



## New strategy in urban scale for American downtowns

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Master of Architecture  
In  
College of Architecture & Urban Studies

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James Jones  
Hans Rott

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## WAL MART

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### 1.ABSTRACT

As an alternative to prevalent development practices, where enormous "big box" stores are built outside of towns, increasing urban sprawl and undermining the economic viability of small retail shops, destroying the character of American downtowns, this thesis explores new architectural possibilities in creating a large-format retail store that is of high quality in a downtown setting. The vehicle for this investigation is the design of a Wal-Mart store in downtown Christiansburg, Virginia

### Introduction

*"Wal Mart, which is one of the nation's largest private employers (1.2 million workers), sellers of retail goods (\$280 billion), and owners of corporate real estate (911 million square feet), is becoming even more dominant, both locally and globally".(1)* Its simple but straightforward strategy is to make customers open their pockets and buy low-cost goods. Increasingly, however, Wal-Mart has been forced to confront the need to address high-quality-oriented, upper-income markets. Wal-Mart has also been criticized for constructing enormous "big box" stores outside of towns, increasing urban sprawl and undermining the economic viability of small retail shops, destroying the character of American downtowns.

In light of these issues, Wal-Mart's current development strategy is seen as no longer sustainable, and the formulation of a new strategy has become imperative. This thesis explores new architectural possibilities in creating a Wal-Mart store that is of high quality in a downtown setting.

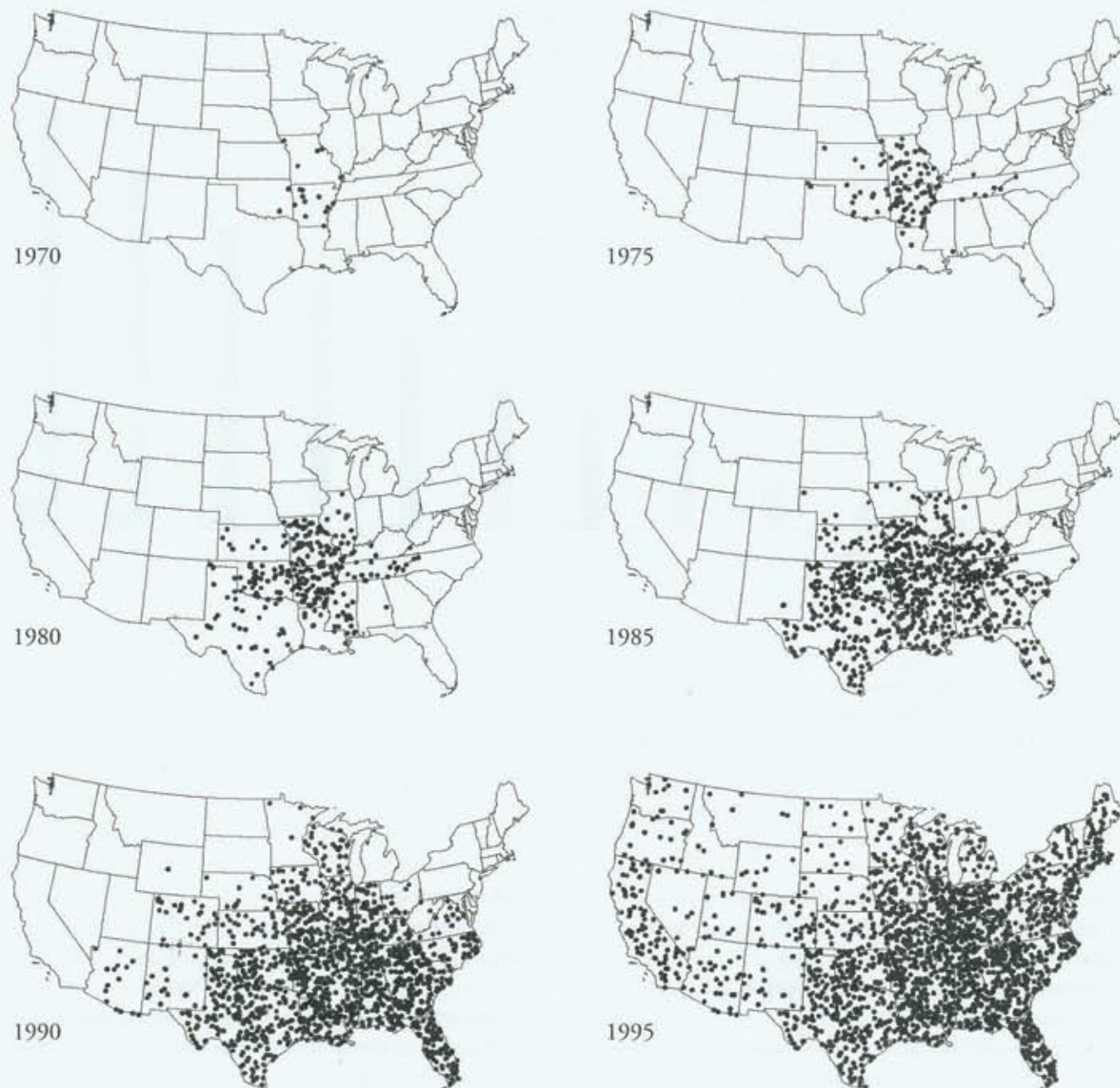


Figure-01., Marlon Baomet,  
Wal Mart Spreads in U.S. between 1970 and 1995





## Acknowledgements

I would especially like to express thanks to William Galloway, my advisor, for his time of encouraging, nudging more creative thinking towards pure architecture world. Also, for other advisors, James Jones and Hans Rott, who have helped me open to the way of being realistic in the field balancing with own adventural philosophy, I would like to show my sincere gratitudes.

Most of all, without my family's unconditional supports these constant works would be impossible. Though it is small space to mention all their affections and cares I would like to thank to all of them.

Lastly, to my fellow classmates, friend and Sinah thank you for your endless patience, giving me uncountable pleasures during working.

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### 3. Problem

*"The city of Iowa [Iowa is a city, not a state] is worried about a shopping center, a Wal-Mart store that is proposed for a site three miles out of town"(2). It will bring jobs and money to the region. It may make shopping more convenient.*

*But what will it do to Main street? And if main street fails, what happens to the city's character, its awareness of history, its pride in its identity? Does a remote shopping mall nurture a sense of community as well as does a central Main street? What about the cosmic design issues-pollution and sprawl and the survival of the planet? The city is right to be concerned? What is the best solution?*

*"People understand that streets are more than a means for movement and access, that they have symbolic, ceremonial, social and political roles to play"(3). Citizens often object to high-volumes of fast traffic on their street, but they will commonly tax themselves to make them special, "great" places.*

*A "great" street should help make community. It should help people to act and interact to achieve what they might not achieve alone.*



By any objective measure, every American city has many more parking spaces available than cars to fill them.

*"Providing less parking can allow a clustering of activities that attracts people, who become willing to walk because their intended destination, the way they get to it, is unique and interesting".(4) Making places worthy of walking -- pedestrians will remember that they have enjoyed the experiences.*

Americans are known for their dislikes of walking, because they daily are asked to walk hundreds of forgettable yards through desert-like parking lots, characterless shopping malls, and identically long corridors of large big box buildings. It is not that Americans do not walk great distances.

It is because they do not remember that they have done so, because the walking experience is grotesque.

*"Multi-functionality is a component of most successfully revitalized downtowns".(5)*

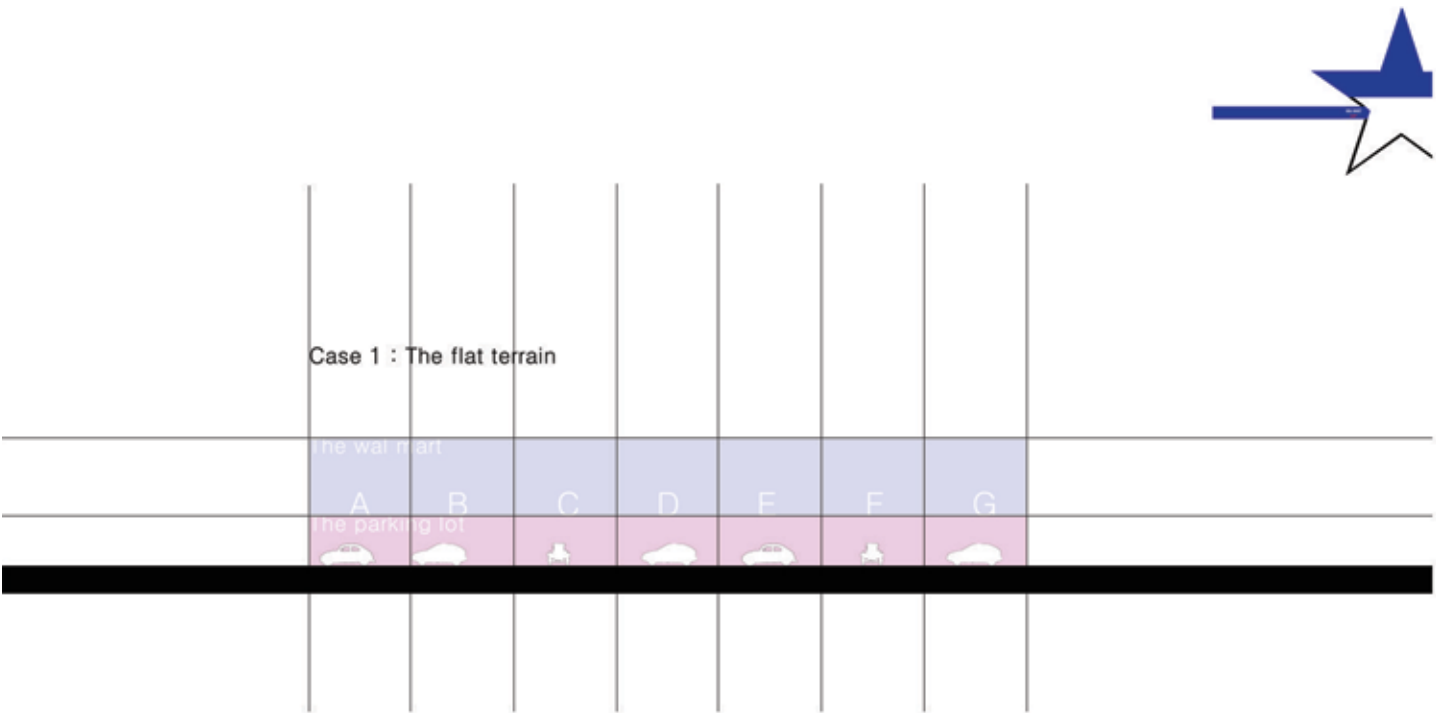
Adding residential and entertainment uses to the usual downtown blend of hospitality and commercial uses extends the hours that both the buildings and the downtown are lively, provides a synergy between uses and users, yields counter cyclical use of parking, and even mitigates the natural ups and downs in the real estate market by diversifying risk.

*"Regarding the term "open space", when a development proposes that 40% of the land is devoted to open space, it is likely that 40% of the land has been insufficiently considered".(6)*

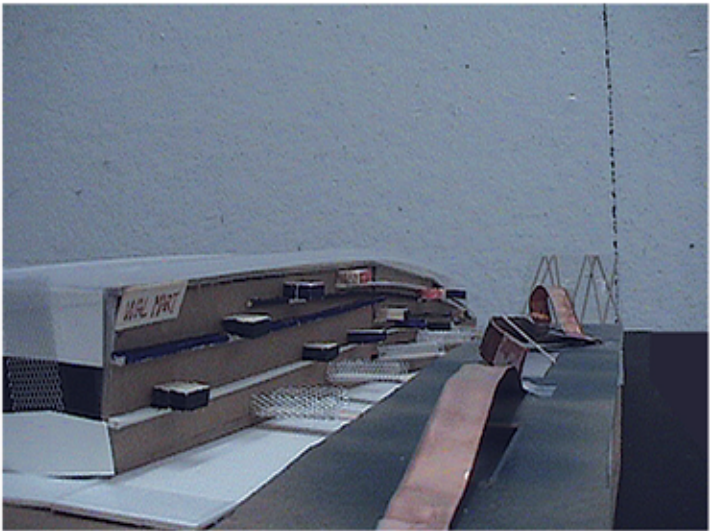
We actually have more trash strewn setbacks, scraggly buffer strips, and purposeless asphalted "open space". What we can use is more parks, natural preserves, recreational areas and football fields. An environment without boundary is likely placeless and indistinguishable from the amorphousness all around it. So, indeed, provide edges, as long as you also abide: be sure to make that edge beautiful, and something of equal value to that on both sides of it. Efforts to re-define urbanism will eventually be a contribution for which Wal Mart can upgrade of the quality of life in the local downtown.

*"Wal Mart should be a new vehicle to revitalize dead downtowns."(7)*

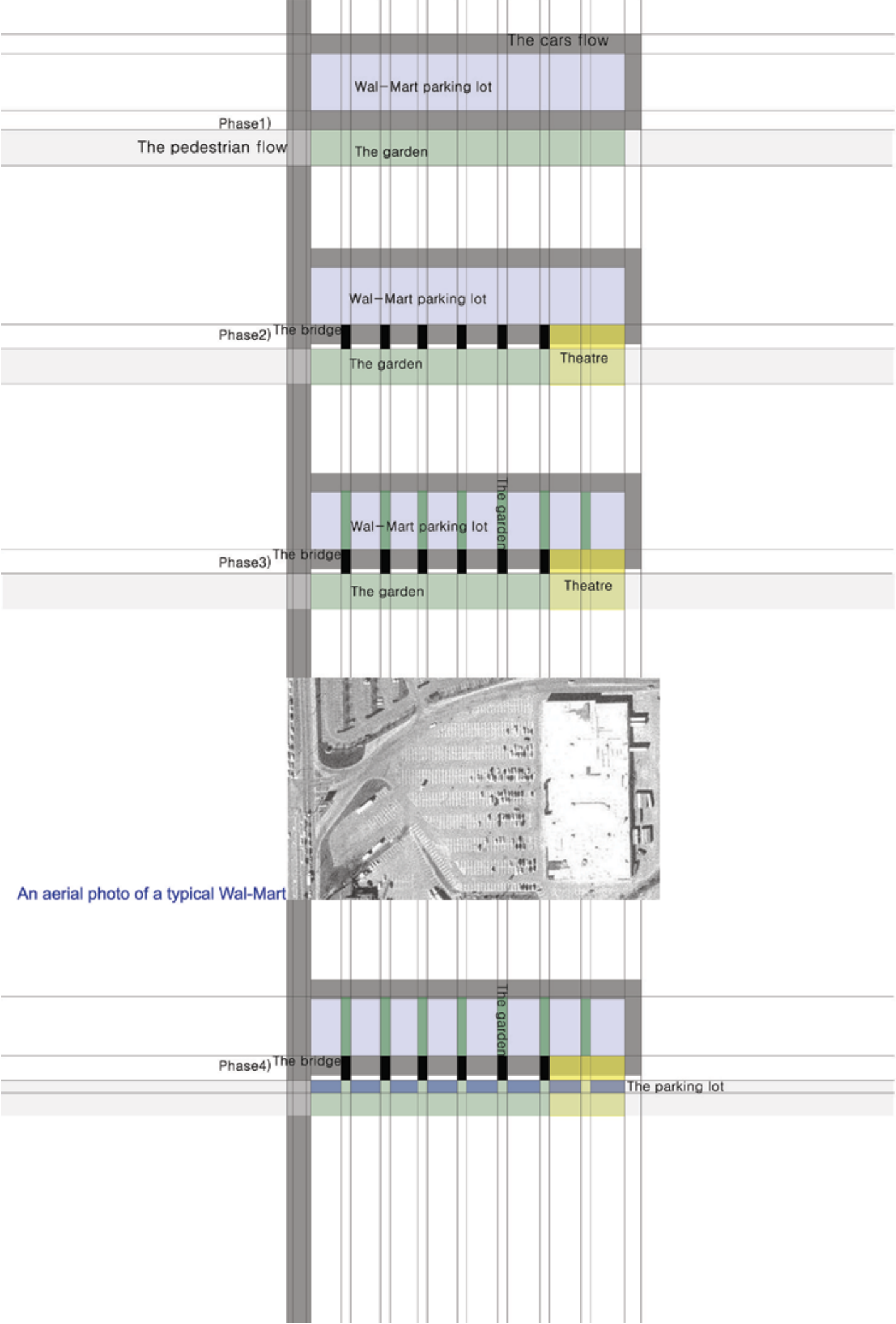




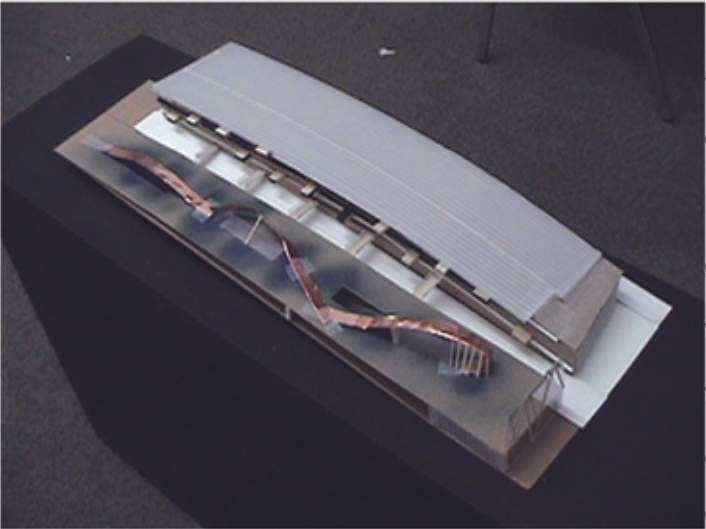
The conceptual diagram on different ground level



Keeping with the simple box shape of a typical Wal-Mart store, the proposed design approach can adjust to the topography of each site. Even though the proposed Wal-Mart store is shaped as one long, narrow container box, it contains seven [verify whether there are six or seven] different functional categories as shown in the section at left (A.B.C.D.E.F.G). One difference between a typical Wal-Mart and the proposed Wal-Mart is the access route for people to move up from the parking space on the ground level to the open sky-roofed third level. This provides better opportunities for customers to freely move back and forth, up and down in open, colorfully-diversified spaces. Furthermore, the schematic diagram illustrates the relationship of the building layout and the parking areas for vehicles. Patrons can drive their cars along the long side of the building and enter one of the seven building units based on the product(s) for which they desire to shop. They can then ascend directly from the ground floor parking area to the second level shopping area and quickly and easily purchase the desired item(s).



The conceptual diagram II : the process to array the relationship of New Wal Mart and Landscape Roof Garden



The diagram at left is based on the idea that the site area normally devoted to the parking lot of a typical suburban Wal-Mart store could be reclaimed as civic space for the Christiansburg community, with recreational space on the roof level. This new element of the proposed Wal-Mart store, the elevated Roof Garden, provides a different way for pedestrians to access the store, while vehicles enter on the ground floor, where the minimum required number of 350 parking spaces are provided. The pedestrian approach, however, is given priority in the project. The roof garden and the retail spaces of the proposed Wal-Mart store are connected by 5 horizontal bridges, the role of which is to induce pedestrians to shop. These bridges connect the project with adjacent residential areas, promoting a more "walkable" downtown.

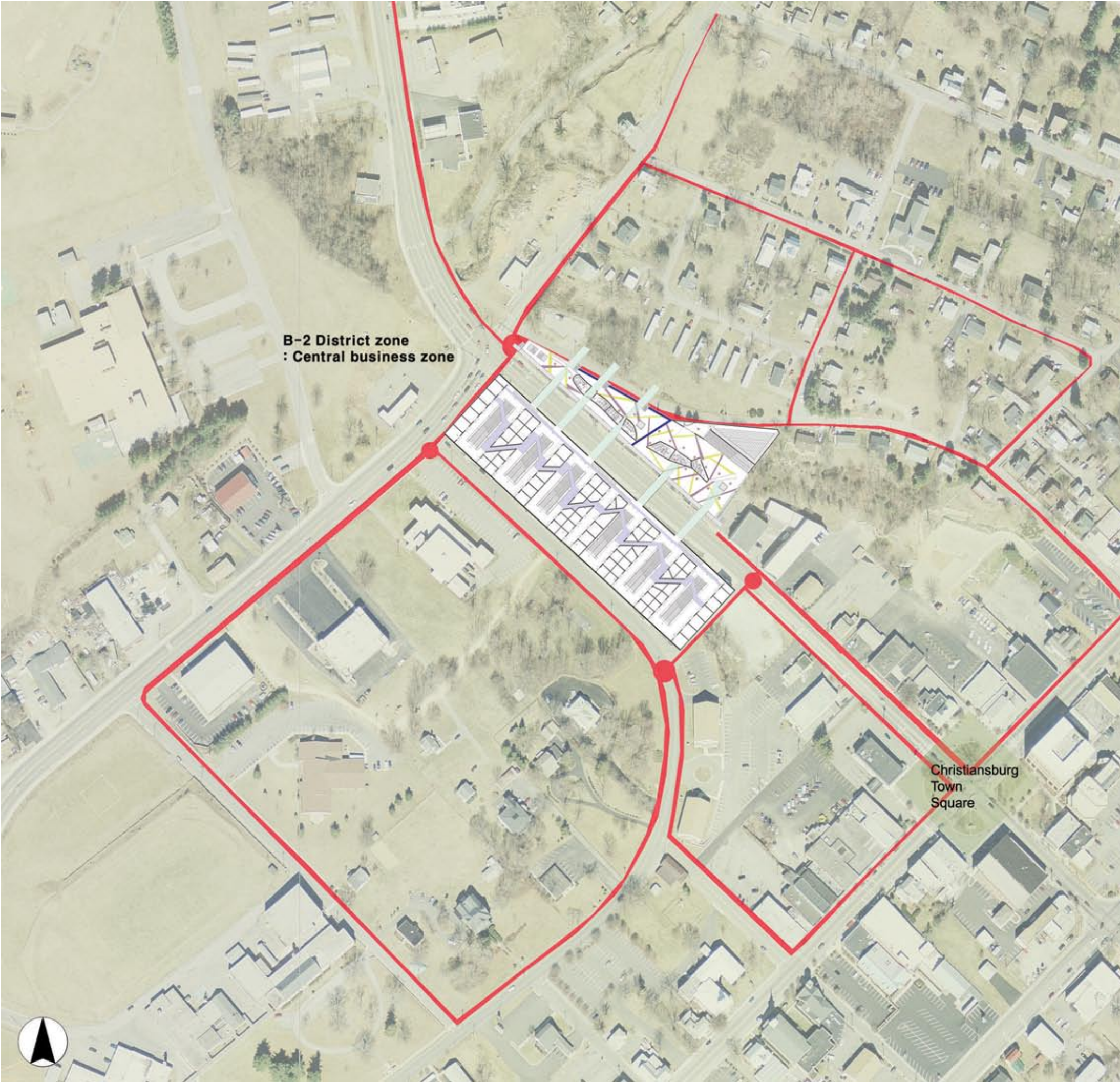




The development of the downtown Christiansburg Wal-Mart begins with the concept of occupying existing commercial properties.

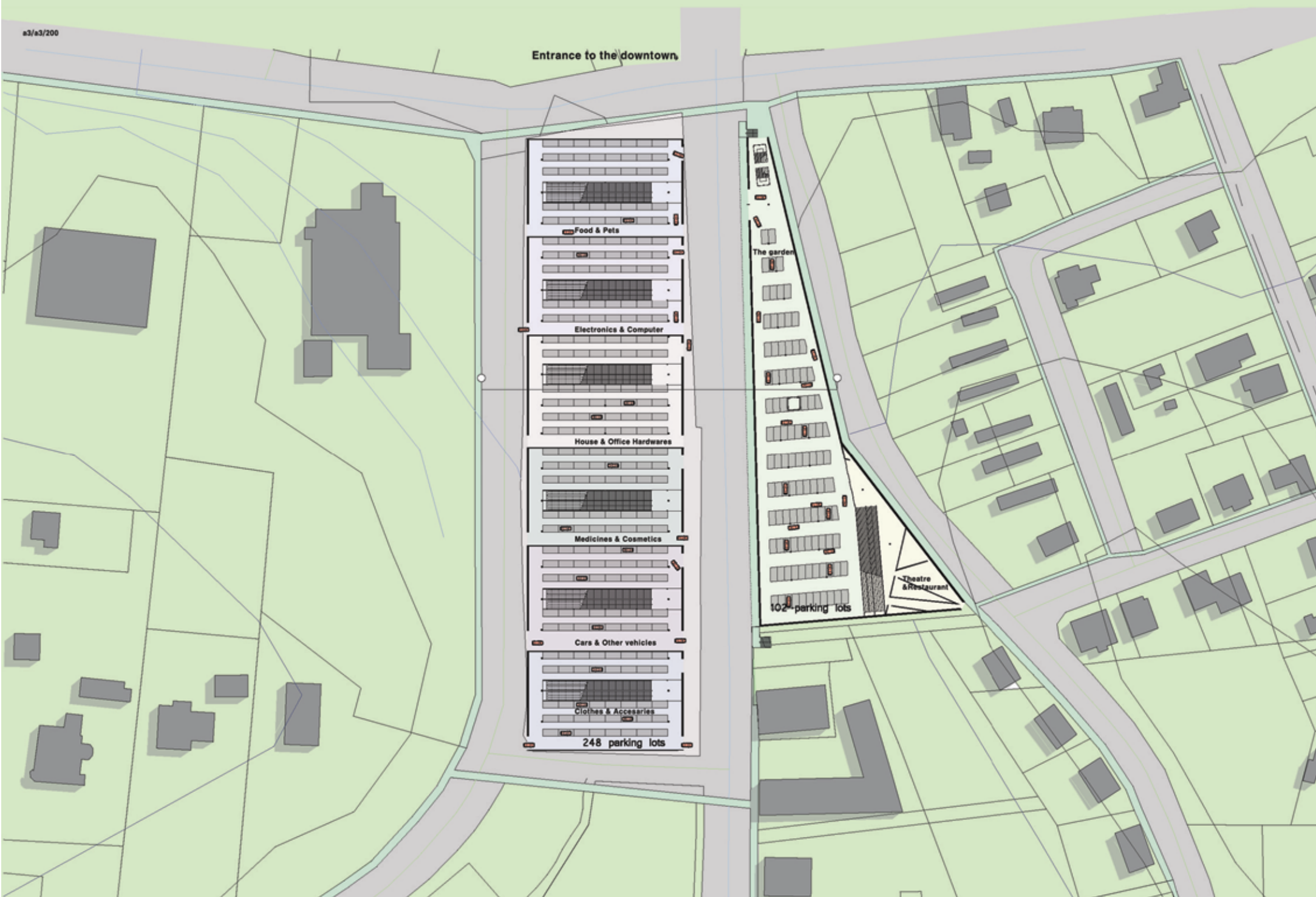
So, under the assumption that Wal-Mart can purchase these long rectangular parcels of land, the proposed new Wal-Mart can be built along the boundary of the principal automobile entrance to downtown Christiansburg, along the way to the town square.





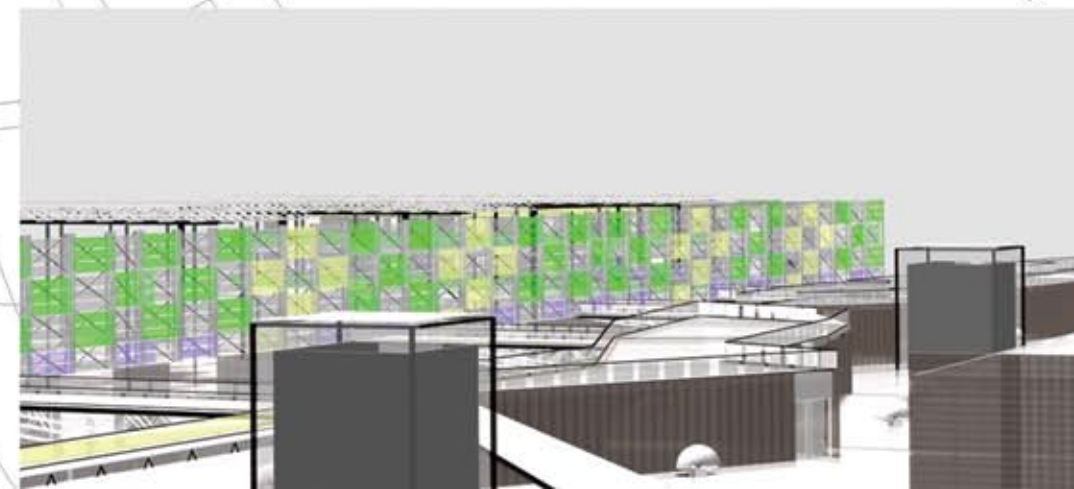
Keeping the ground floor for the use of vehicles, the second floor can be devoted exclusively to the activity of customers, shoppers, and community pedestrians. The main design strategy of the proposed new Wal-Mart is to vertically distinguish spaces for cars and people. Through this separation of program, people can easily move up through the building using the ramp, the staircases, and the escalator. The landscaped roof garden provides an additional way to use the land area allocated to the parking space. It also provides a place for people to enjoy entertainment functions, such as theaters and restaurants. Though the construction cost of building a roof garden above the parking space may be higher than surface parking, the short-term benefits to the community in making the town more pedestrian friendly will be more than worthwhile, and, in the long term, it will eventually boost the vitality of the local economy, through achieving indirect ripple effects toward catalyzing shopping business.





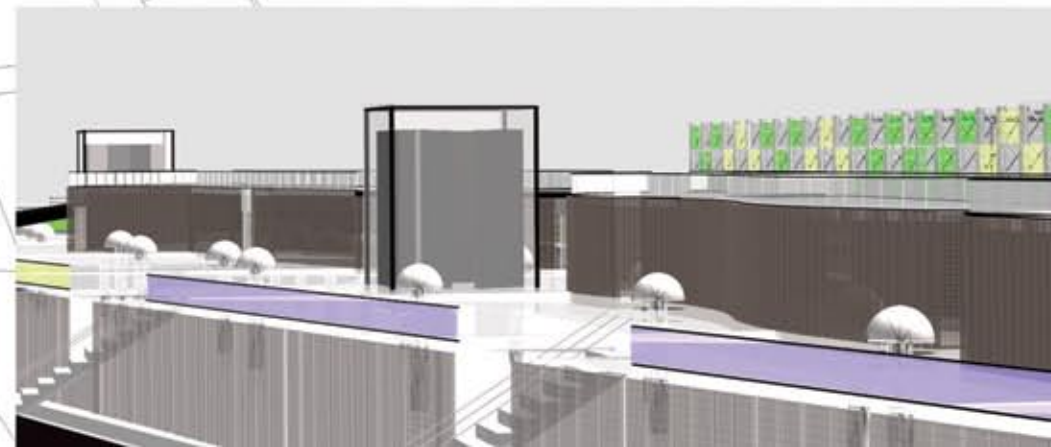
The proposed Wal-Mart induces drivers to park their vehicles in each different categorized section. Parking space is separated into two different spaces, one beneath the Wal-Mart retail space (248 cars) and the other beneath the landscaped roof garden (102 cars). The two parking spaces are also differently programmed, one to support shopping and the other to support the entertainment space. Signage on the façade of the building guides drivers to the parking area closest to the program element they wish to visit. For example, if a shopper desires to purchase clothing, he or she will be directed by the façade display system to the closest parking area, avoiding the time-wasting need to walk long distances from remote parking areas. A one-way vehicular street surrounding the building allows drivers to circulate until they find the appropriate parking area.



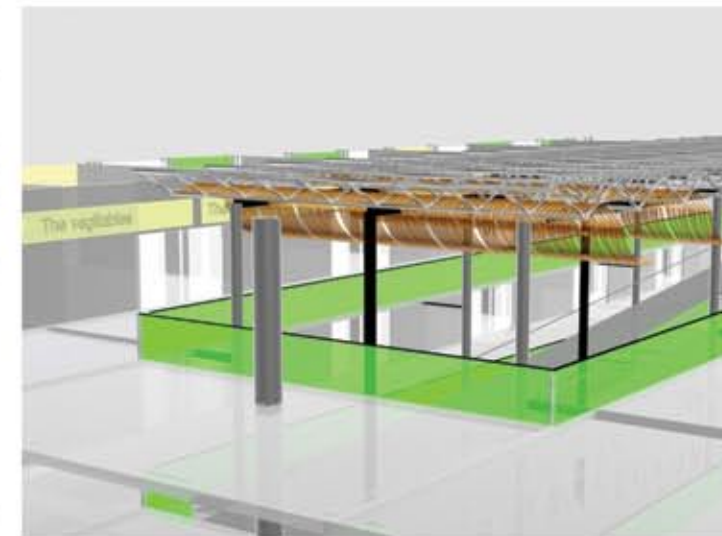


This second floor plan describes the relationship of between the retail spaces of the proposed Wal-Mart and the Landscaped Roof Garden within the cultural context of downtown Christiansburg. The escalator/atrium space functions as open public space, carrying loads of shopping products and people vertically to each categorized section of the building. Two horizontal passageways allow shoppers to move between the building units. A meandering path connects adjacent atrium spaces, while a more direct, straight path is provided along the northeast side of the building. The latter will be useful for pedestrians who enter the building from the second level bridges.



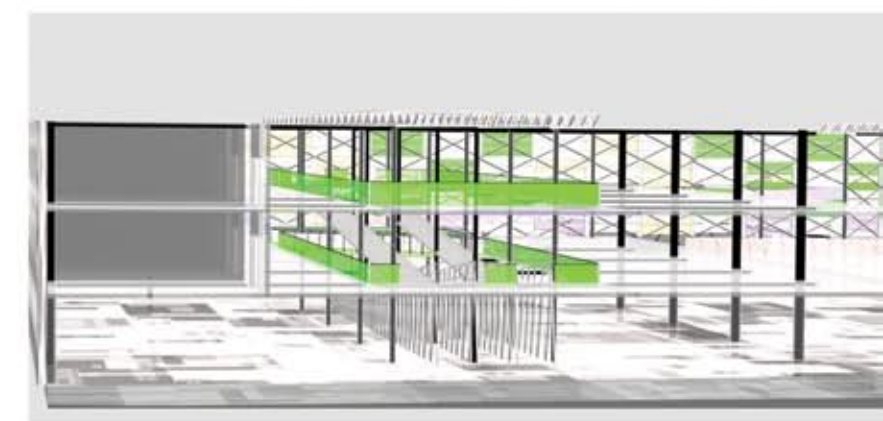
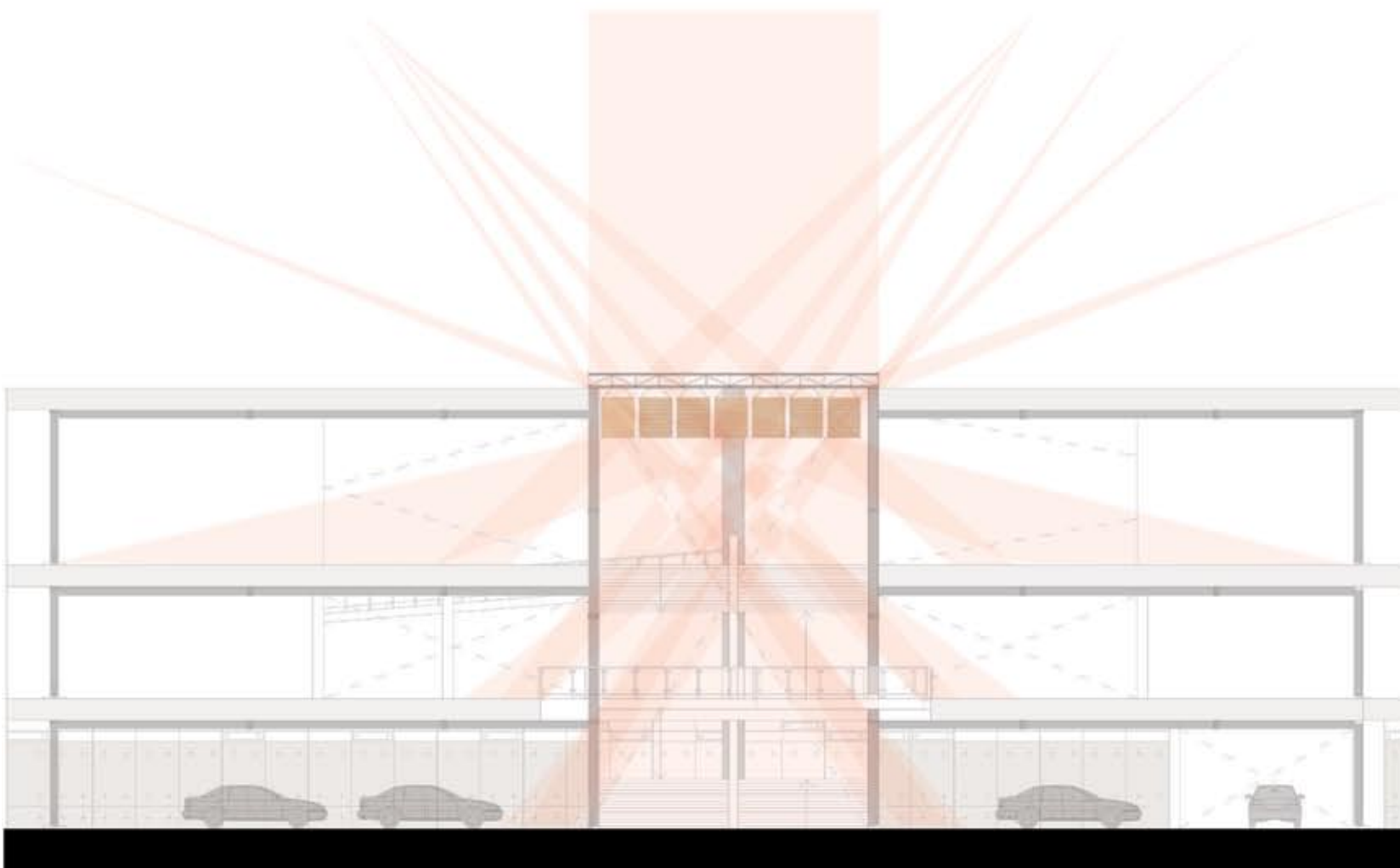
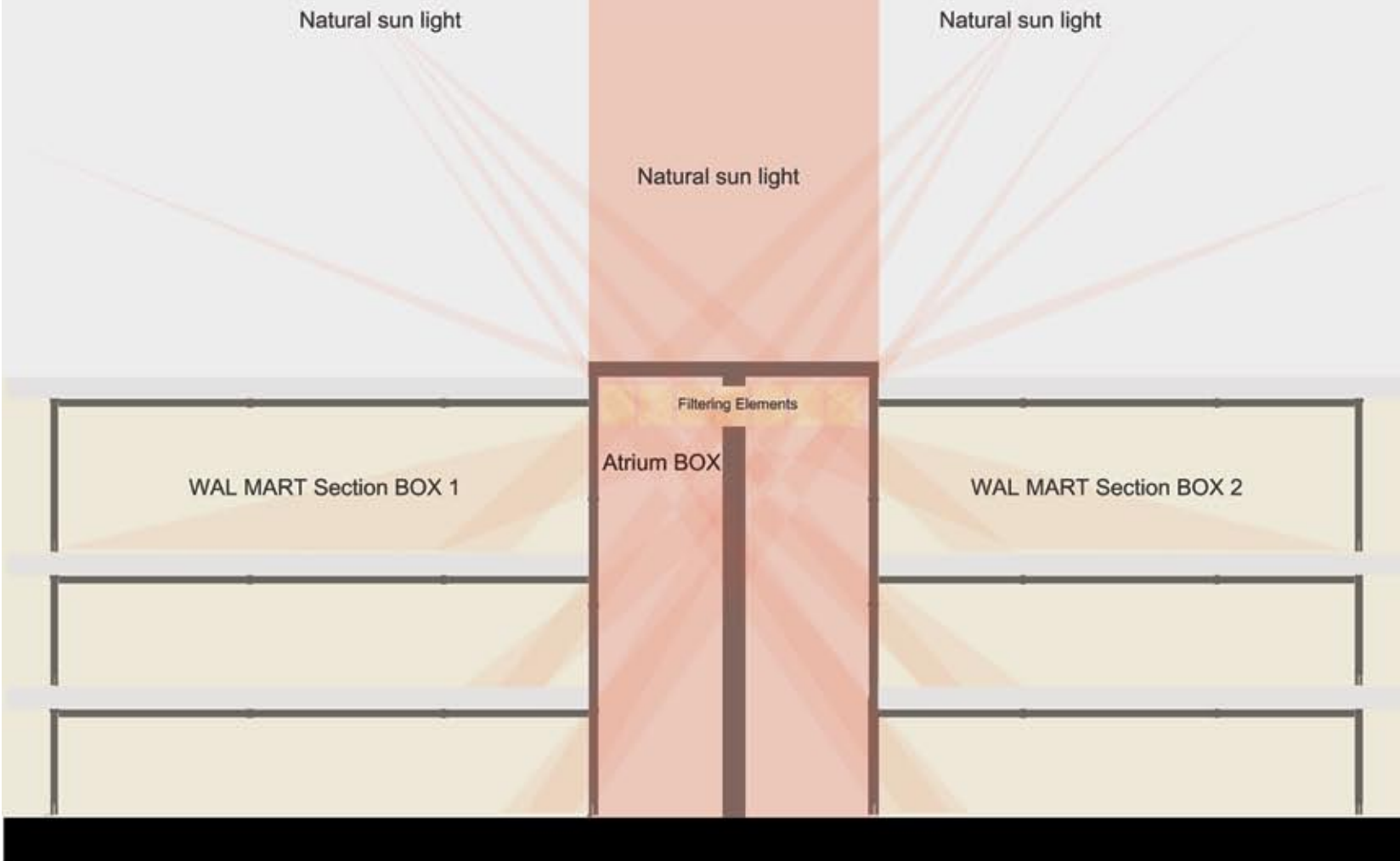


The Landscaped Roof Garden, adjacent to the proposed new Wal-Mart Building, provides open space for the town. The shape of this garden follows the skewed line of the existing topography. The Landscaped Roof Garden reflects the area's unique geographic and topographic situation. This garden includes 6 different restaurants, 2 elevators, 2 staircases and a theatre. It also has an elevated walkable terrace on which six restaurants are arrayed. The theatre space, positioned along the corner of the garden, is accessed from both ground-level parking space and from the roof garden (second level). An escalator functions to vertically carry people inside the theatre. This theatre will support events such as music concerts, speeches, etc.



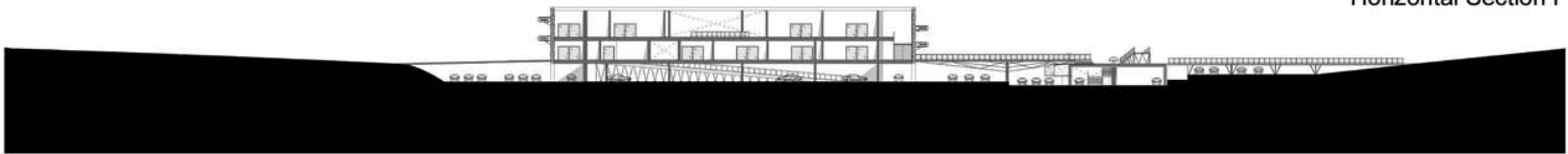
This plan schematically shows the location of the primary structural beams, spaced 40 feet apart, supporting the second floor. These beams are supported by columns on each side of the atrium spaces. This structure provides a column-free open space of 80 feet. Because of the long-span steel beam structure, more freedom in the division and use of space is possible. Shops are divided by removable partition walls, which allow the shops to be constructed in various shapes and sizes.



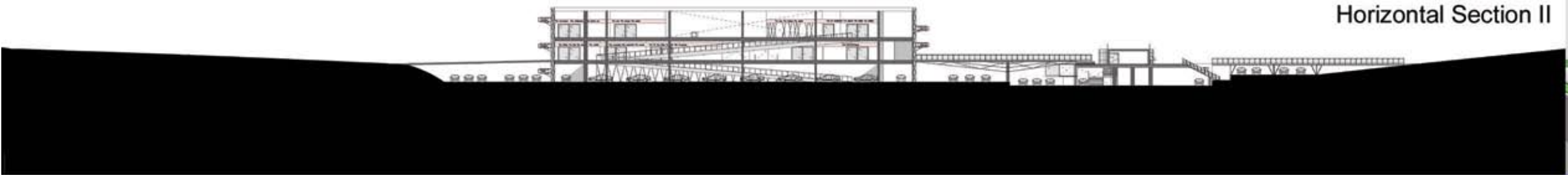


Each atrium space, inserted between two different retail floor sections, establishes the vertical and horizontal circulation strategy for the building. The structure is straightforward in gesturing the direction to visitors. Natural daylight enters the atrium spaces from above. The curved elements of the atrium ceiling filter the light smoothly as well as control its intensity, changing the light reflection and spreading the light to adjacent areas. This daylighting strategy will result in substantial energy savings compared with typical large format retail stores, where interior spaces are illuminated entirely by electric lighting, day and night.

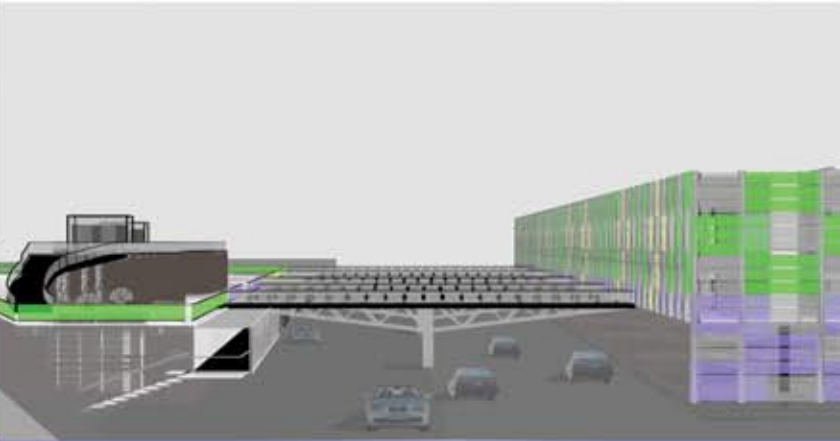
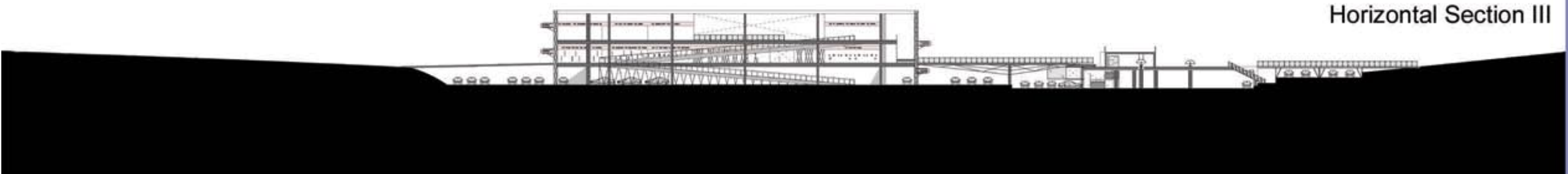
Horizontal Section I



Horizontal Section II



Horizontal Section III



The sequence of sections:

This series of sections shows how the space flows from one end of the building to the other, with subtle variations yet with constantly repeating elements, such as the escalator which defines the center of each open atrium space. The spaces surrounding the atrium each have different characteristics and a different relationship between the public plaza space and the private shopping space. The sequence of spatial flow gradually leads customers from the public open space to more intimate spaces, which shoppers may choose depending on their independent preference/taste.

The proposed Wal-Mart is organized for shopping in a manner midway between a traditional department store and a large format retail store.



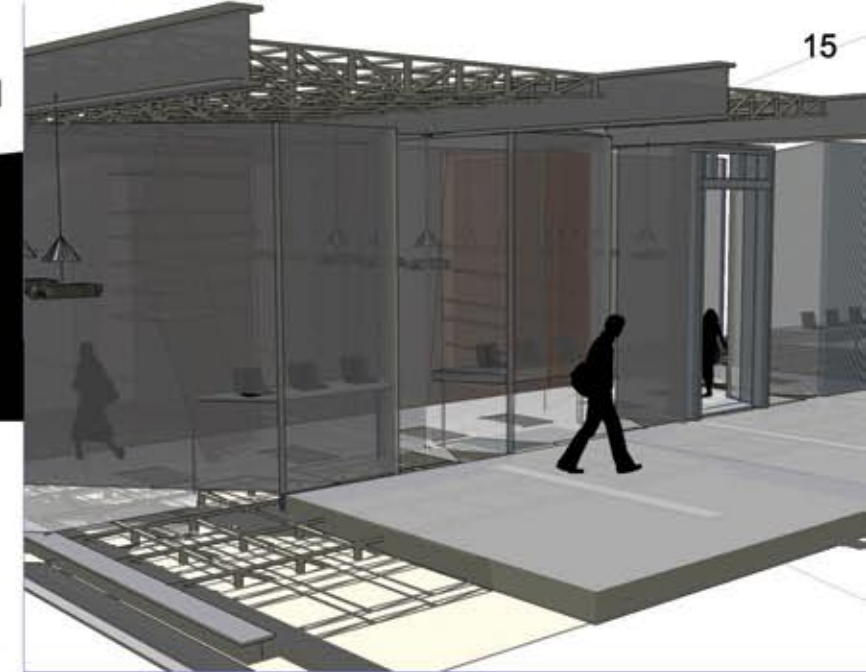
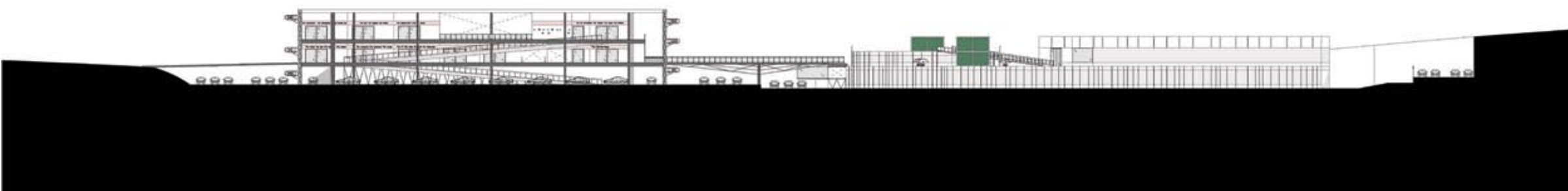
Horizontal Section VI



Horizontal Section V



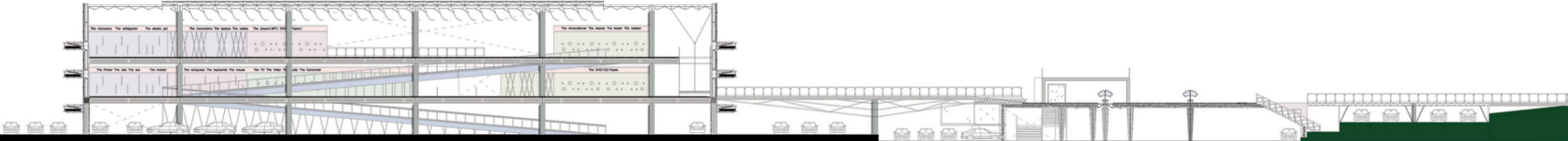
Horizontal Section IV



In order to achieve this plan, community representatives and residents must be persuaded that the project will be economically beneficial to the town. How can this indirect effect be achieved through design? In addition to providing the functional benefits of a typical Wal-Mart store, the proposed Wal-Mart may become a monumental element itself, representative of the town's identity. The design of the proposed Wal-Mart will be more distinctive in accordance with its new selling strategy and delivery method for town customers, perhaps eventually becoming a functional symbol of the town. Then, how can the design strategy make a Wal-Mart store a monument of the town?

Pragmatically, the Wal-Mart store itself should be an enjoyable place for everyone to shop. Visually, the proposed Wal-Mart should be strengthened in its display quality in terms of how the products can appeal to customers and attract their tastes by showing the products' detailed features. Practical application of signage and billboards, as in a typical shopping mall, would attract people to the building. Thses should be designed in application of various colors, patterns, and rhythms in various contexts of site shape or size. These colorful elements must be flexible and easily adjustable to respond to changing needs and timely purposes.

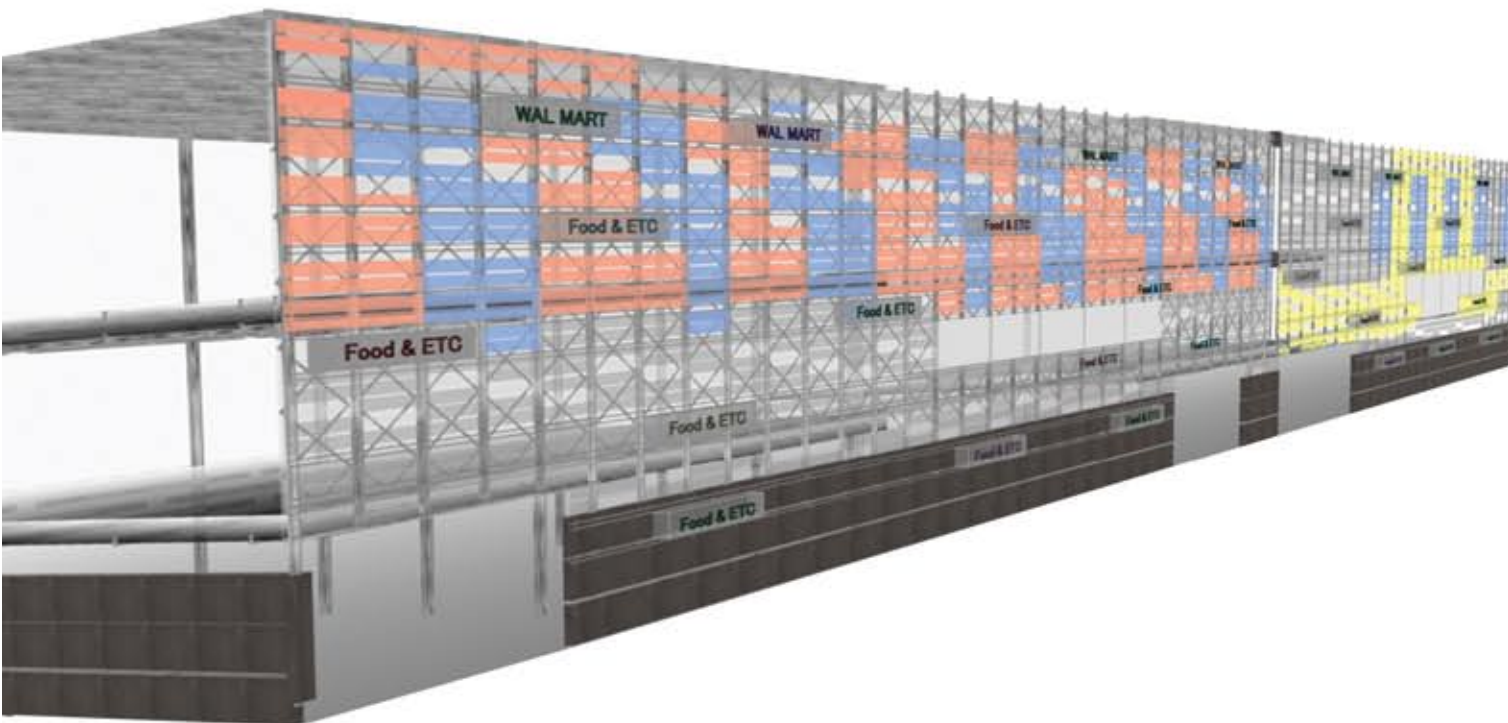
These colorful display elements for promotion of products should also reflect the cultural values of the town as well. The patterns of colors, shapes and textures can also be applied based on the local region's inherent cultural characteristics. For instance, in warm, sunny Florida, the application of colors can be the various prevalent tones or influential colors of that area.



Horizontal Section III

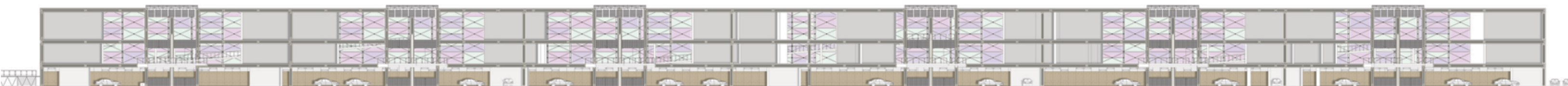
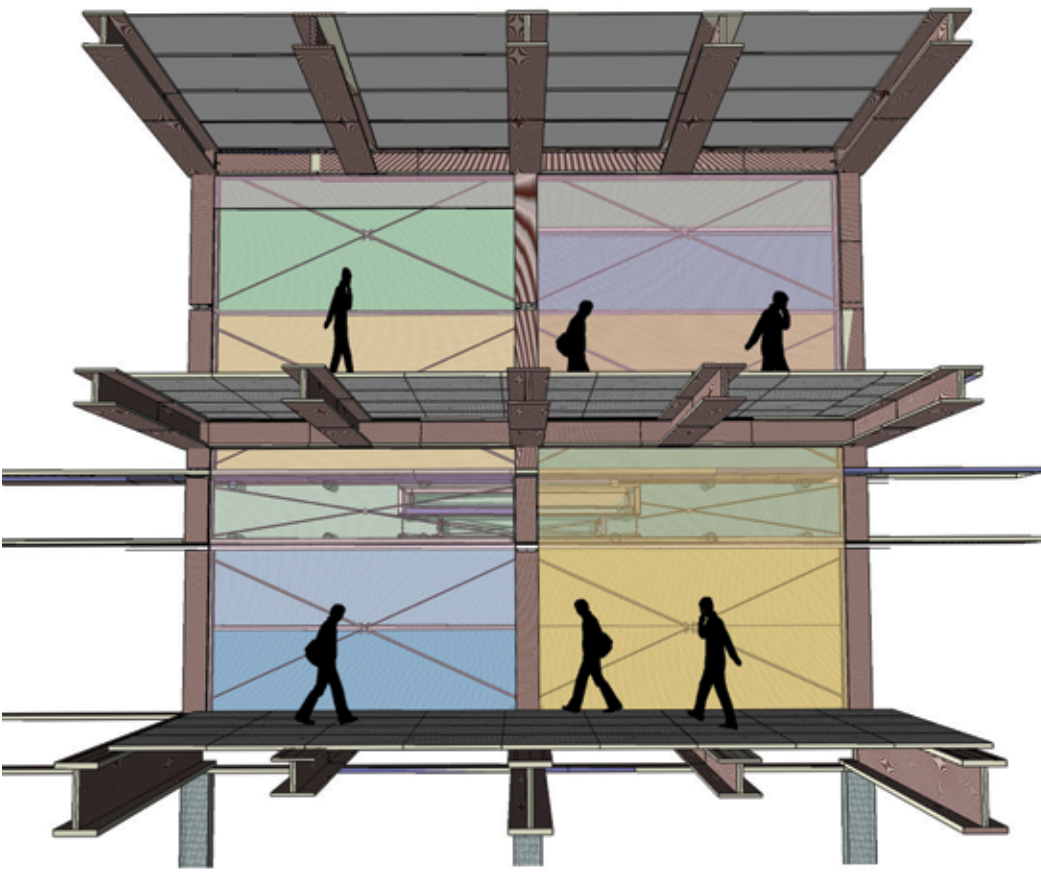


However, while considering diverse cultural values, there is also the need to maintain the basic construction method that Wal-Mart currently employs for practical reasons and to respond to pressing market factors. Firstly, the building itself should be very straightforward, as simple as it can be for the convenience of customers and for the circulation of shoppers. Secondly, the building should be friendly to eco-environmental/sustainable design principles which is an important issue these days, considering global warming, etc. Lastly, it is necessary and practical to design display systems to accommodate both manufactured products and healthy organic foods.

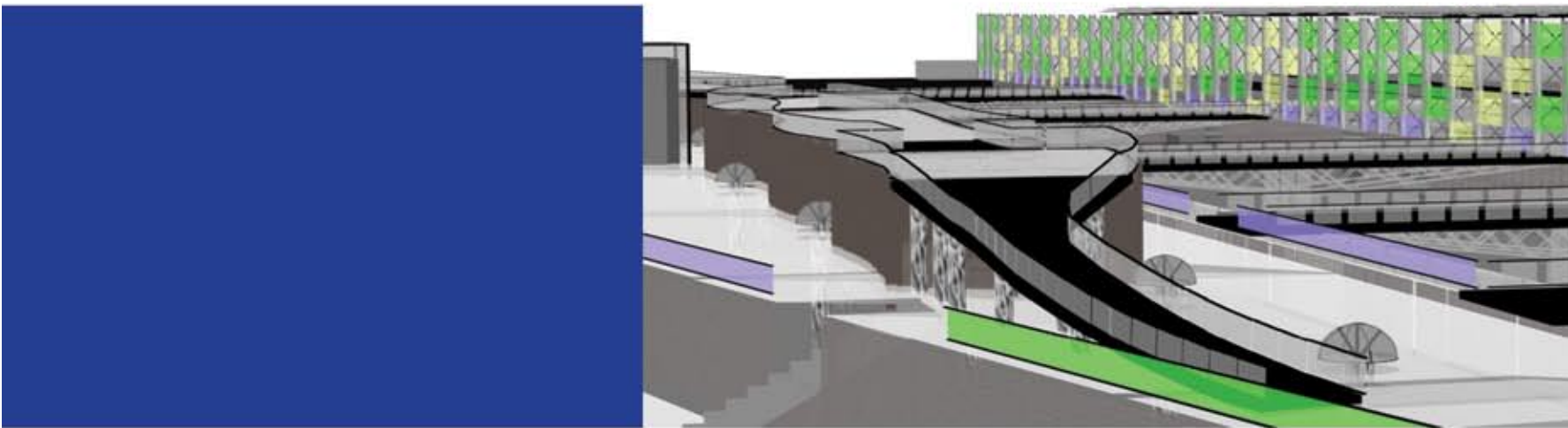




The proposed Wal-Mart store maintains the corporation's practice of providing a large volume of products. This scale of business practice is a good way to get products in people's hands. Though it is a simple delivery method, it has shortcomings in appealing to customers' sense of the quality of the products. People not only choose a product based on price but also on quality. The best strategy that Wal-Mart can employ is to provide better, more durable goods and more trustworthy brand products for upper income customers. This new strategy will achieve greater profits, focusing on upper-middle income families. However, even if Wal-Mart does not promote better quality products to customers due to the desire to maintain stable market profits, through the design of the new proposed Wal-Mart store which presents all products in a distinctive way, making visible the products' quality, the corporation would in some degree achieve greater profits. So, the new design approach for Wal-Mart will lead to inducing more people to buy more products.







On the issue of the use of eco-environmental systems, Wal-Mart should be more committed to saving energy for heating and cooling. This issue can be a good strategy to present a more friendly image of Wal-Mart to customers. In addition, Wal-Mart can save money in the long term even though there is probably a higher initial investment cost in the short term. Now is a critical time for Wal-Mart to decide whether to demonstrate its contribution to local communities or to pursue greater commercial profits.

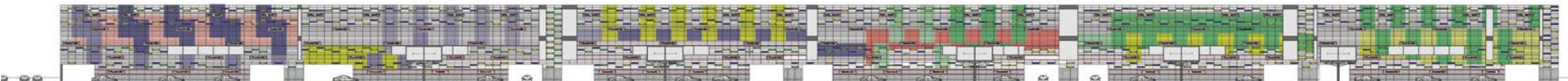
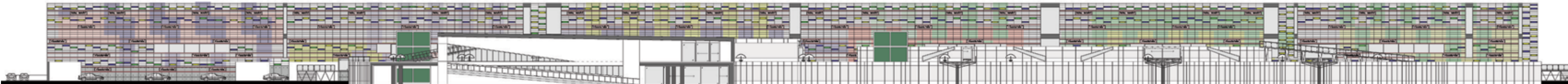






Figure2., Photographed by Don Barker

To realize these sustainable design strategies may not be a very difficult matter nowadays. The proposed atrium design will provide natural daylight, reducing electricity use, and will conserve heating energy, as well as give a sense of design quality in a pleasant space for ascending between floor levels. Application of a more effective ventilation system will also save energy. For instance, although the initial cost could be slightly higher, a “displacement ventilation system” would be more energy saving than a “mixed flow ventilation system.” Wal-Mart has to consider new challenges to adopt recent eco-environmental technology systems if available.





This series of images is from an empirical test of the intensity, dispersion and degree of brightness of light in the main atrium open space. At 12 o'clock noon, sunlight is most intense, flooding in vertically to each floor. This test reveals the characteristics of the atrium space as the most vibrant public space within the proposed Wal-Mart, as well as demonstrates energy-saving benefits through natural heating and natural daylighting.

Panorama pictures taken in different time zone a day, 10th, February





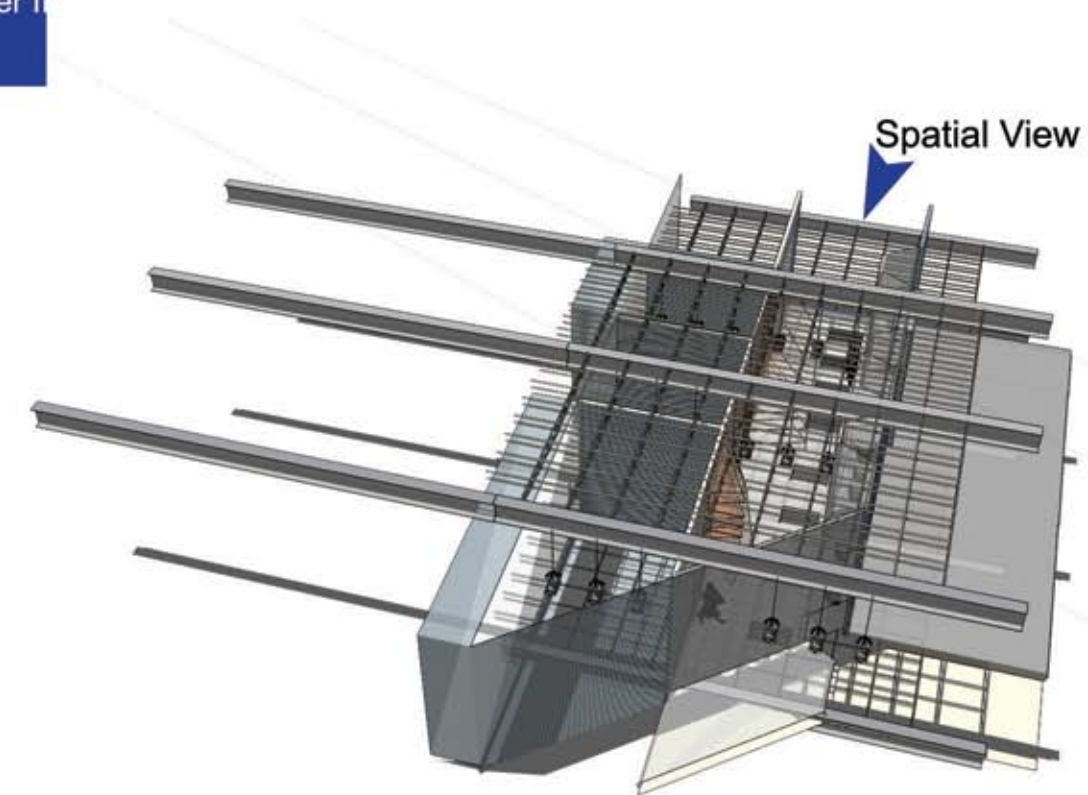


Computer shop interior view in close I



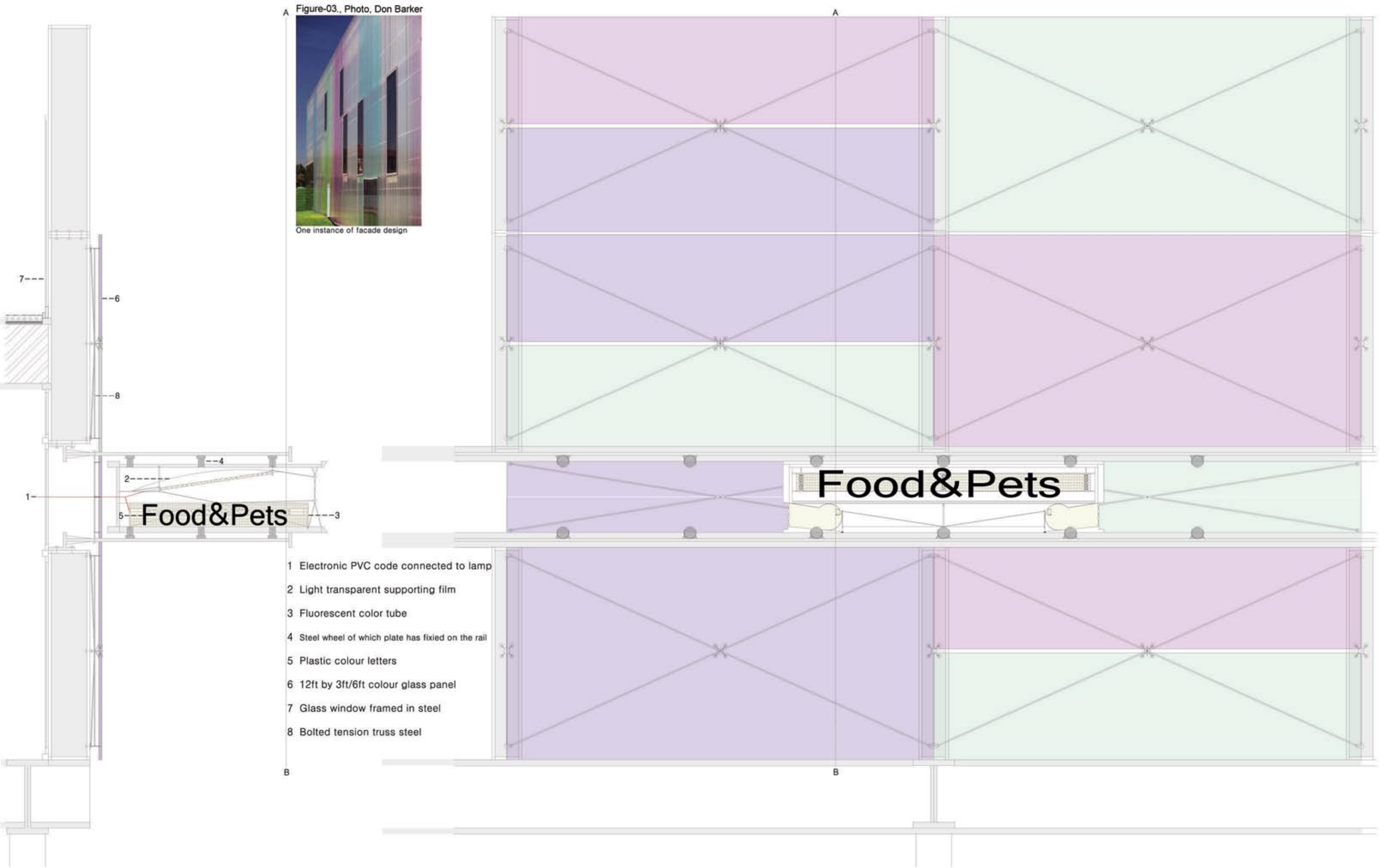
Computer shop interior view in further I

To allow the flexible use of space to respond to different demands, the structure is generally constructed with long-span steel beams on every floor. These exposed wide-flange beams are connected to the columns of the atrium beneath the floor. The floor is covered by 30"x30" modular concrete panels. Removable partition walls can simply be inserted into the joint between two panels to form a 4-sided enclosure for a shop. These walls can be installed in different configurations to conform to different retail purposes, demands for different size capacities, and customer preferences for particular goods. From this more flexible use of space, Wal-Mart could become an all-season discount shopping mall.



The axonometric of computer selling shop presenting structural flows and hierarchies







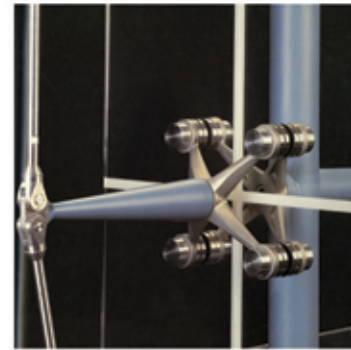
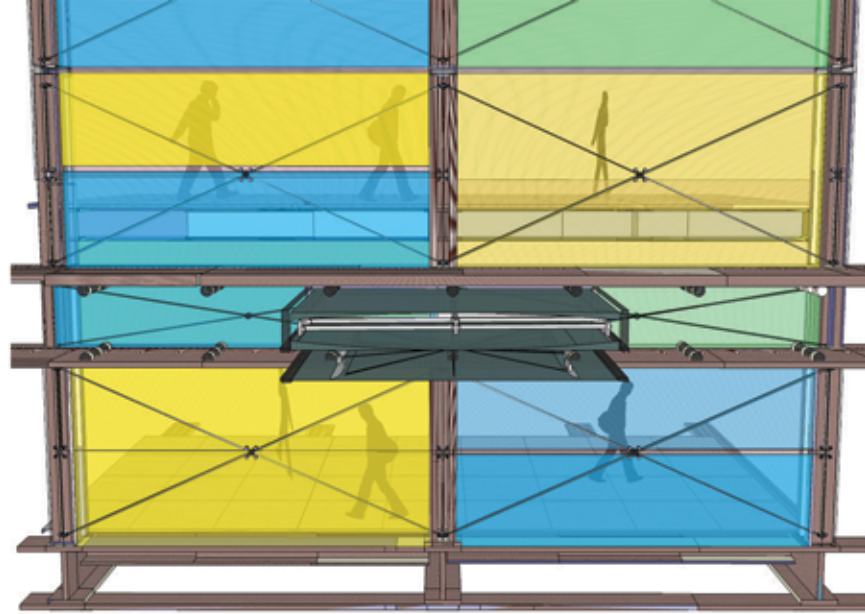
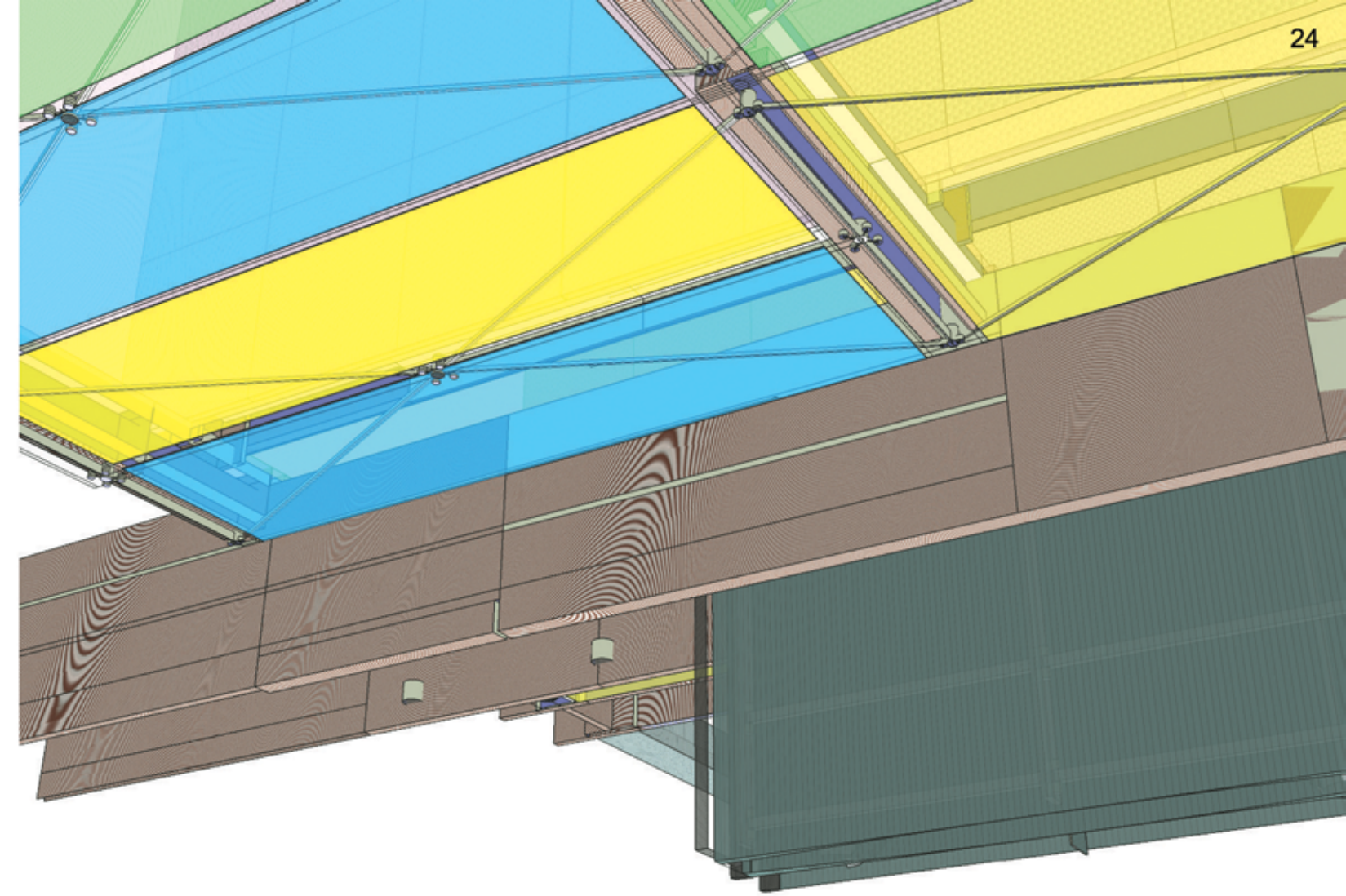
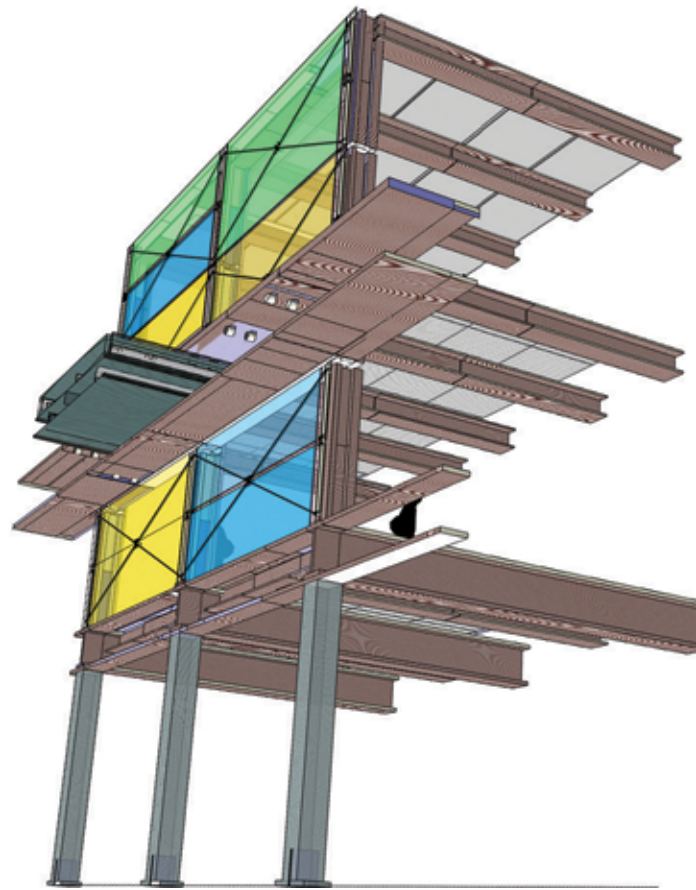


Figure-04., Powell, K., & Moore, R.

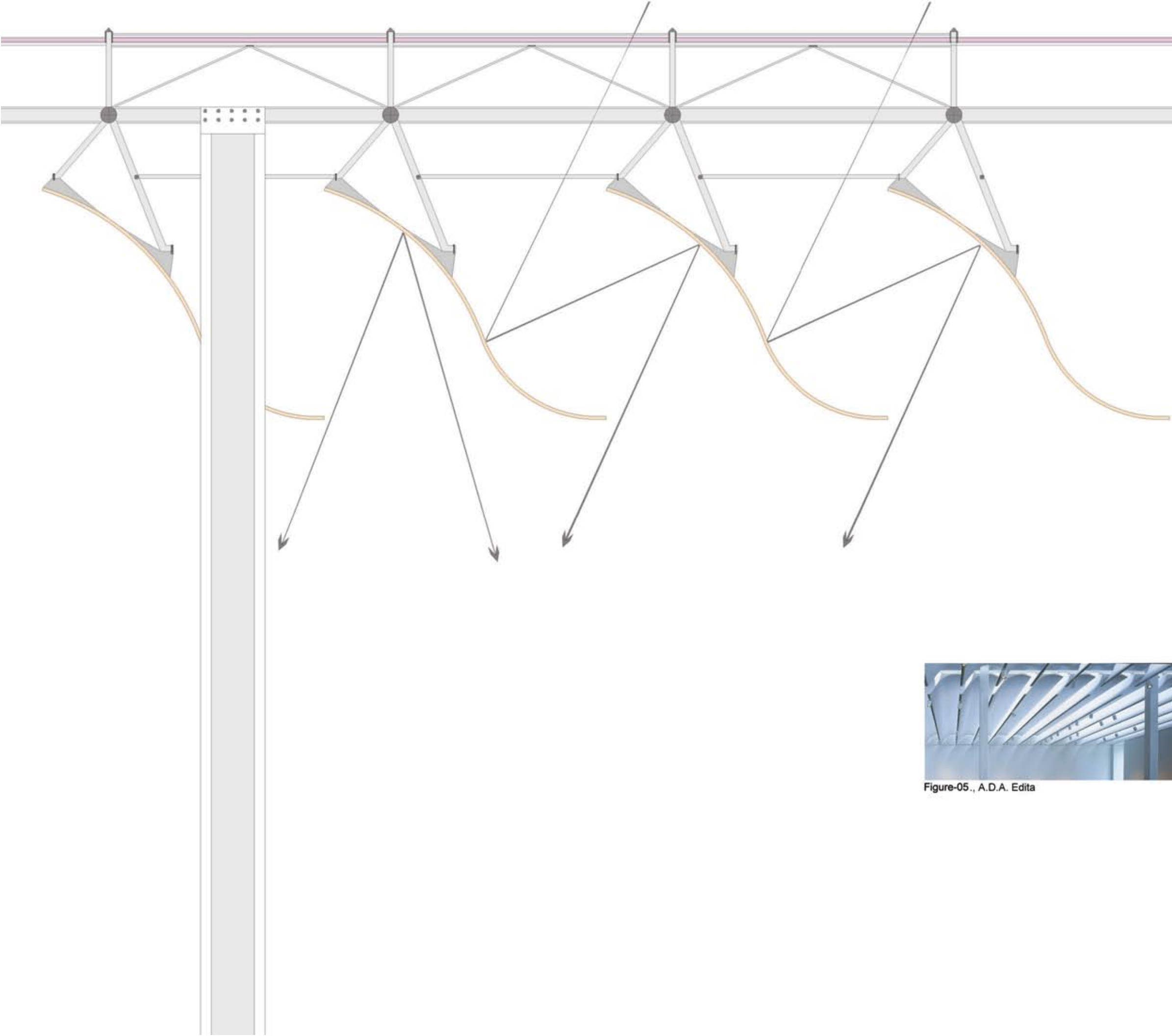


## The facade construction method

The colored glass panels of the façade are modulated between two sizes: 3'x12' and 6'x12.' The panels are hung between H columns along the line of the first floor concrete wall structure. A series of point-supported glass brackets or "spider" connections hold the glass panels. The center bracket is braced by trussed steel wires against the wind load. These panels create a double skin facade. Interior glass windows are installed on the other side of the H column, making a 1'-5" gap between the two glass layers. Also, the signage unit is cantilevered from the façade on horizontal rails to facilitate and control the movement of the signage. These signage units act as advertising and guide drivers of vehicles to the appropriate parking section in which they wish to stop, as well as attract residents accessing the store from the roof garden. In addition, signage will be an element which can illuminate the town at night, as does a street light.







Detail drawing of atrium light filter elements



Figure-05., A.D.A. Edita

Testing of the degree of light reflection in the atrium:

These delicately curved elements are designed to maximize the characteristics of natural sunlight, filtering and reflecting the light smoothly into the atrium, onto the escalator below for the enjoyment of customers ascending to the shopping levels.

The concave shape is specifically designed to control the direction of the light to fall onto the floor surface. The material for these elements will be metal such as aluminum or copper. Further testing of prototypes will be necessary to compare the depth and color of reflected light with different materials, site orientations, and sun positions in order to determine optimum design conditions. The materials specified and the angle and degree of curvature can be geographically varied.



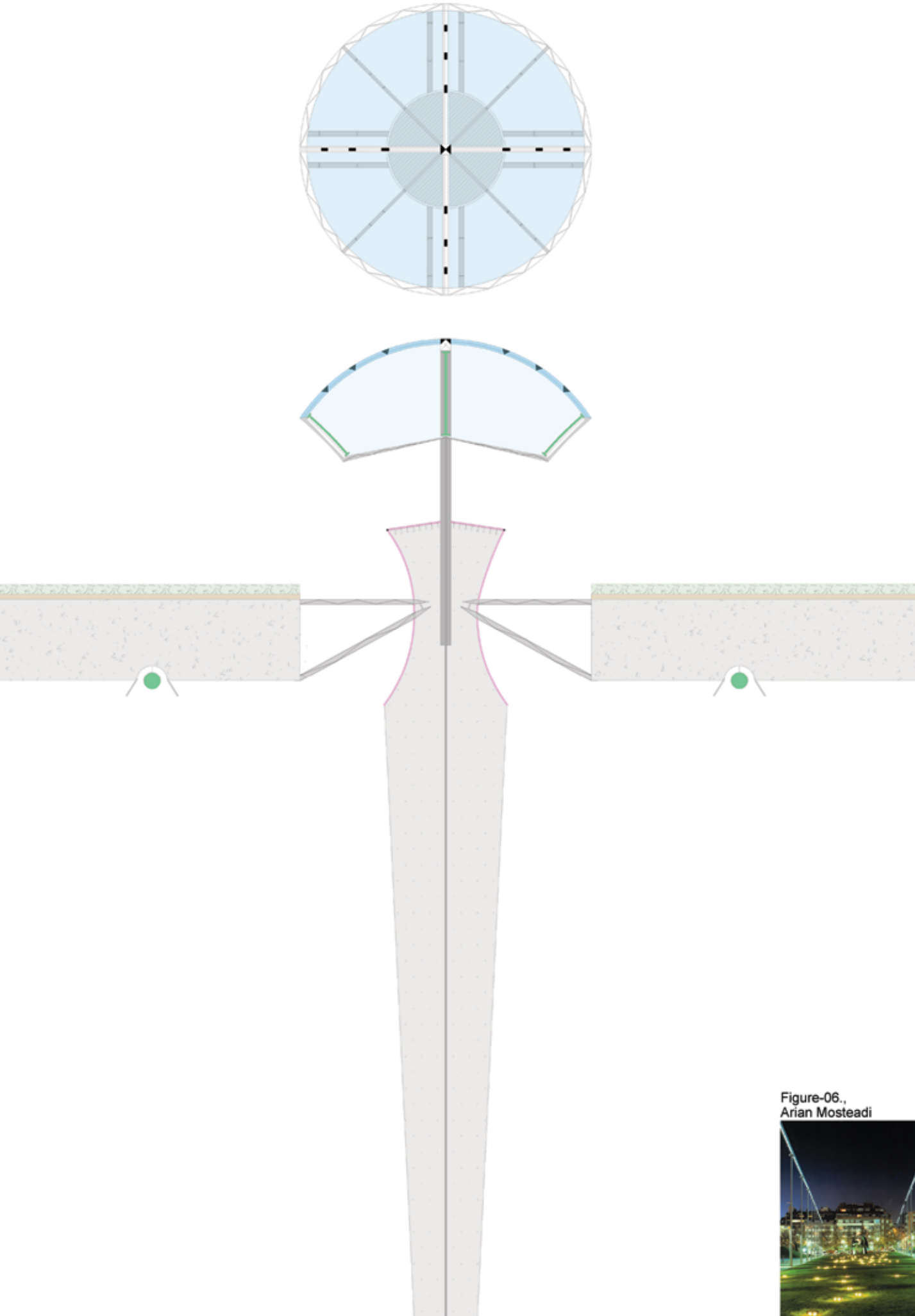


Figure-06.,  
Arian Mosteadi



### Detail drawing of column in open roof space

The drawing at left shows the column lights. These structural columns support roof and floor loads, but they also function like street lights.

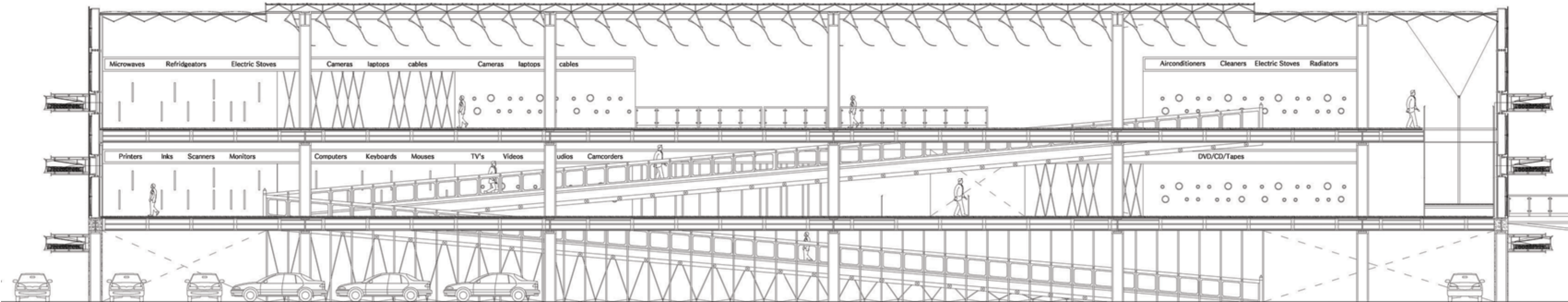
To allow natural sunlight to filter into the parking space, a gap between the concrete floor and the concrete column is spanned by painted steel beams. The column heads are designed in an umbrella shape formed from an aluminum sheet to prevent the influx of rain-drops and to reflect and disperse the light. colorful light tubes inside the cap of the umbrella will allow the column lights to function without daylight so people can enjoy the open space even at night.

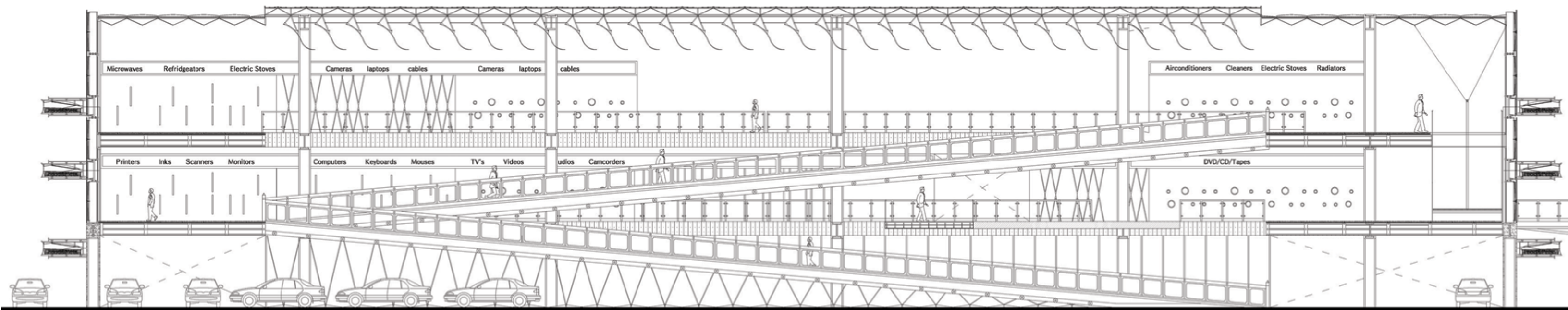


### Detail Floor Section

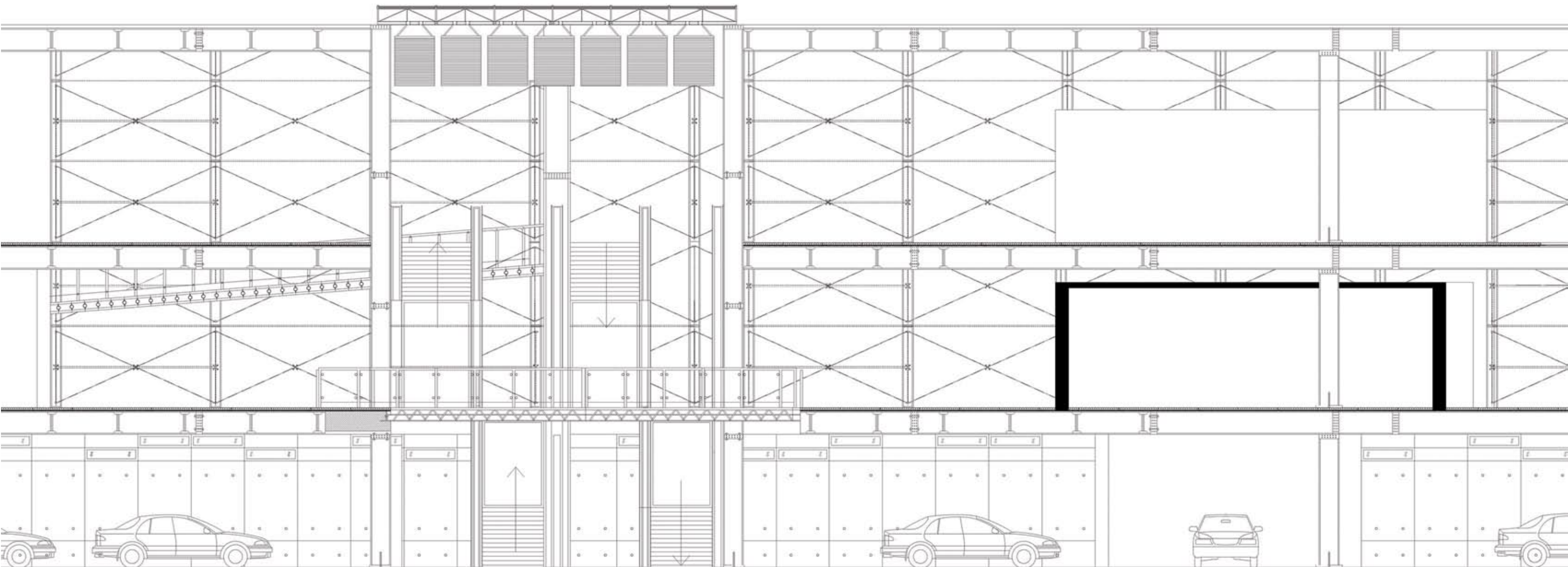
The finished floor of the proposed Wal-Mart store will be 30" x 30" modular, pre-fabricated concrete panels welded to the steel beam structure below. An insulation layer between the panels and the floor beams prevents floor heat from escaping below the panels. In the space between the beams, HVAC ductwork and equipment, electrical conduit, etc., will be housed. A 30" by 30" steel grid spans between the bottom edges of the main structural beams, limiting the extent of the mechanical and electrical systems. This type of floor structure will generally reduce construction costs and will facilitate future changes in the mechanical and electrical systems, providing a structure which is economical to construct and operate in accordance with the goals of the Wal-Mart corporation.

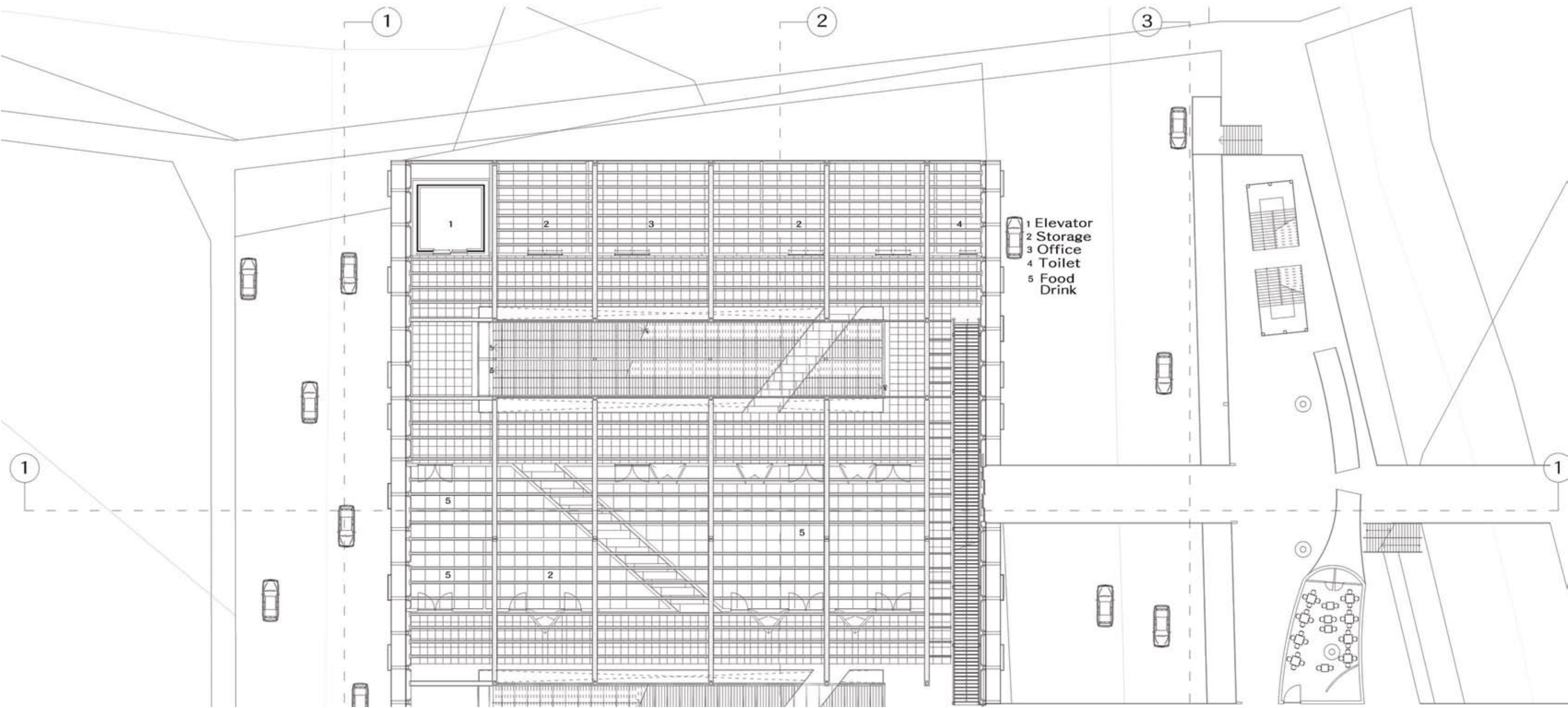














12. Conclusion

Today, we buy and sell large quantities of retail goods in large format stores, and this delivery method conforms to customers' demands as well as retailers' needs for efficiency and profitability. Wal-Mart is probably the most well-known and successful in using simple and direct approaches to help customers purchase what they want in the market. Locally, Wal-Mart stores are often welcomed because they provide low prices and product variety in areas that previously lacked both. *"But, Wal-Mart is also blamed for potentially negative land use impacts, traffic congestion, and the decline of small local businesses".*(8) This problematic phenomenon is affecting local downtown communities in the U.S. in both negative and positive ways. This thesis study reflects the desire to reduce negative urban and architectural factors while maintaining the positive characteristics of Wal-Mart. In response to present and future market forces, the affordable super market format of Wal-Mart has been retained, but the proposed Wal-Mart has been constructed in a local downtown site rather than in the suburbs and has been designed to more innovatively satisfy demanding customers' tastes. In addition, energy-saving strategies are becoming an increasingly important factor in building design, and Wal-Mart corporation will be unable to ignore these issues if they want to continue to access customers in a friendly and profitable manner. Whether or not the architectural design suggestions in this thesis will produce an exemplary solution, it is quite obvious that experimentation regarding the design of Wal-Mart stores is required now more than ever, as a motivation for positive change for both the Wal-Mart corporation and its customers.



Around 6 A.M. 25th April



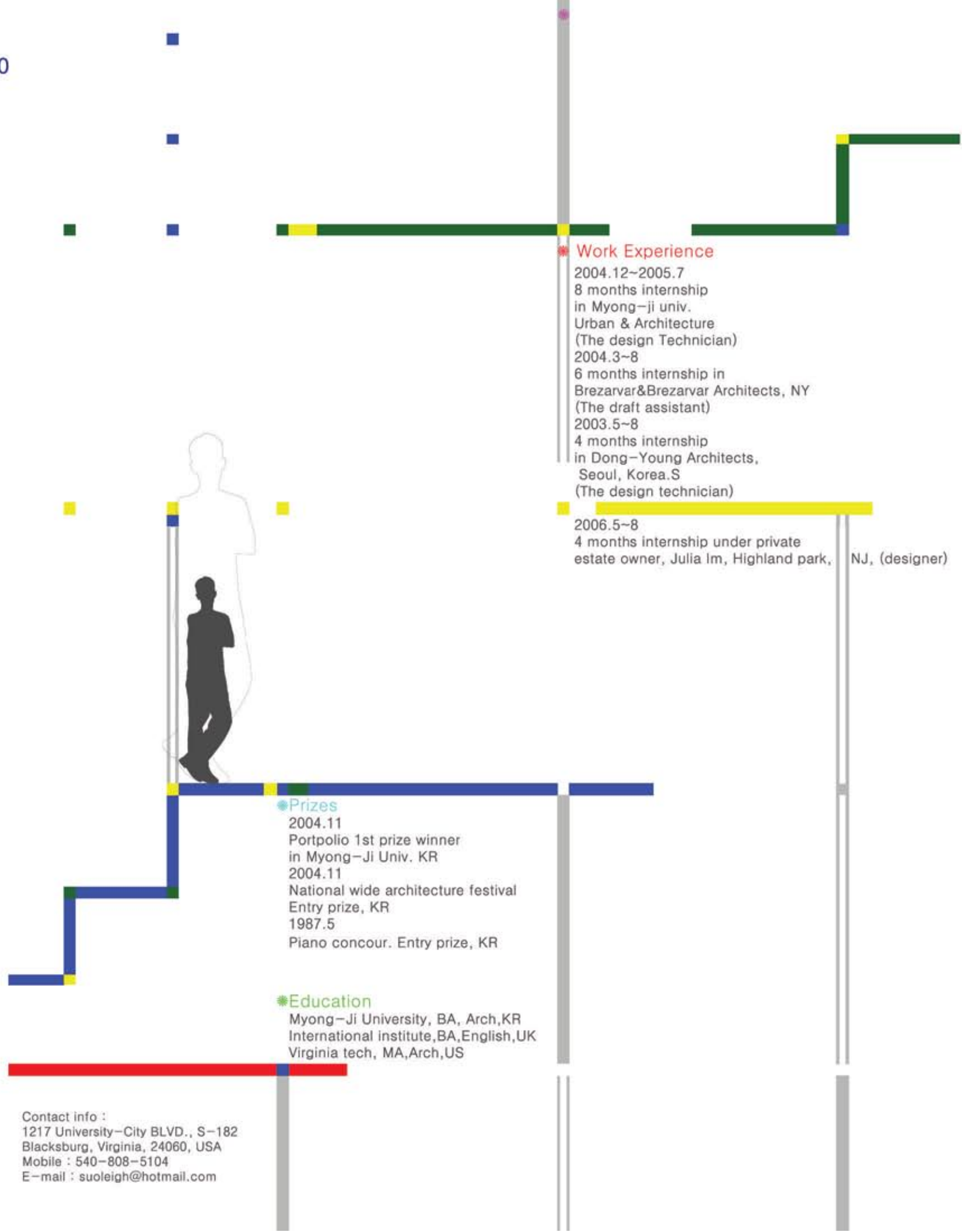
Around 2 P.M. 25th April



Around 6 P.M. 25th April

Atrium Shading Element Light Distribution





Work Experience

2004.12~2005.7  
8 months internship  
in Myong-Ji Univ.  
Urban & Architecture  
(The design Technician)  
2004.3~8  
6 months internship in  
Brezarvar&Brezarvar Architects, NY  
(The draft assistant)  
2003.5~8  
4 months internship  
in Dong-Young Architects,  
Seoul, Korea.S  
(The design technician)  
2006.5~8  
4 months internship under private  
estate owner, Julia Im, Highland park, NJ, (designer)

Prizes

2004.11  
Portpolio 1st prize winner  
in Myong-Ji Univ. KR  
2004.11  
National wide architecture festival  
Entry prize, KR  
1987.5  
Piano concour. Entry prize, KR

Education

Myong-Ji University, BA, Arch,KR  
International Institute,BA,English,UK  
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Notes :

- (1) *Emerging Planning Challenged in Retail, The case of Wal-Mart*, Marlon G. Boarnet, Journal of The Ammerican Planning Association, Vol.71 NO.4, U.S., Autumn 2005, p433
- (2) *The Mayors Institute: Excellence in City Design*, James S. Russell, National Endowment for the Arts, U.S., 2002, p8
- (3) *Ibid.*, p65
- (4) *Ibid.*, p108
- (5) *Ibid.*, p74
- (6) *Ibid.*, p110
- (7) *Ibid.*, p75
- (8) *Emerging Planning Challenged in Retail, The case of Wal-Mart*, Marlon G. Boarnet, Journal of The Ammerican Planning Association, Vol.71 NO.4, U.S., Autumn 2005, p433

Image Sources :

- Figure-01 *Emerging Planning Challenged in Retail, The case of Wal-Mart*, Marlon G. Boarnet, Journal of The Ammerican Planning Association, Vol.71 NO.4, U.S., Autumn 2005, p435
- Figure-02 [http://www.architectureweek.com/cgi-bin/supporting\\_architectureweek.cgi?dir=2003/1105&article=news\\_3-2.html&image=12286\\_image\\_5.jpg](http://www.architectureweek.com/cgi-bin/supporting_architectureweek.cgi?dir=2003/1105&article=news_3-2.html&image=12286_image_5.jpg)
- Figure-03 [http://www.architectureweek.com/cgi-bin/awimage?dir=2003/1105&article=news\\_3-2.html&image=12286\\_image\\_3.jpg](http://www.architectureweek.com/cgi-bin/awimage?dir=2003/1105&article=news_3-2.html&image=12286_image_3.jpg)
- Figure-04 *Structure, Space and Skin The Work of Nicholas Grimshaw & partners*, Powell, K., & Moore, R., PHAIDON, U.K., 1999, p47
- Figure-05 *Renzo Piano Building Workshop*, GA Architect series , A.D.A Edita., Japan, 1997, p73
- Figure-06 *Urban Space*, Arian Mostead, C. Broto & J.M. Minguet, Spain., 2002, p99