COMPARING FORM-BASED CODES AND URBAN DESIGN GUIDELINES IN THE CENTRAL AREAS OF TWO MOUNTAIN RESORT TOWNS

A Master’s Report submitted to the School of Urban and Regional Planning in conformity with the requirements for the degree of Master of Urban and Regional Planning (M.Pl)

Ian Pinchin
School of Urban and Regional Planning,
Department of Geography and Planning,
Queen’s University
August 2017

COMPARING FORM-BASED CODES AND URBAN DESIGN GUIDELINES IN THE CENTRAL AREAS OF TWO MOUNTAIN RESORT TOWNS

Ian Pinchin, September 2017

EXECUTIVE SUMMARY

Through a case study of two mountain resort towns and four study areas, this research investigates and evaluates the urban design and planning controls in place in Whistler, British Columbia and Mammoth Lakes, California. Specifically, this research evaluates a traditional Euclidian zoning bylaw that emphasizes the regulation of land use over form and its accompanying design guidelines (Resort Municipality of Whistler, BC) and a hybrid code (Mammoth Lakes, California). The question this research aims to answer is:

How are two mountain resort communities transitioning to incorporating form-based elements into development control tools and code updates?

The research method used in this report is a qualitative case study comparison that used direct observation, document review, and key informant interviews to evaluate the physical environment and urban design of the study areas, as well as their governing planning controls. The case studies were evaluated under three categories: Resort Development Principles, Urban Design, and Development Control Tools. Each category had a series of evaluation criteria drawn from current and relevant literature. A full summary of the research methods is available in Chapter 3; however, each analysis criterion is ranked according to the legend shown in Table Exec-1 below.

Table Exec-1: Ranking Scheme Legend

Does not fulfill	Minimal fulfillment	Somewhat fulfills	Almost fulfills	Fulfills criteria
○	◔	◑	◕	●

There are also important limitations to this study, including that the findings listed below are particular to seasonal resort communities, and as such, the results are not generalizable to all other communities. The results of the study found that Whistler satisfied all of the Resort Development Principles while Mammoth Lakes satisfied a range of criteria but not to the same degree as Whistler as shown in table Exec-2

Table Exec-2**: Resort Development Principle Summary**

Resort Development Principle	Whistler	Mammoth Lakes
Milieu	●	●
Multi-Activity Environments	●	◕
Town-Centre Hub	●	◑

Each study area's physical built form was evaluated through direct observation and the results are summarized in Table Exec-3. Overall, Whistler Village satisfied the most criteria, with Mammoth Village and Whistler Main Street almost fulfilling all the criteria, while Old Mammoth Road fulfilled almost none of the evaluation criteria.

Table Exec-3: Built Form Summary

	Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
Imageability	●	◑	●	◔
Enclosure	●	◕	●	○
Human Scale	●	◑	●	○
Transparency	●	◕	◕	○
Complexity	◕	◕	◕	○
Overall	●	◕	◕	○

Lastly, despite Mammoth Lakes' built form not satisfying the evaluation criteria to the same extent as Whistler's, its planning controls satisfied the respective evaluation criteria to a high degree, while Whistler mostly satisfied the criteria as summarized in Table Exec-4.

Table Exec-4: Development Control Tools Analysis Summary

	Whistler	Mammoth
Vision and Ease of use	◕	●
Design Standards	◕	●
Overall	◕	●

Mammoth's development control tools were recently updated and as yet, no significant development has been completed under these new controls. While this helps to explain the gap between the lower quality of the built form and comprehensive planning controls, this study also examined a proposed development in Mammoth Lakes, a supermarket, and compared it to similar developments in other study areas. The study showed that future projects developed under the updated planning controls will contribute to addressing many of the gaps in Mammoth's urban design. The report also concluded that Whistler, despite its traditional planning controls, was developed from a greenfield using a method whereby the Municipality had strong controls on the design and was able to parcel out municipal land under the condition that it be developed in accordance with a master plan and set of design guidelines. This has led to a strong emphasis on maintaining a high-quality design from both the municipality and development community.

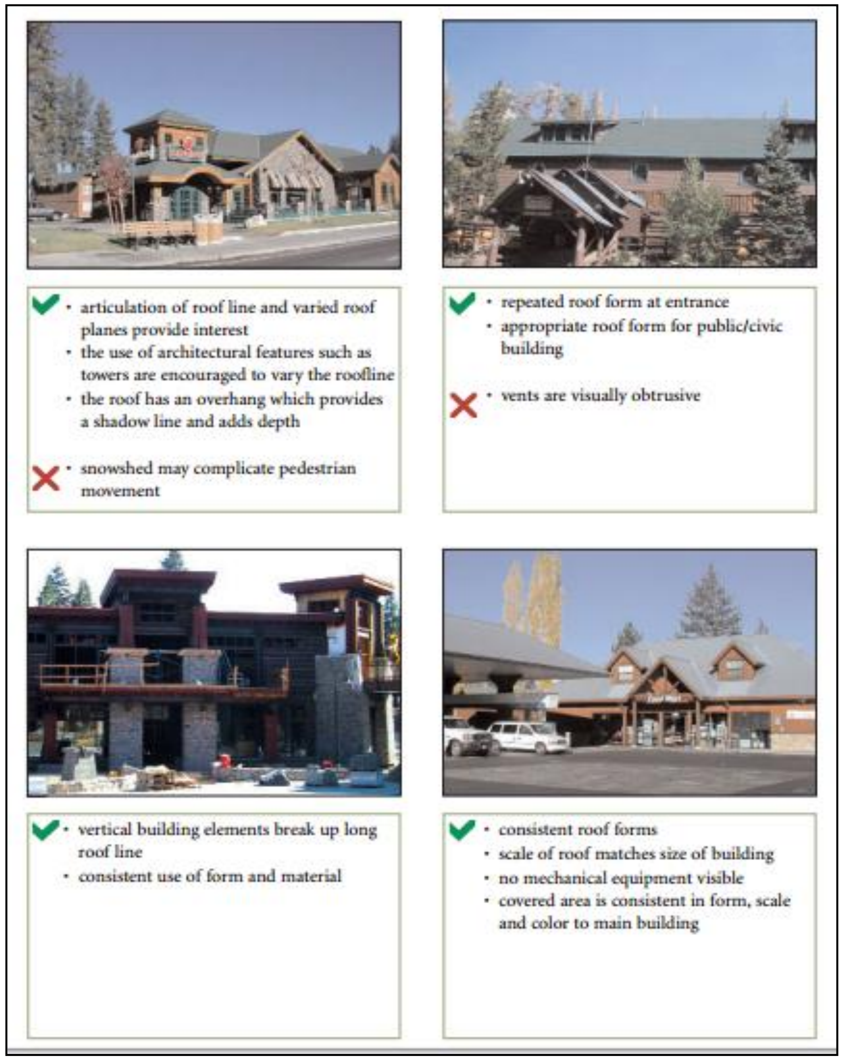


Figure Exec-1: Real examples of recommended design in Mammoth Lakes' codes

This report recommends that other resort communities and smaller municipalities look to Mammoth Lakes and Whistler for examples of how to enhance their urban design and public realm. Mammoth Lakes offers an example of how a small municipality can incorporate form-based standards into its zoning code without the costs (political and economic) of overhauling the entire set of planning controls and developing a true form-based code. Whistler demonstrates how a consistent standard of by-right development can increase a small municipality's control over urban design and have lasting impacts on the quality for design for decades. The report also notes both Whistler and Mammoth Lakes have many elements of form-based codes and that these hybrid codes offer a solution for small municipalities that maintains continuity with familiar traditional zoning controls while introducing more form-based elements and control tools that can significantly improve the built form of their communities.

The report also contains the following specific recommendations:

i. Smaller municipalities should seek to implement hybrid codes and use Mammoth Lake's hybrid zoning code as an example.

ii. It is recommended that Whistler update some of its codes, specifically in the form of updated graphics in the design guidelines. Whistler's graphics are mostly hand sketched and do not provide a useful schematic for future development. Moreover, Whistler could use Mammoth Lakes as an example and use pictures in conjunction with drawings to highlight real examples of desirable design from the municipality. However, while Mammoth's drawings are clearer than Whistler's, they too could be improved by annotating them with plain language to make the codes more descriptive and accessible to applicants who are not familiar with technical design terminology.

iii. While form-based codes can be more prescriptive, this report finds they are not entirely necessary for developing successful mountain resort communities. Hybrid codes and design guidelines were both found to contribute to quality urban design.

iv. Design panel review is present in both case studies and is found to contribute to the development and implementation of each set of codes. It should be implemented in other resort communities as a way to achieve design objectives.

Table of Contents

List of Figures

*All images were taken by the author unless otherwise noted

List of Tables

GLOSSARY

Euclidian Zoning: The separation of land by uses, with the intention of maintaining an orderly separation of incompatible uses. Euclidian Zoning regulates, not only the use permitted in that area, but also the height, setback, parking provisions, and density (among others) yet does not regulate building form or design. (Parolek at. al, 2008)

Form-Based Code: Form-Based Codes are land regulations where building form, rather than exclusively land use, is the organizing principle of the code. These codes are characterized by their emphasis on building form, powerful standards, and use of annotation and graphics. They may also include architectural, landscaping signage, and other design standards in addition to land use regulations. (Parolek at. al, 2008)

Hybrid Code: A Hybrid Code contains elements of both traditional Euclidian Zoning and Form-Based codes. These codes often regulate land into zones based on use yet employ more form and design prescriptions to achieve higher standards of urban design. (Parolek at. al, 2008)

Design Guidelines: A set of criteria developed by a municipality that are used as a standard for the design within a designated area. These are to evaluates the acceptability of proposed developments.

Mountain Resort Communities: Communities that are located in mountainous regions in close proximity to recreational resorts centered around activities such as skiing, mountain biking, and climbing. Often these communities have high numbers of seasonal employees, vacation homes, and rely heavily on tourism. Traditionally these communities were developed as winter destinations but recently have expanded to appeal to visitors year-round. (ULI, 1997)

Usual Residents: Usual residents are persons who have their permanent residence in a community. The opposite of usual residents are temporary residents or visitors. (Statistics Canada, 2011)

Acknowledgements

Foremost, I would like to thank my supervisor Dr. David Gordon for his ongoing support and encouragement during this project. His advice and insight were invaluable and inspiring and I am truly grateful to have been his student.

I would like to thank my family, especially my parents, for their support and guidance throughout my degree as well as inspiring me to pursue a graduate degree.

Thank you to all the faculty and staff at the School of Urban and Regional Planning who contributed to a great experience at SURP and for opening my eyes to so many new fields.

I would also like to thank all my classmates, and specifically Julia Sjaarda and Emilie Coyle, for their friendship and patience. You were always there to field questions and offer advice, even at strange hours of the night. Lastly, thanks to the planners, city staff, and experts who participated in this research via interviews and provided much of the insight that appears in this report.

Chapter 1
Introduction

The modern zoning code has primarily been concerned with the orderly separation of land uses and has shaped North America's cities, towns, and suburbs into increasingly low density, highly segregated, placeless, and environmentally unfriendly, spaces (Elliot, Goebel, & Meadows, 2012). Recently, there has been a shift towards promoting traditional neighbourhood development, new urbanism, and smart growth, with sustainable, walkable, vibrant, and mixed-use communities (Parolek, Parolek, & Crawford, 2008). This research aims to investigate the emergence of tools that planners may employ to incorporate form in addition to land use.

Form-based codes (FBC's) are a method of regulating development to achieve a specific urban form by regulating physical form, with a lesser focus on land-use regulations (Parolek et al., 2008). The Form-Based Codes Institute defines them as

> …a land development regulation that fosters predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. A form-based code is a regulation, not a mere guideline, adopted into city, town, or county law. A form-based code offers a powerful alternative to conventional zoning regulation. (Form-Based Codes Institute , 2017)

Indeed, Elliot et. al suggest that "some claim that only codes based on the transect, the SmartCode, or a similar visual template can truly be considered form-based zoning. But in reality, form-based controls have been enacted in a variety of ways" (Elliot, Goebel, & Meadows, 2012), including hybrid-codes – codes that incorporate form-based elements -- in addition to use-based standards. Compared with traditional or Euclidian zoning, form-based codes and 'hybrid codes' have the potential to promote and guide development towards more walkable and mixed-use communities. This research examines how these codes are implemented and what their effects on development may be in two mountain resort towns: Whistler, British Columbia and Mammoth Lakes, California.

Mountain resort towns are communities that rely heavily on tourism as an economic driver. As such, the vibrancy and attractiveness of the community is intrinsically linked to the urban design and built form of the community (ULI, 1997). While contemporary mountain resorts aim to be attractive year-round, they were developed primarily as ski resorts and, as such, accommodating for the winter months is especially important. Because of this strong relationship between the built form and commercial success of mountain resort towns, they present interesting case studies on how form-based elements may be introduced into development control tools.

The question this research aims to answer is:

How are two mountain resort communities transitioning to incorporation of form-based elements into development control tools and code updates?

This report contributes to a growing body of literature on form-based codes as well as a significant body of work specifically about resort community development. However, there has been little literature on form-based codes and their effects on smaller communities. This research broadens the literature by examining specific case studies of smaller communities and examines, in detail, their codes. The report is another application of Ewing and Clemete's *Measuring Urban Design* (2014), which is a recent method for quantifying and measuring the quality of urban design. The research refers to a number of sources that outline the theory behind form-based codes as well as mountain resort development including Von Hausen (2013), Jacobs' *Great Streets* (1995) and the American Planning Association's *The Rules that Shape Urban Form* (2012). Parolek et al., (2008) wrote extensively on the history of zoning, the emergence of FBC's, and a guide for their implementation, while the Urban Land Institute (1997) published a handbook for resort development that primarily focuses on the real estate development of these communities. Clark et al. (2006), Gill et al. (1994), Taylor and Ryall (2004) all wrote extensively on mountain resort communities and issues in sustainability. While they provided helpful backgrounds on the history of many mountain resort communities, sustainability issues and initiatives surrounding them, there was only cursory reference to the built form or policies affecting it, a gap that this research helps fill.

Daugherty's (2007) report for the Municipality of Mountain Lakes, California provided a helpful introduction to specific mountain resort communities in the United States and highlighted case studies where both FBC's and traditional zoning codes have been effective control tools to achieve specific built forms.

Much of this report has been informed by the previous master's report from Per Lundberg (2014) who studied the effects of traditional zoning, FBC's, and hybrid zoning codes on three small downtowns across Canada. This research will continue the project of studying FBC's in smaller communities, but with specific focus on mountain resort communities. Lundberg built upon the work of Walker (2009) who highlighted key principles for vibrancy in smaller community downtowns.

Lastly, The Codes Project conducted by Placemakers (2016) has attempted to identify and categorize the existing and emerging form-based codes in North America and provides useful criteria for identifying FBC's; ideally this research will add to this database.

Chapter 2 briefly outlines the profiles of the two communities used as case studies, while Chapter 3 outlines the methods used for this research. Chapters 4 and 5 consist of the analysis of the urban design and codes of each case study and Chapter 6 offers some conclusions and applications of this research.

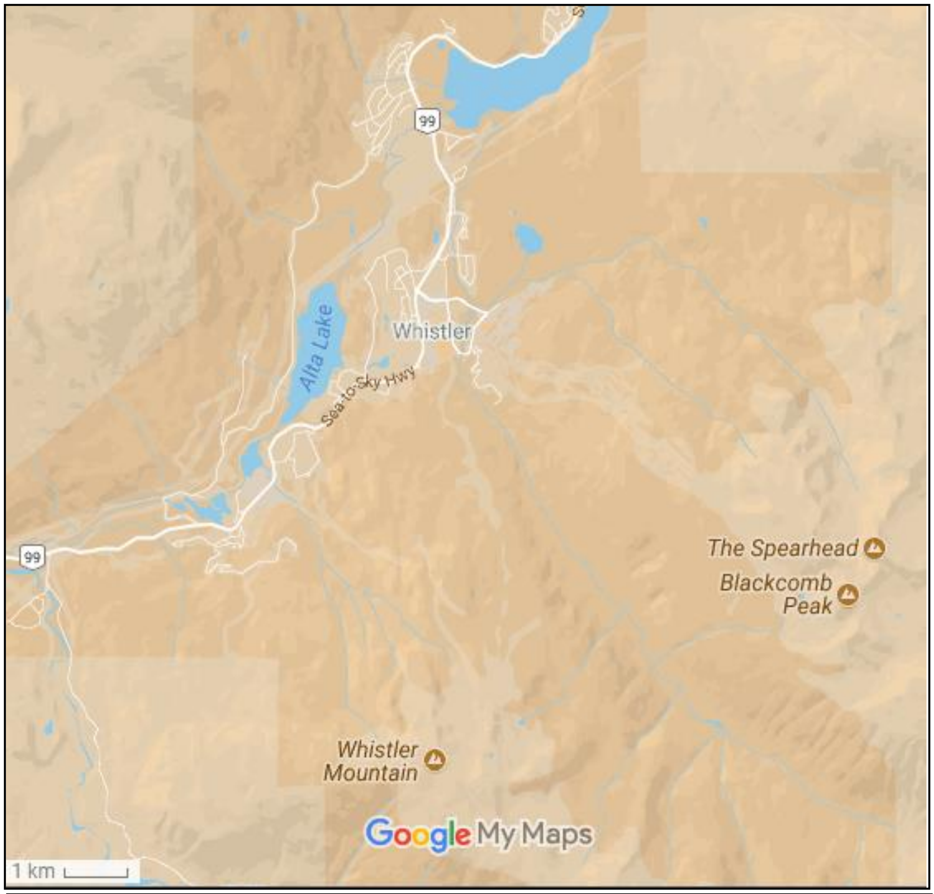
Chapter 2
BACKGROUND

This chapter provides a summary description of the case study communities and an overview of their respective planning controls.

2. 1 Community Profiles

Whistler, British Columbia is located in the Coastal Mountain Range near Garibaldi National Park, approximately 120 km north of Vancouver. Incorporated in 1975 as a resort municipality, Whistler's development as a town has been strongly connected with the development of the Whistler/Blackcomb ski area. In the early 1960's, Whistler Mountain was opened to skiing and with it came infrastructure and the development of a village at the base of the mountain. Unlike many other North American mountain resort towns, Whistler was developed on predominantly greenfield sites, allowing it to be master planned and developed. Because there was no existing built form to consider, Whistler was developed with unusually tight controls. The Resort Municipality of Whistler owned most of the land within its boundaries and, by way of its development arm, the Whistler Village Land Co., the municipality prepared and serviced land and then sold it to developers under the condition that they follow a set of predetermined and specific design guidelines. The result was the coordinated development of Whistler Village at the base of Whistler and Blackcomb Mountains that follows the master plan (Resort Municipality of Whistler, 2013) of urban designer Eldon Beck. Since its inception, the municipality of Whistler has been able to exert unusually strict control over land use and urban form, and the result has been a coordinated and uniform design that continues to this day. In Whistler, as in some other municipalities in B.C., design guidelines are unusually powerful. When a development permit is issued by the municipality, a "Notice of Permit" is filed on the land title registering the title to the conditions of the design permit and subsequent guidelines – in effect making them standards rather than guidelines. After failed bids to host the Olympics in 1968 and 1976, Whistler was a host to a number of events during the 2010 Vancouver Olympic games and is widely recognized as one of North America's premier resort towns (Urban Land Institute , 1997).

Figure 2-1: Eldon Beck overseeing construction of Whistler Village in 1979 according to a master plan designed by beck to maximize views and orientation to the mountain
Source: Whistler Museum



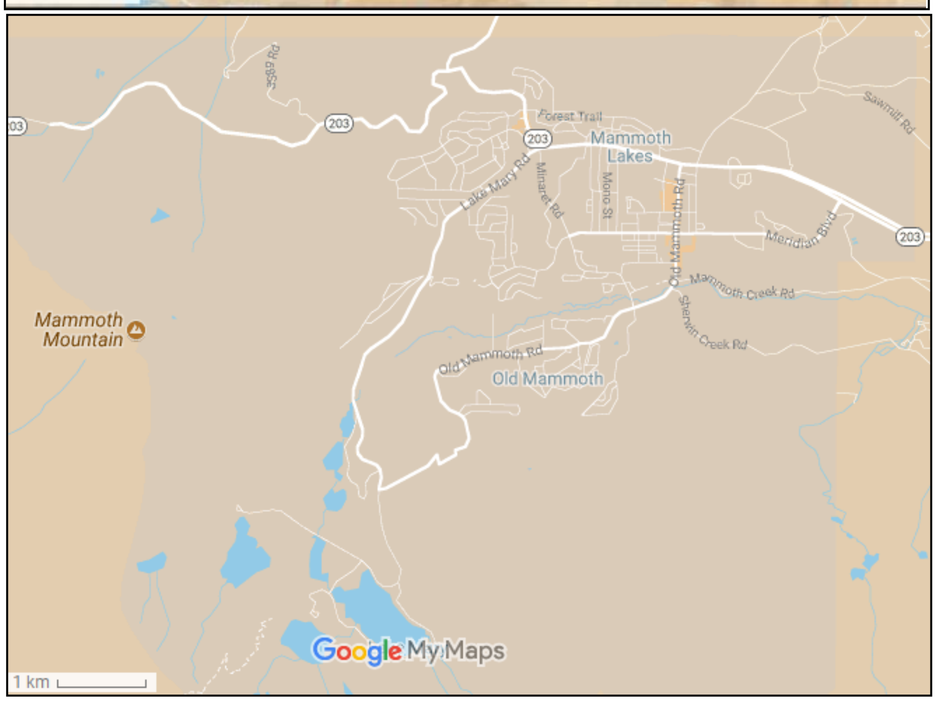
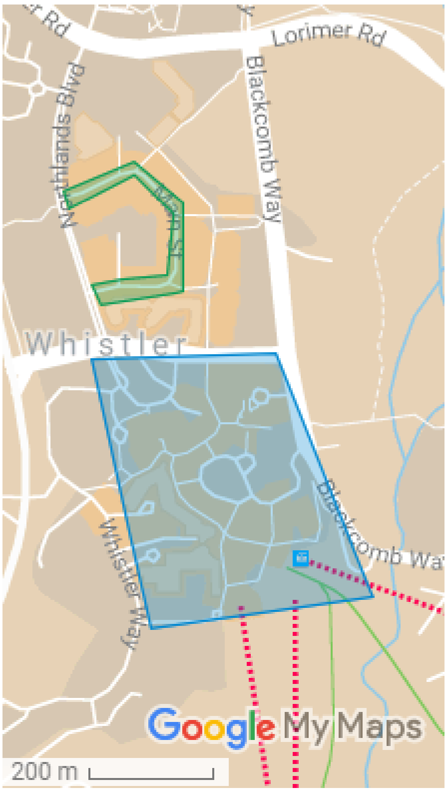


Fig 2-2: **Whistler Regional Development Pattern.** This shows a regional map of Whistler. Development in Whistler is concentrated along the Sea to Sky highway that runs along the base of Whistler and Blackcomb Mountains. Development is concentrated throughout a valley and around Alta Lake in the south, and Green Lake to the north with Whistler Village in the centre.

Fig 2-3 This shows the development pattern of Mammoth from a regional scale. Whistler is situated in a much narrower valley and in between two lakes along the base of the ski slopes, whereas much of Mammoth's development is concentrated to the east of the ski resort. The development here follows a much less organized pattern due to its more organic evolution from a mining town, rather than a master-planned community

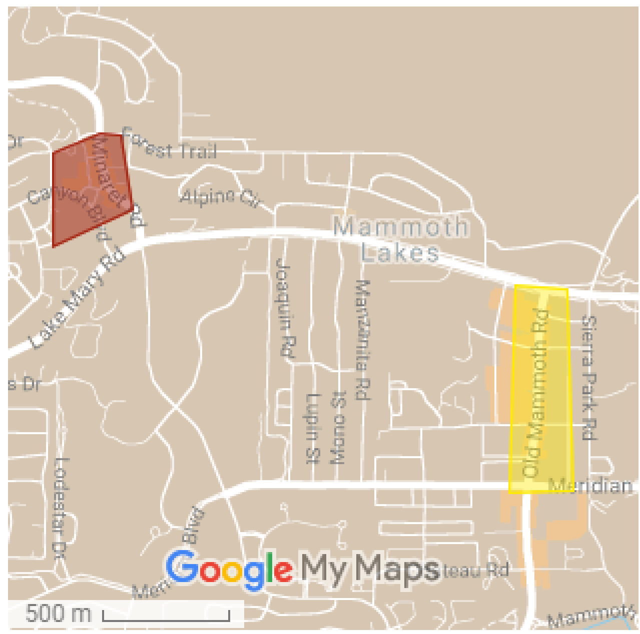
The specific study areas highlighted in Figure 2- are the Whistler Village, the mixed-use hub of Whistler that extends from the base of Whistler and Blackcomb mountains and goes north along a pedestrian-only promenade (blue). This area falls under the Commercial Core One (CC1) zone of the Whistler Zoning Bylaw and has a walkscore of 73 (Walkscore.com, 2017). The second study area, highlighted in green, is Main Street. Also located in Whistler Village, and again with a walkscore of 73, (Walkscore.com, 2017) this section is open to automobile traffic and falls under the Commercial Core Two (CC2) zone.



Whistler Village Study Area

Whistler Main Street Study

Figure 2-4: Whistler Study Area



Old Mammoth Road Study Area

Mammoth Village Study Area

Figure 2-5: Mammoth Study Area

Mammoth Lakes, California is situated over 2000 metres above sea level in the Lizard Range of the Eastern Sierra mountains. Although it was incorporated in 1984, mining settlements have existed on the site since the late 1800's. Like many other mountain resort towns in North America, the development that was spurred by the ski resort was incorporated into the existing built form of the pre-existing mining town. While Mammoth Lakes does have a master-planned Village at the base of Mammoth Mountain that is designed in a similar style to Whistler Village, it was developed after, and in addition to, existing commercial nodes in the town. Situated 275 km. from the nearest major airport in Reno Nevada, Mammoth Lakes is slightly more remote than Whistler. However, it is also within 500 km of both San Francisco and Los Angeles, and is one of California's most popular winter destinations. In 2014, Mammoth Lakes recently adopted a new hybrid zoning code, *Municipal Code Title 17*, that was developed in part to align with the General Plan that was adopted in 2007. The new code is also expected to promote pedestrian-oriented development, encourage high-quality building design, support economic growth and sustainability, increase activity and animation, reduce the role of cars, and streamline permitting for desired uses (Mammoth Lakes, 2014; Zoning Code Update Executive Summary, Mammoth Lakes, 2014).

Figure 2-2 shows the study areas in Mammoth Lakes. The Mammoth Village is highlighted in red. Located at the base of the Mammoth Mountain ski resort, and with a walkscore of 51, (Walkscore.com, 2017) this area falls under the North Village zoning and also contains its own set of distinct design guidelines. The Old Mammoth Road study area is highlighted in yellow. Designated a Commercial Area, this study area falls under the Old Mammoth Road zone and is also subject to the Mammoth Lakes design guidelines along with all other zones that are not part of the North Village and has a walkscore of 16. (Walkscore.com, 2017)

Both Mammoth Lakes and Whistler were incorporated within a decade of each other and are adjacent to two of North America's largest ski resorts, each receiving over 10m. of annual snowfall. Each community receives millions of visitors each year, and Mammoth now receives more visitors in the summer (1.5M) than the winter (1.3M). Their populations are similar at just under 10,000; however, Whistler's population has increased over 20% since 2011, while Mammoth's has decreased by over 3% since 2010. This is reflected in the development patterns in each town and as Chapter 4 and 5 discuss, Mammoth has had no new development since their new zoning code update was adopted in 2014. Both Mammoth Lakes and Whistler feature notable characteristics that are somewhat unique to resort towns. They both have a total number of dwellings that are occupied by usual/permanent residents that is less than 50% of the total number of dwellings. This is largely due to the seasonal employment in the towns and the fact that many of the dwellings are second homes used for holidays, or rented out as investment properties to the large seasonal population (approx. 2,226 in Whistler alone). Whistler is able to accommodate approximately 79% of its employees in Whistler and this large seasonal population and immense number of annual visitors is contributing to increasing issues associated with affordable housing supply, Airbnb, and traffic – issues not addressed in this report- yet will need policy adaptations to accommodate for these specific challenges. Below, Table 2-1 outlines the key amenities for mountain resorts (ULI, 1997) in the central areas of the two case studies. As shown, Whistler has a complete set of amenities while Mammoth is still developing its village as a central community hub.

Table 2-1: Town Centre Amenities

	Whistler Village	**Mammoth Village**
Retail	Y	Y
Visitor Info	Y	Y
Post Office	Y	N
Library	Y	N
Medical Centre	Y	N
Banks	Y	Y
Offices	Y	Y
Recreation Centre	Y	N
Lift Facilities	Y	Y
Skating Rinks	Y	N
Pedestrian Core	Y	Y

Table 2-2: Key Figures

Key Figures	Whistler	Mammoth Lakes
2016 Population	11,854 [1]	7,946 [3]
2011 Population	9,824 [1]	8,234 [3]
Population change (2011-2016)	20.7 [1]	-3.50% [3]
Total private dwellings	10,507 [1]	9,626 [3]
Private dwellings occupied by usual residents [6]	4,612 [1]	4,466 [3]
Population density per square kilometre	49.3 [1]	130 [3]
Annual number of visitors	2.5M [4]	1.3M [5]
Land area in square kilometre	240.41 [1]	64.40 [3]
Median Age	32.4 [2]	32.6 [3]
Median individual income	$32,432 CAD [2]	$27,663 USD [3]
Median household income	$65,757 CAD [2]	$55,799 USD [3]
Median value of owned dwelling	$550,642 CAD [2]	$419,100 USD [3]
Median rent / month	$1,298 CAD [2]	$1,143 USD [3]
Unemployment rate	8.7% [2]	12.1% [3]
Average Snowfall	1170 cm.	1016 cm
Resort Vertical	1609 m.	945 m.
Skiable acres	3307 ha	1416 ha

1 Statistics Canada (2016). 2016 Community Profiles. 2016 Census

2 Statistics Canada (2011). 2011 NHS Profiles . 2011 National Household Survey

3 U.S. Census Bureau (2015). Quick Facts, Mammoth Lakes, California. 2015 American Community Survey (ACS)

4 Resort Municipality of Whistler (2016). Whistler.ca. Facts and Figures

5 Mammoth Lakes (2017). Town of Mammoth Lakes Fact Sheet

6 Usual Residents - see glossary

Chapter 3
METHODS

This research builds upon a continuing body of work that evaluates urban design in the central areas of smaller communities. The methods of evaluation extend largely from the work of Per Lundberg (2014) and are focused specifically on evaluating the plans and built form of mountain resort towns.

The research method for this report consists of qualitative and quantitative research concentrated on comparing and contrasting case studies and evaluating their built form and policies. The report compares two specific sites in mountain resort towns; one that was developed under a traditional Euclidean zoning code, and another that was developed under a form-based code. The analysis examines the physical built form as well as the development control tools that guided the development.

This study compares the effectiveness of form-based codes, traditional zoning bylaws and urban design guidelines in the central areas of two mountain resort communities. The research employs 25 measurement criteria selected to best evaluate certain aspects of good urban design and development specific to small mountain resort communities taken from existing literature on urban design, smart codes, and resort development (Table 3-1, Table 3-2, and Table 3-3). The criteria are divided into three categories: Resort Development Principles, Urban Design and Development Control Tools.

Table 3-1: Resort Development Principles

	Resort Development Principles	Description	Measurement Method	Source
1	Milieu	Unique features that highlight the special attributes of the resort.	Observation, interviews	ULI pg. 172
2	Multi Activity Environments	Diversification of activities that can lead to a variety of uses year round at the resort. Designed to attract a variety of users for varying lengths.	Observation Counting (pedestrian flow, stationary activities) Gehl & Svarre pg. 25	ULI pg. 172
3	Town Centre Hub	A central hub of activity, public space, and services.	Observation Counting (pedestrian flow, stationary activities) Gehl & Svarre pg. 25, interviews	ULI pg. 173
4	Character through tenant mix	An appropriate mix of retail, restaurant, and entertainment to accommodate the needs and interests of a variety of visitors.	Observation, interviews	ULI pg. 173
5	Distinct design themes & consistent urban design	Creation of a cohesive image for distinct districts or neighbourhoods that provide the backdrop for a high level of activity. Cohesive design and architectural guidelines and a consistent storefront, signage, etc.	Observation	ULI pg. 174

3.1 Resort Development Principles

Drawn from the Urban Land Institute's (ULI) *Resort Development Handbook* (1997) these criteria assess the built form in terms of five principles for developing vibrant and commercially successful resort communities (Table 3-1). The primary measurement methods for these criteria are observation methods drawn from Gehl and Svarre (2013), and Ewing and Clemente (2013) for analyzing if the built form demonstrates evidence of the ULI's (1997) principles for good resort development. Interviews with city staff and planners were used to gather information for the criteria of Milieu, Town Centre Hub, and

Character through tenant mix. These interviews add to the information gathered through direct observation and provide information that may not be have been possible to obtain through observation in the sole season when this study was conducted.

Table 3-2: Urban Design

	Urban Design	Description	Measurement Method	Source
6	Imageability	The qualities that make the place recognizable and distinct. Features such as landmarks and sense of place contribute to imageability	Observation: Ewing & Clemente pg. 104-114	Ewing & Clemente pg. 5-6, 163
7	Enclosure	How streets and public spaces are defined by buildings and vertical elements in proportion to the width of the space	Observation: Ewing & Clemente pg. 114-119	Ewing & Clemente pg. 103
8	Human Scale	Does the size and proportions of the physical elements of the space correspond to humans? Is the public realm oriented for pedestrian use?	Observation ibid. pg. 119-127	Ewing & Clemente pg. 103
9	Transparency	The degree to which people can see or perceive human activity and/ or what lies beyond the space. Can humans observe activity beyond their immediate surroundings	Observation ibid. pg. 127-130	Ewing & Clemente pg. 103
10	Complexity	The visual richness of a place. Includes the variety of the physical environment, numbers and types of buildings, architectural diversity, street furniture, and human activity	Observation ibid. pg. 130-135	Ewing & Clemente pg. 103

3.2 Urban Design

The framework developed by Ewing and Clemente (2013) was used to evaluate the urban design of the case studies, as outlined in their book *Measuring Urban Design*. This study measures the quality of the built form using observation methods that are outlined in *Measuring Urban Design* for each of their principles of good urban design: Imageability, Enclosure, Human Scale, Transparency, and Complexity. For each of these criteria there is a dedicated set of observation methods developed by Ewing and Clemente that also includes taking photographs that are featured throughout the report, using Google earth for capturing overhead satellite images and measuring the dimensions of the built form. The scorecards for evaluating the urban design criteria can be found in Appendices B and C, and involve a variety of observation methods such as counting urban design features, people, sightlines, and trees, estimations of heritage buildings, length of sightlines, heights of buildings, building number, and building feature proportions (Ewing and Clemente, 2013).

Table 3-3: Development Control Tools

	Development Control Tools	Description	Measurement Method	Source
11	Clear Physical Plan/ Vision Centered	Is there a clear, structured set of guidelines? Are there easy to follow images? Are design standards legislated in the code? Common vision that binds private and public Interests. Is there a clear vision that is in line with the OP? Are the DCT's focused and clearly spelt out?	Document Review Interviews	Parolek et al. (xvii), Leung pg. 31
12	Density	Do DCT's establish minimum density standard to promote denser development ?	Document Review	Weitz & Waldner pg. 28
13	Lot Sizes	Do minimum lot sizes allow for smaller or urban sized buildings	Document Review	Weitz & Waldner pg. 28
		Does the DCT discourage single family housing and/or preserve large tracts of farm land on the fringe areas	Document Review	Weitz & Waldner pg. 29
14	Building Types	Are there drawings or standards that define different building types, either by name or by requirements?	Document Review	Elliot et al., 9-11; Weitz & Waldner pg. 32
15	Frontage Types	Drawings and standards that address the design of the front of buildings	Document Review	Elliot et al., 9-11
16	Public Space Standards	drawings and standards that address designs and locations of public and open space. Requirements that a development of a certain size include a plaza, park etc.	Document Review	Elliot et al., 9-11; Weitz & Waldner pg. 30
17	Block and Subdivision Standards	Drawings and standards that address max block length, street spacing, illustrations and guides for street patterns	Document Review	Elliot et al., 9-11
18	Regulating Plans	drawings or texts that layout the arrangement of lots, buildings, and building types for an area. Regulated that developer must create this type of documents as a part of the zoning approval process	Document Review	Elliot et al., 9-11; Weitz & Waldner pg. 35
19	By-Right Development	Procedures that allow development that complies with form-based standards to receive expedited approval.	Document Review	Elliot et al., 9-11; Weitz & Waldner pg. 35
20	Mixed-use	Does the DCT allow mixed-use development?	Document Review	Weitz & Waldner pg. 29
21	Parking	Are maximum parking ratios in place in addition to minimum standards	Document Review	Weitz & Waldner pg. 34
		Are parking regulations reduced where transit is available?	Document Review	Weitz & Waldner pg. 34
		Is on-street parking permitted?	Document Review	Weitz & Waldner pg. 34
22	Place-Based / Regionally Diverse	are the DCT's specific to the setting to which they apply? Are there a wide variety of development and conservation options? Are the DCT's specific to the region?	Document Review	Parolek et al. (xvii)
23	Integrated	Are the DCT's set up to coordinate infrastructure, other buildings, space, and design?	Document Review Interviews	Parolek et al. (xvii)
24	Binding	Are the DCT's binding? Are they obligatory or optional? Does adhering to the standards speed up approval?	Document Review	Parolek et al. (xviii)
25	Comprehensible	Are the DCT's simple to understand with clear words, pictures, and tables that are able to be interpreted by all citizens in the community.	Document Review Interviews	Parolek et al. (xviii)

3.3 Development Control Tools

The final category of evaluation was conducted primarily through document review of the development control tools in place in each community, that guide development. One case study (Whistler) employs a land-use zoning bylaw with an accompanying set of urban design guidelines, while the other case study (Mammoth Lakes) features a recently updated hybrid code. Because the two case studies employ different types of development control tools, evaluation methods and principles have been taken from these three sources: Weitz and Waldner's (2003) *Smart Growth Audits*, oriented towards assessing zoning bylaws, Parolek et al.'s (2008) key principles for code-writing towards sustainable urban development contained in their book *Form-Based Codes*, and from Elliott et. al's (2012) criteria for evaluating form-based codes used to assess six case studies across the United States in *The Rules That Shape Urban Form.* Together, these create criteria that may be used to evaluate whether there is a clear and easily used set of development control tools to guide the development of denser, walkable, sustainable, mixed-use and vibrant communities. The scorecards for this assessment can be found in Table 5-2 and the criteria will be evaluated within a range of poor/fair/average/great, or yes/no where applicable.

While document review is the primary measurement method for this category, interviews will also be used to assess if the development control tools (DCTs) are 'integrated', 'comprehensible', 'adjustable', and 'vision centered'. The subjects of these interviews were planners and developers who were either involved or familiar with the development of the development control tools and/or the case study sites. Interviews were semi-structured (Dunn, 2000) with flexible yet content focused questions.

Together, the three categories of evaluation criteria (Resort Development Principles, Urban Design, and Development Control Tools) provide a wide range of data that can be analyzed to assess the impact of these tools on development, and additionally, which development control tools lead to good resort developments as outlined in the framework informed by Weitz and Waldner (2003), ULI (1997), Ewing and Clemente (2013), and Parolek et al. (2008).

3.4 Interview Questions

Semi-structured interviews are used in the research to gather information that could not be obtained through direct observation or document review. In this study, these interviews are with practicing planners, both city staff in the municipalities of each of the case studies, as well as planning consultants who were involved in the design and implementation of the development control tools. The goal of these interviews was to gather information to inform about the design, intent, implantation, and results of the development control tools being studied. The list of interview questions is contained in Appendix D.

3.5 Limitations

i. While site analysis via travel was possible, there were significant limitations in terms of time and budget. The data collection and analysis occurred over 4-6 weeks during peak ski season; however, many resorts are designed to be 'year-round destinations'. As such, solely performing the study during the winter months, despite this being the peak season, limited the study's scope somewhat. Additionally, some of the observation methods required pedestrian counts and analysis of how pedestrians use the space. These can be quite time consuming and with no budget for research assistance, these observations have a limited and very specific scope.

ii. Subjectivity is always a concern when doing qualitative research. Additionally, while the research methods chosen are published, peer-reviewed, and widely used, there may be some biases towards certain types of development control tools over others. However, steps have been taken to make the research criteria as objective and widely applicable as possible.
iii. The cases currently selected are not in the same country. As such the legal, political, and economic conditions of the case studies are not equal.
iv. The number of case studies is also a limitation. With only two case studies it should be noted that the conclusions from the study will not necessarily be applicable to all resort development. Further analysis of many cases developed under different types of codes would yield more widely applicable results.
v. The evaluation criteria used in this study are not all weighted the same. As such, some criteria may be more important than others in measuring urban design in resort communities; however, this study did not attempt to weight categories by importance and treated them all equally.
vi. Within each criterion the gap between units of measurements (1-2, 2-3) must be standard across all criteria.
vii. While the evaluation criteria were taken from leading current evaluation methods there are certain limitations and missing principles when evaluating the unique conditions of mountain resort communities. These include:
    - The Urban Land Institute's resort development principles do not contain key urban design principles, namely context and fit to context. (von Hausen 2013, pg. 260, 85)
    - Ewing and Clemente's (2013) evaluation criteria implies but does not explicitly mention walkability, and future study could specifically examine the walkability in these communities
    - Ewing and Clemente's (2013) research method is meant for larger cities and not specifically for winter resort communities. As such, the design criteria specific to these communities are not captured in their evaluation criteria. In particular, mountain and other view protection and solar orientation are important features of any mountain resort community, and while these are indirectly captured in the Imageability section of the urban design criteria, a specific set of criteria for mountain resort communities would include these.

3.6 Generalizability

As this study primarily uses qualitative research, it is important that the generalizability of the results is understood. Case study research is often misconstrued as being categorically ungeneralizable, (Baxter, 2016) and while this is not true, there are limits to the degree to which these findings will be applicable to future research and case studies (Baxter, 2016). This research is not attempting to falsify a theory or to discover a theoretical framework, but rather to analyze and identify lessons learned connected with the design and implementation of policy and its effects on the physical development in two specific case studies. To ensure rigour and that the findings of this study are appropriately transferable, a carefully selected set of methods has been chosen from a pre-existing and rigorously tested set of methods and judiciously selecting case studies that meet the criteria outlined in the previous section. It should be noted that the design of this research and the accompanying results are not transferrable to all mountain resort communities, but rather, are confined to the findings from each case study. Moreover, this report is about specific communities that are seasonal by nature and it is especially difficult to generalize the findings about these particular communities.

Chapter 4
Analysis

This chapter outlines the results of the built form analysis outlined in Chapter 3. The case studies were evaluated based on the principles of Resort Development (4.1), Urban Design (4.2), and Development Control Tools (4.3), each of which has a set of criteria that were used to analyze the built form and development control tools in Whistler and Mammoth Lakes. Each criterion is ranked according to Table 4-1 below and given a score based on the methods of evaluation outlined in Chapter 3.

Table 4-1: Ranking Scheme

Does not fulfill	Minimal fulfillment	Somewhat fulfills	Almost fulfills	Fulfills criteria
○	◔	◑	◕	●

4.1 Resort Development Principles

4.1.1 Milieu

Resorts depend on the milieu created by their special attributes to provide successful visitor experiences. Natural features that resorts incorporate into their design are central to creating a unique sense of place. (ULI, 1997, 172) Both Whistler and Mammoth Lakes are situated amid the impressive mountain ranges of the Coast Mountains and the Eastern Sierra Nevada range respectively.

Whistler Village, the commercial hub of Whistler, is situated at the base of North America’s largest ski resort with access via public transit, ski, car, or foot. Whistler incorporates extensive view protection guidelines - in addition to its design guidelines - to maintain the unique character of Whistler and contribute to its ongoing success as a resort community. Whistler is routinely ranked as one of the top vacation destinations in North America and the world (Urban Land Institute, 1997), in large part due to the memorable sense of place fostered through its natural and built environment.

Mammoth Lakes also is situated at the base of one of North America’s top ten largest resorts and employs similar techniques to Whistler with design guidelines, view protection guidelines, as well as colour and sign bylaws to make the built form complementary to the natural surroundings. While not as widely recognized as Whistler on a global scale, Mammoth Lakes is one of California’s most popular winter destinations, in large part due to the memorable and unique setting in the Eastern Sierra mountain range.

4.1.2 Multi Activity Environments

Creating a destination through year-round activities creates wider market appeal for resorts and helps to incorporate activities that appeal to different age groups and visitors (ULI, 1997, 172). Whistler, while known as a winter destination and as a host of the 2010 Winter Olympic Games, has increased its emphasis on being a year-round destination. Whistler features mountain biking destinations in the summer and combined with several of Canada’s top golf courses and a wide network of trails and green spaces incorporated in the Village, Whistler has made considerable steps to becoming a year-round destination. There are also activities for users of all ages, including high end shopping, tubing, and playgrounds featured throughout the Village.

Mammoth also markets itself as a year-round destination and this is reflected in its advertising, but also its legislation. Mammoth's zoning code makes repeated mention of being a year-round destination and identifies that the purpose of many of the bylaws, such as the sign chapter, is to strengthen the identity of the community as a premier, year-round destination resort (17.48.010). Mammoth's Village is smaller than Whistler's, and while it does offer several retail and restaurant options, it does not provide the same number of amenities as Whistler.

4.1.3 Town Centre Hub

"Clustering town center functions in a central area increases the functions' appeal and drawing power" (ULI, 1997, 173). In addition to retail, town centres should include a variety of services and recreational activities that generate a sense of community and spinoff traffic with a pedestrian core and parking to the exterior.

Since its inception, Whistler has developed around the central concept of having its Village be a town centre hub. The idea for a single town centre was part of the initial Whistler development plans in the early 1970's (Economic Planning Group, 1984). While the style of the village that was ultimately built is quite different from early plans, some key elements outlined as early as 1974 have been retained to this day, such as a compact, pedestrian oriented focus in a village core. Figure 4-1 shows a proposed Village rendering for the failed 1976 Olympic bid. Printed in 1970, this drawing shows the Village in the same location as today and despite the different architectural style, a central pedestrian concourse was a key theme of the Village's design. This emphasis is continued this day and the wide variety of amenities in Whistler Village make it the economic and social hub of one of North America's most famous resorts.

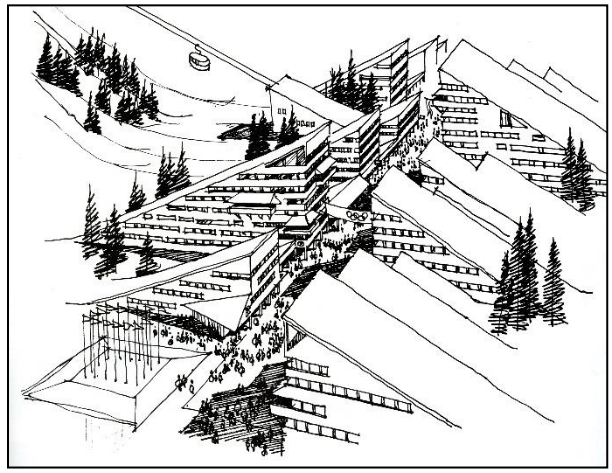


Figure 4-1: Proposed Whistler Village for 1976 Olympic Bid that is stylistically different than Whistler today yet still shows the conceptual central pedestrian core at the base of the mountain

Source: Economic Planning Group, 1984

Mammoth's Village is also designed as a central hub for the resort and the town. The Village Specific Plan (Mammoth Lakes, 2000) identifies the purpose of developing the Village to create

> …a concentrated, pedestrian-oriented activity center with limited vehicular access. The North Village development will be oriented toward year-round uses and visitor activity, to strengthen the existing winter visitor market and to improve Mammoth's attractiveness to spring, summer, and fall resort visitors… [and] to create a unique and attractive commercial center which will be of interest to local, regional, day, and destination visitors during all seasons of the year. The design emphasizes the creation of diverse shopping, recreational, residential and cultural opportunities which will appeal to all ages and family interests (Mammoth Lakes, 2000).

While the Village at Mammoth has a high standard of design, as demonstrated in Section 4.2, the existing town of Mammoth Lakes has several other key commercial nodes such as Main Street and Old Mammoth Road, that have been identified for intensification and further attention in the 2014 zoning code update. While Whistler's town hub is clearly located in the Village, Mammoth's is not so clear. Different users (tourists, locals, skiers) gravitate towards separate areas of the town, rather than one specific town centre hub. This is also demonstrated in Table A-1 (Appendix A) showing that Whistler's village contains many more of the desired features and amenities identified by the Urban Land Institute in one central area, than in Mammoth.

4.1.4 Resort Development Principles Summary

Table 4-2: Resort Development Principles Ranking

Resort Development Principle	Whistler	Mammoth Lakes
Milieu	●	●
Multi-Activity Environments	●	◕
Town-Centre Hub	●	◐

4.2 Urban Design

The urban design of both study areas was evaluated based on the five categories outlined in Section 3.2 and criteria were drawn primarily from Ewing and Clemente's *Measuring Urban Design*, which provides a method for evaluating built form through direct observation. The following section discusses the findings of this built form analysis in both Mammoth Lakes and Whistler's study areas. A full evaluation of all ten design criteria can be found in the scorecards in Appendix A.

4.2.1 Imageability

Imageability is "the quality of a place that makes it distinct, recognizable, and memorable" (Ewing and Clemente, 2013, 102; Lynch, 1960). Features such as outdoor dining, plazas and courtyards, long sightlines, and prominent landscape features contribute to an environment that captures the attention of the users of the space and elicits an emotional response creating a unique sense of place.

Whistler contains many plazas and squares that are linked through the pedestrian route, the Village Stroll, and are placed approximately every 90 m. (300 feet) – close to the length of a small city block (Ewing and Clemente, 2013, 100). Many of these plazas and courtyards feature unobstructed views of the major prominent landscape features in the

Figure 4-2: Town Plaza, Whistler Village with framed sightlines to Blackcomb Mountain

area. In the case of Town Plaza (Figure 4-2), the street wall is interrupted to reveal a sightline to Blackcomb Mountain.

Figure 4-3: Garden, Main Street, Whistler BC. Small features such as this garden are interspersed around the village that together deliver a strong sense of imageability

Figure 4-4: Views of mountains from Main Street with consistent skyline proportions

Outside the pedestrian Village Stroll and on Main Street - an area in the village that is open to automobile traffic - long sightlines and accessible courtyards are also featured. Figures 4-3 and 4-4 and show the long sightlines with prominent views of Whistler Mountain and an accessible courtyard and garden along the west side of Main Street. However, the imageability features, such as the garden in Figure 4-4, are often obscured by the automobile parking along Main Street. While there are prominent views of the mountains from the street, they seem to be merely *ad hoc* – as almost anywhere in the Whistler Valley has impressive views of prominent mountains. In contrast, the views of these features are more incorporated into the urban design in the pedestrian stroll areas of Whistler Village, and the presence of automobiles along Main Street diminishes some of the imageability of this area.

All study areas in Whistler had many buildings with identifiers, especially on Village Stroll, which contains most commercial uses. Due to strict sign requirements preventing large distracting corporate logos, many businesses use identifying words such as 'pharmacy' on their signs. Many of the buildings in Whistler are also non-rectangular and due to the large amount of snowfall Whistler receives, almost all the buildings in the study area feature angled roofs of different heights that do not allow snow accumulation while also contributing to a complex and interesting street wall.

The Village section of Mammoth Lakes is similar to Whistler Village stylistically, but it is much newer and smaller. Like Whistler, it sits at the base of the ski area, where ski lift access leads directly to a pedestrian village with parking around the exterior. The Mammoth Village contains two large plazas (Village Square and Events Plaza) along with a public stage that is open year-round. Prominent mountain views are prevalent throughout the village and can be seen in multiple directions, highlighting the natural features surrounding the Village. Like Whistler, most of the buildings have identifiers that denote the use of the building, such as 'coffee shop', or 'lift ticket office'. All the buildings are non-rectangular and feature slanted roofs creating an interesting urban design. While there is outdoor dining, it is less prevalent than the Whistler Village and the village appears much quieter.

Old Mammoth Road is located a short distance from the Mammoth Mountain ski lifts and has much poorer imageability than the nearby Village. There are no accessible courtyards, plazas, parks, or gardens, despite the ample open space that is dedicated to parking along the street. Unlike the Village, most of the buildings do not contain identifiers. Rather than 'coffee shop' the buildings often denote a brand like 'Starbucks' or 'At&T'. There is no outdoor dining, and few of the buildings contain sloped roofs. However, Old Mammoth Road does contain some notable imageability features, as there are prominent and impressive mountain views throughout the street.

Table 4-3: Imageability Ranking

Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
●	◐	●	◔

Figure 4-8: Non-rectangular building with identifier, Mammoth Village

Figure 4-7: Events Plaza and pedestrian area Mammoth

Figure 4-9: Views of Eastern Sierra Mountains, Minaret Rd. Mammoth

Figure 4-6: Northern Views of Eastern Sierra Range, Old Mammoth Road

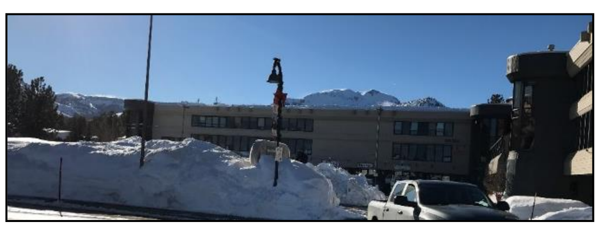


Figure 4-5: Rectangular buildings with few identifiers, Old Mammoth Road

4.2.2 Enclosure

Enclosure is the "degree to which streets and other public spaces are visually defined by buildings, walls, trees, and other vertical elements" (Ewing and Clemente, 2013, 103). Proportions of street width and vertical height create room like qualities outdoors.

Whistler has a very consistent street wall throughout the Village and offers consistent enclosure through buildings and street trees. Mature street trees add another vertical element along Village Stroll creating a sense of enclosure close to the pedestrian right of way.

Along Main Street in Whistler, the street is significantly wider than the pedestrian-only Village Stroll. Main Street in Whistler is approximately 26 metres wide compared to approximately 12 metres wide along the Village Stroll. The study area along the Village Stroll maintains a close to 1:1 street width to building height ratio, which is considered close to ideal by most current urban design research (Ewing and Clemente, 2013, 7).

While building heights are slightly higher along Main Street, the proportion of street width to building height along Main Street is not consistent with the ratio in the pedestrian areas of the Village. However, street walls are not the only way to create a sense of enclosure and while the area along Main Street lacks the same enclosure and outdoor room dimensions, it does incorporate more street trees to add other vertical elements to frame the space.

Mammoth Village is a pedestrian oriented area of Mammoth Lakes that creates a high degree of enclosure. With six-story buildings, there is a consistent street wall with very little sky visible. In the pedestrian pathways through the Village there is close to a 2:1 building height to street ratio, still within the recommended ratio to create a comfortable sense of enclosure, but also higher than the ratio found in the Whistler Village (Ewing and Clemente, 2013, 7).

Figure 4-10: Enclosure and Building to Building Ratio that define and frame the street and also the surrounding mountains, Village Stroll, Whistler, BC

Figure 4-11: Greater street width and sky visibility, Main Street, Whistler, BC

Despite the limited sky visibility within the outdoor rooms in Mammoth Village, there are still consistent sky proportions at either end of the streets as shown in Figure 4-12. Additionally, as shown below in Figure 4-13, the building height to street width decreases in the plazas of the Village to under 1:1, providing more visible sky and less street wall for the pedestrians as they travel along the pedestrian routes through the village.

Table 4-4: Building Height to Street Width Ratios

	Building Height (m.)	Building to Building Width (m.)	Ratio
Mammoth Village	21	12	7:4
Mammoth Village Plazas	21	30	7:10
Minaret Road Mammoth Village	21	18	7:6
Old Mammoth Road	9	18	1:2
Old Mammoth Road Parking Lots	14	100	7:50
Whistler Village Stroll	15	12	5:4
Whistler Village Stroll Plazas	21	32	21:32
Whistler Main Street	16	22	8:11
Whistler Village Parking Lot	12	100	3:25

Figure 4-13: Strong sense of enclosure in Mammoth Village

Figure 4-12: Large outdoor room, Mammoth Village with taller buildings that frame a large open space

Outside of the Village, along Old Mammoth Road, there is considerably less enclosure. Unlike the buildings in the Village, the buildings along Old Mammoth Road are not always situated close to the street. The buildings are often set back considerable distances from the street and separated with strip mall style parking. There is a disjointed and almost non-existent sense of enclosure because of the inconsistent placement of buildings and the varying distance from the street. Furthermore, it makes it difficult to ascertain an accurate building height to street width ratio, as the width between buildings varies considerably. At the points where buildings are closest to the street, the ratio is still approximately 1:3 and in other parts of the street as low as 1:8, both of which are outside the recommended range (Ewing and Clemente, 2013, 7).

Another aspect of Old Mammoth Road's enclosure is the consistent row of snowbanks that frame the street. While this is not a permanent feature, the snowbanks and street trees emerge to form an unintentional street wall that is uncomfortable to the pedestrian. Because there is little to no transparency due to the snowbanks, this design creates an imposing enclosure rather than a comfortable outdoor room.

Figure 4-14: Opaque and imposing enclosure due to snowbanks, Old Mammoth Road

Table 4-5: Enclosure Ranking

Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
●	◕	●	○

4.2.3 Human Scale

Human Scale is the "size, texture, and articulation of physical elements that match the size and proportions of humans and correspond to the speed at which humans walk" (Ewing and Clemente, 2013, 103). Buildings, street furniture, and other urban design elements that are designed and oriented towards pedestrians, contribute to the human scale of a place. The Whistler Village design has, since its conception, been focused around pedestrian only areas with a main artery called the "Village Stroll' (1974 Plan, Economic Planning Group 1984). The Village was designed to be at a human scale and to maintain and maximize sightlines for pedestrians as they walk through the Village. As shown in Figure 4-

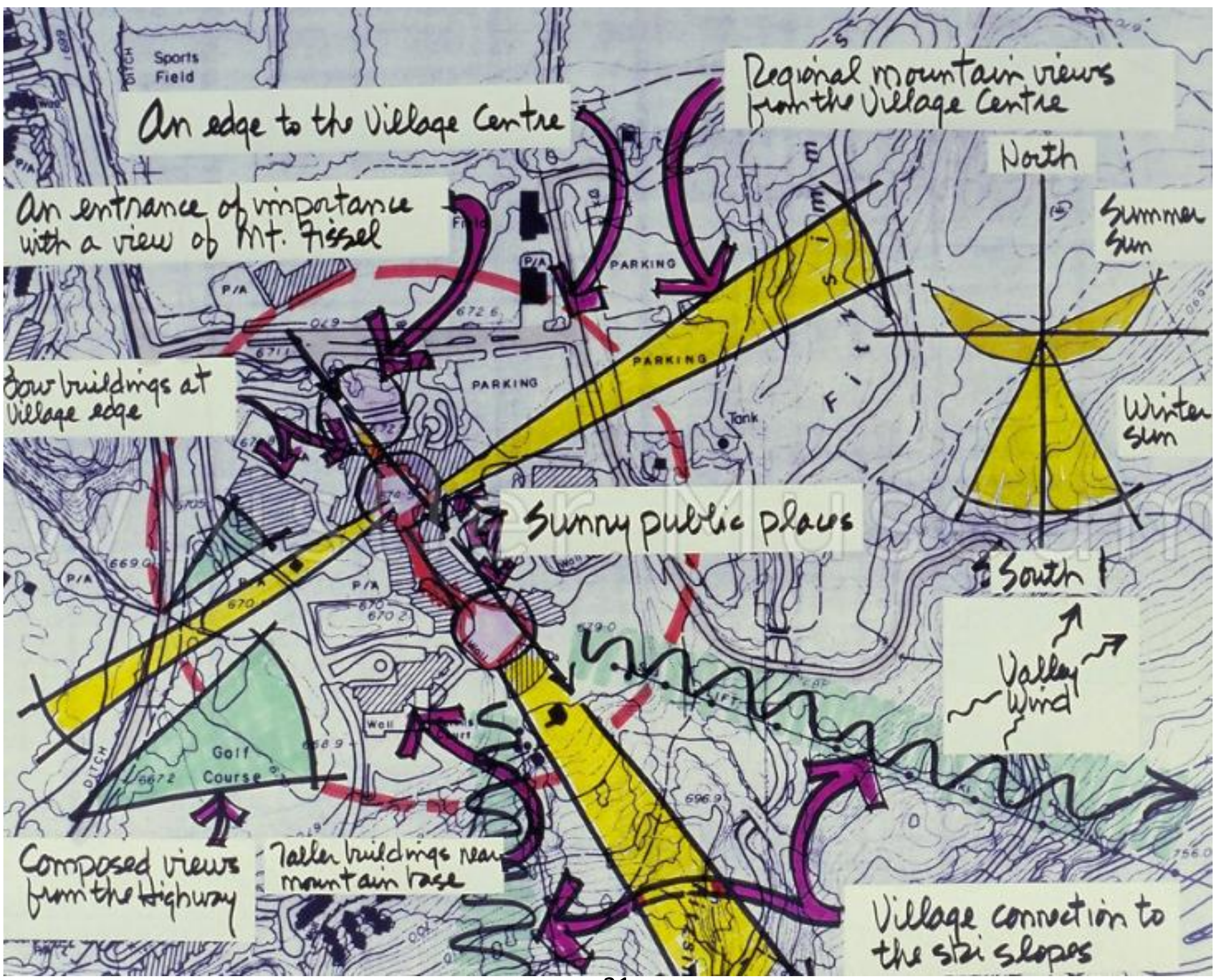


Figure 4-15: Initial Whistler Village conceptual drawings from Eldon Beck's 1978 plan. This plan highlights important views and solar orientations that the village was built according to Source: Whistler, Museum, 2017

15, one of Whistler Village designer Eldon Beck's sketches from 1978, the views of the mountain were carefully mapped out and the Village was constructed in such a way to maximize the pedestrian experience in all seasons.

Figure 4-16: Bicycle/ Toboggan Rack as an example of winter resort specific street furniture- Village Stroll, Whistler

All areas of Whistler have an abundance of street furniture. In the study areas along Village Stroll there are many patios that are active in the winter and consistent planters containing smaller trees and shrubs that add the pedestrian experience and complement the larger mature trees that provide enclosure to the space. There is also street furniture that functions in both the winter and the summer, including ski racks/bike racks as shown in Figure 4-16**.**

Building height is consistent in all areas of Whistler. Because of the wider Main Street open to automobile traffic and street parking, the buildings are 5-6 storeys, higher than the 3-4 storeys found along the Village Stroll. However, both areas are within the appropriate human scale building height range of 4-6 storeys (Ewing and Clemente, 2013, 9), with taller buildings located in wider public squares such as Mountain Square**.**

Figure 4-17: Street furniture specifically designed for winter months with ample seating for pedestrians despite record snowfall

In Mammoth's Village, there is also a high number of human scale elements incorporated in its design, many of which are apparent even in extreme winter conditions. The pedestrian areas of the Village are specifically oriented towards human activity with active snow clearing (Figure 4-17) in the pedestrian areas, and despite many small planters and street furniture elements being unusable due to the snow conditions, there is still a significant amount of street furniture and outdoor dining features that are designed to be used in the winter.

Along Old Mammoth Road there is little concern for human scale. As outlined in Section 4.2.2, the large street width and distance between buildings creates an environment that is more oriented towards cars travelling at high speeds than for pedestrians. Moreover, the buildings along this street are located far from the sidewalk and oriented towards large parking lots rather than the street. As Figure 4-18 shows, there is considerably more cleared area for cars, often at the expense of the pedestrian when snow piles are deposited on sidewalks. This is unlike the Village where snow clearing of pedestrian areas and street furniture is a priority.

Additionally, there are no visible or useable street furniture elements and no outdoor dining along Old Mammoth Road. Despite this area of Mammoth Lakes being one of the main commercial areas of the town, there is little to no emphasis on human scale or pedestrian experience.

Figure 4-18: Snow clearance prioritizes automobiles at the expense of pedestrians, and no visible street furniture, Old Mammoth Road

Table 4-6: Human Scale Ranking

Whistler Village	**Whistler – Main St.**	**Mammoth Village**	**Old Mammoth Road**
●	◐	●	○

4.2.4 Transparency

Transparency is "the degree to which people can see or perceive human activity or what lies beyond the edge of a street or public space." (Ewing and Clemente, 2013, 103) Similar elements to human scale contribute to transparency; however, transparency is concerned with the pedestrian's perception of what lies beyond the space, rather than their perception within the enclosed space.

With similar criteria to human scale, transparency also focuses on active frontages and windows at street level, features that allow pedestrians to perceive the space beyond the street wall and create pedestrian activity. In Whistler, most the street wall contains windows at grade and almost all frontages are 'active' with a high concentration of commercial uses at grade along both the Village Stroll and Main Street. Figure 4-19 demonstrates the large number of active frontages along both sides of the street and high pedestrian activity at off peak hours in the winter. Additionally, Figure 4-20 shows the high proportion of windows at street level (approximately 75% along the Village Stroll and 65% along Main Street) that allow the users to perceive the space beyond their immediate surroundings.

Figure 4-19 Active frontages that attract pedestrians and allow transparency beyond the street wall, Whistler Village

Figure 4-20: High proportion of windows at grade, Mammoth Village

There is also a high degree of transparency in the Mammoth Village. As a major commercial centre there is a consistent street wall with a high proportion of windows at grade (approx. 70%). While almost all the buildings in the village are mixed-use, some condominium buildings do not feature active frontages. In these areas, typically off the main squares in the village, there is an inability to perceive what is beyond the space, making it less inviting and leaving little reason for a visit. Figure 4-21 shows a high degree of transparency in the Mammoth Village, while Figure 4-22 shows areas in the village with inactive frontages that are less transparent and inviting.

Figure 4-21: Transparency incorporated into the design of Mammoth Village. Pedestrians can see through the transparent corridor and don't feel closed in

Figure 4-22: Inactive frontages in Mammoth Village that limit transparency

Old Mammoth Road has a much lower level of transparency than the nearby Village. Indeed, the buildings are so far removed from the street that, in many cases, they are not even visible from the street or sidewalk as shown in Figure 4-23. There is a very low proportion of street wall (approx. 5%) and, as shown in Figure 4-23, there are frequent and large gaps along the street.

Figure 4-23: Inconsistent street wall and unperceivable buildings away from the street, Old Mammoth Road

Additionally, as noted in Section 4.2.2, the snow banks frame the street and create an unintentional enclosure that frames the street. Unlike the snow removal in the Village, Old Mammoth Road features snowbanks that abut the sidewalk, or in some cases, even block it. While the street trees in conjunction with the high snowbanks do form some enclosure and help frame the street, the snowbanks are opaque and with few gaps, rendering the space and buildings beyond the street difficult or impossible to perceive.

Table 4-7: Transparency Ranking

Whistler Village	**Whistler – Main St.**	**Mammoth Village**	**Old Mammoth Road**
●	◕	◕	○

4.2.5 Complexity

Complexity is “the richness of a place that depends on the variety of the physical environment.” (Ewing and Clemente, 2013, 103). This includes the amount of and variety of physical elements, including building form and street furniture.

The building colours in Whistler Village are regulated in the Village Design Guidelines (Resort Municipality of Whistler, 2000) which contributes to an interesting but consistent urban design. The number of buildings is similar in each of the study areas in Whistler with the greater number of buildings found on the larger Main Street. Outdoor dining features are found in all the areas in Whistler, which create more 'sticky' spaces and add variety to the tenure of the buildings. Public art was concentrated closer to the base of the ski area along Village Stroll, an area that also features the most variety in colours and buildings.

In Mammoth Village, despite the small number of buildings (7 large buildings), at grade, the street wall is comprised of many fine-grain commercial outlets that present a high degree of complexity to the pedestrian as they travel through the village. As Figure 4-26 below shows, there is a variety of building colours, accent colours, materials, and fine grain retail that, along with public art, creates complexity and interest to the pedestrian. The Mammoth Village can, through design, appear to be complex and heterogeneous, even though it was developed uniformly.

Old Mammoth Road has very poor complexity. There is little to interest the pedestrian on the street as most of the buildings are recessed away from the sidewalks. Building colours are more basic and have less of a variety in colour and materials and there is no visible public art or outdoor dining of any kind.

Figure 4-24: When visible, basic building shapes, colours, and materials result in poor complexity along Old Mammoth Road

Figure 4-25: Building complexity and public art in Whistler Village

Figure 4-26: Fine-grain retail and complex building colours and materials and statue of Mammoth founder Dave McCoy, Mammoth Village

Table 4-8: Complexity Ranking

Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
◕	◕	◕	○

Table 4-9: Built Form Summary

	Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
Imageability	●	◐	●	◔
Enclosure	●	◕	●	○
Human Scale	●	◐	●	○
Transparency	●	◕	◕	○
Complexity	◕	◕	◕	○
Overall	●	◕	◕	○

Overall, Whistler Village had the highest quality of urban design, best meeting Ewing and Clemente's criteria for measuring urban design. Whistler's Main Street and Mammoth Village almost fulfilled the criteria and overall contained many of the elements that are suggested for good urban design, while Old Mammoth Road did not fulfil the criteria. It should be noted that this portion of the analysis specifically covers the formal urban design elements. In purely formal terms, Mammoth and Whistler Villages are very similar and there has been a great deal of attention paid to elements of urban design. However, as Section 4.1 outlines, Whistler satisfies much more of the criteria specific to resort development than Mammoth does. While Whistler and Mammoth both have high quality formal features, as a functioning resort, Whistler is demonstrably superior and represents a model for resort development.

Chapter 5

DEVELOPMENT CONTROL TOOLS ANALYSIS

This chapter is an analysis of the development control tools (DCTs) contained in various planning documents in the Resort Municipality of Whistler and the Town of Mammoth Lakes. The documents analyzed regarding Whistler were the 2002 Official Community Plan (OCP), Whistler Village Design Guidelines, and the 2015 Zoning and Parking Bylaw. Regarding Mammoth, the updated Hybrid Zoning Bylaw (2014), specifically section 17.24 which focuses on commercial areas, Design Guidelines for the Village at Mammoth, (2000) and the Design Guidelines for the Town of Mammoth Lakes (2005) were analyzed. Previously, in Section 4.2, an analysis of the built form of both Mammoth and Whistler was presented and this section aims to identify how the development control tools in each municipality inform the development of the built environment in their respective communities and assess how they will address existing gaps in the future. This chapter also highlights examples of development control tools and their effects in the community (5.3). Section 5.4 presents a case comparison of the design review process in Whistler and Mammoth and evaluates how Mammoth and Whistler are able to incorporate amenities- in this case supermarkets- and how their respective development controls affect their design objectives.

The evaluation of each municipality's development control tools is informed by the criteria outlined in Table 3-3. These criteria are drawn from existing methods of evaluating zoning bylaws as well as form-based and hybrid codes and how they guide development towards denser, walkable, sustainable, mixed-use, and vibrant communities. The criteria were evaluated within a range of poor/fair/average/great, or yes/no where applicable and the development control tools were evaluated independently against the criteria rather than in comparison with the other documents that were analyzed in this section. The 25 development control tools evaluation criteria outlined in Chapter 3 are broken into two sections for each study area: Vision-Oriented & Ease of Use and Design Standards. The first section evaluates the documents for their presentation of a clear physical plan that is vision centered, comprehensible, and provides user friendly graphics and diagrams. This section also evaluates whether the plans are place-based, binding, and integrated with other development and planning documents. The second section, Design Standards, evaluates the technical aspects of the codes and examines whether these codes incorporate development control tools and design standards outlined in existing literature and best practices that encourage sustainable, mixed-use, and vibrant community development.

5.1 Vision-Oriented Plan & Ease of Use

In the first section of its Village Design Guidelines, Whistler acknowledges that the success of the community and the resort is owed in large part to the high standard of urban design that it maintains and outlines a series of 9 objectives for the municipality, many of which are centred around community design (Whistler, 2017). Whistler employs graphics and pictures in its guidelines that are easy to read and understand, not only for planning staff, but also the public. As shown in Figure 5-1 below, the diagrams are not limited to building form and facades, but also provide useful and instructive images for snow removal and other winter-specific design concerns.

The DCTs are also place-based and regionally diverse. Whistler has 31 different development permit areas (OCP, 2012), each with their own form and character specification that enable planners to implement very specific and place-based regulations throughout the municipality.

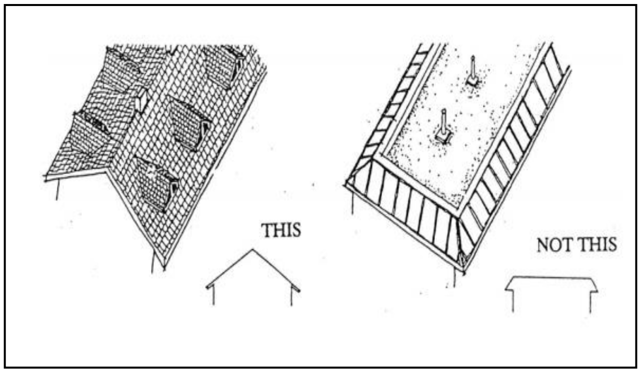


Figure 5-1: Easy to follow sketches in plain language, Whistler Village Design Guidelines, 26

Additionally, the unique form and character of Whistler is recognized in its codes and states that development should work “in concert with Whistler’s mountain setting, diversity of users, and tourism-based economy” (Whistler Village Design Guidelines, 6). Whistler’s DCTs are intended to be coordinated with other buildings, spaces, and design to contribute to this overall place based development. SEC. 3 of the Whistler Village Design Guidelines highlights this coordinated approach.

As previously noted, Whistler’s OCP outlines 31 different development permit areas, the first of which is Whistler Village and will be discussed in detail in Chapter 6. The section of the OCP outlining the Development Permit System (DPS) establishes the obligatory nature of the design guidelines with each section including a brief outline of the purpose and vision for the development of that area. For example, Whistler Village’s section includes mention of the Village being the “primary focuses of visitor, tourist and commercial facilities and the Village design being “pedestrian oriented” with coordinated design to achieve a special character and quality. (OCP, 5.3) The following section then states that “Development Permits issued for each designation category in this area shall be in accordance with the Whistler Village Design Guidelines in addition to [the form and character guidelines outlined in sec 5.4]” (OCP, 5.4). This section makes it very clear that the design guidelines must be adhered to for a development permit to be approved and that the form and character guidelines outlined by the municipality are indeed binding. Moreover, Whistler’s development, from a greenfield with a small landfill, to a world-class resort, was done through a form of by-right development, (Elliot et al., 2012, 6). The Resort Municipality, by way of its development arm and the Whistler Village Land Co. would prepare and service all lands and offer parcels of land with accompanying design guidelines to developers via public tender. This way the municipality could exert more control over what was built and could service the land according to their desires, choosing developers by awarding the land conditionally on adherence to the design guidelines (Economic Planning Group, 1984).

One aspect of Whistler’s DCTs that could be improved are the quality of the graphics. While the addition of illustrations is a positive aspect of Whistler’s codes, these graphics are drawings and in some cases sketches. These graphics could be updated with more realistic and less abstract drawings, or with existing examples drawn directly from Whistler to illustrate acceptable standards.

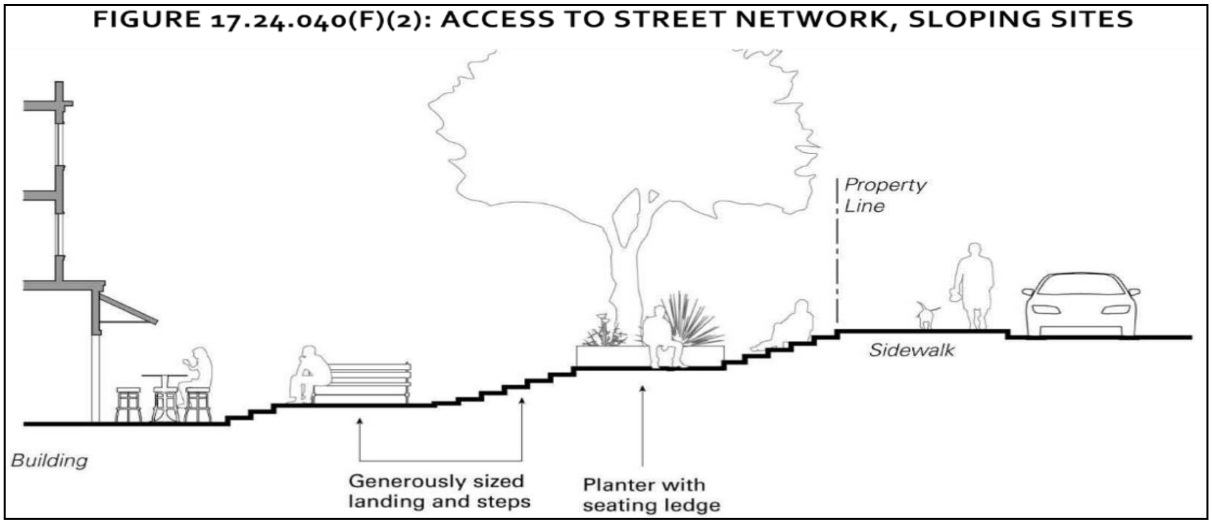


Figure 5-2: Readable and informative graphics, Mammoth Zoning Code

Mammoth Lakes recently updated its zoning code to involve more form-based elements as a hybrid code, implement the goals of its general plan, improve readability and usability, and promote sustainability (Mammoth Lakes, 2013). While no developments have yet been completed under this new code, the updated Zoning Code, along with the design guidelines for both the Town of Mammoth Lakes and the Village at Mammoth Lakes, provide a set of development control tools that should promote a high quality of design and address many of the existing gaps in Mammoth's built form outlined in Section 4.2. Mammoth's new code presents a clear vision and easy-to-use documents that can be understood by all stakeholders. During the code update process, numerous stakeholders were consulted and it is the first zoning code update to incorporate the new aspects of the Town's General Plan update from 2007. In the first section of the code (17.04.020) the purpose of the code is stated and proves a clear and succinct vision that binds public and private interests, including "Implement the General Plan by encouraging the uses of land as designated by the General Plan… Require high quality planning and design for development, that enhances the visual character of the Town, avoids conflicts between land uses, enhances functionality and safety, and preserves the scenic qualities of the Town by maintaining adequate open space… Encourage a range of transportation options with a strong pedestrian emphasis and emphasize connectivity, convenience, and alternatives to use of personal vehicles" (Mammoth 2014, 17.04.020).

The code also establishes specific sections presenting new visions for the commercial zones of Main Street and Old Mammoth Road to address issues in the built form of these areas. These sections of the code provide clear goals of promoting pedestrian-oriented development, encouraging high-quality building design, supporting economic growth and sustainability, increasing activity and animation, creating public gathering spaces, maintaining views, reducing the role of cars, and streamlining the permitting process for desired uses.

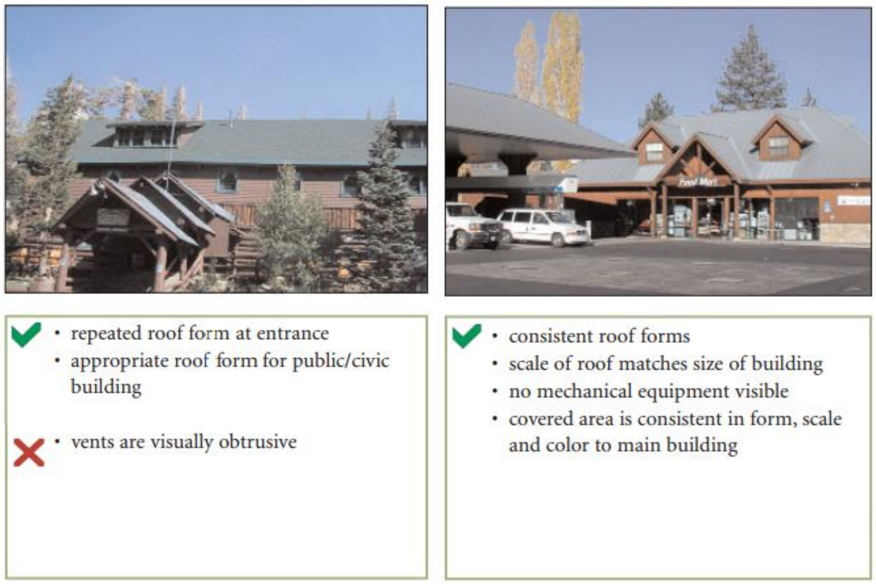
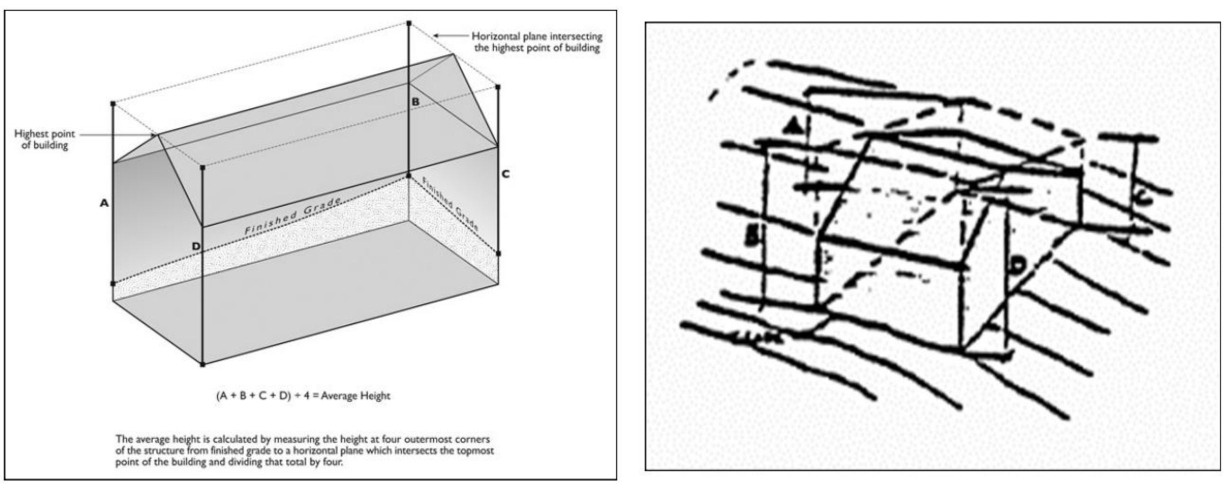


Figure 5-3: Clear, real-life examples of acceptable and unacceptable standards in Town of Mammoth Lakes Design Guidelines, yet the language could be simplified to be more accessible



Updated graphic in new Code. *Example graphic from existing Code.*

Figure 5-4: The code has also improved its user friendliness and includes updated drawings and graphics, but the language is overly technical in some cases

Table 5-1: Vision and Ease of Use Evaluation

Whistler	Mammoth
◕	●

5.2 Design Standards

Table 5-2: Design Standards Summary

Form-Based Tools	**Whistler Development Control Tools**	**Mammoth Lakes Development Control Tools**
Building Types	Yes – Names several building types and has specific standards that inform the shape of buildings	Yes
Frontage Types	Yes – Specific façade, walkways, and roof guidelines	Yes - Build-to Requirements, building placement standards, frontage, façade, window, door, and storefront images and standards
Public Space Standards	No – Only minimum gross area requirements, and plant types	No – Provides minimum standards but does not provide detailed drawings or design standards
Block and Subdivision Standards	No – Pedestrian mall walkway guidelines, but not standards addressing block dimensions or spacing	Yes - 5.0 Landscape and Public Space Guidelines, 17.24.040 A.
Regulating Plans	Yes – Development Permit System	Yes, - ADP submission
By-Right Development	Yes	Yes – Design Review Submission
Minimum Density Standards	No – Only maximum	No – Only maximum
Maximum Parking ratios	No	Yes – Sec. 17.24.30 E
Mixed-use permitted	Yes	Yes
Is on-street parking permitted?	Yes	Yes

While Whistler's DCTs are vision oriented, some other aspects of the code are not as progressive. Whistler does not establish minimum density standards to help promote denser development.

Furthermore, Whistler's DCTs do not have specific open space standards or specific standards for buildings and facades

The DCTs allow for a variety of uses and not only permit mixed-use development but encourage it in several places. For example, in Whistler's Zoning Bylaw the intent of the CC1 Zone (Whistler Village) is to "provide for a mixture of commercial uses, personal services and tourist accommodation facilities in a predominantly pedestrian environment. This zone provides a central tourist-oriented commercial focus for the Municipality" (Whistler, 2015). In addition to a mixture of uses, Whistler's DCTs allow for a variety of housing types and set out standards that guide development towards specific building types.

Whistler does not employ maximum parking standards and only issues traditional minimum standards. However, the DPS sections of the OCP specify that parking should be screened and low-profile. Moreover, the Village Design Guidelines mandate that "all parking must be underground in Whistler Village unless specifically approved by Council" (Whistler, Village Design Guidelines, 12) and where street parking is allowed, it must be screened and unobtrusive.

Mammoth's Zoning code allows for mixed-use in several areas and encourages it in the commercial zones such as Old Mammoth Road. In sec. 17.24.010 of the Mammoth Zoning Bylaw the code identifies Old Mammoth Road as an area intended for a "mix of intensities and uses in a pedestrian-scaled environment at a scale and form that is appropriate to its neighborhood context and adjacent residential uses and forms" (Mammoth Lakes, 2014).

While Mammoth's updated code employs many progressive standards, it maintains traditional density measurements including Floor Area Ratio (FAR), and only establishes maximum densities, rather than minimum densities. However, this is mitigated to a certain extent by permitting a wide variety of denser housing options and establishing minimum building footprints along the main streets of commercial zones, such as old Mammoth Road. There are minimum open-space ratios (17.24.040) and regulations require development to connect with existing open space networks. Parking requirements state that 'buildings **shall** be placed as close to the street as possible' (17.24.30E) and in table 17.44.030CB, the municipality outlines not only minimum parking standards, but also maximum standards – something Whistler does not yet regulate.

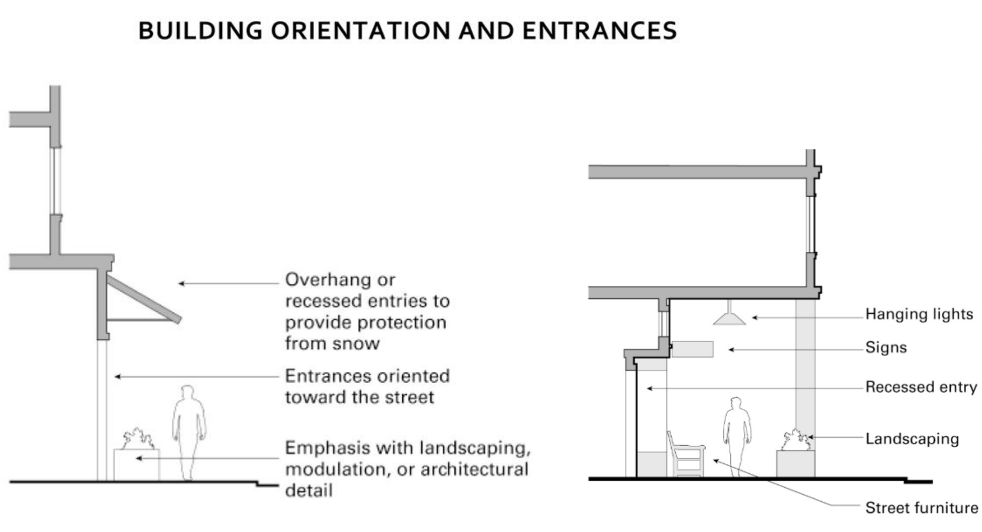


Figure 5-5: Building Frontage Diagrams that are descriptive and easy to understand, Mammoth Lakes Zoning Code

Table 5-3: Design Standards Evaluation

Whistler	Mammoth
◕	●

Table 5-4: Development Control Tools Summary

	Whistler	Mammoth
Vision and Ease of use	◕	●
Design Standards	◕	●
Overall	◕	●

Both Whistler and Mammoth's development control tools meet many of the standards and analysis methods used for this study. However, Mammoth's newer codes surpass Whistler. While both are vision-oriented and easy to understand for both planners and the public, Mammoth's updated graphics are extremely clear and the overall code is in line with the Town's general plan. As Table 5-2 shows, Mammoth's development control tools contain eight out of ten form-based elements, compared to Whistler's, which only have six. Overall, Chapter 5 showed Mammoth to have higher standards in its codes, which is an interesting contrast to the results of Chapter 4, which demonstrated Whistler to have a higher standard of resort development and urban design. This is likely not a coincidence; Mammoth has acknowledged there are a number of gaps in its urban design and it has developed a hybrid code with many form-based elements as a way to address these issues in its built form. Whistler has the benefit of already having a high standard of design, and as such, likely does not see the need to overhaul its development control tools – something that could be both resource-intensive, costly, unnecessary, and disruptive.

5.3 Examples in Use

Examples of the effects of Whistler's codes in effect can be seen across the Village and are also reflected in the international acclaim that Whistler has received throughout the years, including an Urban Land Institute Award for excellence and numerous other awards, (ULI, 2000). Subtler examples in the Village include the attention to detail on all aspects of development, down to sign size and material. Indeed, many junior planners in Whistler may spend a significant time of their early careers focusing solely on the signage aspects of development applications. Whistler's Sign Bylaw (No. 55), outlines a series of guidelines for commercial signs in the Village that regulate their material, shape, colours, lighting, location, and coordination in order to maintain a consistent and pleasant aesthetic in the village. An example below in Figure 5-6 shows the sign of one of Whistler's most popular restaurants and bars. It is part of the 'Warehouse' franchise with other locations in Vancouver, Toronto, and Montreal. The sign for the Warehouse in Whistler is subtle, unimposing, small, and made with materials that complement the surrounding built form. Also shown below is the sign for the franchise in Toronto on Queen St. West,

Figure 5-6: Warehouse franchises and signs, Whistler Village and Queen Street West, Toronto. The Whistler sign (left) is much smaller and uses materials that complement the design context, whereas the Toronto location is much larger and more distracting. It is likely that the owners would rather the Whistler sign look like Toronto, but Whistler's strong sign regulations would prohibit it.

which is situated in a heritage conservation district. The sign in Toronto is significantly larger with larger lettering, and is illuminated, and higher than its counterpart in Whistler.

As noted in Chapter 4, parking in Whistler must be underground and/or screened. An example of this is underground parking lot for the public library on Main Street in Whistler which is screened behind street trees. This policy not only ensures that pedestrians are prioritized in the Village but also adds to the sense of enclosure and imageability in Whistler Village.

Mammoth's new code seeks to address several gaps in the built form of their commercial zones, such as for Old Mammoth Road, gaps that were identified in this study. As outlined in Section 4.2 Old Mammoth Road lacks active store frontages contributing to poor transparency. In

Figure 5-8: The parking at the Whistler Library is underground and screened by street trees

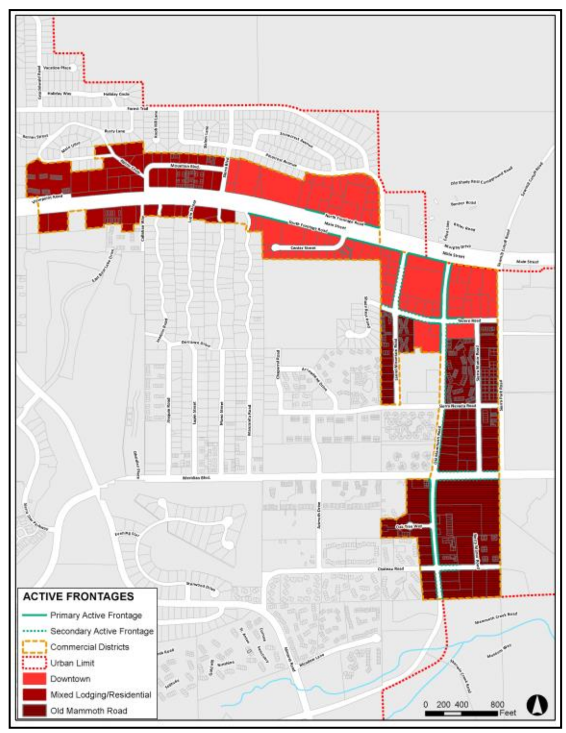


Figure 5-7: Old Mammoth Road is identified for increased active frontages to address lack of transparency

Mammoth's new code this area of Mammoth Lakes is identified as an area designated for active frontages.

While built before the new code was implemented in 2014, the AT&T building along Old Mammoth Road comes closer than any others to meeting the new standards and gives a glimpse into what Old Mammoth Road could look like after redevelopment and future infill development occurs under the new code.

This building, pictured in Figure 5-10, is situated directly at the street and at 3+ storeys high, provides the pedestrian with a sense of enclosure on this half of the street. This is also one of the only buildings that can be seen from the street during periods of heavy snow fall. There is a consistent proportion of street wall along this building with an active, transparent frontage at grade. While this area of Mammoth's urban design did not score as high as the Village, this block represents an increase in attention to design and many features of this buildings will be continued and improved on if the new DCTs in Mammoth are followed.

Mammoth Lakes has recognized the lack of transparency and in their zoning code they have dedicated a section (17.24.040 C.) that implements minimum transparency and active frontage standards in commercial zones like Old Mammoth Road. In the future, all new developments' "exterior walls facing and within 20 feet of a street, park, plaza, pedestrian walkway, or other public outdoor space shall include windows, doors, or other openings for at least 60 percent of the building wall area located

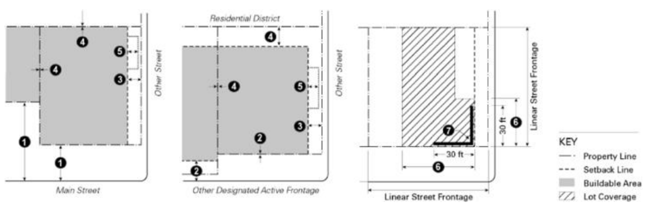


Figure 5-9: Building Placement Standards with detailed setback requirements that ensure buildings are situated closer to the street

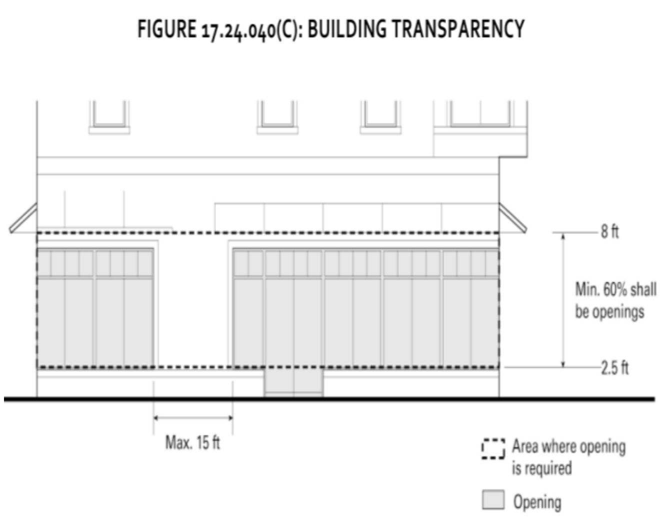


Figure 5-11: Building Transparency standards that are explicit and descriptive, Mammoth Lakes

Figure 5-10: Building on Old Mammoth Road that is close to the street at grade

between 2.5 and 8 feet above the level of the sidewalk. No wall may run in a continuous horizontal plane for more than 15 feet without an opening" (Mammoth Lakes, 2014).

5.4 Case Comparison

This section specifically compares examples of development control tools and developments in Mammoth Lakes and Whistler. The first section outlines and compares the design review processes in each municipality. Section 5.4.2 compares how each municipality is able to provide necessary amenities, in this case supermarkets, while attempting to meet design objectives, and examines how Mammoth's new codes will affect future development.

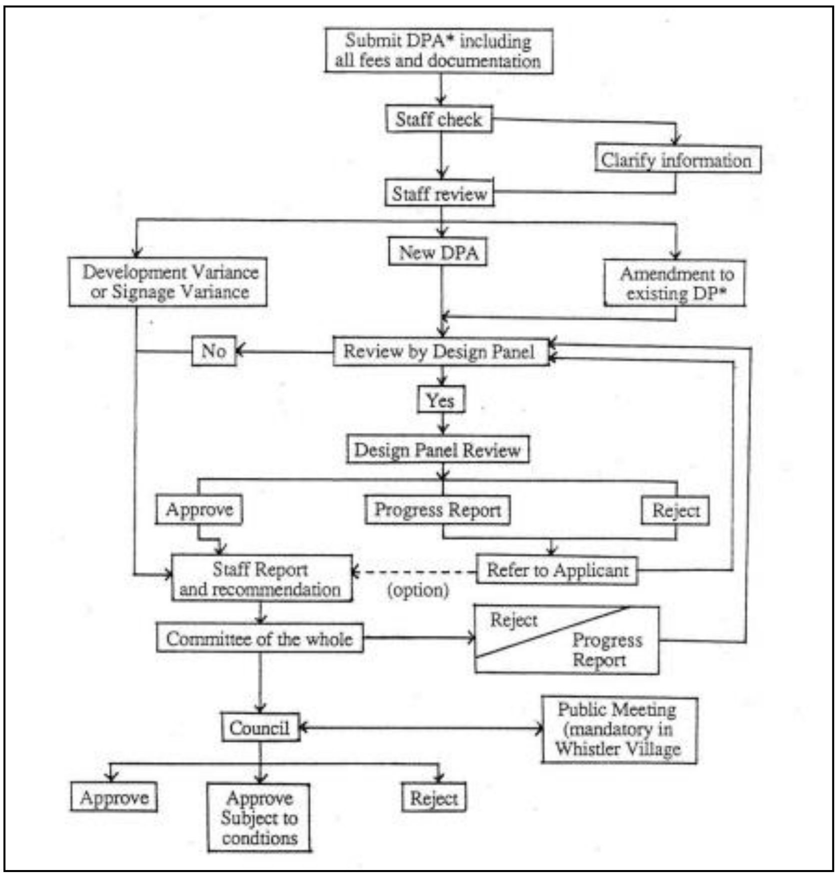


Figure 5-12 Whistler Design Panel Review, Whistler Village Design Guidelines

5.4.1 Design Review

The Development Permit System (DPS) in Whistler is a system that continues the tradition of by-right development. By creating a regulatory framework that incorporates design standards as a necessary component of development approval, Whistler planners can maintain a high quality of design, even with design guidelines and zoning codes that do not incorporate leading form-based elements. Figure 5-12 is an outline of the design review process in a clear and easy to understand format for applicants.

This system allows planning staff to review applications, many of which contain variances, without having to necessarily bring the application to council, in essence streamlining the development process for applications that meet the design specifications. Whistler has an Advisory Design Panel, which is a select committee of council that provides advice to planning staff on development applications. The members of this committee are members of the public and include architects, community members, landscape architects, as well as one council representative. This system is unusual for a small municipality like Whistler and is advantageous as it gives more discretion to planning staff who can approve a broader range of projects internally, without necessarily having to bring the applications to council.

Mammoth has implemented a Design Review process whereby an application will only be accepted if it abides by the standards outlined in the code- in effect making the new code binding. In other words, the new form-based elements in the Mammoth Zoning Code are not mere guidelines, but rather are necessary standards that must be met for an application to pass through design review and be granted approval through by-right development (Elliot et. al, 9). This process ensures that development standards are adhered to and incentivizes applicants to submit designs that meet the standards and will be granted approval without revisions (Zoning Code, 17.88.060). The process of design review in Mammoth is outlined below in Figure 5-13. As with the process in Whistler, there is an Advisory Design Panel (ADP) that was established in 2005, whose purpose is to "provide impartial advice to Town staff on matters relating to the design of the development proposals and the relationship between the development proposal and Mammoth's physical environment" (Advisory Design Panel Procedures, 2013). The panel consists of seven members and is comprised of architects, landscape architects, professionals with experience in development, and up to two members of the public who are on the Mammoth Lakes Planning and Economic Development Commission. Design review is required for all new construction, reconstruction, rehabilitation, alteration, or other projects involving improvements to the exterior of a structure, site, or parking area. Major design review is done by the entire commission, while minor design review can be done by the Director of the commission alone (Mammoth Lakes

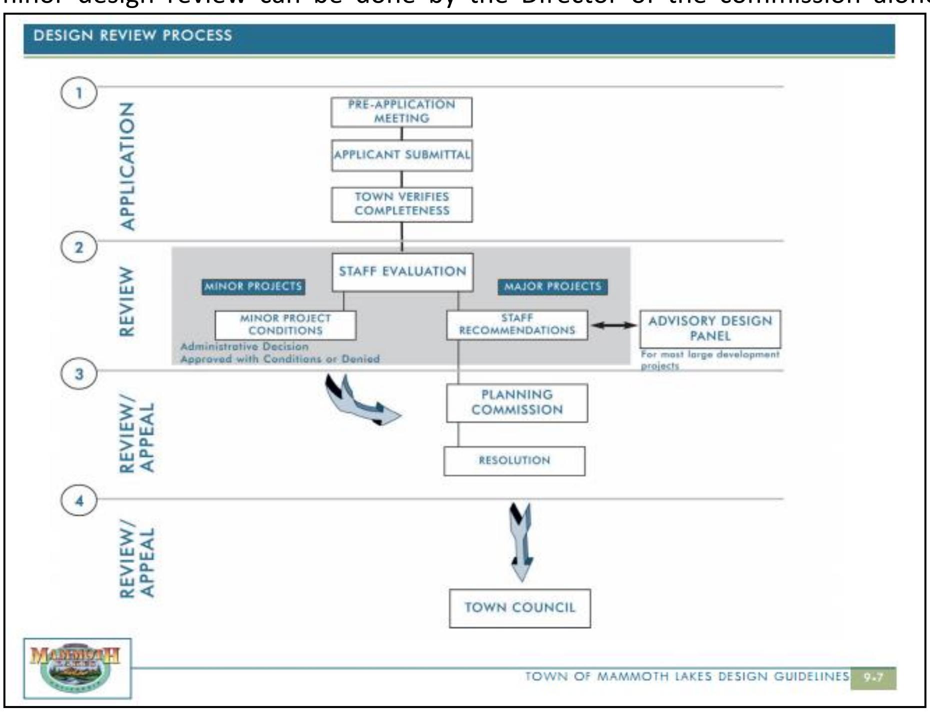


Figure 5-13: Mammoth Design Review Process, Mammoth Lakes Design Guidelines

Zoning Code 17.88). The ADP advises Town staff as well as the Planning and Economic Development Commission (PEDC). The ADP is concerned with specific design aspects of development proposals, rather than the broader components outlined in the general plan, and uses the Mammoth design guidelines and manuals for the evaluation of all projects. It is instructive that both the hybrid/form-based and Euclidian design guideline codes use design review processes. While there are subtle differences between the Whistler and Mammoth review systems, they both act as important ways to ensure the design objectives of each community are met and leverage local, expert input to ensure the vision and goals from their respective codes are implemented.

5.4.2 Grocery Stores

While no developments have been constructed under Mammoth's new code, the first application since the zoning code update was recently submitted for a grocery store in a commercial zone of Mammoth Lakes. This application provides valuable insight into how the new DCTs have changed the way that developments will look in Mammoth and how gaps in the built form identified by this study, and by Mammoth Lakes, will be addressed going forward. A grocery store is a necessary amenity for a community and represents an interesting test for Mammoth's new codes to see how it can accommodate a needed amenity while still meeting design objectives. This application also provides a valuable opportunity for comparison. In this section the development application in Mammoth will be compared with an existing grocery store in Mammoth developed under the old code, and with similar cases in Whistler – one located in Whistler Village and one located outside the Village.

5.4.2.1 Mammoth

The development in Mammoth will be located at 37 Old Mammoth Road and is being developed by a California developer called Best Development Group. The site is currently vacant, but sits near the corner of Old Mammoth Road and Main St., an important area identified for intensification in Mammoth in the C-2 zone.

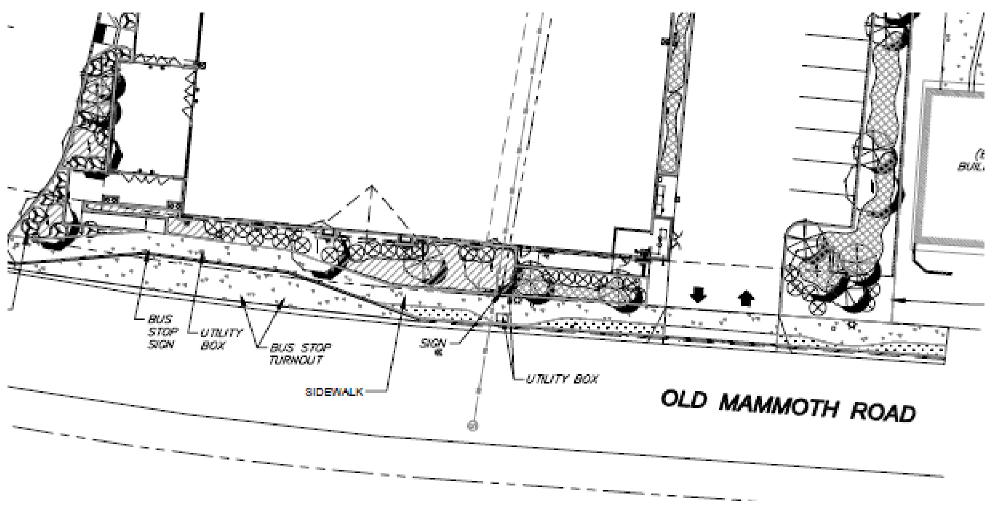


Figure 5-14: Grocery Gateway development proposal site plan

The development application shows a plan for the site that addresses many of the gaps in the built form outlined in Section 4.2. As shown in Figure 5-14, the proposed development is located at the street without the extreme setbacks that characterize much of the existing buildings in the area.

Additionally, the 42 proposed parking stalls are primarily located to the rear and the side of the development along with the servicing. This leaves 178 ft. (approx. 54 m.) of building frontage and as shown in Figure 5-15 below, this development would provide a significant upgrade to the streetscape if developed as proposed.

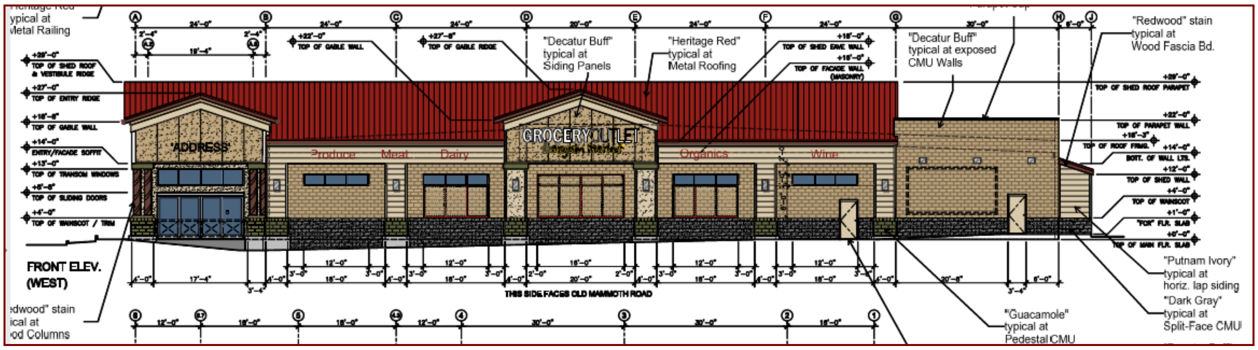


Figure 5-15: Grocery Gateway development proposal, rendering of facade facing Old Mammoth Road

This rendering is an improvement over the AT&T building shown in Figure 5-9**,** with building colours and materials that match the new standards in the Town of Mammoth Lakes guidelines. At approximately 9 metres high, this building will not meet the recommended building height to street width ratios outlined in Section 4.2, but the consistent street wall and complex façade with significant window proportion should increase the sense of enclosure, transparency, and complexity along this portion of the street.

By contrast, Mammoth's existing grocery store, pictured in Figure 5-16 is an example of typical development in Mammoth Lakes and is an example of what Mammoth's new codes are designed to correct. This supermarket is located along Old Mammoth Road and like much of the built form in this zone (see Section 4.2) the buildings are set back extremely far from the street, have a large amount of parking directing in front of the building, and have little to no human scale elements. As shown in Figure 5-17 below, the building is so far back from the street that it is unable to form a consistent street wall, or have an active or transparent frontages. In the proposed supermarket, many of the design issues of the existing supermarket have been addressed, and this can be directly linked to Mammoth's new codes.

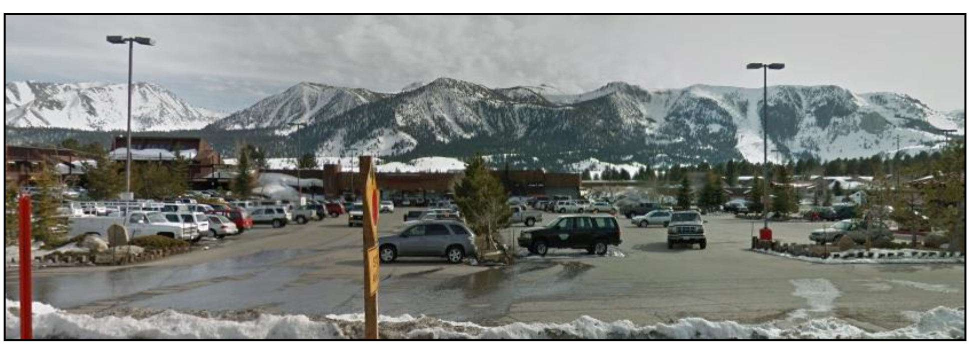


Figure 5-16 Mammoth Super Market

Source: Google Maps, 2017

Figure 5-17: Current supermarket development that is typical of much of Mammoth's streets, Old Mammoth Road Source: Google Maps, 2017

5.4.2.2 Whistler

By comparison, Whistler has two main grocery stores, the IGA, located in Whistler Village, and the Nesters Market located a few kilometres north of the village. The Village IGA is in a development in the North Village known as Marketplace. While the IGA and other outlets in this complex are accessible by car and feature surface parking, the entrance to the complex is concealed behind transparent street wall from the Village Stroll. With street trees and screening from the major arterial roads that lead to the village, a deliberate view of Whistler Mountain in the only gap between the screening street trees as shown below in Figures 5-18,19.

Figure 5-18: Entrance to IGA surface parking via Lorimer Rd. with view of Whistler Mountain, Whistler

Source: Google Maps, 2017

Figure 5-19: Entrance to IGA Marketplace via Pedestrian Stroll, Whistler Village

However, outside of the Village in Whistler, the other main supermarket is Nesters. As pictured below in Figure 5-20, this development is reminiscent of the built form along Old Mammoth Road. The building is set back far from the street, parking is in front of the building, and there is no pedestrian connectivity to access the store.

Figure 5-20: Nesters Market, Whistler **Source:** Google Maps, 2017

The Grocery Gateway development in Mammoth Lakes shows a considerable step forward as a direct result of the new DCTs implemented in the Town of Mammoth Lakes. Moreover, this new development outside of Mammoth's pedestrian village, shows many urban design features that would make it much more desirable than its equivalent in Whistler. While both Mammoth and Whistler have a high quality of urban design in their resort Village areas, with Mammoth's new codes and emphasis on other commercial nodes of the town, higher quality urban design could soon come to other parts of Mammoth.

Chapter 6
CONCLUSIONS

Chapters 4 and 5 provided an analysis of both the quality of the built form of Whistler and Mammoth Lakes, as well as the plans and development controls in these communities. These chapters compared how development is shaped by the controls. This analysis was based on the research methods outlined in Chapter 3 where current methods for evaluating resort developments, measuring urban design, and evaluating zoning bylaws and form-based codes were drawn from a variety of sources and consolidated for this report's study. A combination of document review, key informant interviews, and direct observation were used to evaluate the study areas and the scoring appendices (Appendix B and C) were used to summarize the observations and findings of the data collection and assign a qualitative rank to each study area.

This chapter outlines the findings of the analysis and discusses how these findings answer the research question outlined in Chapter 1. This chapter also discusses how the built form may be guided in the future, provides recommendations drawn from the lessons learned in this study and offers suggestions for future research.

6.1 Whistler

Table 6-1: Whistler Urban Design Summary

	Whistler Village	**Whistler – Main St.**
Imageability	●	◐
Enclosure	●	◕
Human Scale	●	◐
Transparency	●	◕
Complexity	◕	◕

In terms of resort development principles, Whistler met almost all the ULI criteria for a successful resort development. This observation is further supported by the numerous awards it has received and the resort's recent sale for $1.4 billion, while much of the ski resort industry is facing uncertainty due to climate change and other pressures.

Whistler Village also contains a high quality urban design. The carefully designed Village complements the natural features of the area and uses best practices for building heights and public space dimensions (Ewing and Clemente, 2013; Chapter 4) to create a distinct sense of place. While the architectural style of the buildings and the master planned Village is subject to criticism by some architects, the transparency, complexity, and attention to the human scale have created a memorable and functional place.

Outside of the pedestrian areas of Whistler Village, Whistler's built form does not maintain as high a standard of urban design; however, it still has many features that represent an improvement over conventional suburban development. The Village Stroll area of Whistler does not allow access to cars and thus is designed purely for pedestrians, whereas Main Street has been designed with the car in mind. Because of this its human scale, complexity, and enclosure do not score as high as the Village Stroll. However, they still meet many of the evaluation criteria, and almost entirely fulfill many of the urban design criteria, representing an area that can allow for vehicular traffic while still maintaining many desirable design qualities outlined in the literature.

Whistler's codes employ several form-based standards. In its zoning bylaw and design guidelines Whistler has regulating plans, by-right development, design review, and frontage and building standards that help regulate its high quality of design. Perhaps what is most important is the public ownership of the original property and the tradition of by-right development. Whistler's original development was very carefully managed and development was contingent on strict adherence to design guidelines (Economic Planning Group, 1984), meaning that from the initial phases of development Whistler has been built according to a set of design principles and that fewer corrective measures need to be made today. This adherence to design guidelines continues to this day, and despite the relative lack of current form-based and transect elements contained in the bylaw, Whistler and its planning staff are able to meet their design objectives and maintain a high standard of design.

6.2 Mammoth Lakes

Table 6-2: Mammoth Lakes Urban Design Summary

	Mammoth Village	**Old Mammoth Road**
Imageability	●	◔
Enclosure	●	○
Human Scale	●	○
Transparency	◕	○
Complexity	◕	○

Mammoth's Village, situated at the base of Mammoth Mountain ski resort, showed a similar quality of built form as Whistler's Village with high scores for imageability, enclosure, and human scale. While not fulfilling as many criteria of transparency and complexity, Mammoth's Village is still a high-quality pedestrian-friendly space.

In terms of resort principles, Mammoth's Village does lack some significant features. While it intends to be a multi-activity and year-round resort, it still primarily functions as a winter resort. Additionally, while its Village's urban design is commendable, it lacks several key amenities and is not the central hub for the town and resort.

Outside of the Village, in the Old Mammoth Road study area, the urban design is representative of much of North American conventional suburban development. In this area, there is little attention paid to the pedestrian experience, nor is there the attention to design that is found in the Village. Because of this, the Town of Mammoth Lakes has implemented an updated Zoning Code (2014) that incorporates form-based elements as a hybrid code. Despite not being a true 'transect' code, and technically a hybrid-code, Mammoth had high evaluations on form-based design standards in its zoning code. It incorporates industry-leading control tools including maximum parking standards, transparency standards, maximum block lengths, building placement standards, and building façade and design standards. Both Whistler and Mammoth Lakes use by-right development processes whereby projects that comply with design standards receive streamlined approval. In Section 5.4.2, the first development proposal in Mammoth since its zoning code update is analyzed and compared to existing and similar developments elsewhere in Mammoth Lakes and in Whistler. This section demonstrates the design improvements to the new development application that are informed by the progressive design standards in Mammoth's updated codes and provides insight as to how Mammoth's urban design gaps may be addressed in future developments.

Table 6-3: Combined Urban Design Summary Table

	Whistler Village	Whistler – Main St.	Mammoth Village	Old Mammoth Road
Overall	●	◕	◕	○

6.3 Lessons Learned & Recommendations

In Chapter 1 the research question posed was:

How are two mountain resort communities transitioning to incorporating form-based elements into development control tools and code updates?

In Chapter 1, a definition of 'form-based' codes and their characteristics were provided. Throughout this report there has been a detailed analysis conducted of the built form of four study areas in two mountain resort communities, a corresponding analysis of their development control tools in the form of urban design guidelines and zoning bylaws, and a demonstration of how these documents incorporate form-based elements. Both communities examined in this study are not listed on the two most comprehensive sources that track and list form-based codes: *The Codes Study* (Borys et al., 2017) and the *Library of Codes* (Form-Based Codes Institute, 2017). However, as this study demonstrated, both Whistler and Mammoth's codes contain numerous form-based elements, and could be added to these databases, which contain other hybrid-codes. The criteria for inclusion in *The Codes Study* database is as follows:

i. *Is the code's focus primarily on regulating urban form and less on land use?*
ii. *Is the code regulatory rather than advisory?*
iii. *Does the code emphasize standards and parameters for form with predictable physical outcomes (build-to lines, frontage type requirements, etc.) rather than relying on numerical parameters (FAR, density, etc.) whose outcomes are impossible to predict?*
iv. *Does the code require private buildings to shape public space through the use of building form standards with specific requirements for building placement?*
v. *Does the code promote and/or conserve an interconnected street network and pedestrian-scaled blocks?*
vi. *Are regulations and standards keyed to specific locations on a regulating plan?*
vii. *Are the diagrams in the code unambiguous, clearly labeled, and accurate in their presentation of spatial configurations?* (Placemakers, 2016)

While this study was not primarily concerned with identifying form-based codes and used a longer and less concise set of criteria for evaluating codes, many of the criteria listed above were discussed in Chapter 5 and, as summarized in Section 5.2 Whistler, and especially Mammoth Lakes' codes, meet sufficient criteria to warrant inclusion in the database.

Whistler, while not advertised to be a form-based code nor a hybrid-code, does in fact employ many 'form-based' elements in its codes, which have helped it maintain its high quality of urban design.

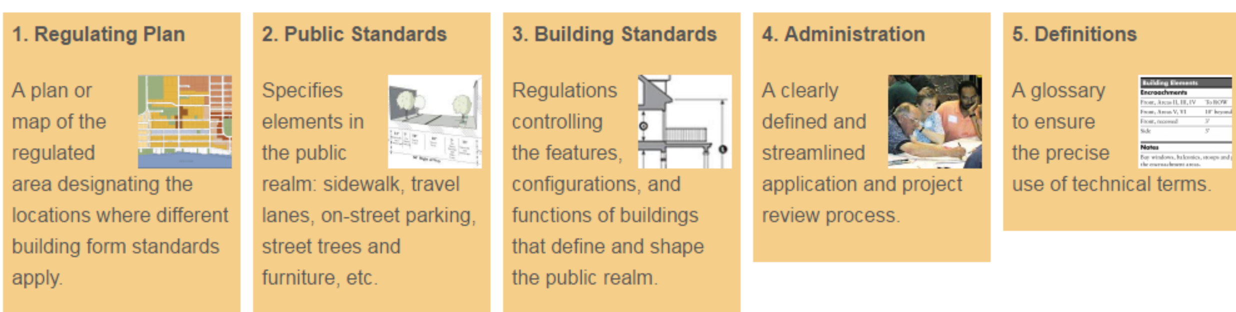


Figure 6-1: Components of SmartCodes and other form-based codes, Source: Form-Based Codes Institute, 2017

Whistler and Mammoth may not have 'brand name' form-based, transect, or SmartCodes. However, many of the APA's and the Form-Based Codes Institute's criteria for evaluating form-based codes (Elliot et. al, 2012) are included in both codes, and particularly in Mammoth's. While there is no official set of criteria for evaluating what is and isn't a form-based code, by the standards of the APA and Form-Based Codes Institute, Mammoth contains several of these elements and has many more form-based and elements than most North American codes.

It is recommended that Whistler update some of its codes, specifically in the form of updated graphics in the *Village Design Guidelines*. The report found that this document contains many features that contribute to Whistler's quality of design; however, the graphics are mostly hand sketched and do not provide a useful schematic for future development such as those shown in Figure 6-2. Moreover, Whistler could use Mammoth Lakes as a template and use photos in conjunction with drawings to highlight real examples of desirable design.

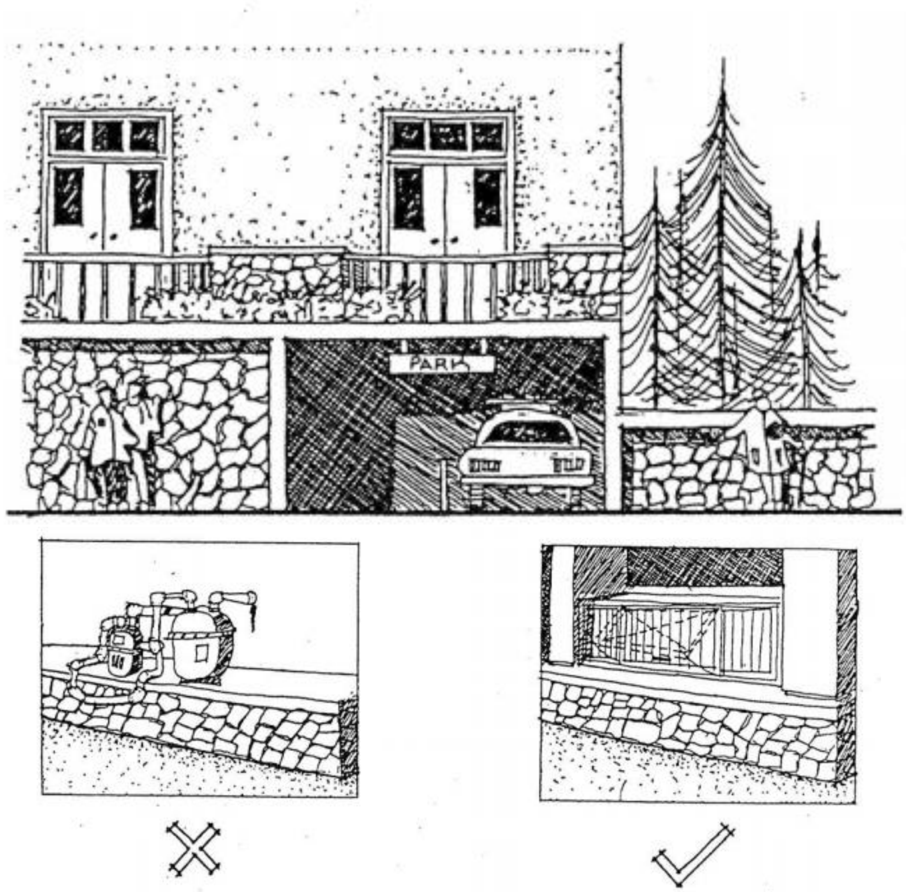


Figure 6-2: Whistler Village Design Guideline graphics

Euclidian zoning, even with design guidelines, emphasizes land-use over form and can often lead to auto-oriented areas with poor urban design like Old Mammoth Road (outlined in this study) and much of North America. By incorporating form-based standards into traditional Euclidian zoning bylaws, like those in Whistler and Mammoth, smaller municipalities that may not have the resources or political will to implement full transect or form-based codes, can look to hybrid-codes as a solution. Whistler benefits from having had a high quality of urban design since its initial development from a greenfield. As such, fewer corrective measures are needed in its code and the tradition of by-right development and adherence to design standards has created an understanding between the development community and the municipality that there is a mutual benefit to maintaining a high quality of urban design in the community. On the other hand, Mammoth represents a more typical community, where the existing built form (Section 4.2) conflicts with its goals for walkable, pedestrian friendly, mixed-use communities (Mammoth General Plan, 2007). Mammoth's codes represent a more comprehensive and progressive set of controls and, as this report shows, the positive effects of these new development controls can already be seen in recent development proposals. For towns where tourism is vital and with the importance of urban design to tourism being increasingly recognized, hybrid-codes such as Mammoth's show a promising solution to municipalities trying to make improvements to their built form.

One of the key findings of this report is that while form-based codes can be more prescriptive, they are not exclusively necessary for developing successful mountain resort communities. Hybrid codes and robust design guidelines can produce a high quality public realm, as outlined in this report. Furthermore, regardless of which type of codes are used, design panel review should be implemented to ensure that the vision and goals of the codes are developed in practice. Design panel review is present in both case studies and is found to contribute to the development and implementation of both sets of codes and should be implemented in other communities as a way to achieve design objectives.

As noted in Chapter 3, there were some limitations to this study. Firstly, there are a number of ways to evaluate urban design and resort communities. While this study used a synthesis of current and peer-reviewed research methods, there is not one sole agreed upon set of methods, especially for specific types of communities such as the ones profiled in this report. Additionally, the two case studies have some inherent features that make comparisons difficult. As previously noted the case studies are in different countries, and as such, the legislative framework is different for each municipality. Additionally, there are a number of factors, many of which are unknown, that have had direct and indirect influences on the development of each community.

As this study drew from multiple existing research methods, some methods were more conducive to being used for this type of study than others. The Urban Land Institute's resort development principles were informative for identifying features that make successful resort communities, but they did not contain the same guide for evaluation as Ewing and Clemente's *Measuring Urban Design (2013)*, which can be directly applied. Moreover, the ULI (1997) principles were primarily concerned with generating economic activity, while some of the other methods were concerned, primarily, with urban design. Specifically, the ULI criteria did not include urban design principles of context and Ewing and Clemente's methods lacked key criteria that are essential and specific to mountain resort planning such as solar orientation, walkability, and view protection.

Lastly, while Ewing and Clemente's methods for evaluating urban design are widely used, there are issues that arise when trying to objectively quantify urban design. The methods include measuring many discrete and countable elements (counting street trees, measuring building height etc.), but the results may contradict subjective experience. For example, in this study, Whistler and Mammoth Villages were evaluated as almost the same based on Ewing and Clemente's methods, which contradicted my personal experience, (and that of many others) of feeling that Whistler's urban design is of a much better quality than Mammoth. However, this was mitigated to a certain extent by including the ULI resort development principles in the analysis, which clearly showed Whistler to be superior. Some of this difficulty stems from the specificity of the community types. Ewing and Clemente's methods are intended for general urban spaces and are very good at differentiating and quantifying the differences between urban/ suburban etc. but for more specific examples like resort communities, the methods are not as tailor made. Additionally, there were some criteria that were not particularly applicable to the case studies of Whistler and Mammoth. Street furniture and outdoor dining, for example, were a large component of evaluating human scale. While street furniture and outdoor dining were found in both case studies, being winter destinations, they were not as heavily featured and can present some problems.

Additionally, while the APA guidelines for design standards provide a good start to evaluating hybrid and form-based codes, these criteria are not tailor made for resort communities. As such, not all of the criteria are equally important in Whistler or Mammoth as they may be in Austin Texas. For example, minimum density standards are important for municipalities trying to combat low-density traditional suburban development, whereas, in Whistler Village, a master-planned area that initially contained a great deal of-high density, having minimum density standards may not be as crucial.

Figure 6-3: Street furniture elements in the winter, Mammoth Village

6.4 Future Research

As Mammoth's code update was only completed in 2014 and no new developments have yet been completed under this new code, an opportunity for future research exists to examine how the new codes influence the built form in the future and if indeed the existing urban design gaps in Mammoth are addressed. Furthermore, this study contained key informant interviews with planners and municipal staff who were involved in the design and implementation of Whistler and Mammoth's codes. Another opportunity for further research exists investigating the developer's perspective. Further research could be made into the challenges in implementing the codes from a municipal government perspective in addition to the challenges from a developer perspective when adjusting to more form-based standards rather than the traditional Euclidian codes. This study was completed in winter, and while both study areas are primarily known as winter destinations, as noted in Section 4.1.2, resort communities becoming year-round destinations is an integral part of their success. Conducting a similar analysis of the built form in the summer months would be an interesting opportunity to see if and how the built form rankings would change and to see if either of the communities experience a significant difference in the summer months.

If more resources were available, further study could be done to understand how people interact with the space. This report evaluates the built form of each resort community and further work that used additional research methods such as Jan Gehl and Birgette Svarre's *How to Study Public Life* (2013) would provide more insight into how people use the spaces. In order to do this the study would require video equipment and permission from private landlords and the municipalities to record, and subsequently analyze video of people in the case studies. Lastly, Ewing and Clemente's (2013) evaluation criteria implies, but does not explicitly mention, walkability, and future study could specifically examine the walkability in these communities.

References

Baxter, J. (2016). Case Studies in Qualitative Research. In I. Hay, *Qualitative Research Methods in Human Geography* (pp. 130-146). Don Mills, Ontario: Oxford University Press Canada.

British Columbia Ministry of Community Services. (2006). *A Guide to British Columbia's Mountain Resort Associations Act.* Victoria: British Columbia Ministry of Community Services.

Center for Applied Transect Studies. (2009). *SmartCode Version 9.2.* Retrieved from Center for Applied Transect Studies: http://transect.org/codes.html

Clark, T., Gill, A., & Hartmann, R. (2006). *Mountain resort planning and development in an era of globalization.* New York: Cognizant Communication Corporation.

Daugherty, J. (2007). *Form-Based Zoning: A research paper for the Town of Mammoth Lakes.* Mammoth Lakes: Town of Mammoth Lakes.

Department of Municipal Affairs. (1974). *Community Development Study.* Victoria: Planning Services Division, Department of Municipal Affairs, Province of British Columbia.

Dunn, K. (2000). Interviewing. In I. Hay, *Qualitative Research Methods in Human Geography* (pp. 50-82). Oxford: Oxford University Press.

Economic Planning Group of Canada. (1984). *Whistler - Development of a Resort.* Victoria: Economic Planning Group of Canada.

Elliot, D. L., Goebel, M., & Meadows, C. (2012). *The Rules Tht Shape Urban Form.* Chicago: Amaerican Planning Association.

Ewing, R., & Clemente, O. (2013). *Measuring Urban Design.* Washington: Island Press.

Form-Based Codes Institute . (2017). *Form-Based Codes Defined*. Retrieved January 2017

Gehl, J., & Svarre, B. (2013). *How to Study Public Life.* Washington: Island Press.

Gill, A., & Williams, P. (1994). Managing growth in mountain tourism communities. *Tourism Management*, 212-220.

Jacobs, A. B. (1995). *Great Streets.* Cambridge: MIT Press.

Leung, H.-L. (2003). *Land Use Planning Made Plain 2nd Ed.* Toronto: University of Toronto Press.

Lundberg, P. (2014). *Cracking the Code of Small Downtowns: A comparison of four small downtowns and the codes used to shape their built form.* Kingston: Queen's University School of Urban and Regional Planning

Lynch, K. (1960). *The Image of the City,* Cambridge: MIT Press.

Mammoth Lakes. (2000). *Design Guidelines: The Village at Mammoth.*

Mammoth Lakes. (2000). *NORTH VILLAGE SPECIFIC PLAN.* Mammoth Lakes, California.

Mammoth Lakes. (2013). *Advisory Design Panel Procedures .* Mammoth Lakes, California.

Mammoth Lakes. (2013). *Zoning Code Update Executive Summary*. Retrieved from http://www.townofmammothlakes.ca.gov: http://www.townofmammothlakes.ca.gov/DocumentCenter/View/4141

Mammoth Lakes. (2014). *Code of Ordinances Title 17 - Zoning.* Retrieved from www.ci.mammoth-lakes.ca.us: https://library.municode.com/ca/mammoth_lakes_/codes/code_of_ordinances?nodeId=TIT17ZO

Parolek, D. G., Parolek, K., & Crawford, P. C. (2008). *Form-Baded Codes A Guide for Planners, Urban Designers, Municipalities, and Developers.* Hoboken: John Wiley & Sons, Inc.

Pique Newsmagazine. (2000). *Whistler History in the Making.* Whistler: Pique Newsmagazine .

Placemakers. (2016, March). *The Codes Study*. Retrieved from Placemakers: http://www.placemakers.com/how-we-teach/codes-study/

Reid, A. (2013). *Regulating Form: Comparing Public Form-Based Codes in Canada.* Halifax: Dalhousie University.

Taylor, L., & Ryall, A. (2004). *Sustainable mountain communities : environmental sustainability for mountain areas impacted by tourism and amenity migration.* Banff: Banff Centre.

Urban Land Institute . (1997). *Resort Development Handbook.* Washington: Urban Land Institute .

von Hausen, M. A. (2013). *Dynamic Urban Design.* Bloomington: iUniverse Inc.

Walker, P. L. (2009). *Downtown Planning for Smaller and Midsized Communities.* Chicago: Amaerican Planning Association .

Weitz, J., & Waldner, L. (2003). *Planning Advisory Service Report No. 512: Smart Growth Audits.* Chicago: American Planning Association.

Yin, R. K. (2003). *Case Study Research.* Thousand Oaks: Sage Inc.

Whistler, Resort Municipality. (1993). *OFFICIAL COMMUNITY PLAN .* Retrieved from whistler.ca: https://www.whistler.ca/sites/default/files/related/ocp_-_text_-_oct_2012.pdf

Whistler, Resort Municipality. (2013). *Whistler Village Enhancement Strategy.* Retrieved from Whistler Department of Planning and Development Services: https://www.whistler.ca/sites/default/files/related/whistler_village_enhancement_strategy_0.pdf

Whistler, Resort Municipality. (2015). *ZONING AND PARKING BYLAW NO. 303.* Retrieved from whistler.ca: https://www.whistler.ca/sites/default/files/2017/Jul/bylaws/pdf/5007/zoning_and_parking_bylaw_303_2015.pdf

Whistler, Resort Municipality.. (n.d.). *Whistler Village Design Guidelines.* Retrieved from Resort Municipality of Whistler: https://www.whistler.ca/sites/default/files/related/whistler_village_design_guidelines_0.pdf

Appendix A

Figure A-1: Town Centre Amenities

	Whistler Village	Mammoth Village
Retail	Y	Y
Visitor Info	Y	Y
Post Office	Y	N
Library	Y	N
Medical Centre	Y	N
Banks	Y	Y
Offices	Y	Y
Recreation Centre	Y	N
Lift Facilities	Y	Y
Skating Rinks	Y	N
Pedestrian Core	Y	Y

Figure A-2: Building Height to Street Width Ratio

	Building Height (m.)	Building to Building Width (m.)	Ratio
Mammoth Village	21	12	7:4
Mammoth Village Plazas	21	30	7:10
Minaret Road Mammoth Village	21	18	7:6
Old Mammoth Road (closest)	9	32	9:32
Old Mammoth Road (typical)	10	80	1:8
Old Mammoth Road Parking Lots	14	100	7:50
Whistler Village Stroll	15	12	5:4
Village Stroll Plazas	21	32	21:32
Main Street	16	22	8:11
Whistler Village parking lot	12	100	3:25

Appendix B – Whistler

Table A-3: Built Form Analysis Score Card: Block 1

#	Step	Process	Value	Notes
Imageability				
1.1	Accessible courtyards, plazas, parks, and gardens	Count	3	
1.2	Visible/ prominent major landscape features	Count	3	
1.3	Buildings with identifiers	Count	16	
1.4	Buildings with non-rectangular shapes	Count	11	
1.5	Presence of outdoor dining	Y/N	y	
1.6	Noise Level	Est. (1-5)	3	music from cafes and pedestrian activity
Enclosure				
2.1	long sight lines (0-3)	count	2	
	proportion of street wall	est. (.10)	0.8	
	proportion of sky	est. (.10)	20/60	
	street trees	count	23	
Human Scale				
	long sight lines (0-3)	count (0-3)	2	
	proportion window (street level)/block	est (.10)	75	
	building height	average est.	40	
	small planters	count	6	
	street furniture & street items	count	15	
	outdoor dining tables	count	13	
	lights on buildings (10ft. High and under)	count	16	
Transparency				
	proportion window (street level)/block	est. (.10)	75	
	proportion street wall	est. (.10)	80	
	proportion active use/block	est. (.10)	100	
Complexity				
	buildings	count	11	
	basic building colours	count	6	
	accent colours	count	4	
	presence of outdoor dining	count	3	
	pieces of public art	count	0	
Resort Development Principles				
	Town Centre Hub	Y/N	Y	
	Character through tenant mix	Y/N	Y	
	Distinct design themes & consistent urban	Y/N	Y	

	design			

Table A-4: Built Form Analysis Score Card: Block 2

#	Step	Process	Value	Notes
Imageability				
1.1	Accessible courtyards, plazas, parks, and gardens	Count	3	
1.2	Visible/ prominent major landscape features	Count	4	mtn, square, square
1.3	Buildings with identifiers	Count	16	
1.4	Buildings with non-rectangular shapes	Count	6	
1.5	Presence of outdoor dining	Y/N	Y	
1.6	Noise Level	Est. (1-5)	4	pedestrian activity
Enclosure				
2.1	long sight lines (0-3)	count	1	mtn
	proportion of street wall	est. (.10)	90	
	proportion of sky	est. (.10)	Oct-50	
	street trees	count	16	
Human Scale				
	long sight lines (0-3)	count (0-3)	1	
	proportion window (street level)/block	est (.10)	70	
	building height	average est.	30	
	small planters	count	15	
	street furniture & street items	count	14	
	outdoor dining tables	count	31	
	lights on buildings (10ft. High and under)	count	20	
Transparency				
	proportion window (street level)/block	est. (.10)	75	
	proportion street wall	est. (.10)	90	
	proportion active use/block	est. (.10)	100	
Complexity				
	buildings	count	8	
	basic building colours	count	8	
	accent colours	count	5	
	presence of outdoor dining	count	4	
	pieces of public art	count	2	
Resort Development Principles				
	Town Centre Hub	Y/N	Y	
	Character through tenant mix	Y/N	Y	
	Distinct design themes & consistent urban design	Y/N	Y	

Table A-5: Built Form Analysis Score Card: Main Street

#	Step	Process	Value	Notes
Imageability				
1.1	Accessible courtyards, plazas, parks, and gardens	Count	2	park, garden
1.2	Visible/ prominent major landscape features	Count	2	mtn, river/ stream
1.3	Buildings with identifiers	Count	13	
1.4	Buildings with non-rectangular shapes	Count	6	
1.5	Presence of outdoor dining	Y/N	Y	
1.7	Noise Level	Est. (1-5)	2	cars more than pedestrian
Enclosure				
2.1	long sight lines (0-3)	count	1	mtn
	proportion of street wall	est. (.10)	40/15	
	proportion of sky	est. (.10)	60/85	
	street trees	count	30+	
Human Scale				
	long sight lines (0-3)	count (0-3)	1	mtn
	proportion window (street level)/block	est (.10)	50	
	building height	average est.	50	
	small planters	count	30+	
	street furniture & street items	count	15	
	outdoor dining tables	count	4	
	lights on buildings (10ft. High and under)	count	15+	
Transparency				
	proportion window (street level)/block	est. (.10)	60	
	proportion street wall	est. (.10)	65	
	proportion active use/block	est. (.10)	80	
Complexity				
	buildings	count	13	
	basic building colours	count	4	
	accent colours	count	3	
	presence of outdoor dining	count	4	
	pieces of public art	count	1	
Resort Development Principles				
	Town Centre Hub	Y/N	N	
	Character through tenant mix	Y/N	Y	
	Distinct design themes & consistent urban	Y/N	Y	

	design			

Appendix C – Mammoth

Table A-6: Built Form Analysis Score Card: Mammoth Village

#	Step	Process	Value	Notes
Imageability				
1.1	Accessible courtyards, plazas, parks, and gardens	Count	3	plazas and public stage
1.2	Visible/ prominent major landscape features	Count	3	mountain views
1.3	Buildings with identifiers	Count	25 +	commercial signage, lift ticket office
1.4	Buildings with non-rectangular shapes	Count	15+	all slanted roofs
1.5	Presence of outdoor dining	Y/N	Y	
1.6	Noise Level	Est. (1-5)	2	few people but lots of snow plows
Enclosure				
2.1	long sight lines (0-3)	count	3	
	proportion of street wall	est. (.10)	100/50, 80/50	100 in stroll, 80 in plaza
	proportion of sky	est. (.10)	0/20	
	street trees	count	30+	small in stroll, large red woods frame street (minaret rd.)
Human Scale				
	long sight lines (0-3)	count (0-3)	3	
	proportion window (street level)/block	est (.10)	0.8	
	building height	average est.	5-6 storeys	
	small planters	count	?	buried in snow
	street furniture & street items	count	30+	outdoor sofas, chairlifts
	outdoor dining tables	count	3	patios on corners near plazas
	lights on buildings (10ft. High and under)	count	12	
Transparency				
	proportion window (street level)/block	est. (.10)	0.8	
	proportion street	est. (.10)	0.9	

	wall			
	proportion active use/block	est. (.10)	0.75	some areas (condos) have a blank wall
Complexity				
	buildings	count	4 |15	4 big ones
	basic building colours	count	4	refer to pallet guidelines
	accent colours	count	2	brown / timber
	presence of outdoor dining	count	3	
	pieces of public art	count	1	Mackay Statue
Resort Development Principles				
	Town Centre Hub	Y/N	Y	
	Character through tenant mix	# types	4	retail, cafes, restaurant, resort, residential
	Distinct design themes & consistent urban design	Y/N	Y	design guidelines for this area

Notes:

taller buildings than Whistler
lots of transparency
significant snow removal activities to maintain views

Table A-7: Built Form Analysis Score Card: Old Mammoth Road

#	Step	Process	Value	Notes
Imageability				
1.1	Accessible courtyards, plazas, parks, and gardens	Count	0	
1.2	Visible/ prominent major landscape features	Count	2\ 3	mountain ranges
1.3	Buildings with identifiers	Count	6	more chain brands, less identifying signs ie Starbucks no coffee shop, many not visible from street
1.4	Buildings with non rectangular shapes	Count	10	some sloped roofs
1.5	Presence of outdoor dining	Y/N	N	
1.6	Noise Level	Est. (1-5)	3	Cars
Enclosure				
2.1	long sight lines (0-3)	count	5	consistent views of mountains
	proportion of street wall	est. (.10)	0.05	.05 from buildings but.7 of snowbanks, buildings are far from the street but snow banks are enclosing
	proportion of sky	est. (.10)	0.6	only this little because of street trees and mountains along the horizon
	street trees	count	50+	most of any study area, very mature
Human Scale				
	long sight lines (0-3)	count (0-3)	5	
	proportion window (street level)/block	est (.10)	0.3	
	building height	average est.	2-3 storeys	only higher building is at&t
	small planters	count	0	
	street furniture & street items	count	0	could be buried in snow
	outdoor dining tables	count	0	
	lights on buildings (10ft. High and under)	count	10+	
Transparency				
	proportion window (street level)/block	est. (.10)	na	away and non-visible from street
	proportion street wall	est. (.10)	0.15	many gaps
	proportion active use/block	est. (.10)	0.25	many condos, parking lots, empty space

Complexity				
	buildings	count	na	
	basic building colours	count	4\5	
	accent colours	count	2	
	presence of outdoor dining	count	0	
	pieces of public art	count	0	
Resort Development Principles				
	Town Centre Hub	Y/N	N	
	Character through tenant mix	# types	3	restaurant, commercial, residential
	Distinct design themes & consistent urban design	Y/N	N	

Notes:

not only low building height but set back far from street

AT&T building is only one that is up to the street - pedestrian can see if over the snow bank - rest can't too far back

likely unintentionally but the snow banks and street trees creates decent enclosure in parts of the street

Appendix D – Interview Questions

1. Which sections of the old code were updated and why?
2. What decisions went into the design of the new Mammoth Lakes zoning code update?
3. What was involved in deciding to use a traditional zoning code vs. form-based?
4. What, if any, elements of FBC were adopted in the new code?
5. Are there any developments/neighbourhoods that were developed under the new code that you would recommend for closer case study?
6. Who else was involved in the code update? (stakeholders, staff, consultants etc.)
7. Is the new code well understood by the public, planning staff, and stakeholders (including developers)?
8. Is there a common vision that binds private and public Interests that is expressed?
9. Are the development control tools focused and clearly spelled out?
10. Are the development control tools designed to coordinate infrastructure, other buildings, space, and design?
11. Are the development control tools binding? Are they obligatory or optional? Does adhering to the standards speed up approval?
12. Are the DCTs simple to understand with clear words, pictures, and tables that are able to be interpreted by all citizens in the community?
13. Can small changes to the DCTs be made easily and often?

Appendix D – Ethics Documents

Letter of Information and Consent Form

Study Title: A comparison of form-based codes and Euclidian zoning and urban design guidelines in the central areas of two mountain resort communities.

Name of Student Researcher: Ian Pinchin, School of Urban and Regional Planning, Queen's University

Name of Supervisor: Dr. David Gordon, School of Urban and Regional Planning, Queen's University

I am Ian Pinchin, a master's student in the School of Urban and Regional Planning (SURP) at Queen's University, working under the supervision of Dr. David Gordon. I am asking professional planners to take part in a research study examining development control tools in mountain resort communities. If you agree to take part, I will interview you for 45 minutes via telephone. The interview will be audio-recorded and later transcribed and I will send you a copy of the transcription to confirm it accurately represents what was said in the interview. There are no known risks for taking part in this study and while there are no direct benefits to you as a participant, the study results will help contribute to a growing body of literature on form-based codes and zoning.

There is no obligation for you to say yes to take part in this study. You don't have to answer any questions you don't want to. You can stop participating at any time without penalty. You may withdraw from the study up until January 20th 2017 by contacting me at ian.pinchin@queensu.ca.

I will keep your data securely for at least five years. Your confidentiality will be protected to the extent possible by replacing your name with a pseudonym for all data and in all publications. The code list linking real names with pseudonyms will be stored separately and securely from the data. Other than me, only a transcriber who has signed a Confidentiality Agreement will have access to any of the data. Please note that despite the efforts listed above, due to the specificity of the research topic, it is possible for someone with knowledge of the topic and case studies to potentially guess the identity of you as an interview informant.

I hope to publish the results of this study in my master's report and academic journals. If I include quotes from the interview, I will send you the quote in advance. However, I will never include any real names with quotes, and I will do my best to make sure quotes do not include information that could indirectly identify participants. During the interview, please let me know if you say anything you do not want me to quote.

If you have any ethics concerns, please contact the General Research Ethics Board (GREB) at 1-844-535-2988 (Toll free in North America) or chair.GREB@queensu.ca.

If you have any questions about the research, please contact me, Ian Pinchin, at ian.pinchin@queensu.ca

This Letter of Information provides you with the details to help you make an informed choice. All your questions should be answered to your satisfaction before you decide whether or not to participate in this research study.

Keep one copy of the Letter of Information for your records and return one copy to the researcher, Ian Pinchin.
By signing below, I am verifying that: I have read the Letter of Information and all of my questions have been answered.

Name of Participant: ____________________________________

Signature: ____

Date: ____