SHADOW STUDY 22072 - 1995 DUNDAS MISSISSAUGA TORONTO, ONTARIO

DATE 9 DECEMBER 2024



405-317 ADELAIDE STREET WEST TORONTO CANADA M5V 1P9 +1 416 599 9729 WWW. RAWDESIGN.CA

Sun/Shadow Study

Introduction

Sun angles used in this study are based on the latitude and longitude of the proposed development at 1995 Dundas Street East in Mississauga, Ontario as follows:

Latitude: 43.622296064260645 Longitude: -79.57098858946509

The base plan was derived from the City of Mississauga Open Data Catalogue. The drawing was imported into Revit and developed into a 3D mapping model showing the context and the proposed buildings.

The key plan shown on Page 2 of the submitted Shadow Study by Raw Design Architects shows the areas surrounding the proposed development that were included in the study as set out in the "Standards for Shadow Studies" of the City of Mississauga dated June 2014.

Key Plan



PROPERTY LINE

COMMUNAL OUTDOOR AMENITY AREA: MARKLAND WOOD GOLF CLUB

PARK: ETOBICOKE CREEK

Shadow Analysis

Page 6 to 17 of the study shows the existing shadows of the surrounding context and the incremental shadows of the proposed development.

- Pages 6 to 10 show the shadows on 21 June at the following times: 05:37, 07:07, 07:20, 08:20, 09:20, 10:20, 11:20, 12:20, 13:20: 14:20, 15:20, 16:20, 17:20, 18:20, 19:20:19:33, and 21:03.
- Pages 11 to 14 to show the shadows on 21 September at the following times: 07:05, 08:35, 09:12, 10:12, 11:12, 12:12, 13:12, 14:12, 15:12, 16:12, 17:48, and 19:18.
- Pages 15 to 17 show the shadow on 21 December at the following times: 07:49, 09:19, 10:17, 11:17, 12:17, 13:17, 14:17, 15:15, and 16:45.

Areas Analyzed and Reviewed for Shadow Impact Criteria 3.2 Communal Outdoor Amenity Areas

Markland Wood Golf Club

With respect to shadow impacts on the Markland Wood Golf Club to the north with their golf courses located on both sides of Etobicoke Creek:

June 21st

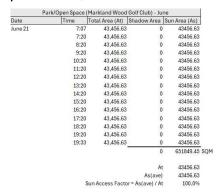
There is no shadow impact on the Markland Wood Golf Club. Sun Access Factor is 100% from the development site, therefore the criterion of having a Sun Access Factor of at least 50% is met.

September 21st

There is no shadow impact on the Markland Wood Golf Club. Sun Access Factor is 100% from the development site, therefore the criterion of having a Sun Access Factor of at least 50% is met.

December 21st

There is minimal shadow impact on the golf course at 9:19am. Sun Access Factor is 98.8% from the development site, therefore the criterion of having a Sun Access Factor of at least 50% is met.



Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35	43,456.63	0	43456.63
	9:12	43,456.63	0	43456.63
	10:12	43,456.63	0	43456.63
	11:12	43,456.63	0	43456.63
	12:12	43,456.63	0	43456.63
	13:12	43,456.63	0	43456.63
	14:12	43,456.63	0	43456.63
	15:12	43,456.63	0	43456.63
	16:12	43,456.63	0	43456.63
	17:12	43,456.63	0	43456.63
	17:48	43,456.63	0	43456.63
			0	478022.93
			At	43456.63
			As(ave)	43456.63
	3	Sun Access Facto	or = As(ave) / At	100.0%

1	iun Area (As)	Shadow Area	Total Area (At)	Time	Date
	39941.72	3514.91	43,456.63	9:19	December 21
	43456.63	0	43,456.63	10:17	
	43456.63	0	43,456.63	11:17	
	43456.63	0	43,456.63	12:17	
	43456.63	0	43,456.63	13:17	
	43456.63	0	43,456.63	14:17	
	43456.63	0	43,456.63	15:15	
SQM	300681.5	3514.91			
	43,456.63	At			
	42954.5	As(ave)			
	98.8%	ctor = As(ave) / At	Sun Access Fa		





3.2 Communal Outdoor Amenity Areas (CONT.)

Proposed Linear POPS

With respect to shadow impacts on the proposed linear POPS located on the southern portion of the Subject Site:

June 21st

The proposed development begins to shadow the proposed linear POPS predominately in the evening. Sun Access Factor is 70.1 % from the development site, therefore the criterion of having the Sun Access Factor of at least 50% is met.

September 21st

The proposed development begins to shadow the proposed linear POPS predominately in the evening. Sun Access Factor is 82.0 % from the development site, therefore the criterion of having the Sun Access Factor of at least 50% is met.

December 21st

The proposed development begins to shadow the proposed linear POPS predominately in the evening. Sun Access Factor is 98.9 % from the development site, therefore the criterion of having the Sun Access Factor of at least 50% is met.

	Proposed POPS - June						
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)			
June 21	7:07	1662.51	0	1662.51			
	7:20	1662.51	0	1662.51			
	8:20	1662.51	0	1662.51			
	9:20	1662.51	0	1662.51			
	10:20	1662.51	0	1662.51			
	11:20	1662,51	0	1662.51			
	12:20	1662.51	0	1662.51			
	13:20	1662.51	0	1662.51			
	14:20	1662.51	0	1662.51			
	15:20	1662.51	654.31	1008.2			
	16:20	1662.51	1156.49	506.02			
	17:20	1662.51	1327.75	334.76			
	18:20	1662.51	1412.67	249.84			
	19:20	1662.51	1464.28	198.23			
	19:33	1662.51	1447.08	215.43			
			7462.58	17475.07			
			At	1662.51			
			As(ave)	1165.004667			
		Sun Access	Factor = As(ave) / At	70.1%			

Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35			1662.51
	9:12	1662.51	0	1662.51
	10:12	1662.51	0	1662.51
	11:12	1662.51	0	1662.51
	12:12	1662.51	0	1662.51
	13:12	1662.51	0	1662.51
	14:12	1662.51	0	1662.51
	15:12	1662.51	24.57	1637.94
	16:12	1662.51	759.89	902.62
	17:12	1662.51	1043.6	618.91
	17:48	1662.51	1129.47	533.04
			2957.53	15330.08 SQI
			At	1662.51
			As(ave)	1393.643636
		Sun Access F	actor = As(ava) / At	83 896

Proposed POPS - December						
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)		
December 21	9:19	1662.51	0	1662.51		
	10:17	1662.51	. 0	1662.51		
	11:17	1662.51	0	1662.51		
	12:17	1662.51	. 0	1662.51		
	13:17	1662.51	0	1662.51		
	14:17	1662.51	0	1662.51		
	15:15	1662.51	124.08	1538.43		
			124.08	11513,49 SQ		
			At	1662.51		
			As(ave)	1644.78429		
		Sun Access F	actor = As(ave) / At	98.9%		





3.2 Communal Outdoor Amenity Areas (CONT.)

Proposed Private Outdoor Amenity Areas

With respect to shadow impacts on the proposed outdoor amenity areas located on Level 1, Levels 5, 13, and 17:

Level 1 (Ground Floor)

The proposed outdoor amenity area at Level 1 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area failed to meet the criteria on September 21st, and December 21st, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 69.1% on June 21st, 24.8% on September 21st, and 1.1% on December 21st. However, in our opinion the condition is considered to be acceptable as it will have a limited impact on the utility of this space. When programming the outdoor amenity space at the detailed design stage, shadow implications will be considered.

Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
June 21	7:07	339	0	339
	7:20	339	7.5	331.5
	8:20	339	37.22	301.78
	9:20	339	108.95	230.05
	10:20	339	127.36	173.09
	11:20	339	165.91	214
	12:20	339	125	214
	13:20	339	241.29	97.71
	14:20	339	339	0
	15:20	339	245.73	93.27
	16:20	339	124.54	214.46
	17:20	339	34.84	304.16
	18:20	339	11.69	327.31
	19:20	339	4.39	334.61
	19:33	339	2.37	336.63
			1575.79	3511.57 S

As(ave) 234.1046667

Date	Time	Total Area (At)	Shadow Area	Sun Area (As)	
September 21	8:35	339	165.62	173.38	
	9:12	339	221.5	117.5	
	10:12	339	266.9	72.1	
	11:12	339	339	0	
	12:12	339	339	0	
	13:12	339	339	0	
	14:12	339	339	0	
	15:12	339	289.41	49.59	
	16:12	339	244.59	94.41	
	17:12	339	156.31	182.69	
	17:48	339	103.31	235.69	
			2803.64	925.36	SQ
			At	339	
			As(ave)	84.12363636	
		Sun Access Fact	or = As(ave) / At	24.8%	

		ty - December	or Outdoor Amen	Ground Flor	
1	Sun Area (As)	Shadow Area	Total Area (At)	Time	ate
Ĩ.	0	339	339	9:19	ecember 21
	0	339	339	10:17	
	0	339	339	11:17	
	0	339	339	12:17	
	0	339	339	13:17	
	0	339	339	14:17	
	26.29	312.71	339	15:15	
SQN	26.29	2346.71	CONTRACT CONTRACT		
17	339	At			
	3.755714286	As(ave)			
	1.1%	or = As(ave) / At	Sun Access Fact		

Level 3

The proposed outdoor amenity area at Level 3 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area failed to meet the criteria on June 21st, September 21st, and December 21st, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 17.7% on June 21st, 13.1% on September 21st, and 3.3% on December 21st. However, in our opinion the condition is considered to be acceptable as it will have a limited impact on the utility of this space. When programming the outdoor amenity space at the detailed design stage, shadow implications will be considered.

	3rd Floor Terrace - June					
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)		
June 21	7:07	1478	1478	0		
	7:20	1478	1478	0		
	8:20	1478	1478	0		
	9:20	1478	1478	0		
	10:20	1478	1478	0		
	11:20	1478	691.82	786.18		
	12:20	1478	345.87	1132.13		
	13:20	1478	701.43	776.57		
	14:20	1478	793.74	684.26		
	15:20	1478	1075.93	402.07		
	16:20	1478	1342.13	135.87		
	17:20	1478	1461.58	16.42		
	18:20	1478	1478	0		
	19:20	1478	1478	0		
	19:33	1478	1478	0		
			18236.5	3933.5 SQ		
			At	1478		
			As(ave)	262.2333333		

3rd Floor Terrace - September						
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)		
September 21	8:35	1478	1478	0		
	9:12	1478	1478	0		
	10:12	1478	1478	0		
	11:12	1478	1215.88	262.12		
	12:12	1478	1186.29	291.71		
	13:12	1478	1139.87	338.13		
	14:12	1478	1053.12	424.88		
	15:12	1478	993.51	484.49		
	16:12	1478	1213.48	264.52		
	17:12	1478	1406.19	71.81		
	17:48	1478	1478	0		
			14120.34	2137.66 SC		
			At	1478		
			As(ave)	194.3327273		
		Sun Access Fact	or = As(ave) / At	13.1%		

	Sun Area (As)	Shadow Area	Total Area (At)	Time	Date
8	0	1478	1478	9:19	December 21
	0	1478	1478	10:17	
	0	1478	1478	11:17	
	89.12	1388.88	1478	12:17	
	169.59	1308.41	1478	13:17	
	84.14	1393.86	1478	14:17	
8	0	1478	1478	15:15	
SQN	342.85	10003.15			
	1478	At			
	48.97857143	As(ave)			
	3.3%	Sun Access Factor = As(ave) / At			

Level 5 (North)

The proposed outdoor amenity area at Level 5 North was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area failed to meet the criteria on June 21st, September 21st, and December 21st, as the sun access factors were less than 50%. Shadows cast by the proposed development resulted in a sun access factor of 40.8% on June 21st, 18.7% on September 21st, and 13.0% on December 21st. However, in our opinion the condition is considered to be acceptable as it will have a limited impact on the utility of this space. When programming the outdoor amenity space at the detailed design stage, shadow implications will be considered.

ate	Time	Total Area (At)	Shadow Area	Sun Area (As)
une 21	7:07	742	168.76	573.24
	7:20	742	190.22	551.78
	8:20	742	197.29	544.71
	9:20	742	311.24	430.76
	10:20	742	464.43	277.57
	11:20	742	642.43	99.57
	12:20	742	515.88	226.12
	13:20	742	289.40	452.6
	14:20	742	143.17	598.83
	15:20	742	461.93	280.07
	16:20	742	742	0
	17:20	742	742	0
	18:20	742	684.34	57.66
	19:20	742	536.59	205.41
	19:33	742	494.53	247.47
			6584.21	4545.79 S
			Δ+	7/12

Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35	742	497.67	244.33
	9:12	742	559.36	182.64
	10:12	742	670.04	71.96
	11:12	742	676.69	65.31
	12:12	742	504.70	237.3
	13:12	742	322.99	419.01
	14:12	742	454.11	287.89
	15:12	742	727.26	14.74
	16:12	742	742	0
	17:12	742	742	0
	17:48	742	742	0
			6638.82	1523.18 S
			At	742
			As(ave)	138.4709091
		Cup Assess East	or = Antonol / At	10 704

Sun Area (As)		Shadow Area	Total Area (At)	Time	Date Time						
0			742	9:19	December 21						
0	0	742	742	10:17							
.53	129.53	612.47	742	11:17							
.78	293.78	448.22	742	12:17							
19	177.19	564.81	742	13:17							
.83	73.83	668.17	742	14:17							
0	0	742	742	15:15							
.33 SQM	674.33	4519.67									
42	742	At									
14	96.33285714	As(ave)									
0%	13.0%	or = As(ave) / At	Sun Access Fact								

Level 5 (South)

The proposed outdoor amenity area at Level 5 South was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on June 21st, September 21st, and December 21st. Shadows cast by the proposed development resulted in a sun access factor of 58.3% on June 21st, 62.7% on September 21st, and 73.7% on December 21st.

	5th	Floor Terrace (So	uth) - June	
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
June 21	7:07	612	612	0
	7:20	612	611.00	1
	8:20	612	605.55	6.45
	9:20	612	571.62	40.38
	10:20	612	438.69	173.31
	11:20	612	279.24	332.76
	12:20	612	135.33	476.67
	13:20	612	61.25	550.75
	14:20	612	0	612
	15:20	612	24.48	587.52
	16:20	612	48.44	563.56
	17:20	612	60.91	551.09
	18:20	612	95.97	516.03
	19:20	612	133.91	478.09
	19:33	612	149.95	462.05
			3828.34	5351.66

As(ave) 356.7773333

	5th Floo	r Terrace (South) -	September	
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35	612	595.35	16.65
	9:12	612	588.63	23.37
	10:12	612	549.86	62.14
	11:12	612	346.07	265.93
	12:12	612	201.72	410.28
	13:12	612	86.45	525.55
	14:12	612	34.38	577.62
	15:12	612	0	612
	16:12	612	23.65	588.35
	17:12	612	36.69	575.31
	17:48	612	46.56	565.44
			2509.36	4222.64
			At	612
			As(ave)	383.8763636
		Sun Access Fact	tor = As(ave) / At	62.7%

260.16 350.92
350.92
466.56
525.72
512.82
539.44
503.82
3159.44 SQN
612
3485714
73.7%

22072 1995 DUNDAS MISSISSAUGA SHADOW STUDY 9 DECEMBER, 2024

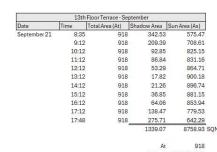


3.2 Communal Outdoor Amenity Areas (CONT.)

Level 13

The proposed outdoor amenity area at Level 13 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on June 21st, September 21st, and December 21st. Shadows cast by the proposed development resulted in a sun access factor of 81.4% on June 21st, 86.7% on September 21st, and 74.3% on December 21st.

	13th	Floor Terraci	e-June	
Time	Tota	(At)	Shadow Area	Sun Area (As)
	7:07	918	218.68	699.32
	7:20	918	212.34	705.66
	8:20	918	92.31	825.69
	9:20	918	84.07	833.93
1	0:20	918	7.52	910.48
1	1:20	918	2.98	915.02
1	2:20	918	4.57	913.43
1	3:20	918	1.54	916.46
1	4:20	918	3.29	914.71
1	5:20	918	22.57	895.43
1	6:20	918	46.39	871.61
1	7:20	918	129.79	788.21
1	8:20	918	195.58	722.42
1	9:20	918	739.95	178.05
1	9:33	918	799.82	118.18
			2561.4	11208.6 S0
			At	918
			As(ave)	747.24
	Sur	Access Fact	or = As(ave) / At	81.4%



	cember	Floor Terrace - De	13th	13th Floor Terrace - December							
Sun Area (As)	Shadow Area	Total Area (At)	Time	Date							
442.55	475.45	918	9:19	December 21							
610.22	307.78	918	10:17								
658.2	259.8	918	11:17								
738.74	179.26	918	12:17								
823.87	94.13	918	13:17								
789.05	128.95	918	14:17								
710.01	207.99	918	15:15								
4772.64 SQ	1653.36										
918	At										
681.8057143	As(ave)										
74.3%	or = As(ave) / At										

Level 17

The proposed outdoor amenity area at Level 17 was analyzed to confirm a 50% sun access factor as part of the communal outdoor amenity areas. This area was found to meet the criteria on June 21st, September 21st, and December 21st. Shadows cast by the proposed development resulted in a sun access factor of 70.9% on June 21st, 86.0% on September 21st, and 61.9% on December 21st.

		17th Floor Terrac	e-June	
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
June 21	7:07	594	594	0
	7:20	594	594	0
	8:20	594	585.2	8.8
	9:20	594	122.77	471.23
	10:20	594	83.25	510.75
	11:20	594	19.87	574.13
	12:20	594	5.11	588.89
	13:20	594	0.73	593.27
	14:20	594	1.62	592.38
	15:20	594	13.05	580.95
	16:20	594	21.83	572.17
	17:20	594	71.12	522.88
	18:20	594	121.25	472.75
	19:20	594	149.28	444.72
	19:33	594	206.2	387.8
			2589.28	6320.72 SQ
			At	594
			As(ave)	421.3813333
		Sun Access Fact	or = As(ave) / At	70 996

		Floor Terrace - Se		,
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35	594	260.72	333.28
	9:12	594	124.91	469.09
	10:12	594	53.22	540.78
	11:12	594	40.05	553.95
	12:12	594	22.12	571.88
	13:12	594	22.48	571.52
	14:12	594	44.74	549.26
	15:12	594	85.69	508.31
	16:12	594	36.01	557.99
	17:12	594	81,63	512.37
	17:48	594	143.13	450.87
			914.7	5619.3
			At	594
			As(ave)	510.8454545
		Sun Access Fact	or = As(ave) / At	86.0%

1	Sun Area (As)	Shadow Area	Total Area (At)	Time	Date	
	353.55	240.45	594	9:19	December 21	
	412.96	181.04	594	10:17		
	414.57	179.43	594	11:17		
	424.24	169.76	594	12:17		
	383.95	210.05	594	13:17		
	336.37	257.63	594	14:17		
	246.31	347.69	594	15:15		
SQN	2571.95	1586.05				
	594	At				
	367.4214286	As(ave)				
	61.9%	or = As(ave) / At				

3.3 Public Realm

Universal Drive Opposite Boulevard

The opposite boulevard on Universal Drive was analyzed to confirm adequate sunlight on sidewalks and boulevards in mixed-use, commercial, employment, and high-density streets as part of the public realm. Although the opposite boulevard had full sunlight on four consecutive hourly test time on 21 September, between 9:12 am to 12:12 pm, this area failed to meet the shadow impact criteria as the opposite boulevard did not have full sunlight between 12:12 pm and 2:12 pm.

Dundas Street East Opposite Boulevard

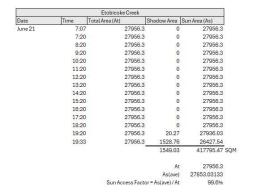
The opposite boulevard on Dundas Street East was analyzed to confirm adequate sunlight on sidewalks and boulevards in mixed-use, commercial, employment, and high-density streets as part of the public realm. The opposite boulevard was found to meet the criteria on 21 September as there no incremental shades from the proposed development from 8:35 am to 4:12 pm.

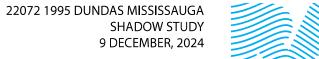
Universal Drive Opposite Boulevard								
Date	Time	Total	Area (At)	Shadow Area	Sun Area (As)			
September 21	9:	12	3196.82	0	3196.82			
	10:	12	3196.82	0	3196.82			
	11:	12	3196.82	0	3196.82			
	12:	12	3196.82	528.95	2667.87			
	13:	12	3196.82	1378.45	1818.37			
	14:	12	3196.82	1757.87	1438.95			

	Dundas Street I	East Opposite Box	ılevard	
Date	Time	Total Area (At)	Shadow Area	Sun Area (As)
September 21	8:35	1051.8	0	1051.8
	9:12	1051.8	0	1051.8
	10:12	1051.8	0	1051.8
	11:12	1051.8	0	1051.8
	12:12	1051.8	0	1051.
	13:12	1051.8	0	1051.8
	14:12	1051.8	0	1051.8
	15:12	1051.8	0	1051.8
	16:12	1051.8	0	1051.8

Etobicoke Creek

With respect to shadow impacts on Etobicoke Creek, located to the north, east, and south of the Subject Site, the criterion of having the Sun Access Factor of at least 50% is being met with a Sun Access Factor of 99.6%

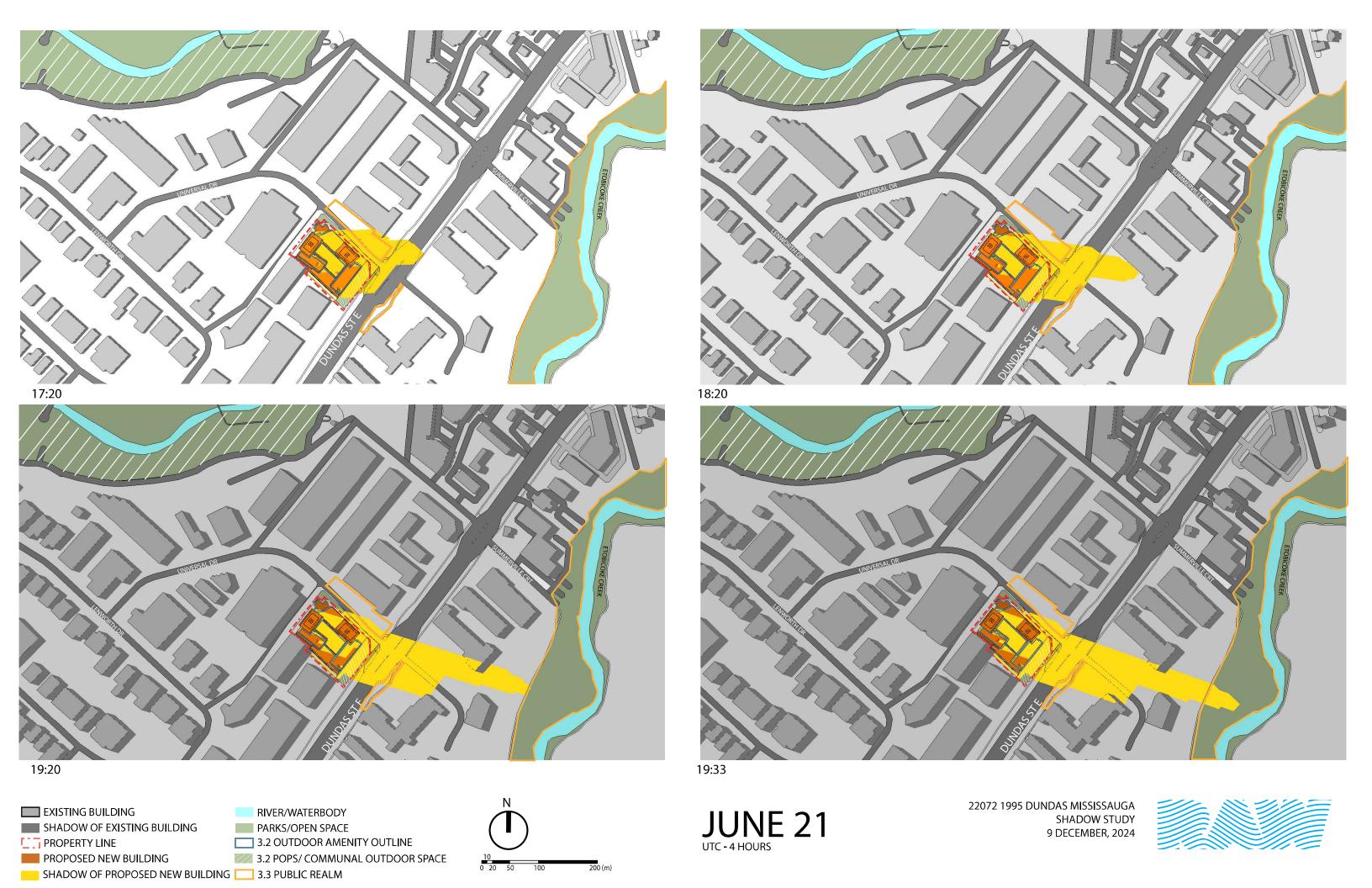


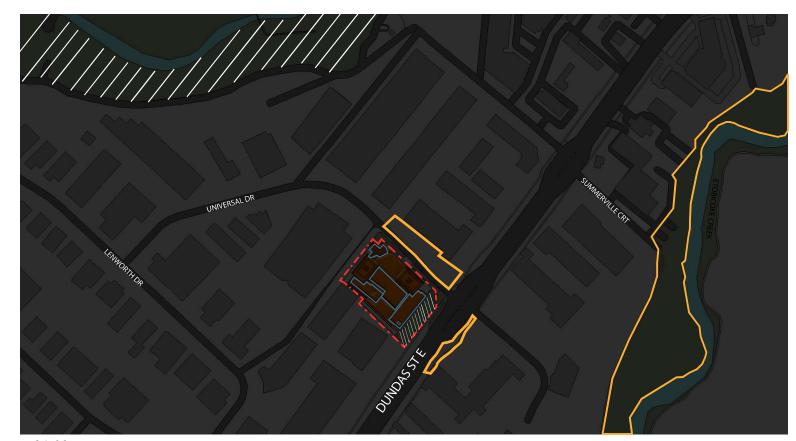






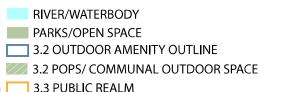


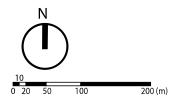




21:03



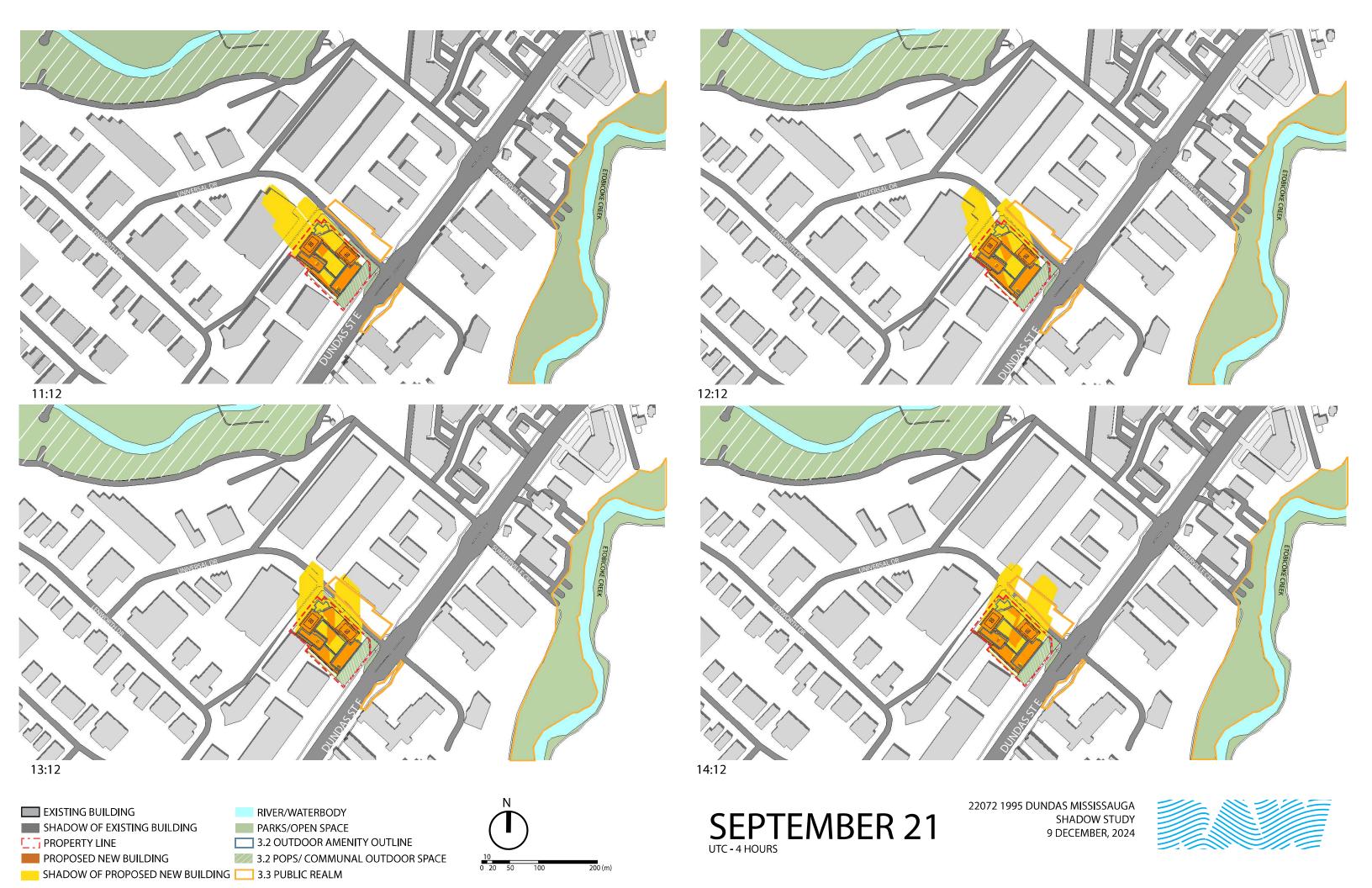


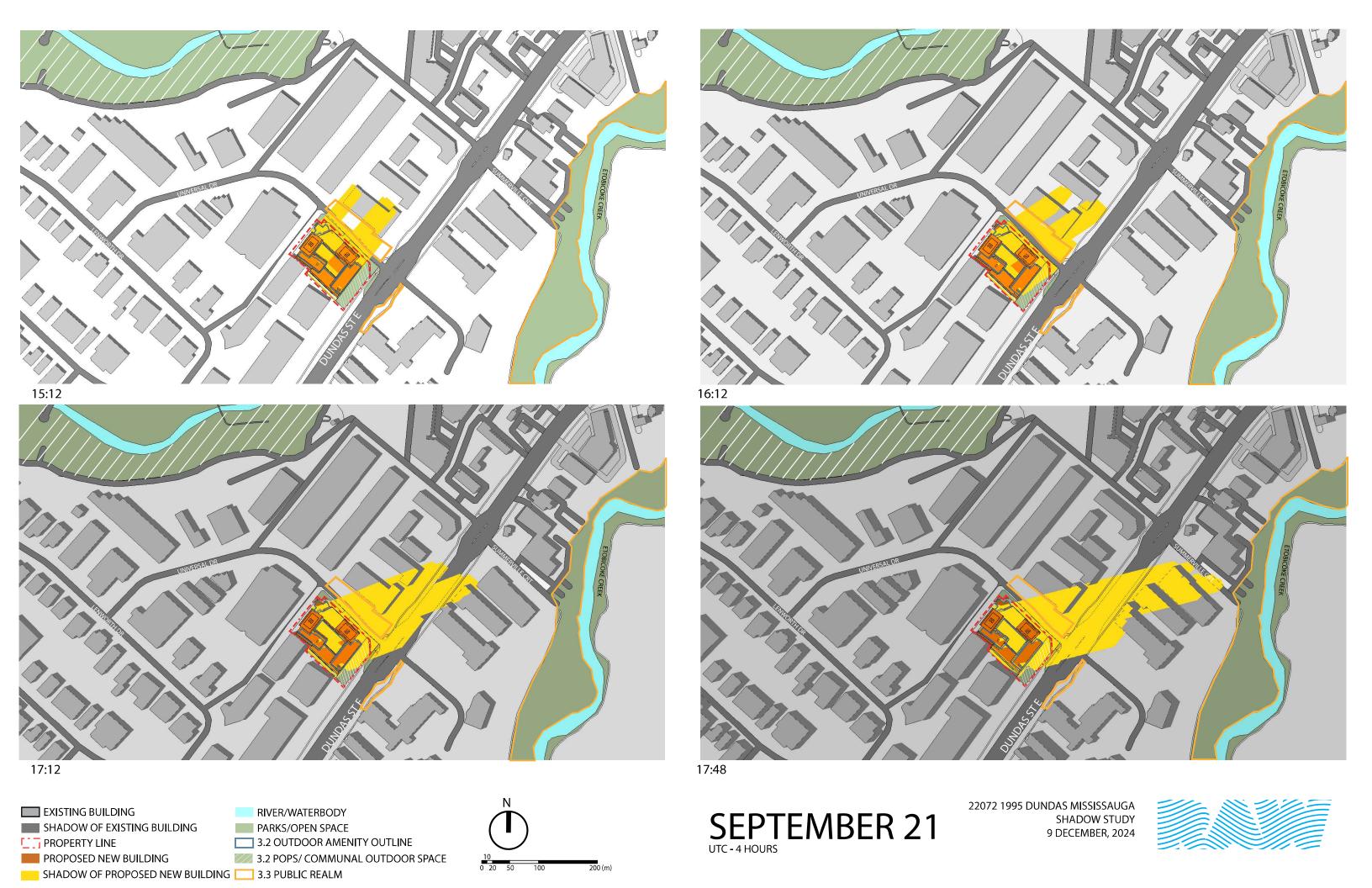


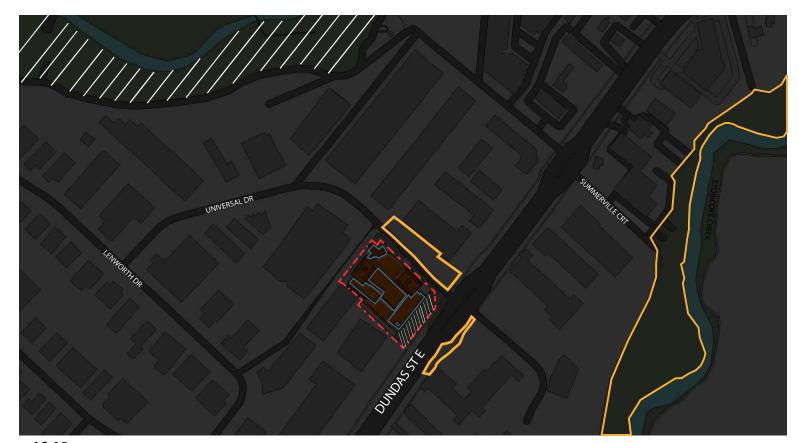






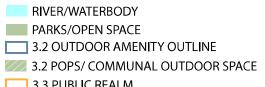


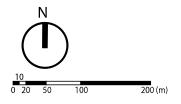




19:18







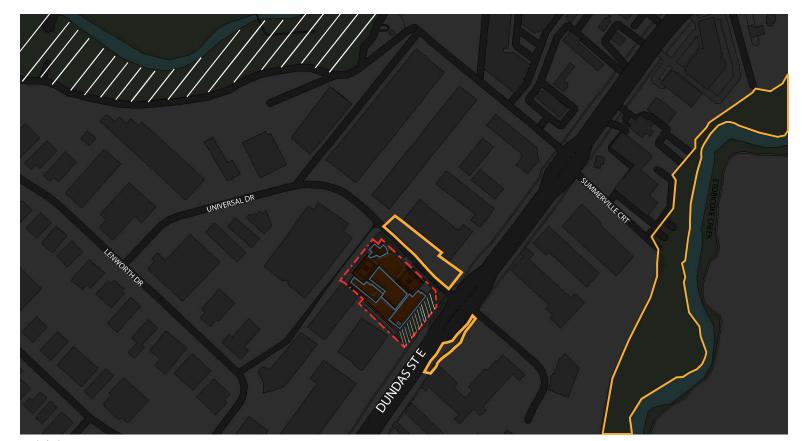












16:45



