SHADOW STUDY

199/201 MARION STREET

2ARCHITECTURE INC

JULY 2022

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The following information prepared by 2Architecture Inc. is to be read in conjunction with the accompanying shadow drawings as well as the architectural drawing set.

SITE

The site is located at 199/201 Marion Street, Winnipeg, MB.
Latitude: 49.88 N
Longitude: 97.12 W

North was determined by geolocating the 3D model in SketchUp based on Google Maps. The origin of the base plan is from the architectural drawings prepared by 2Architecture Inc.

SOFTWARE

SketchUp Pro was used to generate 3D model, Calculations for shadow length/sun position were done via suncalc.org and implemented through Enscape. Final composite images were done with Photoshop.

DESCRIPTION OF AREAS

Residential private outdoor amenity spaces are determined as private rear yards, decks, patios and balconies of surrounding residential dwellings.

Private common outdoor amenity areas are areas which are owned/ operated by private businesses which allow their patrons access. These can include private patios, park area, and outdoor seating.

Public realm is determined as sidewalks, open spaces, parks and plazas.

EXISTING CONTEXT

The site at 199/201 Marion Street is located between Kenny Street and Traverse Avenue.

Located on a heavily trafficed thoroughfare, the development will be highly visible from both the neighborhood's foot traffic on its main strip and vehicular traffic along Marion Street.

The site is made up of two existing lots - 199 and 201 Marion Street - and has two neighbouring properties.

A 3-storey multi-unit residential building is located adjacent to the site on the West, with a commercial building adjacent to the side on the East, as well as one facing front street (South) and an alley to the rear (North).



Proposed project at 199/201 Marion Street
Private common outdoor amenity areas

Figure 1 - Area map

Refer to architectural drawing set for site and building information.

BUILDING INFO

Height: ± 68'-0"
Building Footprint: ±4794 sq.ft.

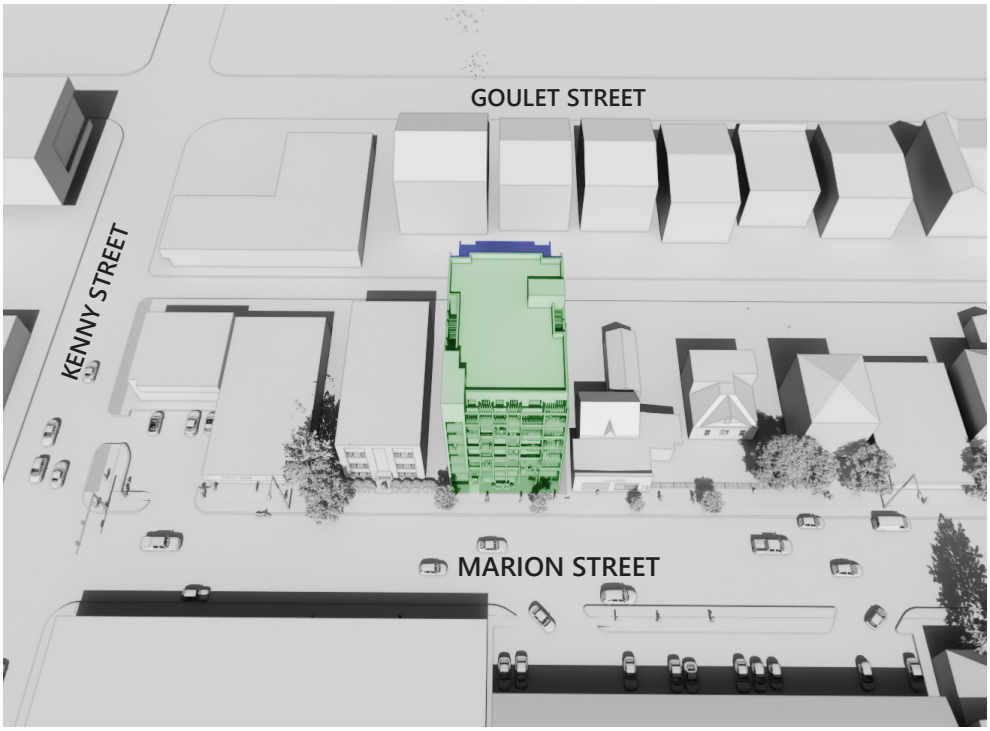
The project proposal is to construct a 6-story, ± 68'-0" tall, mixed use building containing below grade and main level parking, a commercial space on the first level with apartment units on all the levels above.



Figure 2 - Site Image

Figure 3 - Shadow study - March 21, 9am *shadow length = ±84.50m (277'-3")*



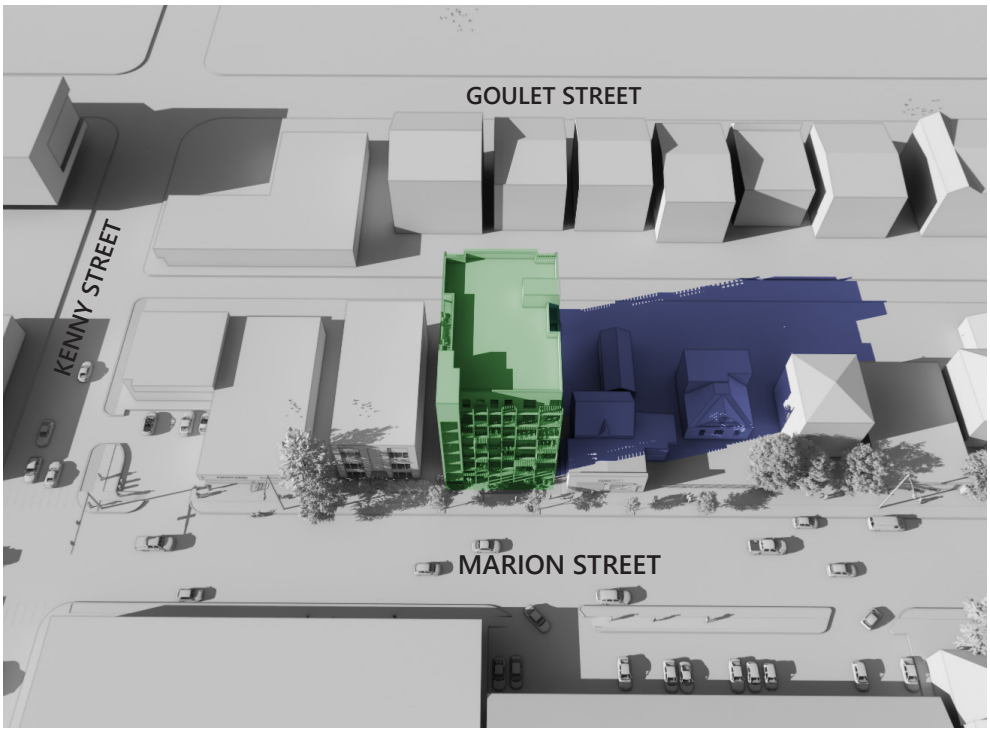


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Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 4 - Shadow study - March 21, 12pm *shadow length = ±27.96m (91'-9")*

Figure 5 - Shadow study - March 21, 3pm *shadow length = ±33.35m (109'-5")*





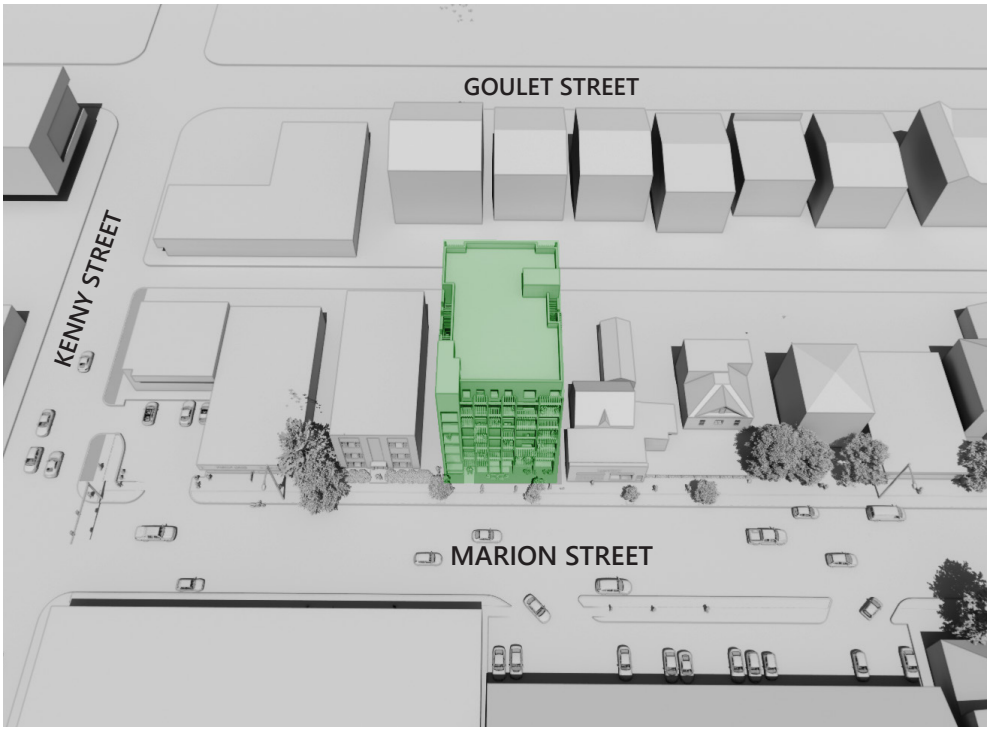


Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 6 - Shadow study - March 21, 6pm *shadow length = ±74.20m (243'-5")*

Figure 7 - Shadow study - June 21, 9am *shadow length = ±33.11m (108'-8")*







Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 8 - Shadow study - June 21, 12pm *shadow length = ±12.82m (42'-1")*

Figure 9 - Shadow study - June 21, 3pm *shadow length = ±16.94m (55'-7")*



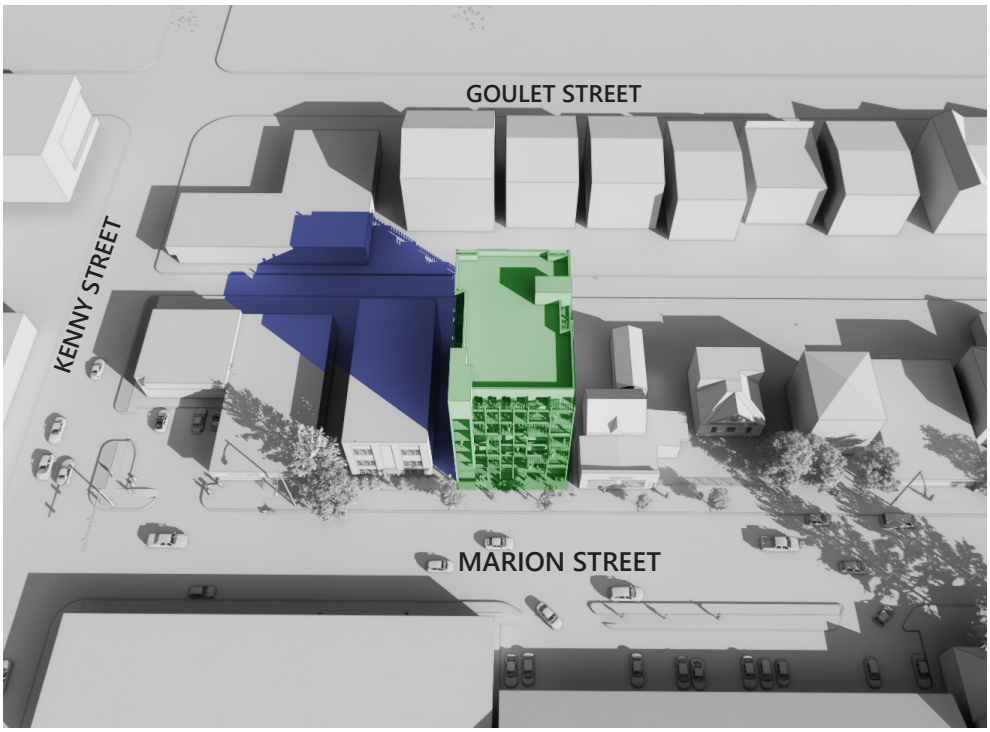


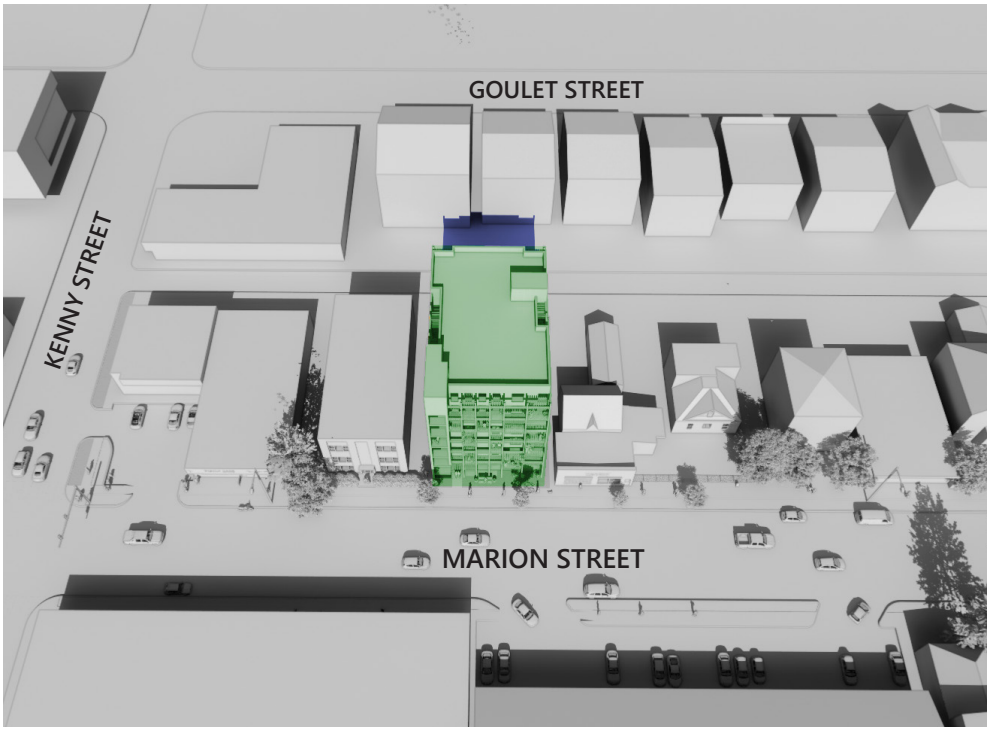


Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 10 - Shadow study - June 21, 6pm *shadow length = ±32.97m (108'-2")*

Figure 11 - Shadow study - September 21, 9am shadow length = ±71.83m (235'-8")



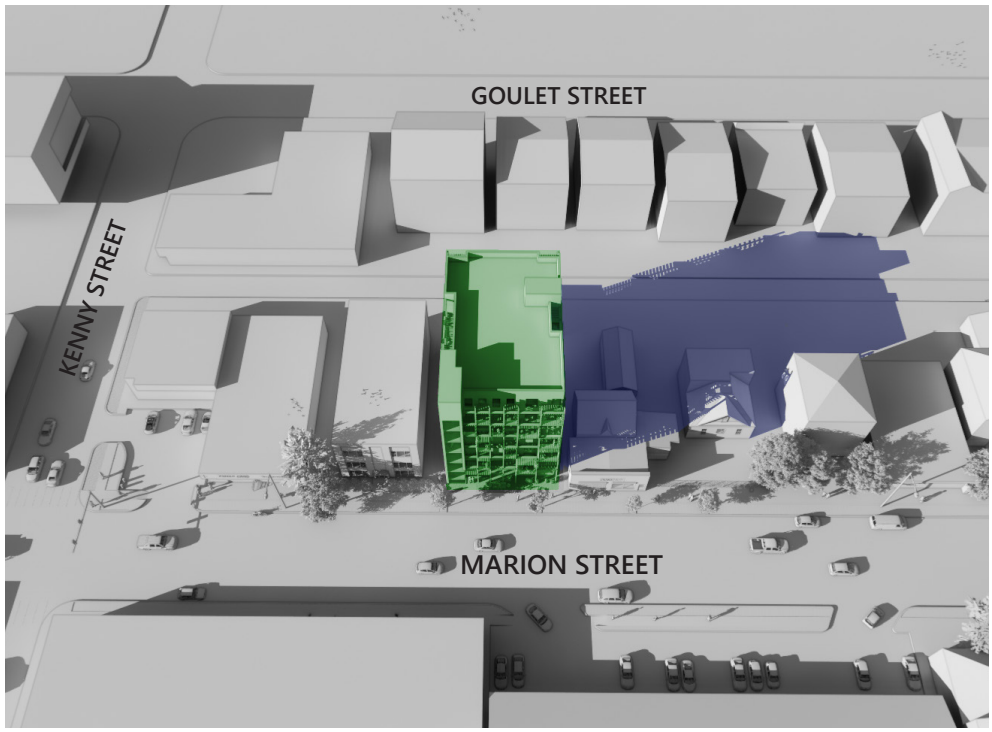


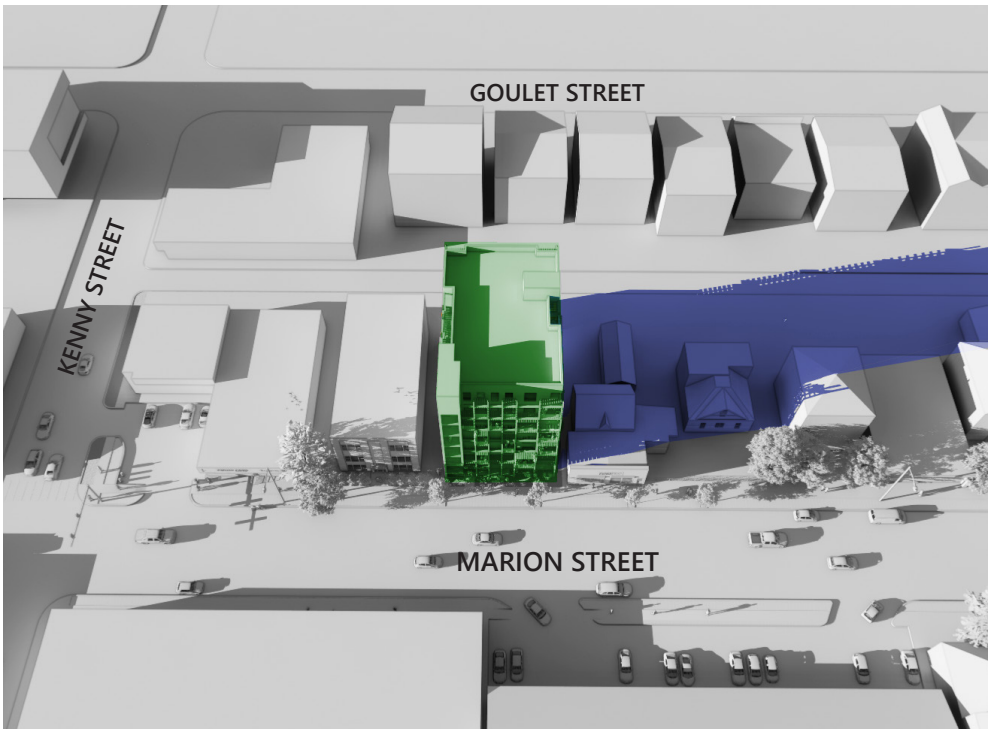


Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 12 - Shadow study - September 21, 12pm shadow length = ±26.80m (87'-11")

Figure 13 - Shadow study - September 21, 3pm shadow length = ±35.60m (116'-10")





Proposed project at 199/201 Marion Street
Shadow cast from project

Figure 14 - Shadow study - September 21, 6pm shadow length = ±87.26m (286'-3")

As illustrated through the shadow studies shown above (figures 3-14) the most significant impact of the shadows generated from the proposed project for all dates occur in the early morning and late afternoon, as expected, when the sun is lowest in the sky and shadows are the lengthiest. Shadow coverage diminishes as the sun reaches its peak position, and begins to lengthen again as the position lowers.

MARCH AND SEPTEMBER EQUINOX

On equinox dates the sun follows the same arc across the sky. As the sun rises in the east and sets in the west on these dates, all shadows theoretically extend indefinitely as the sun comes in intersection with the horizon line. Accounting for the impact of surrounding buildings, shadows become a factor at 8am and cease around 5pm.

SUMMER (JUNE) AND WINTER (DECEMBER) SOLSTICE

The tilt of the Earth's axis affects the length of all shadows. During the summer solstice, the Earth is tilted towards the Sun, so the proposed buildings midday shadows are very short. During the winter solstice, the Earth is tilted away from the Sun, so the proposed buildings midday shadows are longer.

IMPACTS ON SURROUNDING PROPERTIES

Shown through Figures 3 and 9 during the early morning, shadows extend onto the residence located at 195 Marion Street. These shadows begin impacting the residence around 8:30am and continue until around 10am.

Due to the low angle of the sun as well as the site context not illustrated through the simulations, (such as mature trees, fencing and proximity of residential structures such as garages) it is our opinion that the new shadow cast by the project will have minimal effect on the residence.

IMPACTS ON SURROUNDING PRIVATE COMMON OUTDOOR AMENITY AREAS

Figures 5 and 8 demonstrate new shadows being cast from the proposed project onto the patio of the restaurant located at 209 Marion Street.

It is our opinion that the new shadow mass being cast on this location will have negligible impact on the patio due to the presence of the existing adjacent building and mature trees.

CONCLUSION

Although the proposed project will cast additional shadows onto the neighborhood, primarily in the early morning and late afternoon, much of this shadow mass will be mitigated by shadows cast from existing context, including mature trees which are not represented in the simulations.

Due to the direction and angle of the sun at the site, the majority of the shadows cast by the proposed project will fall towards the backlane between Marion and Goulet Street, and avoid falling directly on neighboring buildings. Shadows are in constant motion as the sun moves through the sky, any resulting impact of shadows on specific buildings will be limited in duration.

If the project is built as currently proposed, only a few buildings will be affected by new the shadows generated by the building and only for short periods of time.

It is also important to recognize that the lighting conditions shown within the simulations do not account for typical cloud conditions such as partially cloudy days or overcast skies. These cloud conditions significantly reduce the harshness and strength of shadows cast.

Considering the points stated above, we believe that this project will contribute to the overall aesthetic of the Marion Street strip while having minimal shadow impacts on surrounding properties.