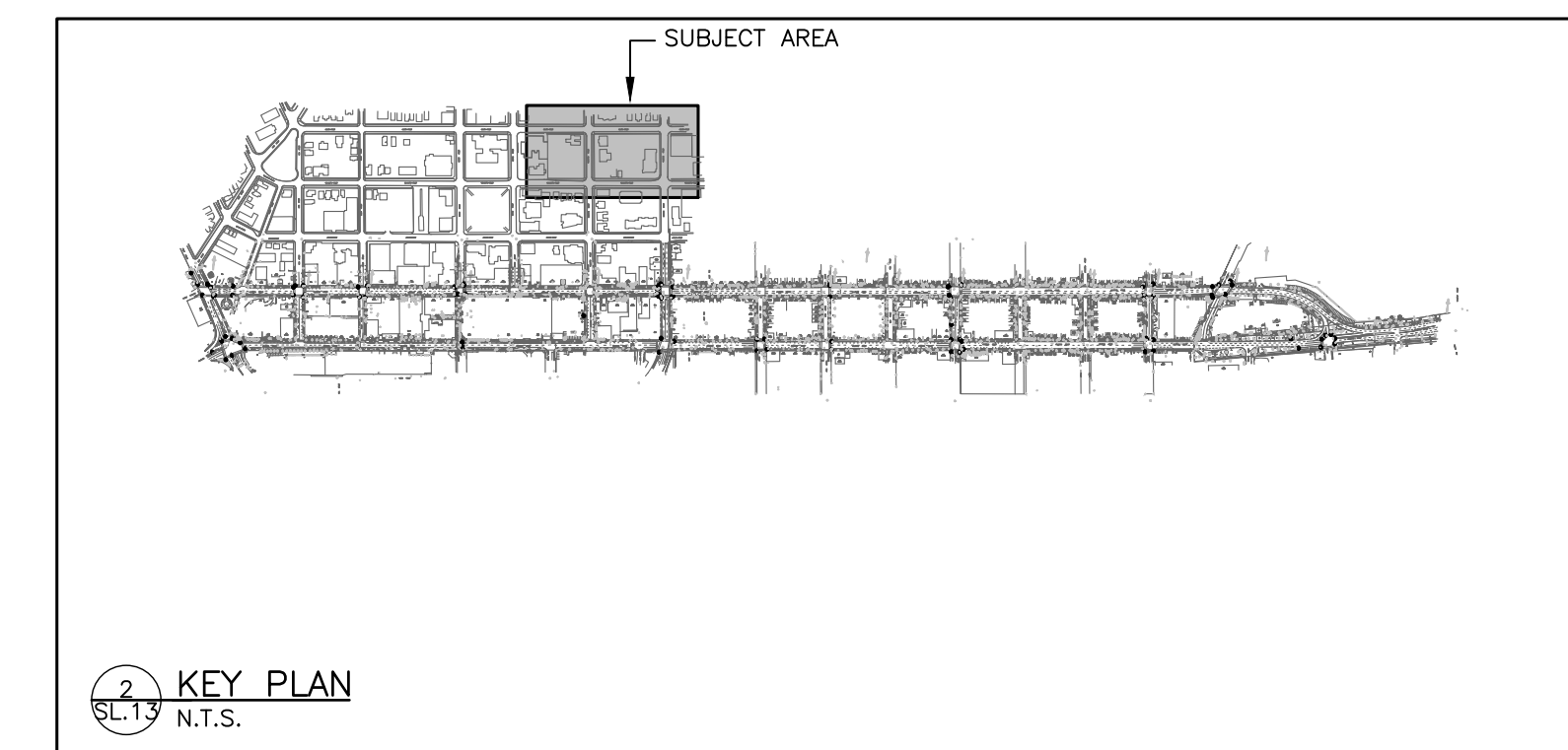
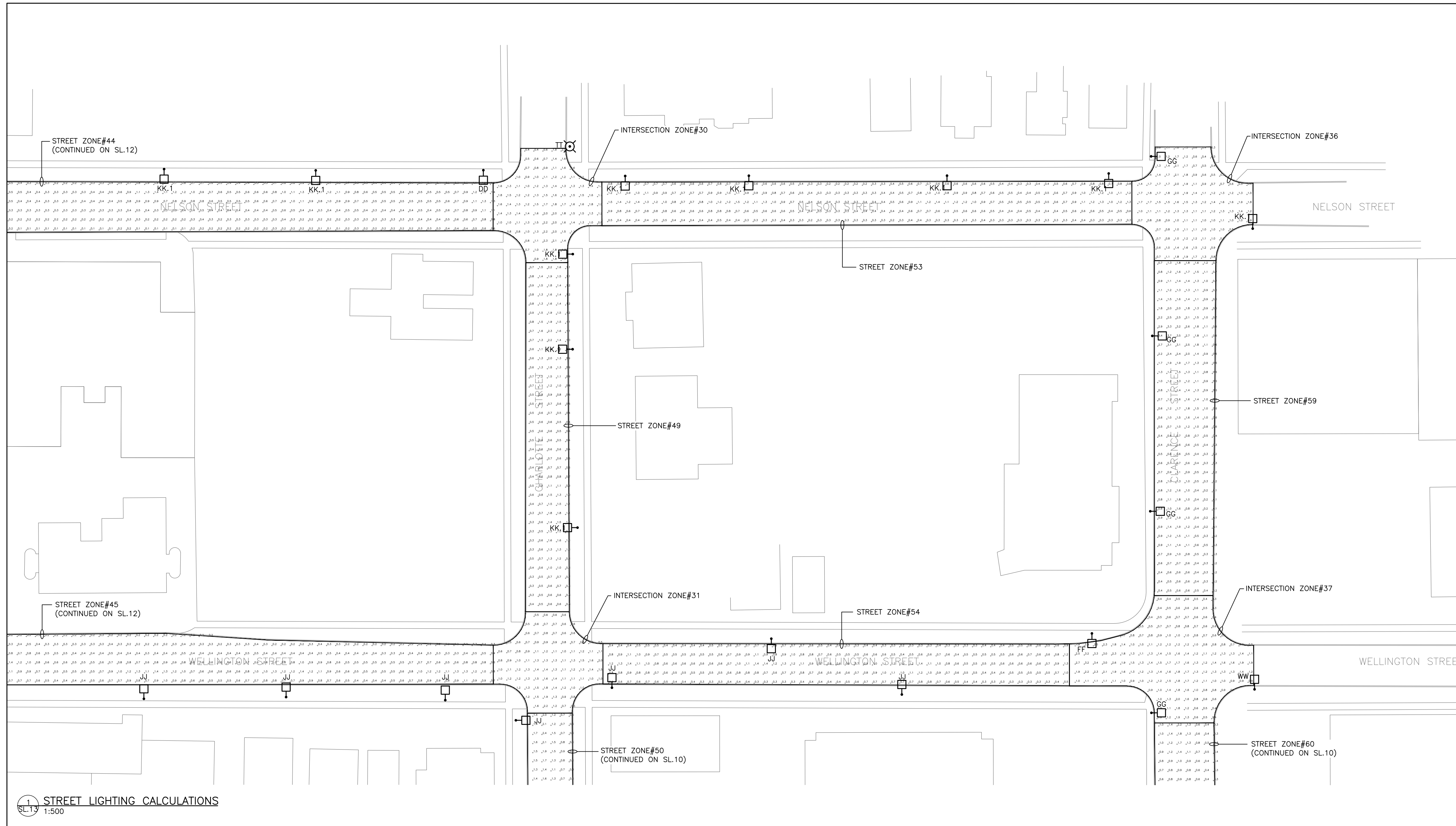
PROJECT TITLE:
PROPOSED

BRANTFORD STREETS CAPING

BRANTFORD
ONTARIO

DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.12
SCALE: 1:500	



5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2H 6R9

PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED

BRANTFORD STREETS CAPING

BRANTFORD
ONTARIO

DRAWING TITLE:
STREETLIGHTING

DRAWN BY: TS	CUSTOMER PROJECT No. -
CHECKED BY: T.A.	MIGHTON PROJECT No. 41013
DATE: MAY 2022	DRAWING No. SL.13
SCALE: 1:500	

STATISTICS – INTERSECTIONS		FOOTCANDLES(f.c.)								
CALCULATION ZONE	INTERSECTION	AVERAGE	MAXIMUM	MINIMUM	MAX:MIN	AVG:MIN	INTERSECTION TYPE	CONFORMANCE WITH STANDARDS		
INTERSECTION ZONE #1	WEST/PEARL	1.6	4.6	0.5	9.2:1	3.2:1	E	OVER LIT		
INTERSECTION ZONE #2	WEST/ALBION	0.4	1.9	0.1	19.0:1	4.0:1	E	UNDER LIT		
INTERSECTION ZONE #3	WEST/WELLINGTON	0.6	1.6	0.2	8.0:1	3.0:1	E	UNDER LIT		
INTERSECTION ZONE #4	DARLING/WEST	1.1	2.7	0.2	13.5:1	5.5:1	E	ACCEPTABLE		
INTERSECTION ZONE #5	WEST/BRANT	1.1	3.3	0.1	33.5:1	11.0:1	F	UNDER LIT		
INTERSECTION ZONE #6	PRINCE/BRANT	2.2	5.0	0.5	10.0:1	4.4:1	F	OVER LIT		
INTERSECTION ZONE #7	COLBORNE/BRANT	1.5	7.3	0.1	73.0:1	15.0:1	G	ACCEPTABLE		
INTERSECTION ZONE #8	WELLINGTON/BRIDGE	1.5	2.3	0.5	4.6:1	3.0:1	E	ACCEPTABLE		
INTERSECTION ZONE #9	DARLING/BRIDGE	2.2	3.6	0.6	6.0:1	3.7:1	E	OVER LIT		
INTERSECTION ZONE #10	DALHOUSIE/BRIDGE	1.6	5.7	0.7	8.0:1	2.3:1	F	ACCEPTABLE		
INTERSECTION ZONE #11	NELSON/KING	2.0	5.5	0.7	7.9:1	2.9:1	E	OVER LIT		
INTERSECTION ZONE #12	WELLINGTON/KING	0.8	3.3	0.1	3.3:1	8.0:1	E	UNDER LIT		
INTERSECTION ZONE #13	DARLING/KING	0.8	2.0	0.3	5.7:1	2.2:1	E	UNDER LIT		
INTERSECTION ZONE #14	DALHOUSIE/KING	2.9	4.5	1.3	3.5:1	2.2:1	F	OVER LIT		
INTERSECTION ZONE #15	COLBORNE/KING	3.1	5.5	1.4	3.9:1	3.0:1	F	OVER LIT		
INTERSECTION ZONE #16	NELSON/QUEEN	1.2	2.8	0.4	7.0:1	3.0:1	E	ACCEPTABLE		
INTERSECTION ZONE #17	WELLINGTON/QUEEN	1.5	4.3	0.6	7.0:1	2.9:1	E	ACCEPTABLE		
INTERSECTION ZONE #18	DARLING/QUEEN	1.5	4.7	0.4	3.4:1	2.0:1	E	ACCEPTABLE		
INTERSECTION ZONE #19	DALHOUSIE/QUEEN	5.1	8.5	2.5	11.8:1	3.8:1	F	OVER LIT		
INTERSECTION ZONE #20	COLBORNE/QUEEN	2.3	3.9	1.1	3.5:1	2.1:1	F	OVER LIT		
INTERSECTION ZONE #21	NELSON/MARKET	1.6	3.3	0.4	8.3:1	4.0:1	E	OVER LIT		
INTERSECTION ZONE #22	WELLINGTON/MARKET	3.2	6.3	1.5	4.2:1	2.1:1	E	OVER LIT		
INTERSECTION ZONE #23	DARLING/MARKET	2.8	5.8	1.1	5.3:1	2.5:1	E	OVER LIT		
INTERSECTION ZONE #24	DALHOUSIE/MARKET	1.9	4.3	0.7	6.1:1	2.7:1	F	OVER LIT		
INTERSECTION ZONE #25	NELSON/GEORGE	1.3	2.8	0.4	7.0:1	3.3:1	F	ACCEPTABLE		
INTERSECTION ZONE #26	WELLINGTON/GEORGE	1.3	4.2	0.4	10.5:1	3.3:1	E	ACCEPTABLE		
INTERSECTION ZONE #27	DARLING/GEORGE	1.4	4.5	0.3	15.0:1	4.7:1	E	ACCEPTABLE		
INTERSECTION ZONE #28	DALHOUSIE/GEORGE	2.3	4.5	1.0	4.5:1	2.3:1	E	OVER LIT		
INTERSECTION ZONE #29	COLBORNE/BAIN	2.0	4.8	0.7	6.9:1	2.9:1	F	OVER LIT		
INTERSECTION ZONE #30	NELSON/CHARLOTTE	1.2	2.1	0.4	5.3:1	3.0:1	F	UNDER LIT		
INTERSECTION ZONE #31	WELLINGTON/CHARLOTTE	2.2	3.7	1.3	2.8:1	1.7:1	E	OVER LIT		
INTERSECTION ZONE #32	DARLING/CHARLOTTE	0.8	1.5	0.3	5.0:1	2.7:1	E	UNDER LIT		
INTERSECTION ZONE #33	DALHOUSIE/CHARLOTTE	3.7	6.1	1.9	3.2:1	1.9:1	E	OVER LIT		
INTERSECTION ZONE #34	COLBORNE/CHARLOTTE	1.3	3.7	0.4	9.3:1	3.3:1	F	ACCEPTABLE		
INTERSECTION ZONE #35	COLBORNE/ECHO	2.2	4.2	0.5	8.4:1	4.4:1	F	OVER LIT		
INTERSECTION ZONE #36	NELSON/CLARENCE	1.4	3.6	0.5	7.2:1	2.8:1	F	ACCEPTABLE		
INTERSECTION ZONE #37	WELLINGTON/CLARENCE	1.3	3.4	0.4	8.5:1	3.3:1	E	ACCEPTABLE		
INTERSECTION ZONE #38	DARLING/CLARENCE	1.0	3.4	0.2	17.0:1	5.0:1	E	UNDER LIT		
INTERSECTION ZONE #39	DALHOUSIE/CLARENCE	1.7	4.1	0.3	13.7:1	5.7:1	E	OVER LIT		
INTERSECTION ZONE #40	COLBORNE/CLARENCE	2.0	4.5	0.6	7.5:1	3.3:1	F	OVER LIT		
INTERSECTION ZONE #41	DALHOUSIE/ALFRED	1.8	4.5	0.4	11.3:1	4.5:1	F	OVER LIT		
INTERSECTION ZONE #42	COLBORNE/ALFRED	2.4	5.0	0.8	6.3:1	3.0:1	F	OVER LIT		
INTERSECTION ZONE #43	DALHOUSIE/PARK	2.1	4.7	0.6	7.8:1	3.5:1	F	OVER LIT		
INTERSECTION ZONE #44	COLBORNE/PARK	1.4	4.3	0.2	21.5:1	7.0:1	F	ACCEPTABLE		
INTERSECTION ZONE #45	DALHOUSIE/PEEL	1.7	4.5	0.6	7.5:1	2.8:1	F	ACCEPTABLE		
INTERSECTION ZONE #46	COLBORNE/PEEL	2.0	4.3	0.8	5.4:1	2.5:1	F	OVER LIT		
INTERSECTION ZONE #47	DALHOUSIE/MURRAY	2.1	4.7	0.3	15.7:1	7.0:1	F	OVER LIT		
INTERSECTION ZONE #48	COLBORNE/MURRAY	1.8	4.5	0.3	15.0:1	6.0:1	F	OVER LIT		
INTERSECTION ZONE #49	DALHOUSIE/BROCK	1.7	4.5	0.1	45.0:1	17.0:1	F	ACCEPTABLE		
INTERSECTION ZONE #50	COLBORNE/BROCK	1.4	4.2	0.4	10.5:1	3.5:1	F	ACCEPTABLE		
INTERSECTION ZONE #51	DALHOUSIE/DRUMMOND	1.4	4.3	0.3	14.3:1	4.7:1	F	ACCEPTABLE		
INTERSECTION ZONE #52	COLBORNE/DRUMMOND	2.1	4.8	0.4	12.0:1	5.3:1	F	OVER LIT		
INTERSECTION ZONE #53	DALHOUSIE/RAWDON	1.9	4.5	0.6	7.5:1	3.2:1	F	OVER LIT		
INTERSECTION ZONE #54	COLBORNE/RAWDON	2.1	4.6	0.8	5.8:1	2.6:1	F	OVER LIT		
INTERSECTION ZONE #55	DALHOUSIE/STANLEY	2.0	5.1	0.3	17.1:1	6.7:1	F	OVER LIT		
INTERSECTION ZONE #56	COLBORNE/STANLEY	1.6	4.6	0.3	15.3:1	5.3:1	F	ACCEPTABLE		
INTERSECTION ZONE #57	COLBORNE/IROQUOIS	2.1	4.5	0.4	11.3:1	5.3:1	F	OVER LIT		
INTERSECTION ZONE #58	COLBORNE/DALHOUSIE	1.7	4.3	0.5	8.6:1	3.4:1	G	ACCEPTABLE		

STATISTICS – STREETS			FOOTCANDLES(f.c.) OR CANDELA METER SQUARED cd/m2								
CALCULATION ZONE	ROAD NAME	BETWEEN CROSSING ROADS	AVERAGE	MAXIMUM	MINIMUM	MAX:MIN	AVG:MIN	ROADWAY TYPE	CONFORMANCE WITH STANDARDS		
STREET ZONE #1	WEST	PEARL/ALBION	0.7	1.9	0.1	19.0:1	7.0:1	D	ACCEPTABLE		
STREET ZONE #2	WEST	ALBION/WILLIAM	0.8	1.8	0.3	6.0:1	2.7:1	D	ACCEPTABLE		
STREET ZONE #3	WEST	WILLIAM/BRANT	1.8	4.9	0.5	17.0:1	7.0:1	D	ACCEPTABLE		
STREET ZONE #4	BRANT	WEST/PRINCE	1.6	4.0	0.5	7.0:1	3.6:1	C	OVER LIT		
STREET ZONE #5	BRANT	DALHOUSIE/COLBORNE	1.7	4.2	0.7	6.0:1	2.4:1	C	OVER LIT		
STREET ZONE #6	WELLINGTON	WEST/BRIDGE	0.2	0.6	0.1	6.0:1	2.0:1	D	UNDER LIT		
STREET ZONE #7	DARLING	WEST/BRIDGE	1.5	3.8	0.3	12.7:1	5.0:1	D	OVER LIT		
STREET ZONE #8	DALHOUSIE	BRANT/BRIDGE	2.4	5.1	0.7	7.5:1	3.4:1	C	OVER LIT		
STREET ZONE #9	BRIDGE	WELLINGTON/DARLING	0.8	1.8	0.2	9.0:1	4.0:1	D	ACCEPTABLE		
STREET ZONE #10	BRIDGE	DARLING/DALHOUSIE	2.2	4.6	0.7	6.6:1	3.1:1	D	OVER LIT		
STREET ZONE #11	WELLINGTON	BRIDGE/KING	0.8	1.6	0.4	4.0:1	2.0:1	D	ACCEPTABLE		
STREET ZONE #12	DARLING	BRIDGE/KING	0.8	2.0	0.2	10.0:1	4.0:1	D	ACCEPTABLE		
STREET ZONE #13	DALHOUSIE	BRIDGE/KING	1.9	5.6	0.6	9.3:1	3.2:1	C	OVER LIT		
STREET ZONE #14	COLBORNE	BRANT/KING	2.2	4.9	0.9	5.4:1	2.4:1	C	OVER LIT		
STREET ZONE #15	KING	NELSON/WELLINGTON	0.8	5.5	0.1	16.0:1	8.0:1	D	ACCEPTABLE		
STREET ZONE #16	KING	WELLINGTON/DARLING	0.6	1.6	0.1	16.0:1	6.0:1	D	ACCEPTABLE		
STREET ZONE #17	KING	DARLING/DALHOUSIE	1.1	3.9	0.3	13.0:1	3.7:1	D	OVER LIT		
STREET ZONE #18	KING	DALHOUSIE/COLBORNE	1.7	4.2	0.5	8.4:1	3.4:1	D	OVER LIT		
STREET ZONE #19	NELSON	KING/QUEEN	0.8	1.9	0.4	4.3:1	2.0:1	D	ACCEPTABLE		
STREET ZONE #20	WELLINGTON	KING/QUEEN	1.2	5.6	0.3	15.7:1	4.0:1	D	OVER LIT		
STREET ZONE #21	DARLING	KING/QUEEN	0.7	5.6	0.1	5.6:1	7.0:1	D	ACCEPTABLE		
STREET ZONE #22	DALHOUSIE	KING/QUEEN	2.6	8.7	0.6	14.5:1	4.3:1	C	OVER LIT		
STREET ZONE #23	COLBORNE	KING/QUEEN	2.3	5.5	0.8	6.9:1	2.9:1	C	OVER LIT		
STREET ZONE #24	QUEEN	NELSON/WELLINGTON	1.1	4.3	0.2	21.5:1	5.5:1	D	OVER LIT		
STREET ZONE #25	QUEEN	WELLINGTON/DARLING	1.6	5.5	0.4	13.8:1	4.0:1	D	OVER LIT		
STREET ZONE #26	QUEEN	DARLING/DALHOUSIE	2.1	5.0	0.8	6.3:1	2.6:1	D	OVER LIT		
STREET ZONE #27	QUEEN	DALHOUSIE/COLBORNE	1.7	7.2	0.4	18.0:1	4.3:1	D	OVER LIT		
STREET ZONE #28	QUEEN/MARKET	QUEEN/MARKET	0.5 cd/m2	1.1 cd/m2	0.2 cd/m2	5.5:1	2.5:1	B	ACCEPTABLE		
STREET ZONE #29	WELLINGTON	QUEEN/MARKET	0.7 cd/m2	4.3 cd/m2	0.2 cd/m2	21.5:1	3.5:1	D	ACCEPTABLE		
STREET ZONE #30	DARLING	QUEEN/MARKET	0.6 cd/m2	2.8 cd/m2	0.1 cd/m2	28.0:1	6.0:1	B	ACCEPTABLE		
STREET ZONE #31	DALHOUSIE	QUEEN/MARKET	1.9 cd/m2	3.8 cd/m2	0.3 cd/m2	12.7:1	6.3:1	A	OVER LIT		
STREET ZONE #32	COLBORNE	QUEEN/MARKET	1.3 cd/m2	3.6 cd/m2	0.1 cd/m2	3.6:1	13.0:1	A	OVER LIT		
STREET ZONE #33	MARKET	NELSON/WELLINGTON	2.1	6.2	0.5	12.4:1	4.2:1	D	OVER LIT		
STREET ZONE #34	MARKET	WELLINGTON/DARLING	1.7	5.9	0.3	19.7:1	5.7:1	D	OVER LIT		
STREET ZONE #35	MARKET	DARLING/DALHOUSIE	1.8	5.9	0.5	11.8:1	3.6:1	D	OVER LIT		
STREET ZONE #36	NELSON	MARKET/GEORGE	0.7	1.8	0.3	6.0:1	2.3:1	D	ACCEPTABLE		
STREET ZONE #37	WELLINGTON	MARKET/GEORGE	1.6	4.2	0.6	7.0:1	2.7:1	D	OVER LIT		
STREET ZONE #38	DARLING	MARKET/GEORGE	1.4	6.0	0.3	20.0:1	4.7:1	D	OVER LIT		
STREET ZONE #39	DALHOUSIE	MARKET/GEORGE	2.2	5.4	0.5	10.8:1	4.4:1	C	OVER LIT		
STREET ZONE #40	COLBORNE	MARKET/BAIN	1.8 cd/m2	4.0 cd/m2	0.3 cd/m2	13.3:1	6.0:1	A	OVER LIT		
STREET ZONE #41	GEORGE	NELSON/WELLINGTON	0.7	1.5	0.2	7.5:1	3.5:1	D	ACCEPTABLE		
STREET ZONE #42	GEORGE	WELLINGTON/DARLING	1.9	5.9	0.7	8.4:1	2.7:1	D	OVER LIT		
STREET ZONE #43	GEORGE	DARLING/DALHOUSIE	2.3	4.6	0.9	5.1:1	2.6:1	D	OVER LIT		
STREET ZONE #44	NELSON	GEORGE/CHARLOTTE	0.4 cd/m2	1.4 cd/m2	0.1 cd/m2	14.0:1	4.0:1	B	ACCEPTABLE		
STREET ZONE #45	WELLINGTON	GEORGE/CHARLOTTE	1.0 cd/m2	2.6 cd/m2	0.3 cd/m2	8.7:1	3.3:1	B	OVER LIT		
STREET ZONE #46	DARLING	GEORGE/CHARLOTTE	0.5 cd/m2	1.3 cd/m2	0.2 cd/m2	6.5:1	2.5:1	B	ACCEPTABLE		
STREET ZONE #47	DALHOUSIE	GEORGE/CHARLOTTE	1.7 cd/m2	4.2 cd/m2	0.4 cd/m2	10.5:1	4.3:1	A	OVER LIT		
STREET ZONE #48	COLBORNE	BAIN/CHARLOTTE	1.1	3.4	0.5	6.8:1	2.2:1	C	ACCEPTABLE		
STREET ZONE #49	CHARLOTTE	NELSON/WELLINGTON	0.8	1.8	0.3	6.0:1	2.7:1	D	ACCEPTABLE		
STREET ZONE #50	CHARLOTTE	WELLINGTON/DARLING	1.1	4.3	0.2	21.5:1	5.5:1	D	OVER LIT		
STREET ZONE #51	CHARLOTTE	DARLING/DALHOUSIE	1.6	4.5	0.4	11.3:1	4.0:1	D	OVER LIT		
STREET ZONE #52	CHARLOTTE	DALHOUSIE/COLBORNE	0.6	1.9	0.2	9.5:1	3.0:1	D	ACCEPTABLE		
STREET ZONE #53	NELSON	CHARLOTTE/CLARENCE	0.5 cd/m2	1.2 cd/m2	0.2 cd/m2	6.0:1	2.5:1	B	ACCEPTABLE		
STREET ZONE #54	WELLINGTON	CHARLOTTE/CLARENCE	1.2 cd/m2	2.7 cd/m2	0.2 cd/m2	13.5:1	6.0:1	B	OVER LIT		
STREET ZONE #55	DARLING	CHARLOTTE/CLARENCE	0.5 cd/m2	2.3 cd/m2	0.1 cd/m2	23.0:1	5.0:1	B	ACCEPTABLE		
STREET ZONE #56	DALHOUSIE	CHARLOTTE/CLARENCE	2.0 cd/m2	4.4 cd/m2	0.5 cd/m2	8.4:1	4.0:1	A	OVER LIT		
STREET ZONE #57	COLBORNE	CHARLOTTE/ECHO	2.0	4.7	0.4	11.8:1	5.0:1	C	OVER LIT		
STREET ZONE #58	COLBORNE	ECHO/CLARENCE	2.9	4.5	2.1	2.1:1	1.4:1	C	OVER LIT		
STREET ZONE #59	CLARENCE	NELSON/WELLINGTON	1.1	3.5	0.3	11.7:1	3.7:1	D	OVER LIT		
STREET ZONE #60	CLARENCE	WELLINGTON/DARLING	1.1	3.4	0.3	11.3:1	3.7:1	D	OVER LIT		
STREET ZONE #61	CLARENCE	DARLING/DALHOUSIE	1.2	3.4	0.3	11.3:1	4.0:1	D	OVER LIT		
STREET ZONE #62	CLARENCE	DALHOUSIE/COLBORNE	1.2	3.7	0.3	12.3:1	4.0:1	D	OVER LIT		
STREET ZONE #63	DALHOUSIE	CLARENCE/ALFRED	1.3 cd/m2	3.2 cd/m2	0.4 cd/m2	8.0:1	3.3:1	A	OVER LIT		
STREET ZONE #64	COLBORNE	CLARENCE/ALFRED	1.8 cd/m2	3.8 cd/m2	0.6 cd/m2	6.3:1	3.0:1	A	OVER LIT		
STREET ZONE #65	ALFRED	DALHOUSIE/COLBORNE	0.9	1.5	0.5	3.0:1	1.8:1	D	ACCEPTABLE		
STREET ZONE #66	DALHOUSIE	ALFRED/PARK	2.1	4.6	0.8	5.8:1	2.6:1	C	OVER LIT		
STREET ZONE #67	COLBORNE	ALFRED/PARK	2.2	4.9	0.8	6.1:1	2.8:1	C	OVER LIT		
STREET ZONE #68	PARK	DALHOUSIE/COLBORNE	0.6	1.2	0.2	6.0:1	3.0:1	D	ACCEPTABLE		
STREET ZONE #69	DALHOUSIE	PARK/PEEL	2.4	4.7	1.0	4.7:1	2.4:1	C	OVER LIT		
STREET ZONE #70	COLBORNE	PARK/PEEL	2.0	4.6	0.8	5.8:1	2.5:1	C	OVER LIT		
STREET ZONE #71	PEEL	DALHOUSIE/COLBORNE	0								

ELECTRICAL LEGEND	
	POLE LIGHT FIXTURE (z = TYPE AS PER SCHEDULE)
	LIGHT FIXTURE (z = TYPE AS PER SCHEDULE)
	2 LIGHT FIXTURES ON ONE POLE (z = TYPE AS PER SCHEDULE)
	2 LIGHT FIXTURES AND STREET LIGHT ON ONE POLE (z = TYPE AS PER SCHEDULE)

LUMINAIRE SCHEDULE						
TYPE	SIMULATED MANUFACTURER	MODEL	CATALOGUE NUMBERS	DESCRIPTION NUM OF LUMPS LIGHT LOSS FACTOR	LOCATION MOUNTING HEIGHT	NOTES
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	LED STREETLIGHT 111W LED LLF=1.0	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m PHOTOMETRIC FILE IS BASED ON A 97W LAMP. 111W / 97W X 0.9 = ~1.0 LLF LLF=1.0 TO COMPENSATE FOR WATTAGE LLF= LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 39W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 47W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 86W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE II LIGHT DISTRIBUTION	STREETLIGHT 71W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 97W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	AMERICAN ELECTRIC LIGHTING	125	125 25S R3 SG HP TYPE 3 LIGHT DISTRIBUTION SAG LENS	COBRA HEAD 250W HPS LLF=0.72	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION SAG GLASS LENS HPS=HIGH PRESSURE SODIUM LAMP
	AMERICAN ELECTRIC LIGHTING	125	125 25S R3 FG HP TYPE 3 LIGHT DISTRIBUTION FLAT LENS	COBRA HEAD 250W HPS LLF=0.72	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION FLAT GLASS LENS HPS=HIGH PRESSURE SODIUM LAMP
	AMERICAN ELECTRIC LIGHTING	115	115 10S R2 FG HP TYPE 2 LIGHT DISTRIBUTION FLAT LENS	COBRA HEAD 100W HPS LLF=0.72	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION FLAT GLASS LENS HPS=HIGH PRESSURE SODIUM LAMP
	AMERICAN ELECTRIC LIGHTING	115	115 10S R2 SG HP TYPE 2 LIGHT DISTRIBUTION SAG LENS	COBRA HEAD 100W HPS LLF=0.72	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION SAG GLASS LENS HPS=HIGH PRESSURE SODIUM LAMP
	KING LUMINAIRE	K118	K118-B3AR-IV-75 (SSL)1036 TYPE 4 LIGHT DISTRIBUTION	LED POST TOP 75W LED LLF=.88	GENERAL POLE 4.72m	LED ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION
	KING LUMINAIRE	K118	K118-RETROFIT TYPE 4 LIGHT DISTRIBUTION	LED POST TOP 75W LED LLF=.88	GENERAL POLE 4.72m	LED ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION
	KING LUMINAIRE	K124R	K124R-LAR_70(MED)_MH TYPE 3 LIGHT DISTRIBUTION METAL HALIDE	POST TOP 70W MH LLF=0.7	GENERAL POLE 4.72m	ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION HOUSE SIDE SHIELDS, POLYCARB GLOBE MH=METAL HALIDE
	HOLOPHANE	PUCL2	PUCL2 P20_30K FC2 TYPE 2 DISTRIBUTION	POST TOP 45W LED LLF=.88	GENERAL POLE 6.0m	LED ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION FULL CUT OFF NO LENS
	HOLOPHANE	PTE3	PTE3 P20_30K AL3 TYPE 2 DISTRIBUTION	POST TOP 40W LED LLF=.88	GENERAL POLE 6.0m	ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION LENS
	HOLOPHANE	PTE3	PTE3 TYPE 2 DISTRIBUTION	POST TOP 100W HPS LLF=0.72	GENERAL POLE 6.0m	ROADWAY DECORATIVE LIGHT LLF = LAMP X DIRT DEPRECIATION LENS ASSUMED WATTAGE
	AMERICAN ELECTRIC LIGHTING	247L	GRP 10S RH R3 TYPE 3 LIGHT DISTRIBUTION	POST TOP 100W HPS LLF=.72	GENERAL POLE 6.0m	ROADWAY DECORATIVE LIGHT. LLF = LAMP X DIRT DEPRECIATION SAME LIGHT DISTRIBUTION AND IES FILE FOR POST TOP AND SIDE MOUNT FIXTURES.
	AMERICAN ELECTRIC LIGHTING	HPS	GRP 10S RH R3 TYPE 3 LIGHT DISTRIBUTION	POST TOP 100W HPS LLF=0.72	GENERAL POLE 6.0m	ROADWAY DECORATIVE LIGHT. LLF = LAMP X DIRT DEPRECIATION SAME LIGHT DISTRIBUTION AND IES FILE FOR POST TOP AND SIDE MOUNT FIXTURES.
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION MANUFACTURER IS ASSUMED	LED STREETLIGHT 111W LED LLF=1.0	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m PHOTOMETRIC FILE IS BASED ON A 97W LAMP. 111W / 97W X 0.9 = ~1.0 LLF LLF=1.0 TO COMPENSATE FOR WATTAGE LLF= LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 31W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION
	GE LIGHTING SOLUTIONS	ERL1	ERL1 TYPE 2 LIGHT DISTRIBUTION	STREETLIGHT 44W LED LLF=.88	GENERAL POLE 9.1m	LED ROADWAY STREETLIGHT. ARM LENGTH=2.4m LLF = LAMP X DIRT DEPRECIATION

5		
4		
3		
2	ISSUED FOR REPORT	2023.03.13
1	LIGHTING CALCULATIONS	2022.10.21
No	REVISION	DATE

MIGHTON ENGINEERING

300 VICTORIA ST N. 2ND FL. PH (519) 745-3703
KITCHENER, ON N2M 6R9 FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
PROPOSED

BRANTFORD STREETSCAPING

BRANTFORD ONTARIO

DRAWING TITLE:

LUMINAIRE SCHEDULE

DRAWN BY:	TS	CUSTOMER PROJECT No.	-
CHECKED BY:	T.A.	MIGHTON PROJECT No.	41013
DATE:	MAY 2022	DRAWING No.	
SCALE:	N.T.S.		SL.15