# Our Physical Environment, Our Choices?: <br> A comparison of urban design and pedestrian patters along Kingston's Princess Street by Phillip Prell, April 2018 

## Executive Summary

## Report introduction:

The connection between the physical environment and pedestrian movements is frequently noted by urban designers. The physical environment can be assessed in relation to pedestrian activity in numerous ways. Among the most important are the urban designs of buildings and surrounding cityscape. This report seeks to compare the physical streetscape and pedestrian movements by focusing on Kingston, Ontario's main downtown street, Princess Street. Two blocks with different urban designs were compared and pedestrian movements were assessed.

## The site:

These two blocks, designated "West Block" and "East Block" are adjacent to each other in Kingston's "Central Business District". Adjacent blocks were chosen because it is assumed that this mitigates surrounding amenity and land use bias. Both blocks are comparable, yet each has unique design features/land uses that were expected to influence results. The West Block has a church with a forecourt; the East Block has a fast food drive-through, which both disrupt the consistent street wall. In addition, in 2016, the East Block was reconstructed to improve the sidewalks/street design to make it more amenable to pedestrian usage. The fieldwork was done in Fall 2017 allowing for a comparison of the West Block before its current improvements.
(Fig. 1.1) Location within the Central Business District (Kingston Official Plan)

(Fig. 1.2) Images of both Blocks from Google Earth:
East Block


West Block


Block Figure Description:
The purple line denotes the edge of the sidewalk during 2017 observations.

## Methods of assessment:

To assess the pedestrian movements on these two blocks, the movement, number, centres of activity, average walking speed and resting patterns of pedestrians along both segments of each block were evaluated by implementing methods from Jan Gehl and William Whyte. The urban design for both sites was assessed using a quantifiable scoring system from Ewing and Clemente's "Measuring Urban Design". In addition, a short qualitative analysis of signage was performed, based on Crankshaw's "Creating Vibrant Public Spaces".

## Data analysis:

The central question that guided this report is: Does urban design influence the pedestrian patterns along Princess Street?

The answer required two types of data collection and analysis: pedestrian patterns and urban design. To assess pedestrian patterns, three cameras situated on opposites sides of the targeted blocks took pictures every 15 seconds between the hours of 11:05 AM and 3:35 PM. Two cameras focused on the West and one on the East (see above). These pictures were then assessed to identify the following pedestrian patterns: (1) where people 'stayed' (2) for how long, (3) how many people were present during each hour, (4) total number of pedestrians during the entire observation period, (5) the number of times the blocks achieved the status of an 'active street', and (6) average pedestrian movement speed along each block (see appendix sections A-5 \& A-6). In addition, (7) where people 'stay' and enter/exit was used as an indication of an 'active façade' or 'centre of activity'. Both blocks were observed between 11:05 AM-3:35 PM each on two Wednesdays and two Saturdays in October and November under similar conditions to mitigate against weather and event biases.

Ewing and Clemente's assessment tools were used to consider which block had a higher quality urban design and thus was more pedestrian-friendly. Both blocks were graded on the five essential and quantifiable categories: Imageability, Enclosure, Human Scale, Transparency and Complexity.

## Conclusions and recommendations:

## Urban Design Evaluation:

- The urban design evaluation demonstrates that the streetscape on the East Block was superior to that of the West Block.

Urban Design Evaluation (Ewing and Clemente's method):

| CRITERIA | WEST BLOCK EAST BLOCK |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| IMAGEABILITY |  |  |  |  |
| ENCLOSURE |  |  |  |  |
| HUMAN SCALE |  |  |  |  |
| TRANSPARENCY |  |  |  |  |
| COMPLEXITY (D) - |  |  |  |  |
| OVERALL <br> EVALUATION <br> Good <br> Very Good |  |  |  |  |
| Evaluation Criteria |  |  |  |  |
| Rating | Poor Fair | Good | Very Good | Excellent |
| Symbol |  | (1) |  |  |

## Pedestrian Pattern Evaluation

- The disparity between the East and West Block's pedestrian patterns appears to correlate to differences in urban design, as described below. However, other confounding factors (e.g. land uses, and proximity to institutions and natural amenities) may have influenced these results.



Findings:

- The data show that the East Block, which had a superior urban design, yielded more pedestrian counts, 'stays' and a greater amount of time as an 'active street' than the West Block.
- The East Block had a far greater amount of time as an 'active street'. This was related to the East Block having a larger number and length of 'stays', and more 'centres of activity' than the West.
- For both blocks there was a strong connection between the 'centres of activity' and places where pedestrians chose to 'stay'. This relationship corresponded to the most popular land uses.
- Weekday observations yielded half as many overall pedestrians counts as weekends. Pedestrians also typically 'stay' for shorter lengths of time on weekdays when compared to weekends.
- Warmer and cooler observation periods influenced pedestrian 'counts', length of 'stays' and number of 'stays'. Temperature heavily influenced the number of pedestrians along both blocks.
- 'Centres of activity' remained consistent throughout data collection, despite the day of the week and differences in temperature.


## Recommendations:

1) The City of Kingston and/or a Queen's School of Urban and Regional Planning student could conduct this or a similar study again after the reconstruction of the West Block is completed. This will provide more data on the influence of the intervention.
2) The City of Kingston should install way-finding systems along Princess Street to assist pedestrians.
3) The Business Improvement Association (BIA) should find a business to fill the vacant storefront on the East Block to improve pedestrian experiences.
