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Project Name: City of Dublin - North Community Pool Redesign
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Project Address: 5660 Dublinshire Dr. Dublin, OH 43017

City of Dublin – North Community Pool Redesign - DynaDome

The following outlines MSA Design's assessment of the DynaDome retractable pool enclosure system following our on-site review of the DynaDome installed in Highlands, North Carolina on January 30th, 2019.

DynaDome Enclosure – Background

MSA Design has been contracted by the City of Dublin to provide professional design services for the North Community Pool. The existing pool is an outdoor complex that includes lap and leisure swim areas, slides, a splash pad, shade structures, and support facilities. The existing pool is at the end of its life expectancy. MSA has been working with the City to gather feedback on the new pool design through two initial community engagement sessions. The sessions have identified the community's desire for a new 50m lap pool that has some type of "retractable" cover, in addition to an outdoor leisure pool, splash pad, slides, tot pool, and support buildings that had been originally anticipated. In response to the feedback received from the community, the City had asked MSA to review options for an enclosure that would allow the new lap pool to be utilized year-round, while still preserving the "outdoor feel" during the summer months.

Through discussions on enclosure options, and given the City's desire to maintain the outdoor feel as well as the anticipated budget, it was determined that a pre-engineered enclosure may be a viable option. DynaDome is an example of such an enclosure. DynaDome designs and manufactures retractable enclosure systems. DynaDome's enclosures are made with telescoping aluminum frames and polycarbonate panels. The panels move along a fixed track with the assistance of a small motor. The width of the panels can be customized for commercial applications, with the minimum length per frame of 12'.

MSA and the City of Dublin contacted a representative from DynaDome to discuss the potential project via conference call. The group discussed mechanical and electrical concerns, code compliance requirements, daily and ongoing maintenance, as well as preliminary design considerations. DynaDome also shared technical drawings from two previous projects with MSA for reference. At that time, it was determined that the City and MSA should visit a DynaDome enclosure in person.

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DynaDome Enclosure – Highlands, NC

DynaDome recommended that the group visit their structure in Highlands, North Carolina. MSA and the City visited the pool in late January. The group met with Lester Norris, the Highlands Park & Recreation Director in the afternoon and spoke with him at length. The group also returned after dark to gain a better understanding of the enclosure during the evening hours. The Highlands project was constructed approximately 5 years ago, one year after the pool that it encloses was built. It is currently one of the largest DynaDome enclosures over a public community pool.

It was noted that the Highlands enclosure had significant condensation on the panels. The air temperature at the time of our visit was unseasonably cold for Highlands (18*), but would be reflective of the temperature changes that would be expected in Ohio. If Dublin were to proceed with the DynaDome enclosure, we would recommend additional air movement and HVAC review to assist with minimizing condensation build up.

It is also worth noting that the DynaDome cannot be designed to withstand high wind when in its open position (due to wind uplift concerns), and therefore, DynaDome recommends closing the enclosure each evening to avoid any potential issues that may occur overnight.

In addition to the observations noted above, please refer to the chart below for details of the Highlands project when compared to the potential enclosure for the Dublin North Pool:

DynaDome – Highlands, NC:

- Covers a 6 lane, 25m lap pool
- 88' wide by 122' long by 29' high
- Located in North Carolina – temperate climate
- Located in a tourist community – low use during winter months
- Recreational use only, limited deck space around pool
- Light poles mounted to deck
- Heat provided by 4 small gas-powered units hanging at each fixed end
- A support building at one end that includes restrooms, office, entry, and pool mechanicals
- Fencing provided along length of pool, each side of track
- Enclosure covers only pool in small community center complex

DynaDome - Dublin North Pool project (preliminary design):

- Would cover an 8 lane, 50m lap pool
- Approx. 115' wide by 213' long by 39' high
- Located in Ohio – variable climate
- Anticipated high use year-round
- Potential use for swim events, lessons, rentals, etc., additional deck space may be required
- Light poles mounted to deck
- Heat provided at fixed ends as well as supplemental heat, likely under deck.
- Anticipated that a support building will be needed at each end
- Length of pool to be fully open to pedestrian traffic, design team to review options for recessing track into deck with custom cover for flush appearance
- Enclosure would cover one pool out of several in a large outdoor pool complex



Interior View



Interior View



Exterior Overlapping Operable Sections



Interior Mechanical and Lighting

DynaDome Enclosure – Considerations:

Maintenance and Operation: It has been recommended that the enclosure be closed each evening. This would add an extra step in the pool operational process during the summer months. The track must be free of debris prior to closing. The staff in Highlands indicated that they use a leaf blower each evening to clear the track as part of their daily tasks. They have not had many issues with the panel operation. In addition to the additional cost to maintain and operate a pool and support facilities year-round, it is also important to recognize that the panels on the enclosure only have about a 10-year life span. The City should plan for a full panel replacement every 10 years, with some panel replacement on an as needed basis. The City's acceptance of faded or discolored panels over time may also impact the life expectancy.

Bleachers: The City of Dublin has indicated interest in utilizing the enclosure for swim events and may add bleacher seating. MSA and the City would need to work with DynaDome to determine a comfortable span width to right size the enclosure. The amount of concrete, and therefore bleacher space, on either side of the pool may be dictated by the maximum span of the enclosure. It is likely that some amount of bleacher space can be accommodated.

Additional Items: The original project included a 25m outdoor lap pool. In addition to the elements needed to support a 25m outdoor pool (replacement of existing), the following items would need to be added to the project to accommodate a 50m lap pool with a retractable enclosure:

- Additional 25m length of pool
- The enclosure system
- Additional, or potentially separate, mechanical space to support year-round use
- Storage areas
- Restrooms and locker rooms to support the added water and deck space – note that bleacher seating could add more restrooms
- HVAC for the enclosure
- Lighting for the enclosure
- Parking and site access to allow for year-round use
- Operational costs associated with year-round use



Exterior Night View



Exterior Day View



Exterior Track System



Exterior Track System



Interior Rail Detail



Interior Rail Detail

DynaDome Enclosure – Challenges and Solutions:

Through our conversations with DynaDome, our discussions with the City, and our site visit, we have identified the following challenges and proposed solutions with the DynaDome retractable enclosure system:

- **The track** – the operation of the retractable enclosure requires a surfaced mounted track along the entire length of the enclosure, and therefore, the length of the pool. There is great concern that the physical track would act as a barrier, and impact not only the desired "outdoor feel" when open, but also cause accessibility issues and be a potential tripping hazard. It is anticipated that we could work the DynaDome to develop a detail to recesses the track into the pool deck and design a cover system that is easily installed and removed by the pool staff. The goal would be to maintain a flush deck surface.
- **HVAC** – due to the retractable nature of the dome, it would be challenging to hang duct or any type of mechanical unit from the structure (except for the fixed ends). It is anticipated that given the length of the enclosure, as well as our climate, it will be necessary to distribute heat and air throughout the space. MSA would recommend investigating options for geothermal heat in the deck, providing a heated floor, with possible supplemental heat from above at the fixed ends.
- **Lighting** – again, due to the retractable nature of the dome, lighting would need to be mounted to the deck via light poles. The light pole or light support structure can be a designed element. Light poles would be required for an outdoor pool as well due to code requirement and safety concerns.
- **Year-round operational costs** – MSA recommends that the City evaluate the operational and maintenance impact that would be required for year-round use.



Interior Lighting



Panel Close-up

DynaDome Enclosure - Conclusion:

Based upon the observations and information identified above, should the City decide to move forward with a retractable enclosure on the new lap pool, MSA would recommend that the City continue to engage DynaDome as a potential enclosure solution. The structure's ability to retract would allow the City to maintain the "outdoor feel" of the community pool during the summer months, while still allow for year-round swimming. The next steps would be to review design options to ensure that the enclosure can fit within the neighborhood aesthetics, as well as a more detailed cost analysis of the enclosure system and the additional required items.

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