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How Urban Design can Improve Qatar's Program for the 2022 World Cup of Soccer

Two highly successful projects provide insight into the discipline of Urban Design which improves planning and enhances development of mega projects. This article shares Mr. Gogulski's experience with Disney's master planning organization, WED Enterprises during construction of the Contemporary Resort Hotel at Orlando, Florida, and as Development Manager for Kaiser Engineers on Boston's Southwest Corridor. Both projects faced similar challenges to Qatar's, and won several awards.

Qatar's plans to host the 2022 World Cup of Soccer requires moving massive amounts of people to the nine new Stadiums plus three that are to be renovated. The complex of infrastructure, a 320 km rail system, 80,000 hotel rooms, a 1.4 billion Sports City stadium, support facilities, a new causeway, and transportation to service both the public and employees certainly breaks the mold of anything like it in the world. It also creates an enormous risk in the movement of people, cars, busses, trucks and support vehicles to and from downtown Doha and surrounding areas.

Two fundamental questions are: (1) What kind of experience will be encountered in 2022 by the public during the opening of this most ambitious project? and (2) When it is all over and the last visitor leaves, how many will want to come back to Doha to reside permanently and raise a family?

To answer these questions, one needs to examine facts from the perspective of similar projects. This article shares Mr. Gogulski's experience from the opening of DisneyWorld in Orlando, Florida together with the planning of Boston's Southwest Corridor, then compares both with Qatar's plans for the opening of the 2022 World Cup of Soccer. The approach suggested in this paper is nothing more or less than an attempt to apply the wisdom and experience of the past to the problems of Qatar today.

Qatar is Unique

Qatar is unique among its surrounding neighbors in the Middle East. Qatar's quality of its development is more advanced, its leaders are more open to innovation and new technology. One can argue that there is not much similarity between the two projects in the United States and that of Qatar. That would be correct in the sense that Qatar's development for 2022 is considerably larger in scope; nevertheless, the same principles apply to a planning process that contain the mix of infrastructure with monumental construction. Both DisneyWorld and the Southwest Corridor won numerous awards for excellence of design and planning, Their overall success cannot be denied. The DisneyWorld project speaks for itself. The Southwest Corridor project went much further than Disney: it was awarded the American Society of Civil Engineers Outstanding Civil Engineering Achievement, 1988, the Presidential Design Award by the National Endowment of Arts, and the Award for Urban Design Excellence by the Boston Society of Architects, 1988.

Boston's Southwest Corridor¹

The Southwest Corridor Project is a 1.2 billion dollar combined transportation and urban revitalization project financed by the United States Federal Government, the Commonwealth of Massachusetts, and the City of Boston. Nine new stations, 5 km of combined rail and transit right of way, a new linear park, and 38 bridge crossings are included as part of the project. Roy Mann of Roy Mann Associates, Inc, author of the referenced article below, offers a history of the Southwest Corridor from the perspective of the landscape architect who was part of an Urban Design team. Other members of the Urban Design team include: Charles Hilgenhurst & Associates, Stull and Lee, Inc., and Wallace Floyd, Ellenzweig & Moore.

Mr. Gogulski oversaw the Urban Design team as Development Manager for Kaiser Engineers, the coordinating Engineer in a joint venture with Fay, Spofford and Thorndike, Inc. He coordinated their work among three Section Engineers assigned to the overall design, and was responsible for the issuance of the Urban Design Manual. The Urban Design Manual was prepared by the Urban Design team for use by the Engineers and Architects during the design phase. Massachusetts Bay Transportation Authority, as Owner, did not have the resources for planning and design for a project of this size and scope.

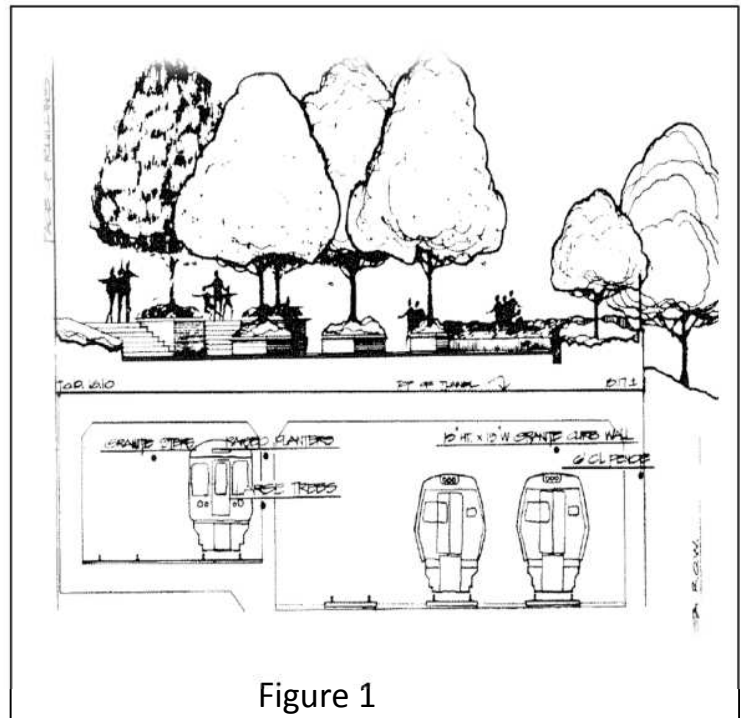


Figure 1

Objectives of the Urban Design Team

The purpose of the Urban Design Team was to establish a design framework for the entire Corridor, and to focus on engineering, architectural and landscape design of the areas between stations. Every area of engineering, including railroad operations, was analyzed by the Urban Design Team. This resulted in innovations which added value and greatly enhanced the project.

One of the objectives of the Urban Design team included the need to integrate the concerns of the communities which shared the infrastructure. They did this by including community groups within the planning process. The planning process involved a series of meetings within the different communities in order to establish trust and build relationships which would support the design. This

¹ Boston's Southwest Corridor: From an Urban Battleground to the Paths of Peace, Roy B. Mann, 1991, Places, College of Environmental Design, University of California – Berkeley; designobserver.com/media/pdf/Bostons_South_1265.pdf

would not be possible without the leadership of a team of professionals who cared more about people than their own interest in promoting their firm. Mr. Gogulski submits that what worked in Boston among the different ethnic groups, young professionals and a diverse mix of residents within five established communities of Boston can also work in Doha. This statement may seem unrealistic, but so was the incomprehensible hostility that occurred at the beginning of the Southwest Corridor planning. Thanks to the leadership of the Urban Design professionals who worked tirelessly to understand both the needs of the community and requirements of the engineers, The Southwest Corridor project accomplished much more in human relationships than it did in technical merit.

Innovative landscaping linked parkland to infrastructure as shown in Figure 1. This was only one of the factors in the success of the Southwest Corridor. What was once a divided and blighted community is now a thriving enterprise of diverse citizens proud of their environment, and interested in keeping the high quality established within the design in which they participated. The following Urban Design elements helped Boston's Southwest Corridor project become one of the most successful in the nation:

Fencing

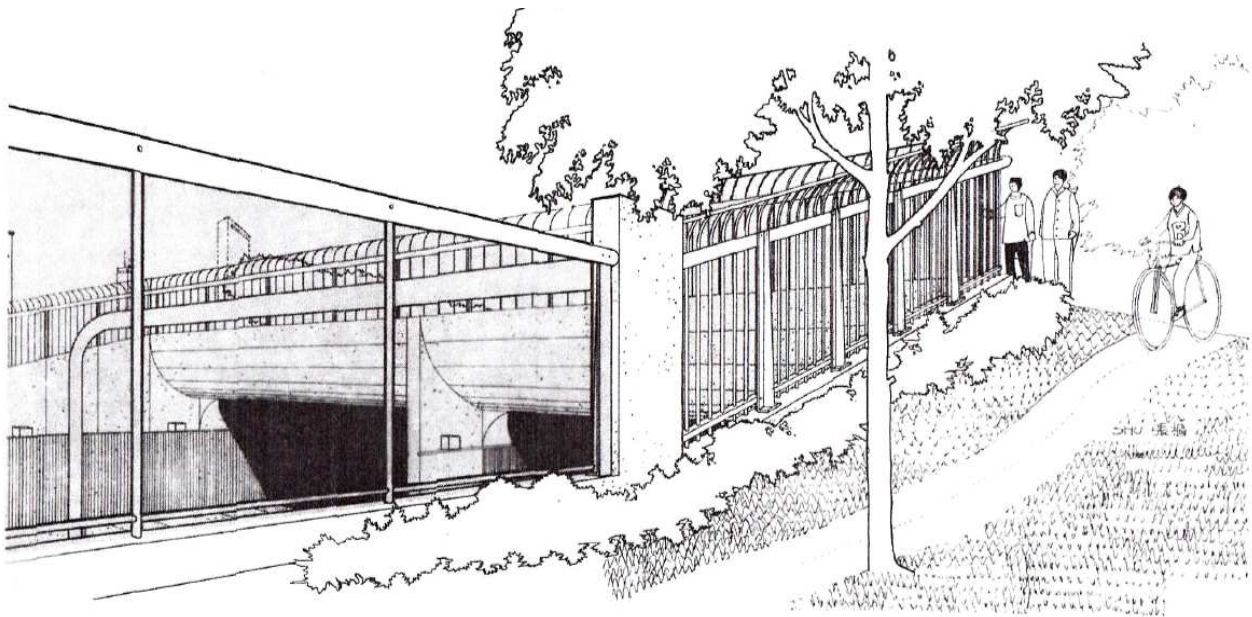


Figure 2

Fencing shown in Figures 2, 3 & 4 indicates typical design criteria included in the Urban Design Manual. Fencing is usually considered an after thought by engineers. This was not true for the Urban Design team. Fencing is a significant visual element that combines bridges with retaining walls which run the length of the corridor. The linkages are critical not only for security, but to achieve a favorable visual impact.

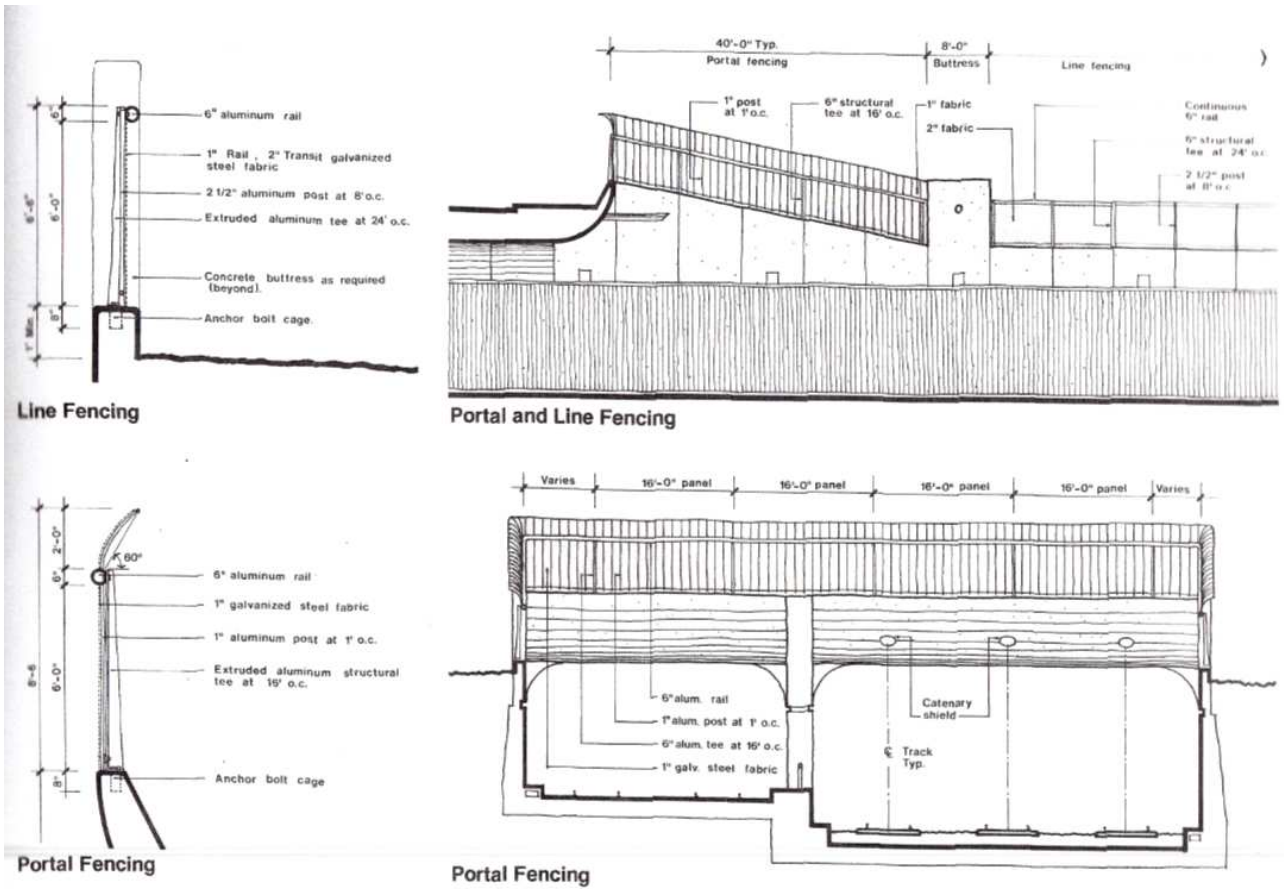
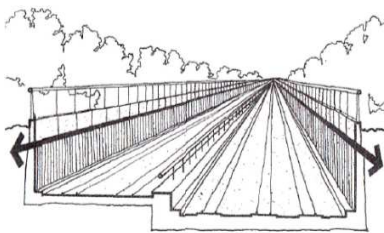


Figure 3

Spring Line



Constant Spring Line

Figure 4

A spring line located at a constant height above the top of the rail on the retaining walls contributes to the system wide continuity by tying together the many diverse conditions found throughout the corridor. The spring line provides a continuous point where concrete pours and forming can be broken with minimum disruption. The wall is divided into zones organized about the spring line. These zones define areas for locating operational elements, simplify construction and breakdown the vertical scale of the wall. Rustications for sound attenuation are located below the spring line.

Operational Components

To ask architects for help in the design of train approach lights, Impedance Bonds, J Boxes, Safety Switches, Emergency Exits and Track Lighting invites trouble, and is considered a waste of time to most engineering firms. That attitude did not prevail in the Southwest Corridor project.

Engineers on transit and rail projects usually have preconceived ideas of how their technology must fit together, but when the Urban Design team was allowed to examine the physical appearance of components within the technology, and submit alternates for consideration, even the most stubborn and opinionated engineers became believers. Visual guidelines for components within the right-of-way gave character to an otherwise visual clutter. The results speak for themselves.

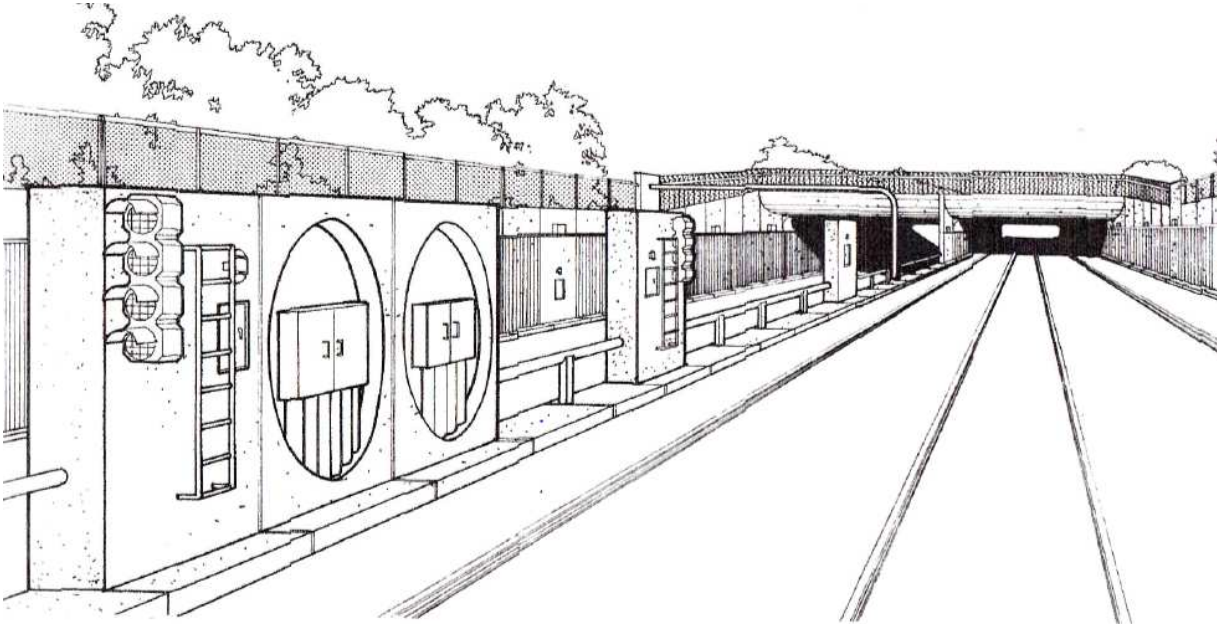


Figure 5

Integration of transit and railroad operational elements into system wide components resulted in a favorable visual impact. The Urban Design² team introduced new levels of excellence into the project. This is just one reason why the Southwest Corridor won so many awards.

² David Lee, AIA, of Stull & Lee Inc, architects, was the leader within the Urban Design team whose innovations were accepted by the engineers on this project. Without his perseverance, this project would have fallen short of its objectives. David teaches Urban Design at Harvard, MIT, and conducts lectures on the same subject in Paris.

Concept Plan

Through a long, comprehensive and sometimes controversial planning process, the Urban Design Concept plan emerged. Fundamental to the plan is the recognition that although transit, rail and road infrastructure serve regional functions, they represent immediate physical impacts to a series of generally independent and varied commercial and residential development, land patterns, circulation, expressions of important points as to movement, and open space. These all respond to the local environments. This breaks down into linear, lateral and nodal concepts. A linear expression of the Corridor is organized to define and reinforce axial growth along the right-of way. A lateral expression of the Corridor orients stations to cross corridor access and movement patterns. This is indicated below in Figure 6. A nodal expression of the Corridor recognizes each station as a separate station responding almost entirely to the local environment. Parkland is given an emphasis based on the residents using the park³. An opportunity exists to encourage communication and values in the way parks are designed⁴.

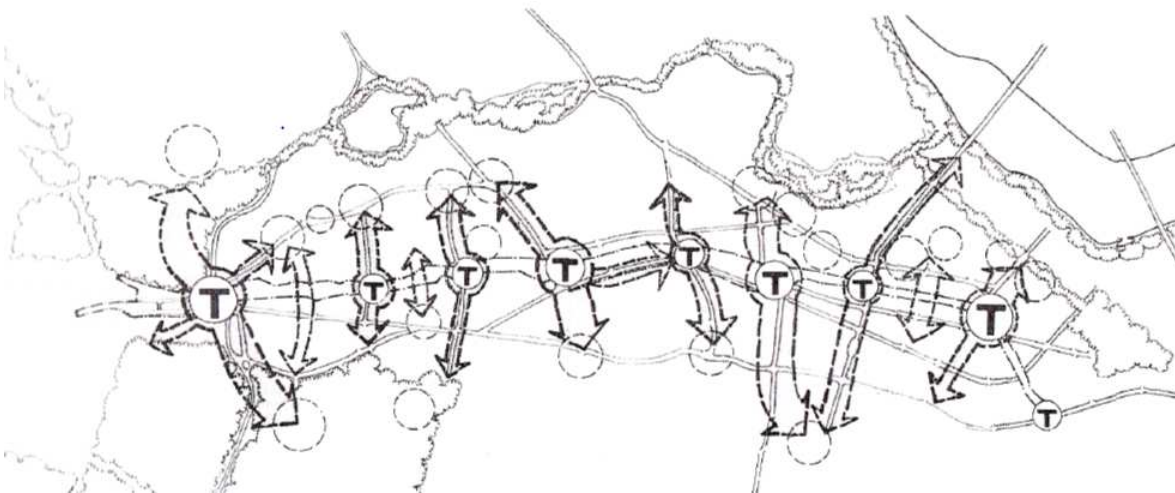


Figure 6

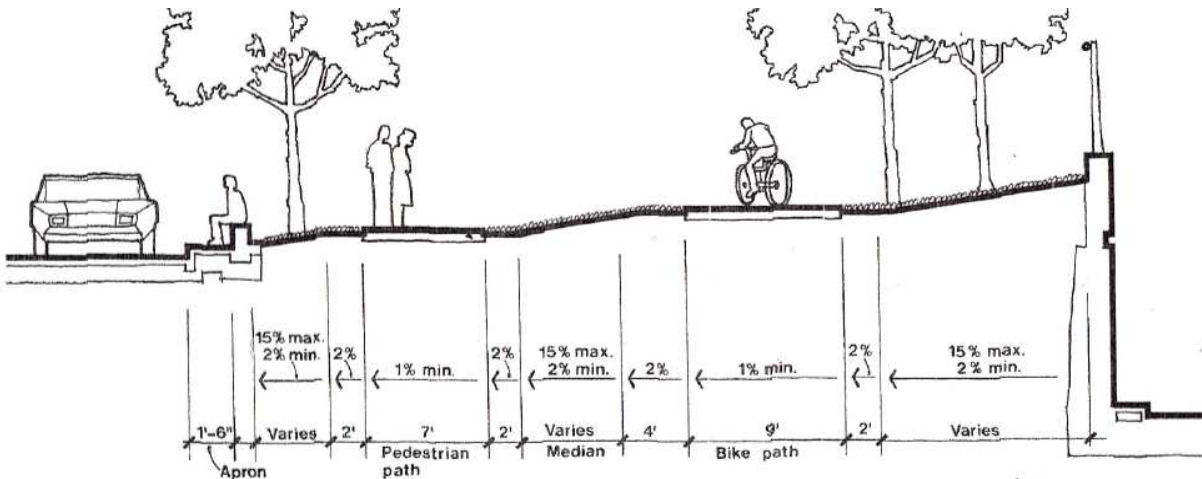
Parkland

Close examination of the adequacy and distribution of open space resources in the vicinity of the Corridor revealed a lack of open space amenities. Roy Mann, as Landscape Architect on the Urban Design team, was an advocate of Fredrick Law Olmstead, the famous landscape architect who

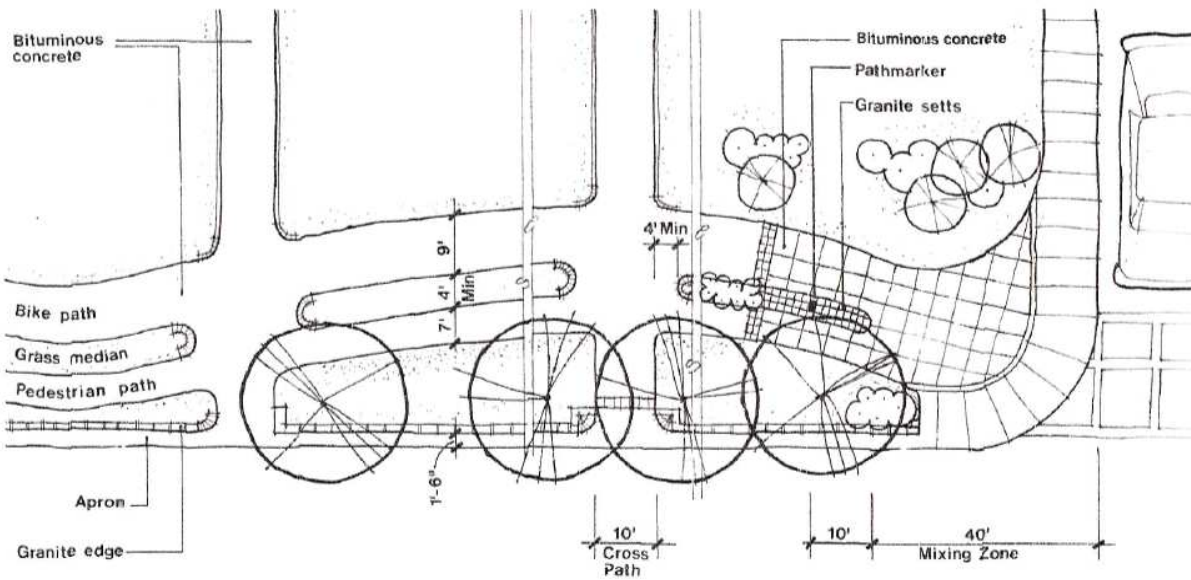
³ Over 500 parks were built from vacant lots in New York City during the reign of Robert Moses. This resulted in significant improvements to the character of the inner city.

⁴ Walt Disney's original concept for Epcot included the rental of the best house on each cul-de-sack to an older storyteller who loves children. Disney believed that the children playing in the cul de sack parks would congregate around the storyteller, then tell their fathers some of the stories. This in turn would trigger the fathers to investigate. Disney felt that Americans should begin talking to each other once again.

designed and built Central Park in New York. The Southwest Corridor included a 5km linkage of parkland in compliance with Olmstead's original concept. A Corridor path consisting of pedestrian path, landscaping, buffering and a bicycle path connected stations together, provided a plan linking the different communities together. Without taking parkland, bicycle paths, jogging and pedestrian paths into consideration, you have an unlivable mess.



Prototypical Section—Dual Corridor Path



Prototypical Plan—Dual Corridor Path

Figure 7



Other Urban Design Considerations

The above issues are only a few of the many design issues incorporated in the Urban Design Manual of the Southwest Corridor project. Others include: grading, drainage, bicycle and pedestrian paths, paved areas, landscape irrigation, planting materials, parkland furniture, parkland lighting, retaining walls, portals, bridges and decks, catenary support, overlaps, catenary protection, train accelerator lights, safety niches, handrail, emergency exits, 3rd rail cases, wayside signals, ventilation structures and ancillary buildings.

Bridges were designed with a curve radius which matched the same curve radius used in catenary support structures. Few users would notice this level of detail, but the overall feeling was that your trip on the transit was a pleasant surprise over any other system of transportation.

The curvature radius used for bridges incorporates standards by manufacturers of steel forms, which proved to be a savings over conventional formwork. In this instance, the Urban Design team saved considerable money and provided an esthetically pleasing design element to bridges themselves.

Station areas were designed to respond to each local condition. If a school was nearby and the new station impacted the children crossing, then more sidewalk space was required together with specialized signalization of traffic and signage.

The Urban Design team was especially concerned on how shadows feel along the Corridor path from tall buildings, and what views of the stations and larger commercial buildings could be seen and emphasized along the pedestrian path. Buffering of vacant lots along edges with landscaping adds favorable context to an otherwise empty lot.

A copy of the urban design manual is available upon request. This is a public document published by the Massachusetts Bay Transportation Authority.

Lessons from Disney

Having been employed by WED Enterprises, Disney's master planning organization, Mr Gogulski's responsibility included oversight of construction at the Contemporary Resort Hotel, including a monorail running through the 5th floor lobby. This project was one year late at the time of his arrival on site, which coincided with at the start of steel erection. As In Doha, it is demanded that openings of facilities occur on time. So it was at the Contemporary Resort Hotel. When the theme park opened, so too must the Contemporary Resort Hotel.



This was a design-build project, with a design that started out as reinforced concrete, but was changed to steel. The project was financed by US Steel Corporation⁵ late in the design process. A great deal of pressure was encountered in the architect's design office to make the change. Mr. Gogulski insisted that the key designers from Welton Becket, the architect of record, move on site and accelerate the design process. Next, at the appropriate time, crew sizes were doubled, and then tripled to include 1,200 employees working two shifts seven days per week in order to make up time.

A few weeks before opening, when Roy Disney, brother of Walt, first walked the job with Mr. Gogulski and observed the mad rush of craft trades working everywhere at once, he stated: *"All I want to do is sit at the cocktail lounge in the lobby and watch that monorail come through this hotel"* and: *"My God there is a lot of people working here"*, to which Mr. Gogulski responded: *"We have over 1,000 union trade personnel on site, working 24/7 in two shifts. Our payroll is over one million dollars per week"*.

The following are the lessons learned from Disney that have a high probability of occurring at Doha:

Getting Employees and Service Personnel To and From Their Work Areas

Disney separates employees, staff and support personnel from routes used by visitors to the park. You will never see a Disney employee on any of the theme park's Main Street except those assigned to clean the street from horse droppings. All employees enter and exit their assigned work areas by tunnels below grade. When you go to DisneyWorld, you might observe doors that seem to blend in with the architecture. Most visitors do not notice. Others think they are closets. Employees can be observed opening a door at the back of a small concession area, and disappearing. In actuality, the door opens to a stairway, and the employee descent to a maze of tunnels 30 meters wide, brightly lit with occasional seating areas, lots of space and rooms everywhere. Motorized electric carts, service personnel and employees are scurrying. Employees change clothes, eat, shower and rest within the massive maze of rooms, tunnels and comfortable well designed space underground.

Disney employees do not use the same roads as visitors when they enter and exit the property. Employees and service personnel have a separate entrances and rely on Orange County to provide adequate service roads away from the highway to the park. Because Orange County failed to invest in their infrastructure, the backup along the two lane service road when DisneyWorld opened was bumper to bumper for ten kilometers. This was on the news and TV for weeks. Everybody blamed Disney for this condition. The employees were furious. Orange County officials were bombarded with demands for immediate road construction. At the same time that employees were complaining to Orange County officials, the Commissioners were advising employees to write to Disney. After a few

⁵ US Steel Corporation was the general contractor who financed the project. They were also the manufacturer of the 1008 modular units comprising the rooms. This project which was intended to be a model for the future of hotel construction in America.



weeks of their opening, Disney posted signs along the crowded two lane road which road: *"We have received your letters."*

What was not reported in the papers nor talked about on TV was the fact that long before the land was cleared to build the 96,000 acre site at DisneyWorld, the Orange County commissioners and their staff were all flown to California and hosted as guests by Disney to meet with their counter parts within the government agencies of California. *"How lucky you are"* stated their California counterparts *"to avoid the crisis we had to face when Disneyland opened 20 years ago here in California"*.

After being shown the consequences of the full impact from the California opening, and given an expense paid vacation to see Disneyland, the Orange County commissioners returned to Orlando and did nothing. Disney took the blame for a problem ignored by politicians who were well warned and given every opportunity to prepare years before the opening of DisneyWorld.

Hopefully, Doha's management will use this experience to prevent a similar occurrence by building service roads for employees early, not after the fact.

Traffic Control at Station Areas

Visitors will be displeased in 2022 if there is not enough provision for loading and unloading of buses. Wide sidewalks must be provided. Adequate parking is vital. Unless the planners have walked each station area as did the Urban Design team, it would be difficult to determine where and how much traffic will be interfacing with pedestrians, and what kind of needs must happen to avoid bottlenecks. Thought must be given to "urban design" issues using realistic numbers to prevent massive problems at station areas. Well designed intermodal transfer is the answer.

Intermodal Transfer

The Lusail Light Rail will help reduce bus traffic, so will the West Bay People Mover, but not enough to stop the logjam at the 48 stations of the Doha Metro scheduled to be completed by opening day. How are busses to load and unload at the stations without backing up or causing passengers to interfere by walking in front of the busses? Planning for this occurrence requires space for the busses to unload close enough to the stations so that passengers can travel directly to the entrance without causing any congestion. Unless busses can unload and depart in the same direction as they were parked, they cause delay and bottlenecks.

How much space is required to handle bus and taxi traffic during peak hours of operation? I asked these questions to the engineers engaged in building Doha's connecting highway above the subway



during my seminar in September 2012. They brushed it off like it was some kind of annoyance. This question will be much more than an annoyance in 2022 unless it is mitigated by adequate planning now. Design of the stations themselves is easy. Intermodal transfer at station areas is not. This applies to both rail and transit stations. The urban design team struggled with these issues at Boston as well.

Congestion of Pedestrian Traffic from Parking Lots to Stadiums

How will pedestrians walk to the stadiums from remote parking lots? Disney solved that problem by the use of trams which carried thousands of visitors per hour quickly and efficiently to the ticket booths at the main entrance. What risk will occur to the massive traffic of pedestrians struggling to make it to the stadium from parking lots? Will there be hundreds of trams and enough space to unload and reload without pedestrians collapsing from heat exhaustion? Will enough underground parking be provided to insure free pedestrian travel both above and below grade? The congestion and problems at DisneyWorld were pretty well thought out before opening day, but not enough to cause long lines and heat exhaustion. Despite considerable planning from Disney's senior management, chaos occurred and emergency sessions were necessary for unforeseen conditions. One has to keep the people moving. Engineers have very little knowledge of the human factors, and generally don't think much about the consequences of their own decisions in terms of the people who use their new facilities.

This too is part of the urban design discipline. Recently Mr. Gogulski visited the Outback Bowl in Tampa Florida, one of America's newest stadiums. The stadium itself is beautiful, but getting to it is a nightmare, and leaving is even worse. Standing in line for twenty minutes waiting to exit down a set of stairs, and then do it over again at the next level is not acceptable. Disney has figured this out for their visitors at DisneyWorld. Outback Stadium designers did not address this issue. Doha's exit conditions at the stadiums need consideration to avoid a similar occurrence. A timely experience entering and leaving the stadiums is required.

Conclusion

The difficult we do today, the impossible may take a little longer.

The challenge is not to find new or different truths for the opening of Doha's World Cup of Soccer in 2022, but to learn how to apply established truths to the problems that Doha is certain to face in its rush to the finish line. Qatar's design and construction program is racing ahead in a fast track mode. Qatar 2022 World Cup will succeed without any consideration for Urban Design, but how much better will the process be if it is implemented as it was for the Southwest Corridor? The right questions need to be asked. The architects, engineers and planners engaged in making it happen need to be challenged in a professional and cooperative way. Forensic engineering combined with Urban Design



reduces risk and provides the means and methods to accomplish miracles. The more knowledgeable management is regarding risks, the better chance in preventing their occurrence.

Qatar’s citizens are seeking a better life. Will the events following the opening of Qatar 2022 World Cup guarantee that better life, or will this project become a monument only to those who built it? . Walt Disney’s dream of a new community where people talked to one another died when the second generation of Disney’s management could not conceive of any gain except profit. It is regrettable that those closest to Mr. Disney failed his trust by withholding vital information regarding risk and cost at the Contemporary Resort Hotel. This article attempts to open the discussions regarding the possibility of a similar occurrence in 2022.

Hopefully, the experience gained helps Doah’s World Cup of Soccer in 2022, and offers a few suggestions to make it even better through the discipline of Urban Design.

Respectfully,

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