A design of the Des Moines Higher Education Collaborative

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A design of the Des Moines Higher Education Collaborative

by

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A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
MASTER OF ARCHITECTURE

Major: Architecture

Program of Study Committee:
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This is to certify that the master's thesis of

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has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy
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Chapter 1. Introduction

This thesis is a design for the Des Moines Higher Education Collaborative as part of the Western Gateway urban renewal project located in downtown Des Moines, IA. I chose to undertake this project for several reasons. First, the project had an actual constituency. I could speak with an actual client and with city officials to receive information on a project that was very real to them, and a project that they cared very much about. Second, the project is dynamic and diverse, occurring within a web of activities and interaction of people. There is a coming together of several entities such as specific clientele goals, civic goals, urban masterplanning, and economic implications.

I recognized that architecture takes place in these webs of activities and people. This thesis is a quest to address some of these issues in a comprehensive building design that is a prominent fixture in the city of Des Moines.

Within the thesis I bring several other interests. The first is to explore systems of structure and making. Materials, how materials drive the structure, and the realization of a work were very important factors. Second, I wanted to thoroughly explore issues such as delight and commodiousness, and how to create a successful people place within several urban renewal theoretical frameworks.

I discovered that the systems portion of emphasis I could do well. However, it seemed I could only address the multiple theoretical frameworks partially, and many questions they raised went unresolved.
Chapter 2. Project

In 1998 a projects task force identified a need for undergraduate courses, graduate courses, corporate and computer training, and certification programs in downtown Des Moines. In August of 2000, the Des Moines Higher Education Collaborative (DMHEC) was formed to begin to meet this need. The contributing institutions to the DMHEC are the University of Iowa, Iowa State University, the University of Northern Iowa, Drake University, Grand View College, Simpson College, and Des Moines Area Community College. As the Collaborative grows in its course offerings it is inviting other institutions and businesses to join its increasing efforts to build better families, organizations, and community through education and knowledge.

The DMHEC building program seeks to provide quality higher education courses and training programs that will help organizations to reach their professional and educational goals. They feel this will benefit the greater Des Moines community. The building will be a hub for educational opportunities with future considerations for an insurance institute and a language learning center.

The Collaborative offers easily accessible courses, with its location as well as time schedule. The vision for the future of the DMHEC is to provide a learning center where working professionals have college course and professional training opportunities. Currently the DMHEC is located on the 8th floor of the Pioneer Hi-Bred building at Capitol Square.

The DMHEC is working on a capital campaign to raise $7 million for a new, state of the art, flexible facility to accommodate its ever-increasing educational needs. The building, designed by HLKB architects in Des Moines, will be constructed as part of the Western Gateway Project of downtown Des Moines. The Western Gateway is located between 9th and 18th Streets and Locust and Grand Avenues. It demarks an entrance to the city center from the west (see Figures 2 and 3).
In 1997 it was proposed that the city, in conjunction with the Des Moines Development Corporation (DMDC), undertake a comprehensive structural and financial feasibility study of the architecturally/historically significant properties located within the Western Gateway. This study would focus on the Masonic Temple building at 10th and Locust, the adjoining American Institute of Business building, the Arlington and Hallett Apartment buildings, the Kingston Apartment building, and the Aramark building among others. The study determined whether these buildings had architectural or historical significance, could be restored, the expected cost of restoration, and the economic feasibility of commerce that may be associated with the buildings within the Gateway project. In addition, the city identified the extent to which public or private funds would be needed to subsidize the restoration.

The City Council received the final report and recommendation of the Steering Committee for a park-like system of open spaces and buildings called the Western Gateway.
Figure 2: Diagram of Western Gateway

Figure 3: Aerial photo of Western Gateway
on May 19, 1997. This report was referred to the Planning and Zoning Commission, Park Board, Architectural Advisory Committee, Urban Renewal Board, Library Board, Historic District Commission, Skywalk Commission, and the Neighborhood Advisory Board. Affected tenants and property owners discussed the report with city officials.

On May 4, 1998, the City Council approved the Gateway project and established a funding package, which included funding sources from the City of Des Moines, Des Moines Development Corporation (DMDC), and additional sources to be identified by the DMDC. On September 14, 1998, the City Council approved a series of public actions designed to initiate the implementation of the project. A partnership between the city of Des Moines and DMDC conducted interviews with occupants and businesses, who were afforded benefits for their relocations, with other future considerations. Next, a Memorandum of Understanding (MOU) was prepared which established the respective responsibilities of the city and DMDC, and formed the basis for the continued cooperative effort.

A program was developed for the long-term use of the Western Gateway which includes well developed open spaces, streetscape improvements, public uses and attractions, and “appropriate development which supports and complements the Western Gateway design.” The Western Gateway design would serve the entire community, be a “successful people place”, and provide an environment that attracts major development adjacent to the Gateway.

Figure 4: Schematic diagram of Western Gateway project
Some of the other goals set at this time were: a powerful attraction for high quality, tax producing economic development around the Gateway, long-term durability, maximization of public and private resources, generating an acceptable return on investment, creating highly effective public (and private) spaces that attract people from the entire community, and providing flexibility for decisions on future buildings.

The first planning for the Gateway established an axis running east and west, between the Meredith and Equitable buildings. This idea became less prominent, however, as different proposals for building restoration came in. Also, David Chipperfield’s Des Moines Public Library design dictates outdoor spaces that do not follow the original axis (see Figure 4). Chipperfield was selected to design the library, also a part of the Gateway project.

As of April 1999, the Masonic Temple was tentatively to be restored as well as the Arlington and Hallett Apartments.

As late as October of 2000, one concept plan showed the pattern of development if the Masonic Temple was rehabilitated; the other concept plan showed the pattern of development if the Masonic Temple was not retained. This plan did not prescribe details but established the location of major elements in the five-block area and their relationship to each other. Major elements included building pad locations and locations of major landscape features such as the signature fountains. Use of open space was not definitely established; these details would be developed through subsequent programming phases.

The Western Gateway goals and plans were the result of a five-month process. Input from town meetings, focus groups, and downtown stakeholders were used to develop the plans. Major uses and their locations in the Western Gateway were established within a theme of life long learning.

Landscaping and open space details were to be determined during the programming of the project. In addition, the plan did not dictate the form or materials of the buildings.

Surrounding streetscapes of the Gateway would be improved with landscaping,
more parking, more pedestrian friendly sidewalks, metal halide streetlights, and allocations for public art. In fact, the project has been allotted $175,000 from the Capitol Improvement Fund to produce public art pieces throughout the open spaces.

The Western Gateway Project is just one of several projects in downtown Des Moines aimed at urban renewal. Visions of urban renewal include well-developed open spaces, pedestrian-friendly environments, streetscape improvements, building renovation, public attractions, and compatible developments such as specialty retail, restaurants, and hotels. Creating an environment that encourages economic growth, through catalytic projects that jump-start others, is a major goal. There is an emphasis on diverse, mixed-use buildings.

Both in scale and in speed, the urban renewal plans are an unprecedented attempt to link the eastern and western portions of downtown. The only other master planning done was Beaux-Arts programming along the Des Moines River in the 1970’s and ad hoc brainstorming in the 1970’s and early 1980’s relating to the Greater Des Moines Civic Center. The current plans are about creating a vision through an effective methodology. The leading groups are the downtown businesses; they are envisioning what their city might be.

Some of the urban renewal plans include the Eastern Gateway, or Capitol Gateway East, the East Village Block, Court Avenue, and the Principal Riverwalk. Each one has different goals, but are united in their attempt to revitalize the urban core.

Whereas the Western Gateway’s purpose is to entice major corporate investments through a highly attractive public amenity, the Eastern Gateway combines building restoration, new construction, and streetscape improvements to strengthen the neighborhood and link downtown to the state capitol. The Eastern project sets the course for revitalization by planning thriving, diverse neighborhoods that rid the area of its negative perceptions. Several of the projects include Locust Street improvement and reconnecting Locust Street with the capitol building, city hall parking lot and plaza, the capitol building’s terraces, including the Hall of Pride project, a new state parking facility, and a revitalization district
centered on East 5th Street and Locust Avenue.

The East Village Block project wishes to further the emphasis of the Eastern Gateway, by changing perceptions of the Eastern Village through providing a clear, physical framework for both public and private investments. Profitable businesses will be established within the framework of a diverse and cultural neighborhood by diminishing the level of risk involved investing in this area.

Court Avenue’s project goals have a major retail and entertainment emphasis. The project attempts to rejuvenate the area by establishing a mixed-use neighborhood where housing is a critical component. People’s presence 24 hours a day creates a need for the desired retail and entertainment commerce.

The Principal Organization’s plans for the Des Moines Riverwalk aim to make it the hub of all Des Moines activity. A riverwalk would serve as the center from which all the other urban renewal projects extended.

The Western Gateway, in which the DMHEC building will be constructed, is located between Grand Avenue and Locust Avenue, from 9th to 18th Streets. The Meredith Corporation and Equitable buildings are bookends to the project on the west and east, respectively. The newly completed (2002) 468,000 square foot Allied Insurance building anchors the south edge, with other 250,000 plus square foot projects in the works on the south and north.

In some way the Gateway is a kind of first impression of the vitality of downtown Des Moines, and a reflection of the success of the other urban renewal projects. It may be a filter through which the other viewed, as well as judged. It’s success increases the others’ chances at being successful.

Part of the Western Gateway’s purpose is to create a “natural” extension of the downtown core that serves as a highly attractive public amenity. Some of the desired economic effects of the Western Gateway are an added tax base, new and retained jobs,
and long term vitality for the inner-city. Its goal is to revitalize the entrance to the city. “A memorable entrance to the downtown core” is how the Gateway Steering Committee has described the project. The product of the specific buildings in the Gateway should be better than the sum of the ingredients. The Gateway should be a “system of spaces, structures, and inhabitants rather than a series of unrelated buildings and streets.” This means there should be a continuity of architecture and a continuity of perceptions for the public to easily understand the spaces and their functions. Each building cannot fend for itself.

But there may be more to it than just being a public amenity and an investment catalyst. As Wayne Attoe and Donn Logan have stated,

“An urban catalyst has a greater purpose than to solve a functional problem, or create an investment, or provide an amenity. A catalyst is an urban element that is shaped by the city and then, in turn, shapes its context. Its purpose is the incremental, continuous regeneration of the urban fabric. The important point is that the catalyst is not a single end product but an element that impels and guides subsequent development.”

It is important that the project be able to change, just as the catalyst for a chemical reaction may change in its molecular structure. This could be achieved with the project’s ability to mold and be molded, and avoiding a single, underlying nature. “Any design used for part of a city should be able to be modified and extended into an ever-widening area.”

A social goal of the Gateway is to improve the quality of life for central Iowans. This takes precedence over Des Moines becoming a tourist destination. At a 1990 Urban Land Institute seminar on creating great city centers, architect Stan Eckstut said, “It is originality and distinctiveness that should be highlighted. Don’t do attractions. Make an authentic place that attracts the locals. If they come the tourists will follow….Create spectacular places, not spectacular architecture. It is authentic places that attract people.”

After some deliberation, it was determined that only two buildings would be retained and restored as part of the Western Gateway project. One is the Masonic Temple, which is
located on the corner of Locust and 10th and houses the Temple for the Performing Arts (see Figure 1 and 4). The other is the Arlington and Hallett Apartments on the corner of Locust and 13th.

These two structures join the new 110,000 square foot Des Moines Public Library and the DMHEC, as the only buildings in the Gateway project from 10th to 15th streets. The Library, scheduled for construction to begin in the spring of 2003, is designed by David Chipperfield Architects. It has a gardened, park-like entrance off of Grand Avenue, with a winter garden approach for the colder months. Windows are designed to bring the park into the library and vice versa. The Des Moines Public Library is supposed to indicate a concrete vision of what the Western Gateway is to become, while connecting downtown with the Gateway (see Figures 5-10).

Methods used in the design process of the DMHEC building do not necessarily
Figure 6: Rendering of Des Moines Public Library

Gateway Park View

Model viewed from 10th Street side

Figs. 7-10: Model Photos of Des Moines Public Library
have to follow the design methods of the surrounding projects within the Gateway. The Gateway project will come to fruition on a longer timeline than can be handled by one, single design process. Some of the design factors that were considered for the library or the Allied Insurance building for example, will have changed. Also, even with its adjacency to these other buildings, slight variations in site factors may be the cause of different design parameters.

The relationship between the DMHEC building and the library is one of form and vision within the Western Gateway project. How does the DMHEC building answer to the form of the Des Moines Public Library? Also, how does the DMHEC building’s form answer to the intended objectives of the Western Gateway project and the urban core revitalization of the downtown area as a whole? How does an educational building become a “highly attractive public amenity” that will attract corporate investments? How does it go beyond being an amenity and instigate continuous urban renewal?

According to civic goals, the architectural thread between the DMHEC, the Des Moines Public Library, and the park-like setting of the Gateway is “transparency”. The park should be brought into the building and the activities of the building brought out. Someone sitting in the buildings should feel as much a part of the park and the city as someone on a bench outside. Exterior and interior spaces are intertwined. In designing the DMHEC building, there is a unique opportunity to achieve the civic design goals of the Gateway project and the design goals of the DMHEC through transparency. Transparency of materiality will provide architectural continuity at the same time as speaking of the building’s program and function.

One of the DMHEC’s objectives is to become more viewable. This is signified by its move from occupying space in an office high rise to a place of unique scale and prominence in a park setting, and can be furthered by a transparent design in which the programs are truly on display.
The DMHEC building should be transparent, but in a different way than the library is transparent. There should be a consistency of the idea, a downtown project should be “a continuous, unbroken flow of impressions” but it should still speak uniquely of its function.

Relationships of transparent surfaces offer an opportunity for the functionality of the buildings to be expressed to the observer more easily. According to Raymond Curran, an effort should be made to have the functionality of the building easily understood through its form, so that the downtown area is more easily interpreted and the pedestrian traffic has a more meaningful experience. He says, “It is not form in itself that provides meaning in our interpretation. Rather it is the function the form is seen to “perform” and how clear this is to the observer.” An important question to be answered is how the building conveys its function, in order to accomplish the DMHEC’s goal of bringing more people into their educational programs.

Openness in the park will be brought into the DMHEC building, and, at the same time, the activities of the building will be brought out into the park and beyond. Here, the way in which the masses of the building define outdoor and park spaces, should be considered in addition to the transparency of these masses. “The clarity and vigor with which mass and space are resolved set the level of excellence in architectural work….. Architectural form is the point of contact between mass and space.”

The program interaction of the library and the DMHEC building is also a key to the DMHEC project. Its adjacency to the library is about collaboration and shared spaces. There should be a flexible movement toward maximizing the use of both buildings for classes, other meetings, and learning resources. This raises questions about public access and security as well.
The DMHEC program includes:

- about 40,000 square feet
- accommodation of up to 400 people
- 6 professional conference rooms of 12-20 individuals
- 6 classrooms of 20-30 people
- 2 ICN rooms of 40 people each
- a 90-100 person lecture hall
- a 30 person computer lab
- 13 private offices for faculty, trainers, and speakers
- a food service area (for library patrons, public, and students)

Classrooms should all be wired in addition to wireless networking. All classrooms need to be equipped to handle audio/visual, catering, and storage needs. Each space needs to be flexible enough to schedule and set up classroom space for lectures, discussions, computer training, and computer lab use as needed. The office areas must also be very flexible, incorporating private offices for the DMHEC director and support staff.

Classrooms, offices, and community spaces should be pleasant, increasing student productivity and ensuring that the courses offered will be managed efficiently. Extensive use of daylighting will to provide well lit, comfortable spaces. Also, unconfining spaces with transparency providing many unique views of Des Moines and the Gateway park should be provided.

This thesis is a design proposal for the DMHEC building project, taking into account the downtown civic goals of the city of Des Moines relating to the Western Gateway, as well as the specific design constraints placed on the building by the Des Moines Higher Education Collaborative as the client.
Demands on this project are to provide an aesthetic addition that fits into the overall plan of the Western Gateway Project. The DMHEC building should be another link in the project. Each Gateway building should provide cohesiveness by “relating functionally and physically to its neighbor.” Visual continuity should be a major factor. Similar materials, massing, and the spaces between buildings may help to accomplish this. At the same time, variation in design should be encouraged. The design should foster variety and encourage diversity, not just through building uses, but through design and materials.

Facades of the DMHEC should speak somehow of its purpose and defined goal of a place of lifelong learning. At the same time the building becomes somewhat of a public art piece, placed in the center of the Western Gateway’s park-like landscapes between buildings; landscapes that provide open public spaces. The contextually smaller scale of the building, along with its centrality in the Gateway, lends itself to being an architecture that is viewed. The open nature of the landscaping plan makes the DMHEC building very visible from the ground plane as well as from an elevated position inside other, larger buildings.

How does it link the downtown to the incoming people from the west? How does it link the new public library, the Masonic Temple, and the apartment complex to its southwest? How does it link the much larger corporate centers, both physically and economically? How does it link to the library, both architecturally and programmatically? The building should fit into the goals and architecture of the Western Gateway Project, the DMHEC, and fulfill its role as a public art piece.

The architecture of the building, along with its prevalent location, should be attractive, meaning a desirable place to spend time and to study, drawing people that otherwise would not have explored higher education programs, or even known the DMHEC existed. Also, according to the overall civic goals of the project, it needs to be attractive in order to induce corporate investments in the area as well as bolster the programs offered by the DMHEC, both current and future.
The building should function well at close range. It should be comfortable at a human scale. At the same time it needs to be a recognizable public marker from afar. Approach is a major factor, from its distant, perspective role as a visual entry piece, to experiencing the building at a human, entry-level scale. According to Edmund Bacon, close attention must be paid to “how it meets the sky and the ground, points in space, recession planes, depth, and its relationship to human scales.” It should embrace the street, inviting people in and encouraging in and out movement.

Gateway architecture needs to be within the local urban design framework. Wayne Attoe and Donn Logan explained, “It requires appropriate ‘downtown’ architecture, not a contrived atmosphere or generic or suburban design.” The specific consistencies of downtown Des Moines architecture need to be considered. Des Moines’ distinctive downtown identities need to be accentuated, especially elements that reflect the past and show how the downtown formed. Desirable architectural elements should be recognized and repeated, and the undesirable replaced.

This project is an opportunity to be inventive with transparent materials and the way they bring out the program and structure of a building that accepts its role in a greater urban renewal context, but at the same time defines itself as a unique structure to be viewed in the context of a park and city, as an attraction for educating people and bolstering economy.
Design processes began with the movement of people and how they would encounter the building. I laid out different spatial schemes in order to determine where entrances should be, how architectural form would guide people to these entrances, and then how people would be directed through the building. The main reason for starting here was the DMHEC’s desire for easy accessibility at a human level because the majority of learning center students, with the exception of street-side parking, will be walking from many different approach angles.

Since the DMHEC is central to the park, and the fact that people will arrive by walking suggests several entrances, each one a front or main entrance. It follows that the building would not have a backside. There will still be a service entrance, but this will have to be designed into one of the accessible façades. The notion that the building does not
have a backside compliments the notion of readily viewable architecture and programmatic function, regardless of a ground-level or an elevated viewpoint from a surrounding building.

For pedestrians there should be three entrances, making the building accessible from three directions. People that are in the park to the south and the Allied building need a readable entry that invites them in. Also, people walking east on Grand Avenue will be presented with an entrance into a double-loaded atrium space. People coming east on Locust

Figure 12: Diagram of traffic movement

Figure 13: Entrance/spatial diagram
by vehicle would be entering the city core from the airport, residences of old Des Moines, or
the western suburbs. People traveling east by walking would be coming from the Meredith
Corporation building and also from the hospital, as well as other near west side locations.

The entrance from the east provides the accessibility for the people coming from the
library. This entrance needs to interact closely with the library, because of the collaboration
of programs between the two buildings. Library patrons may use the DMHEC’s cafe, or the
atrium for studying. Students at the DMHEC may use the library for research or study for
the program they’re enrolled in. Also coming from the east are people from 801 Grand as
well as the rest of downtown. This entrance will most likely be the most traveled.

The entrances should access a central core, or atrium to provide unity and
collaboration of programs, as well as internal readability. It also would provide community
study and semi-private conference space, and a cafe. My objective was to induce gathering
spaces and possibly even “interior passers-by” in the atrium space. I wanted to create a hub
of activity, both related directly to the programs in the building and also a sort of interior
streetscape belonging to the city. People may pass through to warm up in colder months, or
meet friends after attending class, or studying at the library.

The narrow site along an east-west axis provided an opportunity to stretch the
building on that axis, affording energy benefits. Southern sun exposure is increased and
enhances daylighting opportunities. (Note: The site is skewed at 16 degrees from true north-
south, but heat gain opportunities are maximized within 15 degrees of true south.) The
problem, however, is that it is hard to balance volumes around a centralized community space
when the site is long and thin. In the first space analysis (see Figure 14), the atrium gets
moved to the northeast, accommodating only one main entrance from that direction. The
atrium and classrooms are not close enough in proximity. The second-floor space analysis
ostacizes the classroom wing from the community of the learning center.
The next iteration (see Figure 15) started to explore distributing the atrium space more evenly. This method was desirable because it showed potential for pockets of semi-public space for collaboration and study, as well as providing more entry options. Now the entrances could be oriented in a manner that satisfied more pedestrian-friendly objectives. Also, this iteration turned the classrooms due south to maximize solar gain. The idea that the classrooms would be skewed from the city grid was quickly disregarded. Maintaining the pattern of the city was more important than increasing solar exposure.
The following space analysis (see Figure 16) started to bring up the role of the auditorium. I placed the auditorium in the southeast corner, dividing the east and south entrances. The auditorium should also feed into the atrium, for ease of travel to the café and to the semi-private study spaces, for meetings in the auditorium breaking off into smaller groups. This space analysis again did not solve the issue of the classrooms extending like an appendage from the central core.

Figure 16: Third spatial layout

Figure 17: Site model of third spatial layout
Next I made massing models of the designated spaces (see Figures 18 and 19). Volumes were sheared apart from each other with spaces extruded in the process. The atrium became elongated, which could expose more of the spaces to the exterior through several different modes of transparent hanging curtain walls that would increase exterior vision and daylighting. Playing with these volumes also allowed separate materiality to be assigned, articulating their relationship to each other and to the site. The volumes began to define their functionality with their height, shape, and location in plan, and not just their materiality. This would give direction to the pedestrian traffic, a kind of psychological accessibility.

Figure 18: Massing model
Transparency could be achieved through glass and a perforated skin, not as a clean, sleek surface, but having more of a sequence of patterns, breaking up the facade. This, and the sheared volumes, would create an intense mix of different viewpoints within a range of transparency, as opposed to the steady-state transparency of the library. The transparency would bring the activities of the learning center out into the city.

The lightness afforded by the transparency of the building provides the opportunity to accentuate the building’s structure. Next I sketched the massing model shown in Figure 18 with its materiality and structure playing a major role (see Figures 20-22).
Figure 20: Sketch, view looking northwest

Figs. 21, 22: Sketches, looking northeast and southeast, respectively
Chapter 4. Final Design

Figure 35: Sketch of Western Gateway, looking west

Figure 36: Sketch of Western Gateway, looking northwest

Figure 37: Sketch of DMHEC, looking southwest on Grand
Figure 23: First floor plan
A. Classrooms
B. Conference Rooms
C. Auditorium
D. Atrium
E. Faculty/Lecturer Offices
F. Cafe/Service
G. ICN Classroom
H. Computer Lab
The three entrances (see Figures 23 and 24) each funnel people to the center atrium with volumes that embrace the spaces immediately outside the doors. South and east entrances place people directly into the main atrium, while the northwest entrance brings people through a double loaded sub-atrium into the main atrium. The elevator and stair to the second level are central to the main atrium.

The auditorium feeds the atrium and has its own set of restrooms. There are seven rows of fixed stadium-style seating for 95 people, sloping down toward the front. A projector room is located in the back, oriented toward a large screen located at the focal point of the seating. Lighting in the auditorium is easily controlled for a variety of purposes, including computer presentations and movies.

The southwest section of the learning center has wired classrooms and two conference rooms, one containing a side room which houses servers and computer equipment for the classrooms. There are faculty/lecturer offices across the atrium to the north. Walls of these offices facing the atrium are frosted glass.

The northeast section of the learning center first floor has restrooms and a small café service area that can be modified to move large equipment through the cafe, into the atrium, and down the elevator to the mechanical room below. Also, there is an ICN room and computer lab located where they can be prominently viewed from the exterior on the corner of 12th Street and Grand Avenue. Throughout the atrium there are semi-private study and collaboration spaces on the first and second levels.

On the second level, southwest section there are three more wired classrooms and two conference rooms with more faculty/lecturer offices across the atrium. The northeast section has director and administrative offices and restrooms as well as an ICN classroom, another flexible classroom, and conference room.

Each classroom (see Figures 28 and 29) contains a Smartboard flanked by two dry-erase boards on each side. An automated drop-down projection screen for larger
Figs. 28, 29: Classroom and conference room details, respectively
presentations may be utilized. There are ceiling-mounted projectors that can display computer (including Smartboard), DVD, VCR, and Elmo projection graphics. Equipment for the technology is housed in the lecturer’s podium, and operated by remote control. Each classroom is equipped with internet access at each desk space, as well as wireless internet service. Networking cords are contained in channels set flush in the concrete floor which are covered by a hard plastic kick-plate.

The design is an interplay of shearing volumes. Each of the volumes that are southfacing and glazed will be shaded by horizontal louvers. The volumes are glazed or glazed with fritted copper skin. The two main rectangular volumes have thirty foot bays between columns. The interplay of form and material speaks of the interplay of this
Figure 34: Schematic Diagram of Western Gateway
building and the city. The shearing nature articulates the program and is a breakdown of the surrounding city scale.

Some of Bernhard Tschumi’s thoughts served as a precedent for my design. When talking of his design for the National Studio for Contemporary Arts in Tourcoing, France, he says,

"The complex is intended to be precise and rational in its conception, yet richly poetic in its spatial diversity. The great steel roof, traversed by “clouds” of light, floats above the old tiled roofs, creating a new plane of reference, an artificial sky. Not only does this huge roof generate the new poetic space of the “in-between”, but it provides a pragmatic solution to problems of climate, energy, and information. The scale and presence of this horizontal space relativizes the concepts of inside and outside in relation to the old building. The “in-between” itself becomes a concept, condensing different fields of investigation: teaching, performance, and research; art and cinema; music and image. This multi-functional space, which is intended to “cover” the event is one possible model for the new “urban” spaces of the 21st century."\[^{19}\]
The form of the auditorium draws and directs people to the east and south entrances. It also breaks the rectangular volume nature of the building, terminating the southeast corner and addressing 12th street boldly. The acute angle holds the sightline for an observer.

Figure 38-40: Model photos of DMHEC
on the eastern or southern side of the building. The form also provides a corollary to the termination of the above louvers. However, the two were formed together, one was not the result of the other.

The atrium (see Figures 41 and 42) provides several semi-private spaces for learning center students, library users, and Gateway visitors to collaborate, sit, and converse. It fosters a community atmosphere in which gathering occurs. Multiple, glazed extrusions
into the park create collaboration and gathering space for students and visitors. Pedestrians traveling from the library going west or in the opposite direction may even pass through the DMHEC, especially in the colder winter months, rather than on the street sidewalks. This means greater exposure for the programs of the learning center. The atrium’s aim is to provide an authentic, local place that visitors can lay claim to.

I designed each facade to be frontal. No side would be considered the rear and no one entering will think they are using a back door. The building’s differing, yet related, facades create different, but related, impressions as they are viewed from many angles. Due to this,
and the aforementioned smaller scale, it is a public art piece. The proportions such as the demarked column lines and the patterns such as the five by nine foot extruded aluminum frames, or the horizontality of the copper skin on the north facade and the horizontality of the light passing through the adjustable shading louvers on the south are consistent throughout. However, someone driving past on Grand will have a much different experience than the person walking through the park to the south. Differing impressions illustrate the DMHEC's ability to mold and be molded, and avoid a single, underlying nature. The facades and the system of spaces they surround, create a diverse and dynamic environment.

Transparency provides the observer with a greater sense of the functionality and circulation of the DMHEC. The building breathes people and activities into and out of the park and city.

In order to maintain a continuous flow of impressions within the Gateway, the color of copper skin and granite panels fastened to the auditorium compliment the library's copper-like color. The mass of the auditorium reflects more massive surrounding structures and defines a strong edge for the DMHEC. General continuity in building height is maintained from the library to the DMHEC. The form of the auditorium mirrors the break in city pattern that the library performs, while the remaining form and column grid reflects the typical, gridded city structure, such as the Masonic Temple or the Arlington and Hallett apartments.

However, the DMHEC breaks from the library in its proportioned, or sectioned

Figure 42: DMHEC, looking northwest
Figure 43-47: Model photos of DMHEC
patterns, rather than an unbroken surface. Whereas the library’s long, sleek design causes the building to be experienced as a whole, the DMHEC is experienced in parts adding up to a whole.

One of the major design considerations was how the DMHEC as part of the Western Gateway would influence the perception of downtown Des Moines as visitors arrived from the west, for example, coming from the airport. The DMHEC is part of what will form the first impressions of downtown Des Moines. Just as the building was shaped by its environment, it will contribute to shaping the environment of the city core, and, in this sense, perceptions of it. Obviously, a first impression is worth nothing if there is nothing substantial
to back it up, but, as stated in Chapter 1, efforts are being made on several fronts to increase the vitality of the downtown area through several urban renewal projects.

The readability of the DMHEC, in collaboration with the library, will send a message that this is an area that is serious about education. Not just institutions such as universities, but places of continued education, or lifelong learning. Also, by this same token, the DMHEC will give the impression that the area is cutting edge in its educational offerings, and is interested in technological and economic development.

The park setting will impress upon the visitor that open space and recreation, in addition to well planned architecture in a pleasant environment, are priorities for the city. Transparency of architecture creates indoor spaces closely connected with the outdoor, creating positive work atmospheres, bolstering productivity and the satisfaction of its population.

The sum of all these things is an increased quality of life for central Iowans, and the visitor’s perception of that quality of life is recognized, and, hopefully, shared with people from other locales. Since much of economic development depends on the perception of the area by potential investors, this will help to meet the goal of an increased tax base and the Gateway being a catalyst of corporate investment in the area. As the DMHEC fosters a quality, community atmosphere, the attraction of businesses to the surrounding areas will only increase. The DMHEC helps the Western Gateway promise a return on corporate investment and create a “highly attractive public amenity”.

Figure 49: Looking west

Figure 50: Looking east
Chapter 5. Construction and Materials

I started the construction sequence with excavation for the square concrete shallow foundations, placed four feet below grade to accommodate freeze/thaw cycles. Steel columns are attached at grade. The below grade mechanical room is excavated (see Figure 51) and the concrete walls are poured, including the elevator walls and elevator pit.

Figure 51

The next element I added (see Figure 52) was the concrete floor slab on grade. Also, the reinforced concrete walls of the auditorium are poured, along with the risers for the auditorium seating, and the remaining walls of the elevator. The columns are put in place in thirty by thirty foot bays on the northeast and southwest sections, fifteen by thirty foot bays in the atrium corridors, and eighteen by thirty foot bays in the central atrium.

Figure 52
Now the girders are fastened into place (see Figure 53). I provided concentric braced frames in two bays on a north-south axis and in two bays on an east-west axis, both in the northeast and southwest sections of the building. These transfer lateral wind loads, and give the building’s center of gravity a more central location, which will reduce the external moment on the entire structure caused by the lateral loads.

![Figure 53](image1)

Next I added the beams and roof joists (see Figure 54). These will support the structural steel deck which underlies the four-inch concrete topping for the second floor level and the insulation and ballast for the roof level.

![Figure 54](image2)
Next in the construction sequence is the roof system (see Figure 55). It consists of corrugated structural steel decking with vapor barrier and five inches of rigid insulation, followed by a protective barrier, bur membrane, and light-colored limestone ballast. The light color will help to reduce heat gain in the summer. The four-inch concrete second level floor is poured.

![Figure 55](image)

Now I added the roof trusses (see Figure 56). They will support an adjustable louver system to shade the glazed southern facades in the summer. The roof trusses are fastened to the tops of the columns that protrude through the roof system.

![Figure 56](image)
The next step in the process was to add the structural glazing and curtain wall glazing systems to close off the interior (see Figure 57). The glazing is structural where it spans the atrium ceilings. Here the aluminum mullions become a structural web, holding up the VisionWall system. The vertical glazing components are curtain VisionWall systems.

![Figure 57](image)

VisionWall (see Figure 58) is a one-inch thick glazing system with a layer of clear interior glass with low-E coating, suspended optically clear films in the cavity, and greyish-blue tinted, reflective glass on the exterior. The three air barriers have an R-value of 6.0. The mullions are made of extruded aluminum, which surrounds a polyamide thermal break to provide a barrier for air passage. It reduces total HVAC costs, eliminates the need for

![Figure 58: Cross-section of VisionWall system](image)
perimeter heating, allows for larger glass areas and spans, increases condensation resistance, provides low shading coefficients, improves sound attenuation, and it increases occupant comfort and productivity.²⁰

It has been used extensively throughout the Des Moines area, including the EMC building, where it was estimated that the elimination of a perimeter heating system and a smaller mechanical system in general saved $400,000 in construction.

Figure 59: EMC Building, downtown Des Moines

Next are the adjustable shading louvers (see Figure 60). As shown in Figure 61 and 62, these provide complete shade to the classrooms when the sun is at its greatest azimuth, (71 degrees on the summer solstice), and allow the exposed concrete floors to absorb the
Figure 61: Shading diagram, summer solstice sun at 71 degree azimuth

Figure 62: Shading diagram, winter solstice sun at 36 degree azimuth
sun’s rays in winter, thereby acting as a thermal heat sink, radiating the heat gained from the sun throughout the building.

I added the one-inch copper skin to the northeast section of the building as well as the faculty/lecturer offices. The copper is suspended by ties into the girders at the roof and floor levels. It has one-inch tall slits running laterally along its length. The color was chosen to provide continuity in the Gateway’s architecture. The slitted pattern creates light patterns, allows the activities in the building to be brought out into the exterior and vice versa, and makes a bold expression toward Grand Avenue, where much of the auto traffic will enter the city.

In order to break up the north façade along Grand, I placed vertical screens on the column line. These accentuate the pattern of the rest of the building as well as provide a place for advertisement of DMHEC programs or display of public art that will be viewed by
those entering the city on Grand Avenue.

I designed five foot by nine foot granite panels to be fastened to ties set in the concrete walls of the auditorium. They are in the pattern of the extruded aluminum VisionWall system, rotated horizontally. The panels were chosen to accentuate the pattern of the building, and also to provide a more massive edge, that helps solidify and define the auditorium as it anchors the building, and correlates to some of the more massive, local architecture.

On the following three pages, Figures 64, 65, and 66 show detailed, exterior wall sections. The first section is through the curtain VisionWall system on the south facade. The second section is through the reinforced concrete and granite panel wall of the auditorium. The third is through the curtain VisionWall and copper skin system on the north facade.
Figure 64: Wall detail 1
Figure 65: Wall detail 2
Figure 66: Wall detail 3
Chapter 6. Conclusion

This project raises a number of theoretical questions. These have not been fully explored, but accept this conclusion as a beginning to addressing some of these questions.

In creating a vital space, this project derives pieces from four urban renewal theories, used primarily in Europe and the United States. They are functionalist, formalist, humanist, and systemic theories. But the Gateway project also diverges from these theories in several areas, and attempts to become catalytic. Attoe and Logan explain it is necessary for a project to become a catalyst to complete any one or combination of these theories.24

Functionalism calls for harmonious growth in each portion of the city.25 Growth between downtown Des Moines and the booming western suburbs can be equalized if the desired reactions of the Gateway are achieved. However, it is doubtful that equilibrium between downtown and the suburbs can be achieved in the near future. The renewal projects downtown must unite in vision and effort, not to oppose suburban growth, but to compliment it and limit its excesses.

In order to come into equilibrium with the suburbs, the suburb cannot simply be copied. The next question is if the Gateway’s spaces are authentic, downtown spaces. What makes this project uniquely downtown is the way the function and flow of people and activities will intersect, in a much more concentrated and diversified way than in the suburbs.

Formalism is about seeing a collective pattern, even as each person has their individual interpretations of architecture.26 Aldo Rossi, when speaking about the Palazzo della Ragione in Padua, states,

“One is struck by the multiplicity of functions that a building of this type (Palazzo della Ragione in Padua) can contain over time and how these functions are entirely independent of the form. At the same time, it is precisely the form that impresses us; we live it and experience it, and in turn it structures the city.”27
Formalism is about an archetypal notion of what urban architectural form should be. Some common notions are civic axes, or using the grid for proportioning and governing form. As I stated in chapters 1 and 2, these notions played a role in forming the DMHEC's spaces, besides the auditorium. These notions most definitely played a role in the outdoor park spaces, where an axis was defined, with entities balanced on each side. But, the role of a rigid formalism was challenged greatly, starting with Chipperfield's organic library design. Once a concrete vision of Chipperfield's library was presented, notions of formalism were taken in a new direction. My design of the DMHEC follows this new direction with its differing volume heights, intersecting planes, and the form of the auditorium. It will be interesting to see the influence this challenge has on subsequent projects adjacent to the Gateway, as well as in other urban renewal areas. In this way, the Gateway project may take part in shaping its surroundings.

Humanist theory played a role in the early stages of the Gateway's design. Design was based on the ease with which people encounter the structures and open spaces. It also provides programming beneficial to individuals' well-being. However, a staple of humanist theory is that people are able to mold their environment, and it is questionable to what extent this will happen in the Gateway. My only answer in the DMHEC design is some of the semi-private spaces in the atrium, that people may be able to lay claim to them. In comparison with the suburbs, where home ownership allows for more choices in ways to live and manipulate one's environment, people downtown have fewer options to make and to mold. According to Herman Hertzberger, "The more somebody is personally able to influence his surroundings, the more involved and attentive he becomes, and also the more likely he will be to give them his love and care." If humanist theory is adopted, a further look into imaginative ways people can manipulate their surroundings is required.

Systemic theories imply a consistency of impressions elicited by architecture, and a continuous flow and growth of traffic and people, both internally and externally. Urban
renewal should be comprehensible with clarity of organization. In the DMHEC, library, and park, close attention was paid to the flow of people. People will move easily from one function to another, and move freely in the park.

There were efforts made in the design of the DMHEC to foster a continuous flow of impressions within the Gateway, as in the transparency. But there is somewhat of a jump of impression from the city to the Gateway project itself, starting at the library. I think this is justified; the city is moving in a new direction, and the perceptions or impressions people have of the Western Gateway will be positive. The Gateway is uniquely defined, and will be recognized accordingly.

Finally, and in conjunction with civic goals, the Gateway project will become a catalyst for growth, not necessarily by its forms or spaces, but primarily by providing a model for subsequent projects. Projects where close attention is paid to creating a mixed, diversified, and people-friendly convergence point. Projects where there is a continued "sequence of limited, achievable visions, each with the power to kindle and condition other achievable visions."

The sum of the civic effort relating to the DMHEC and the Western Gateway Project is vitality. Vitality, or renewed energy in the urban core due to the Gateway, although also meant to impress visitors, is specifically about inspiring local people. Inspiring people to enjoy learning, inspiring people to become better workers, inspiring people to think more critically, to have higher goals set for themselves and their businesses, and inspiring people to make Des Moines a better home for their families and descendents.

Architecture in the Western Gateway can provide vitality and inspiration, but only as part of a complete system. Can architecture create urban vitality? I think it can, in conjunction with the proper programs and entertainment, run and performed by experienced and talented people, and outdoor space planning contributing to a healthy environment within an urban context. Bernhard Tschumi says, "Architecture has always been as much about the
event that takes place in a space as the space itself.”21 I think a mistake that could be made in this project would be to judge the architecture solely on if the Western Gateway becomes a successful people place or not. Aesthetic and functional qualities of Gateway architecture could be extremely powerful contributors to the success of the place, but will not determine success solely on their own accord.

The Gateway project has tremendous potential to be successful for several reasons. Urban places should be varied to enhance the activities associated with them. Mixed activities are basic to cities.22 With performing arts, educational opportunities for children and adults, and housing all present in the Gateway alone, along with major corporate centers skirting the park, mixed use opportunities are plentiful. The Gateway is a confluence of multiple activities and people, and that is imperative to its success. Attoe and Logan, and Tschumi agree, we should not concentrate on masterplans, but on incremental developments. “No more locating in a fixed place, but a new heterotopia. That is what our cities are striving towards, and here we architects must help them by intensifying the rich collision of events and spaces.”23

The “rich collision of events and spaces” is the main notion from this project that would affect me in future, similar projects. I would start with an emphasis on making a rich, dynamic environment, and let that dictate architectural form and material.
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