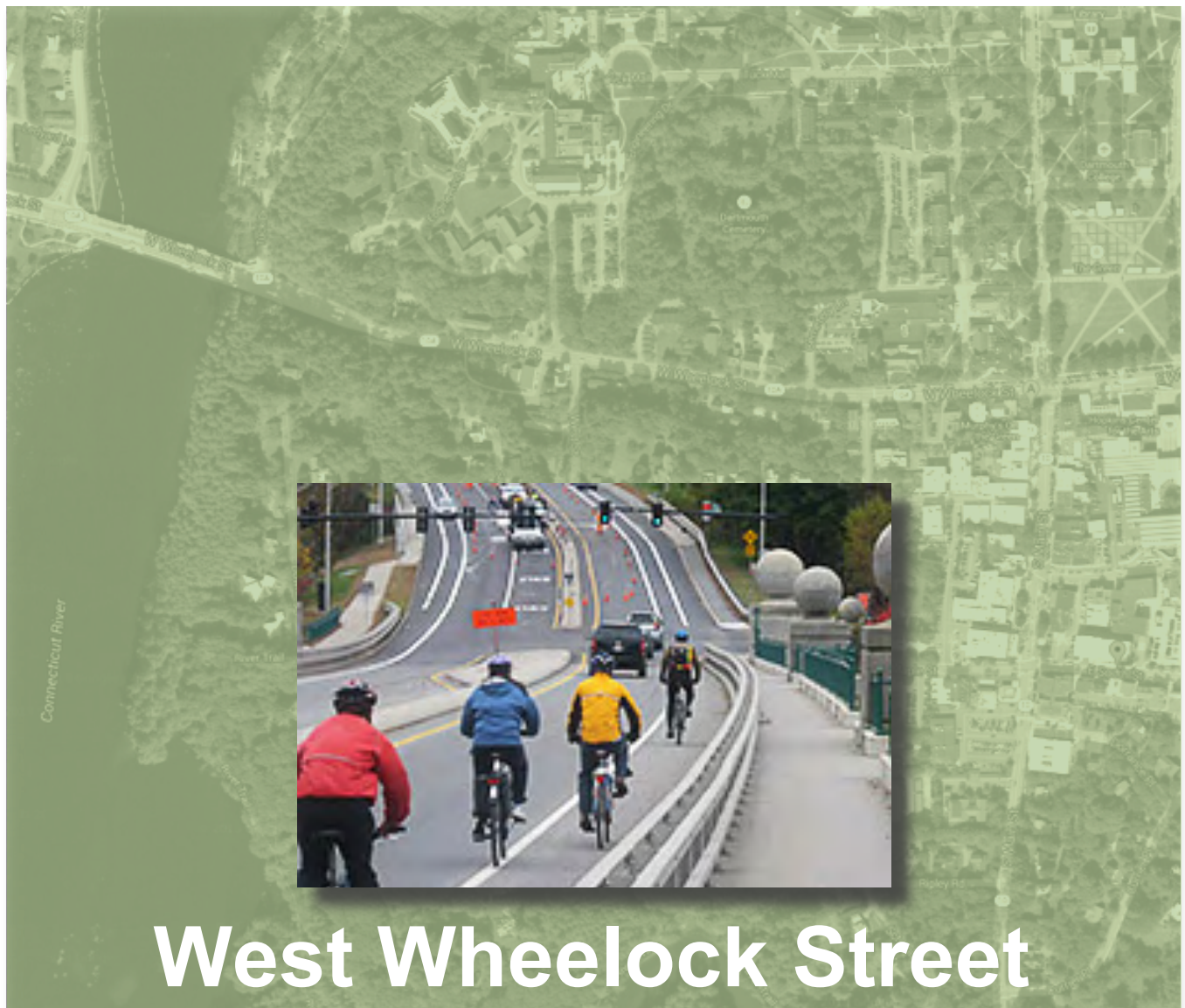




# PLAN NH

Visioning *for* Sustainable Communities



## West Wheelock Street Charrette

Hanover, NH  
November 2013

# ACKNOWLEDGEMENTS

Sincerest thanks go to the individuals and groups who donated their professional expertise and personal time to make the West Wheelock Street Charrette a success. Also, many thanks to the citizens, businesses, and town officials who shared their time, energy, services, thoughts and knowledge with us.

## West Wheelock Charrette Team

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**Special Thanks to the Town of Hanover Planning Board and Affordable Housing Commission  
Dartmouth College, Lou's Restaurant, Umpleby's Bakery Café, and Saint Thomas Episcopal Church**

*Plan NH is grateful for the special support of these members:*



# B A C K G R O U N D

## **Who is Plan NH?**

Plan New Hampshire, The Foundation for Shaping the Built Environment (Plan NH) is an association of professionals working in the built environment. The organization includes architects, planners, engineers, landscape architects, builders, historic preservationists, construction managers, as well as others who concern themselves with sustainable communities and buildings. Plan NH was established to create a forum for bringing together these different professional groups and to serve as a catalyst for spurring interest in participatory community development. Part of Plan NH's mission is to make a positive contribution to New Hampshire communities. One way in which Plan NH does this is by providing planning and design assistance to communities with a demonstrated commitment and need.

## **What is a Charrette?**

Simply stated, a Charrette is a brief, yet intense, brainstorming session in which much information and many ideas are brought together for the purpose of defining potential planning recommendations and possible design solutions for an identified need. The charrette is typically of a short duration. And most importantly, it involves the combined efforts of planning and design professionals, or others with related areas of expertise, with local residents, community representatives or "stakeholders" to collect information needed to develop recommendations about how to solve a problem. The broad range of experience and knowledge represented in a charrette results in general and over arching planning and design recommendations, rather than specific, "how to" construction directions. Most often the outcome of a charrette is described as a "vision": an expression of how things might be and the features, conditions, qualities and characteristics that would need to exist in order for it to come true. What is most unique about Plan NH's charrette process is the way it involves and engages the host community's residents. Their input is both essential and critical to the ultimate success of the charrette. The charrette provides an overall framework within which final solutions can be developed. It sets a tone and provides a direction against which future decisions may be measured.

## **Why did Plan NH come to Hanover?**

Plan NH came to West Wheelock Street as the result of an application submitted to Plan NH by concerned community representatives. Their application was reviewed by Plan NH representatives during a meeting in early 2013. West Wheelock Street was one of four communities chosen for a charrette in 2013 by Plan NH.

The application stated five goals:

1. How to make West Wheelock Street an inviting entrance to the downtown and Dartmouth College Campus.
2. How to significantly increase the housing density with incentives for workforce housing.
3. How to create safe pedestrian routes and public open space.
4. How to create a functional traffic corridor that accommodates high traffic volumes with limited access from abutting properties.
5. How to create a creative parking plan.

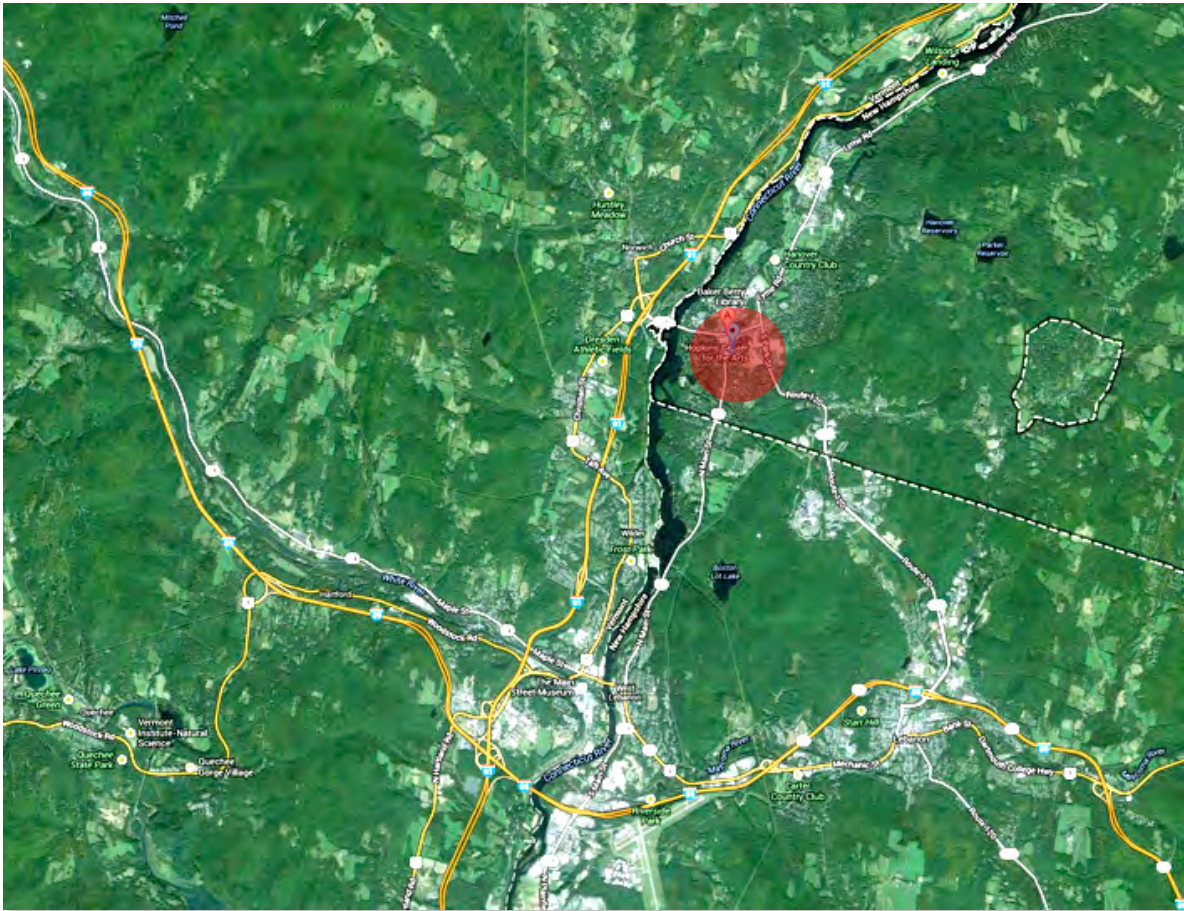
## **The Charrette Process**

1. Identify the need or opportunity
2. Collect information to understand the need or issue, including input for the citizens of the community
3. Evaluate and analyze the information
4. Synthesize conclusions and recommendation for meeting the need and fulfilling the existing opportunity





# REGIONAL CONTEXT



West Wheelock Street serves many roles. It is a residential street, it is a recreational corridor (Appalachian Trail), it is a public transportation route, it is a gateway to downtown Hanover and Dartmouth College, and it is one of the busiest commuter corridors in the Upper Valley Lake Sunapee Region.

Because West Wheelock Street provides a direct connection from Interstate 91 to downtown Hanover, traffic considerations have historically driven planning efforts for the corridor. Roadway capacity issues have been a significant challenge, as the two-lane road serves more than 1,100 vehicles in the morning peak hour and more than 1,400 vehicles in the evening peak hour.

In the mid-1990s, the Ledyard Bridge and most of West Wheelock Street were reconstructed. The New Hampshire Department of Transportation proposed that West Wheelock Street become a three-lane road, and purchased all of the necessary right-of-way to accommodate three lanes of traffic. The Town of Hanover opposed the expansion to three lanes because of concerns about how the character of both the West Wheelock Street neighborhood and the community's downtown would change. Ultimately, the third lane was not constructed.

The lessons learned from that debate twenty years ago informed the Plan NH team's work during the charrette by helping to frame key questions:

1. How can West Wheelock Street serve as the central thoroughfare of a denser residential neighborhood, while also safely and efficiently accommodating regional commuter traffic?
2. How can West Wheelock Street build upon its identity as part of the Appalachian Trail to better serve as a gateway to downtown Hanover and Dartmouth College?
3. How can West Wheelock Street better accommodate *all* roadway users (e.g. not just vehicular traffic but public transit riders, bicyclists, and pedestrians)?
4. How can the West Wheelock Street corridor accommodate affordable housing?

An effective plan for West Wheelock Street must strike the right balance among all of these factors, and the concepts presented in this report were developed with that balance in mind.

# CURRENT LAND-USE ANALYSIS

## Study Area Overview:

The Town of Hanover, through its Affordable Housing Sub-Committee, requested a Charette by Plan NH for the purpose of studying the West Wheelock Corridor from the Town and Campus center to the Connecticut River Bridge. The Street is the only connector from the east and to the west for some 6-10 miles in either direction as it connects Hanover to Highways 5 and 91 and the Vermont Town of Norwich. In addition, the street is designated as a portion of The Appalachian Trail.

The street is some 2500 feet long and has a significant grade drop of 130 vertical feet. The grade is not continuous, but is broken in several places as it descends, meaning the grade varies somewhat along the course of West Wheelock Street. There are significant changes in the land use character as the street curves downward. There is very heavy traffic at both the morning and evening rush hours. Old photographs indicate the way the street was carved into the slope in the early days on its way up to the Town Center.

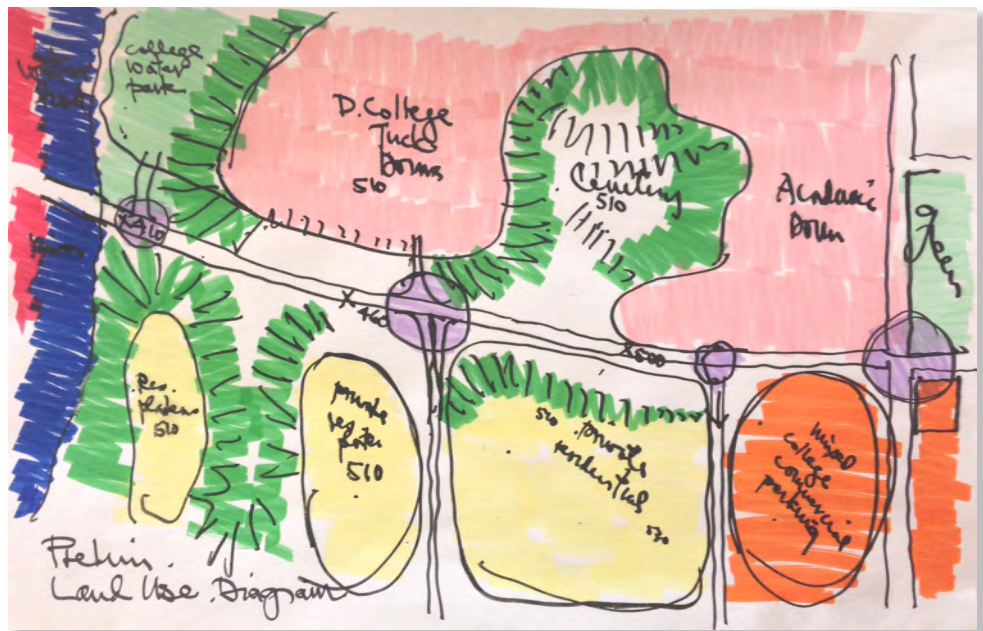
There is also heavy pedestrian flow on both sides of the street. There are painted crosswalks but some serious concerns of pedestrian safety in crossing from side to side. Additionally, there are traffic safety issues with the various turning movements on and off the Street. There is significant bicycle traffic in the road and on the walks. With the river crossing and the Dartmouth waterfront at the base of the hill, there is significant activity in both directions.

## Land Use Observations:

Beginning at the Dartmouth Green and the Town Center, the land uses are mixed, with commercial on the south side of the street and campus buildings on the north side in addition to the Episcopal Church. When the grade changes to a steeper drop, the land uses change to multifamily college owned housing on the north and a largely private mix of multifamily and single family housing on the south.

The middle section on both sides presents a variety of housing in various states of repair with inefficient and unattractive layouts. There are sidewalks on both sides of the street with a narrow section on the north that is confined between the curbing and retaining walls. The south side is more comfortable in width and provides an element of improved pedestrian safety. Behind the housing on both sides of the street there are steep slopes, unsuitable for any buildings, which create a natural barrier or clear separation between the structures along West Wheelock and the neighborhood to the south and Dartmouth College to the north. This section of West Wheelock has a distinct feeling of being located in a sunken gash in the landscape.

Very large evergreen trees bound the lower section along both sides of the street, on very steep slopes of generally unbuildable land. This presents a wonderful year-round green gateway in both east and west directions, striking in its height, depth and strength as a natural element.





## Character Zones:

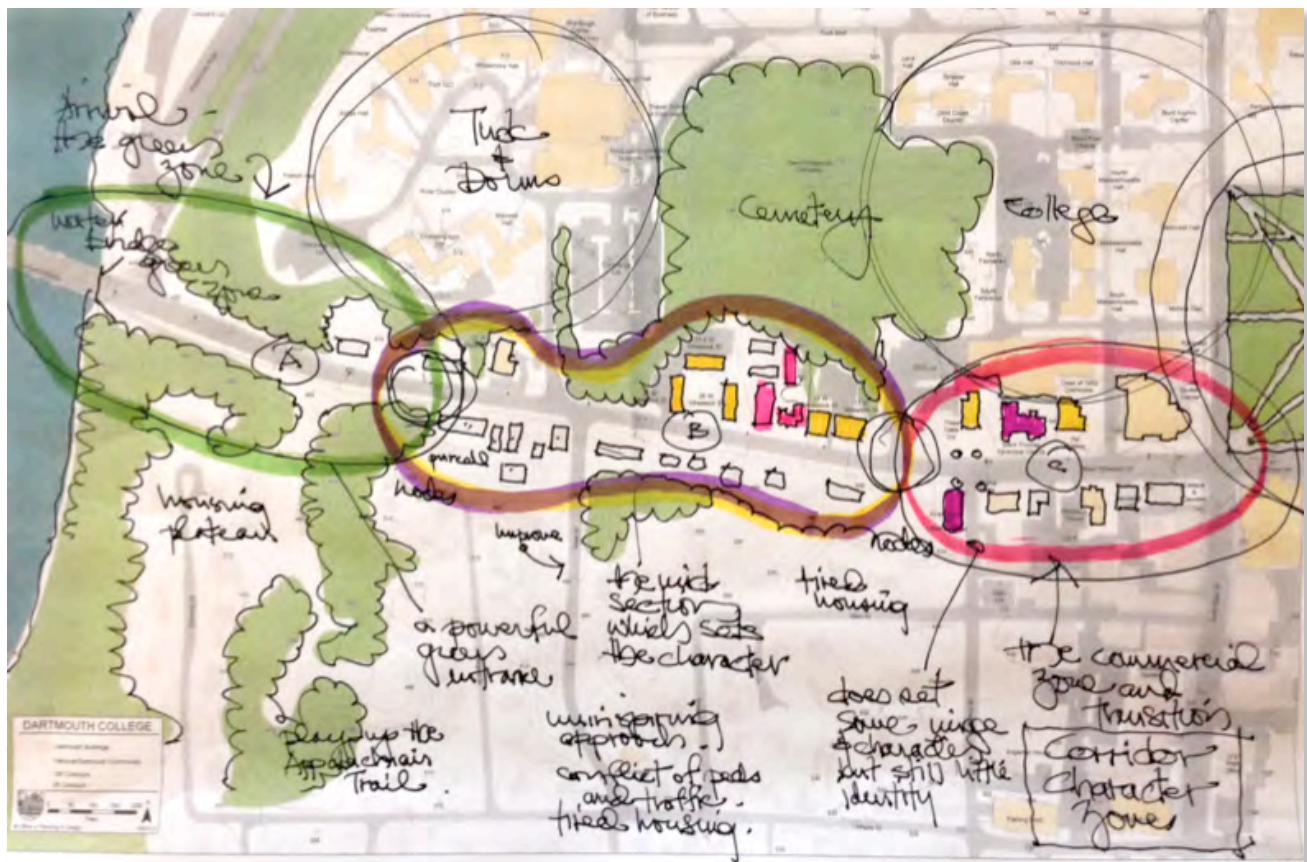
Land use observations indicate a very distinct pattern, form and character of three separate zones which create the unique physical structure of the west gateway corridor for the Town of Hanover.

The **upper section** of the three zones is strong in traditional masonry buildings on the north and a mix traditional wood and masonry buildings on the south.

In the **middle zone**, college uses dominate the north side of West Wheelock Street, along the street and higher up on the top of the steep slopes behind the street front properties. Private residential housing units are located along the middle section on the south side of the street.

The **lower portion** is essentially evergreen trees and steep slopes on both sides of the corridor, which create another distinct character zone. This defines the Town and Campus gateway. When respected in the planning and design process, this portion will continue to provide a beautiful connection between the natural landscape of the Connecticut River and the open space beauty of the Town of Norwich on the west.

The importance of this discovery of the structural character of the corridor lends itself to the creation of planning and design concepts which will protect the integrity and character of the entire corridor and has the capability of enhancing the existing Town and Campus character, while at the same time improving the underwhelming character of West Wheelock Street. In any planning study, the *search for character* and *defining order* are critical before moving into possible design solutions. These elements provide the foundation for all future planning.



# CONCEPT OVERVIEW

The West Wheelock Street corridor is a primary route into Hanover. It is characterized by unique topography, with significant natural and man-made features. At its essential core, it can be seen as a prominent and active gateway to Hanover's downtown from the Vermont side of the Connecticut River.

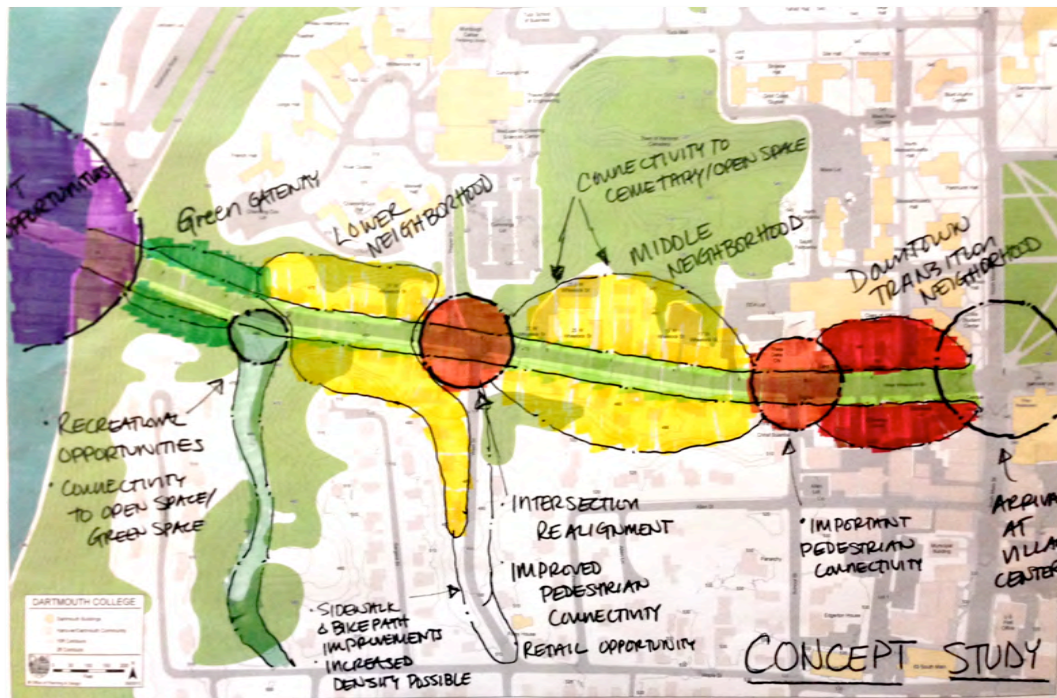
The current condition of the corridor, while having substantial potential, suffers from a few significant liabilities:

1. Traffic and pedestrian safety issues abound, with high volumes of traffic and uncertain pedestrian crossways.
2. Access to Dartmouth College from West Wheelock is not well defined.
3. Demand for low cost and student housing, under current zoning regulations, has resulted in a mix of housing types and quality along the corridor, which results in a less than organized appearance making the area look inferior.

To address these issues, we looked at a variety of cues and to adopted a multi-pronged approach to providing better clarity and safety of pedestrian pathways, improved (although not allowing dominance) traffic flow, take advantage of better access and availability of the assets along the corridor, offer ideas about how to enhance opportunities for the private sector to develop appropriate housing choices for affordable housing within the confines of Hanover.

From the Connecticut River Gateway and heading east, the corridor can be divided into several opportunity areas, which this report will discuss in greater detail:

- The Gateway from Ledyard Bridge
- The Natural Buffer
- The Lower Neighborhood
- Pedestrian Pathways
- The Middle Neighborhood
- The Upper Neighborhood, essentially the beginning of the fabric of downtown.



Overlying the physical context are the following key objectives:

- Provide a Quality Pedestrian Experience
- Protect and Enhance Cultural, Historic and Natural Features
- Create Affordable Housing, which is supportable by the Marketplace
- Create An Appropriate Corridor for entering a Unique Community



# CONCEPT RECOMMENDATIONS

## Gateway / Natural Buffer / Lower Neighborhood:

The new Ledyard Bridge has become a symbolic gateway to the Hanover community. As the bridge meets landfall on the New Hampshire side, the wooded hillsides above West Wheelock St. and the Dartmouth riverfront area serve as a green entrance to town.

This charrette team determined that enhancements to the wooded areas would benefit the community gateway experience and also provide exceptional recreational access along the riverbanks. Removal of the chain-link right-of-way fencing, vegetation management and creation of a southbound riverside pathway were among ideas recommended.

The lower zone is essentially a green barrier through which West Wheelock Street creates a portal, leading from the Connecticut River up to the Middle Zone.

Heading east on West Wheelock, an additional vegetation management routine in the sewer line ravine and storm water basins could benefit the visual experiences as well as make an obvious statement of green infrastructure as a functional landscape for the community. Pedestrian paths and green landscape infrastructure can weave together West Wheelock St. and the adjacent neighborhood areas.

On the north side of West Wheelock St. additional college housing on the hillside below the Tuck School Terrace could integrate terraced housing infill and parking.

On the south side of West Wheelock Street, housing could be developed as more of an urban form of row houses with parking behind.

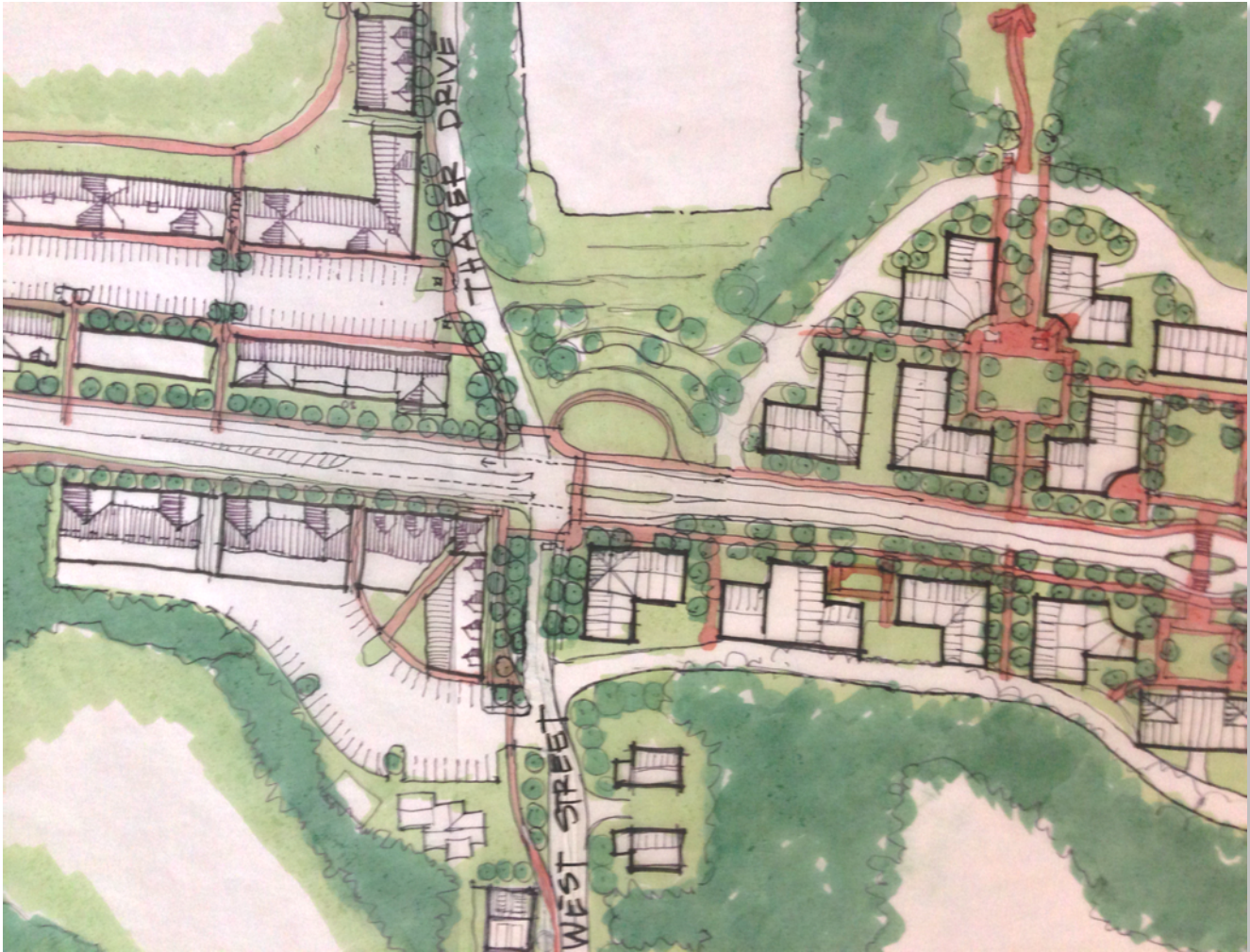
The intersection of West Wheelock St. Fair Drive and West Street needs traffic and pedestrian safety rehabilitation. The plan shows a left turn lane and refuge islands with crosswalk for turn onto Thayer Drive. The plan also shows the alignment of West Street with **THAYER?** Drive although this carries some impacts to private property on either side of the intersection.

The critical component is a traffic island safety refuge for the crosswalk to allow safe pedestrian access from West Street to Thayer Drive for the heavy pedestrian volumes from the neighborhoods and West Wheelock housing frontages.

Redevelopment of the corridor should integrate improvements by private development and the town for an enhanced neighborhood gateway to the community.







North Side: New terraced housing infill for Dartmouth College with parking and street frontage along West Wheelock.

South Side: Redevelopment of the south side of West Wheelock and higher density mixed-use apartments and lofts, with the possibility of a small commercial use at the intersection, such as a coffee shop, that provides a respite for pedestrians.

Intersection improvements to West Wheelock St. and Thayer Drive that include a pedestrian crossing refuge.

## The Middle Neighborhood

West Wheelock would benefit from fewer driveway curb cuts. Eliminating all but the essential driveways directly on West Wheelock and creating access lanes off of West Street and Thayer Drive would reduce pedestrian, bicycle and vehicular conflicts. Service vehicles (recycling, trash, etc.) would not be stopping along the street or trying to maneuver in traffic. It would also mean elimination of trash and recycling containers along the Middle Neighborhood.

One location in the Middle Neighborhood that is in real need of improvement is the intersection of West Wheelock with West Street and Thayer Drive. Currently there are numerous pedestrians trying to cross at this intersection with limited safety. It was felt that it would be wise to completely eliminate the misalignment of the cross streets at the intersection. The realignments should also include a crosswalk with a refuge island on the east side of the intersection, a left turn lane on the west side of the intersection and possibly a bus stop on both sides of Wheelock Street. The consensus was that neither stop-lights, nor a rotary would be necessary to improve the traffic problems at the intersection.

Because of the proximity to both Downtown Hanover and Dartmouth College and the current use of this area primarily for rental housing, this area was identified as being suitable for higher density, multifamily housing for students, young professionals (singles and couples), and the local workforce. The team recommends that higher density be accommodated, but only when significant benefits to the neighborhood are included in any proposed developments (useful open space, significant landscaping, concealed parking). Further, we recommend parking be provided at the *absolute minimum* and designed to be concealed from view of West Wheelock Street, with a significant percentage located under buildings or other amenity areas.





The concept scheme that was developed during the charrette was a broad-brush look at a possible overall approach. To the east of the West Street/Thayer Drive intersection it shows a series of multifamily structures arranged to create a series of courtyards linked by pedestrian and visual axes. These links are proposed to connect across West Wheelock Street in order to develop a greater sense of community between both sides of the street. This is further reinforced along West Wheelock Street where courtyards face each other across the street. At the center one building was set back from the street to create a deeper lawn, echoed on the opposite. At that location a center island was added to the street, for traffic calming and a crosswalk.

This approach also relies on the use of continuous access roads behind the developments that provide service access and minimize the number of curb cuts along Wheelock Street. This arrangement allows for more efficient use of the available buildable land as well as allowing for greater flexibility in creating interesting open space.

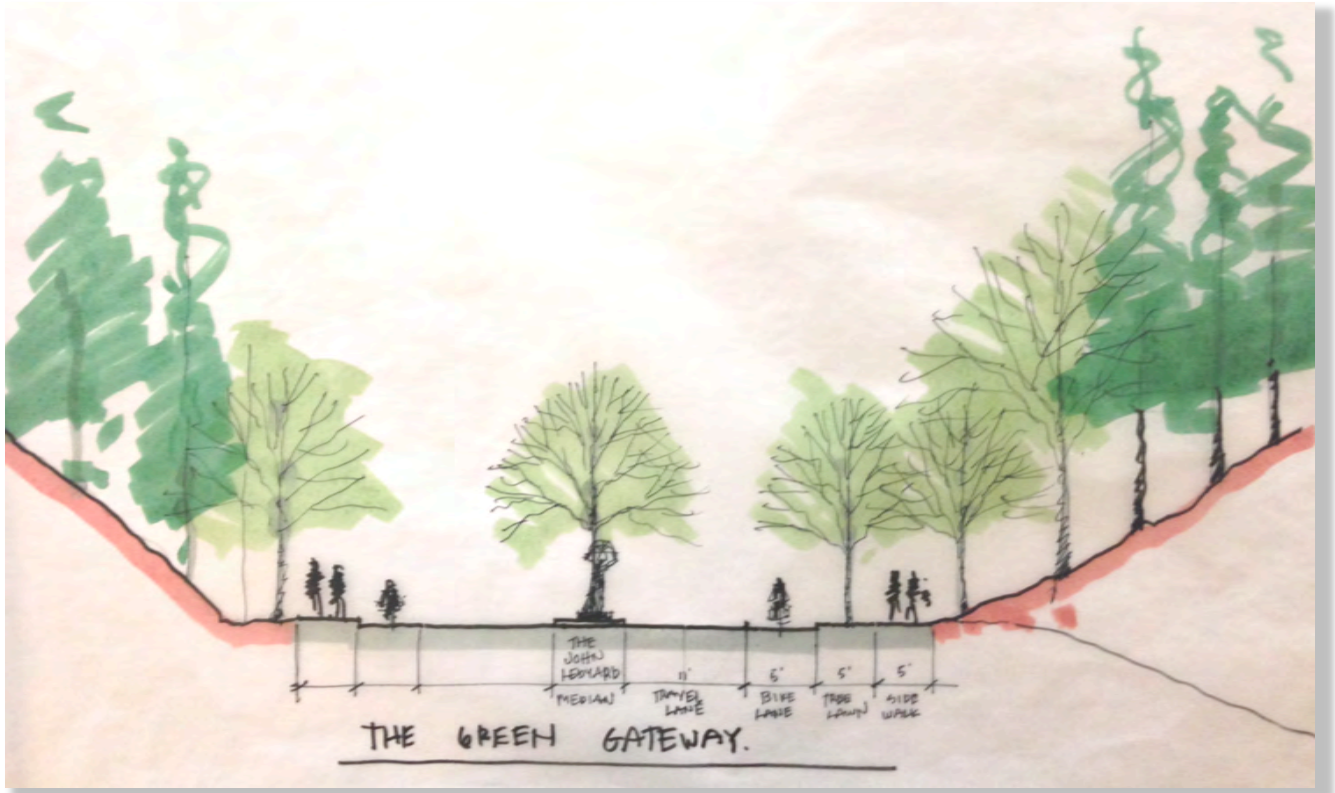
This concept of development and density would also be extended to the west of the West Street/Thayer Drive intersection on the south side of Wheelock Street. On the north side of Wheelock Street in this area there is a more significant slope to the land. In this quadrant, terracing of structures would reinforce a pedestrian connection to Dartmouth College along Thayer Drive. It is also envisioned that access to any development in this quadrant would be from Thayer Drive, again to minimize curb cuts along Wheelock Street.

One Hanover asset that is almost completely hidden is the historic old cemetery located between the existing housing on the north side of West Wheelock Street and the Dartmouth College Campus further to the north. The cemetery is an oasis of quiet just a few steps from the busy roadway of the street. It is located in a grove of evergreen forest, with the graves laid out in terraces along both sides of a ravine that leads up to the area along Tuck Drive. The concept scheme envisions pedestrian access to the cemetery through the series of courtyards included in the development shown in the concept scheme. There are paths in the cemetery that run both north-south and east-west and offer additional pedestrian options to access various locations on the Dartmouth Campus.

## Roadway Sections

The goal is to create a continuous park the whole length of West Wheelock that is a shared space for vehicles, pedestrians, and bicyclists and includes street trees, colorful plantings and interesting outdoor spaces. The goal is to create a *complete street*.

The proposed cross-section of the corridor varies as one travels along West Wheelock. The right-of-way is approximately 65-feet wide. In the proposed cross-sections the vehicle travel lanes are minimized to encourage reduced speed. Bike lanes, sidewalks and vegetated planting strips are maximized to help pedestrians and bicyclists feel more welcome in the corridor. The green space can include educational boards and benches for gathering or

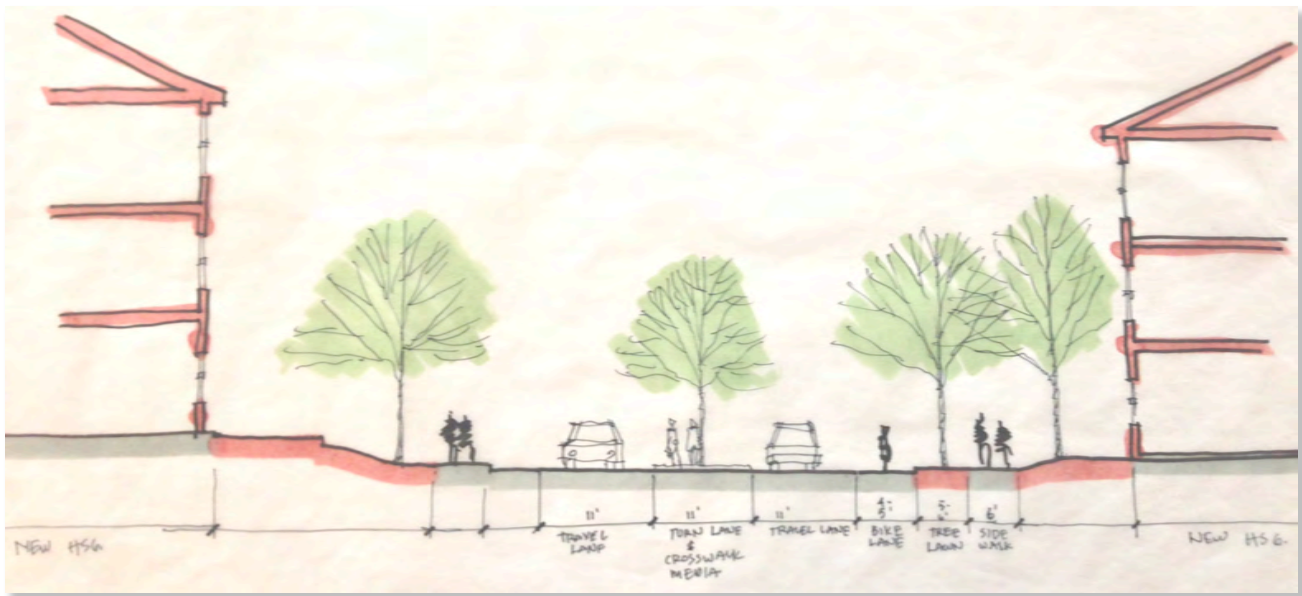


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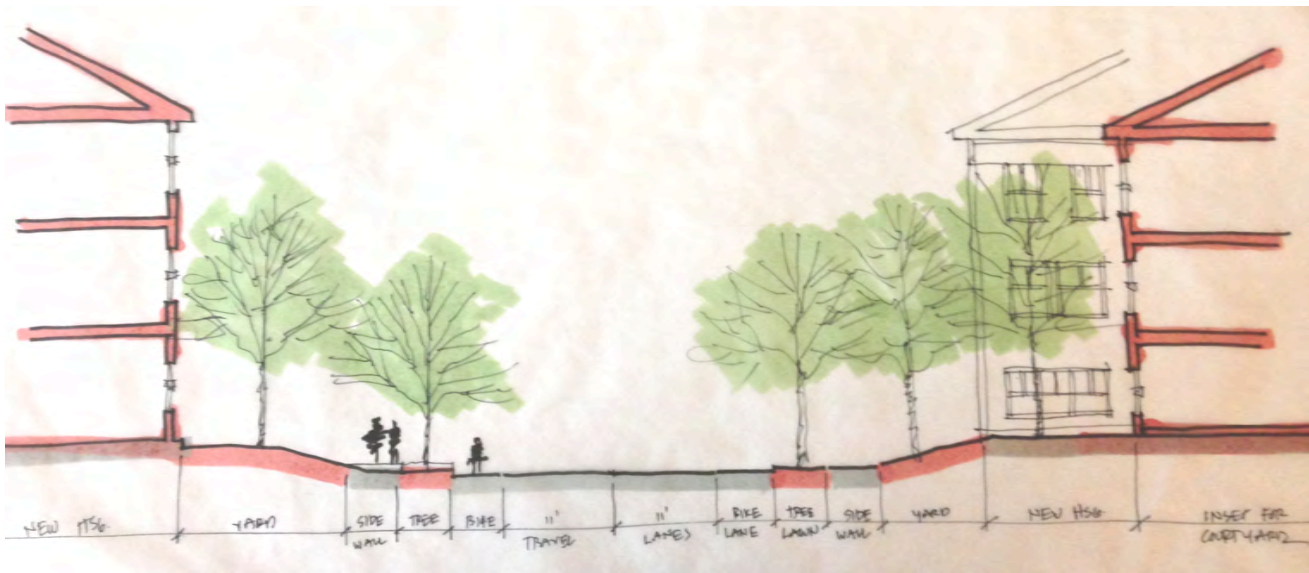
Attractive streetscape and green gateway just past the Ledyard Bridge would create the visual celebration of interest to the community. This could include the statue of the famous John Ledyard and a designation that you are on the Appalachian Trail.

Beginning at the Green Gateway, the road has a center median that provides an opportunity for a welcoming architectural element and street trees. On each side of the median there is an 11-foot wide travel lane, a 6-foot wide bike lane and 6-foot wide sidewalk. On the south side of the road there is a 5-foot vegetated strip between the bike lane and sidewalk for street trees, lawn or other plantings.





Through the lower and middle neighborhoods, the center median can become a turning lane at cross streets or a cross-walk median to provide refuge for pedestrians. The cross-section continues to provide 11-foot travel lanes, 4 to 5-foot bike lanes, a 5 to 6-foot wide vegetated strip on the south side, and 6-foot wide sidewalks.



Proceeding through the transition zone to the top of the hill, the centerline of the road shifts to the south. The center median is eliminated and a vegetated planting strip is added on the north side of the street between the bike lane and sidewalk. This enhances the pedestrian experience at the village by adding street trees along the walkway.

## Housing & Density:

Input from members of the community indicated that West Wheelock area residents tend to be younger, and to be small family units consisting of singles and couples. The residents of the area are generally there for a relatively short term. Many are attracted to the area because of the easy walk to the Dartmouth campus and downtown Hanover.

The new design includes a significant increase in number of apartments, with more smaller unit types, mostly one bedroom and studio apartments to fit the demographic that is attracted to the area. Total square footage of buildings increases about a third, while the number of apartments more than doubles due to efficient use of existing space. Due to the high number of West Wheelock residents who walk to work or school, the parking per unit was reduced. The building heights and designs were kept consistent with neighborhood input.

The following Density Comparison Chart shows the number of existing housing units, along with their approximate square footage, and the proposed number of housing units under a higher density scenario. While the number of units increased by 2.57 times, the square footage only increase by 1.46 times, indicating a different and more efficient type of proposed unit design than what currently exists.

**Density Comparison**  
**Plan New Hampshire Charrette, Hanover NH**

EXISTING							PROPOSED		
Lower/ Upper	Side of Street	Address	Lot size (acres)	# of units	Existing Square Footage	Units / Acre	# of units	Proposed Square Footage	Units / Acre
Upper	South	Subtotal	2.21	27	31,150	12	90	54,000	41
Lower	South	Subtotal	2.58	28	48,650	11	42	25,200	16
Upper	North	Subtotal	2.59	64	40,700	25	85	51,000	33
Lower	North	Subtotal	1.71	21	18,300	12	144	73,650	84
		Totals/Averages	9.09	140	138,800	15	361	203,850	40

### Notes:

"Upper" means East of West Street or Thayer Drive

"Lower" means West of West Street or Thayer Drive

Acreage is the sum of all lot sizes, including college-owned and private

Existing Square Footage is an estimate based on approximate size of existing units

Proposed Square Footage is an estimate based on approximate size of existing units



## **Zoning Considerations:**

The outcome of the Design Charrette was to create a more identifiable “place”, which understands the existing character of Hanover while allowing for higher densities, and encouraging a green space and parkway feeling when approaching Downtown Hanover.

Members of the community who attended the presentation embraced the recommendations of the Design Charrette. The Design Team recognized that the Hanover Zoning Ordinance (HZO) would not allow the type and intensity of development that was being proposed. The team decided that an innovative zoning overlay district for the Wheelock Street study area was needed in order to advance the planning and design concepts. A concept zoning plan was prepared and is part of this design charrette report. The next step in the process would be to meet with landowners, Dartmouth College, Hanover Planning Board and interested persons to review and discuss the design charrette report and proposed zoning concepts.

### **A Flexible Zoning Approach - West Wheelock Overlay**

#### **Principles**

- Flexibility in design and site layout
- Walkability, energy efficiency, affordable housing
- Consistency with the “Parkway” concept
- Present density about 10 units / 1 acre
- Allowed density 16 units / 1 acre
- Proposed density 40 units / acre (gross)
- Increased density does not mean greater mass due to more efficient unit layout
- Smaller units – studio apartment – 550 SF
- Grad students incentives for workforce housing (WFH)

#### **New Zoning Provision in Article II Hanover Zoning Ordinance (HZO)**

- Section 214 Wheelock St Corridor District
- 1. Establishment of Boundaries
  - From Wheelock Bridge to Main Street
  - 300 feet on either side of Wheelock Street
  - Refer to map
- 2. Purpose and Intent
  - Establish a green gateway / parkway experience
  - Encourage new investment and infill to replace aging and tired buildings
  - Allow for increased housing opportunities
  - Provide for some retail / commercial use to support the neighborhood
  - Pedestrian safety
  - Housing for graduate students and work force housing
- 3. Development Guidelines
  - Creativity and flexibility of design
  - New England or Hanover (eg. South St) architecture
  - Buildings can be located at the property line
  - Parking – generally less than 1 space per unit, shared parking arrangements, off-site parking
  - Landscaping that compliments parkway
  - Improve the pedestrian and bicycle experience
  - Significant density bonuses for significant infrastructure and design improvements
  - Varied height restrictions to reinforce desired form of built environment



Suggested Building Examples from  
Hanover and other communities

