ITEM # 38
DATE: 09-14-21

COUNCIL ACTION FORM

SUBJECT: DOWNTOWN PLAZA ICE SKATING RIBBON

BACKGROUND:

When discussing the vision for the Downtown Plaza, City Council determined the Plaza should be a year-round destination which included ice skating. The conceptual design done by Confluence in January 2021 included an ice-skating ribbon. This design received positive feedback from the Parks and Recreation Commission, City Council, and the public.

There are two options regarding ice for the skating ribbon, 1) Synthetic Ice, or 2) Real (Natural) Ice. As we are in final design, a decision needs to be made regarding these two options as other components (i.e. building, storage, etc.) will be impacted by what option is chosen.

Confluence has sub-contracted with American Arena, Burnsville, MN, to design the ice-skating portion of the Plaza. American Arena investigated the two ice options and their findings are shown in Attachment A and summarized later in the report. **As a reminder, City Council was informed at its July 27, 2021 meeting that if the decision is made to proceed with an ice system utilizing real (natural) ice, there will be $52,000 in additional design fees.**

Additionally, City staff travelled to Arden Hills, MN to skate on synthetic ice before making a recommendation. Feedback on synthetic ice versus real ice was solicited from members of the US Rink Association and these comments are found in Attachment B.

ICE SKATING OPTIONS:

Synthetic Ice

Synthetic ice is a plastic/resin product that is made in 4' X 8' sheets and 3/8" to ½" thick. These sheets are laid down on a flat surface and connected to provide an ice-skating surface. The product includes a lubricant embedded in the plastic that helps with gliding while skating. Regular ice skates can be used on these sheets, but will lose their edge quicker than on real ice.

Pros:

- Lower capital cost
- Lower maintenance costs (labor, equipment, supplies)
- Lower annual contractual costs (refrigeration service)
- Could have a longer season
- Maintain ice in unseasonably warm weather

Cons:

- Different skating experience than real ice (more effort needed to glide across the ice)
- Potential safety issues with the seams between plastic sheets
- When water gets under the panels and freezes, the seams could pop creating an unlevel area of ice and a skating safety hazard
- The need for two or more “speed bumps” to cover six-inch expansion joints
- Installation of panels will be time consuming and difficult due to many small pieces
- Small pieces may not be able to connect to anything resulting in loose pieces that create a safety concern
- With a ribbon style rink, the panels will not be able to be flipped thus shortening the life of the panels
- Snow and ice removal will be challenging with floating pieces of plastic
- Snow and ice removal will take longer as much of this work may need to be done manually
- Skates will lose their edge quicker on synthetic ice thus requiring sharpening more often

<u>Real Ice</u>

A real ice surface is one that involves natural ice that is made through an ice rink chiller (refrigeration system) to cool a surface to about 20 degrees so that ice can be made using water. The chiller is connected to tubing embedded in the concrete and the refrigeration process cools the concrete so ice can be made. Water is added to the top of the concrete until the desired ice depth is achieved.

Pros:

- Creates a true skating experience
- Different skating experience than synthetic ice (less effort needed to glide across the ice)
- People are familiar with real ice
- Staff is familiar with maintaining real ice

Cons:

- Higher capital cost
- Higher maintenance costs (labor, equipment, supplies)
- Specialized equipment needed to maintain the ice
- The restroom building will need to be sized to accommodate the chiller unit which

will run the ice system
- Could lose ice in unseasonably warm weather

CAPITAL COST COMPARISON:

A comparison of the capital costs between the two systems is shown below.

ESTIMATED ICE RIBBON CONSTRUCTION COSTS

	SYNTHETIC ICE	REAL ICE
Embedded Ice Piping/Insulation	N/A	$ 200,000
Synthetic Ice Product	$ 125,000	N/A
Chiller	N/A	$ 400,000
Ice Resurfacing Equipment*	N/A	$ 50,000
Railing System	$ 130,000	$ 130,000
Estimated Total Project Costs	**$ 255,000**	**$ 780,000**

*This amount includes resurfacing equipment and a tractor to pull it.

The current estimated budget has $715,000 for the ice-skating ribbon.

ALTERNATIVES:

1. a. Approve proceeding with designing an ice-skating ribbon in the Downtown Plaza utilizing real (natural) ice.

   b. Approve Change Order 1 to increase the Confluence contract by $52,000 for additional design fees associated with designing an ice system utilizing real (natural) ice.

2. Approve proceeding with designing an ice-skating ribbon in the Downtown Plaza utilizing synthetic ice.

3. Do not approve installing an ice-skating ribbon in the Downtown Plaza.

4. Refer back to staff.

CITY MANAGER'S RECOMMENDED ACTION:

There are pros and cons to both synthetic ice and real ice with real ice having capital costs approximately three times that of synthetic ice. When staff reviewed the two options, the factor that kept coming up was user experience. The City strives for

excellence in everything it does, and this is no exception. Skating on synthetic ice does not deliver the same experience as real ice. Staff experienced that in Minnesota; it is referenced in the American Arena report; and it is mentioned in the feedback from US Rink Association members.

Staff feels synthetic ice is good for some applications, but could not find an outdoor skating ribbon constructed using synthetic ice. The safety of the synthetic ice due to potentially small pieces that are not connected also concerns staff. The Parks and Recreation Commission discussed this topic at it September 9, 2021 meeting and recommended City Council approve proceeding with a real (natural) ice system.

Therefore, it is the recommendation of the City Manager that the City Council support Alternative #1 thereby 1) approving moving ahead with designing an ice-skating ribbon in the Downtown Plaza utilizing real (natural) ice and 2) approving Change Order #1 to increase the Confluence contract by $52,000 for additional design fees associated with designing an ice system utilizing real (natural) ice.

Ames Plaza – Ribbon style ice rink

The purpose of this analysis is to compare natural (real) ice to synthetic ice and how these two surfaces would affect the success of this community ice rink. We will present pros and cons to both the surfaces to help the city of Ames, Iowa understand what is involved with each of the two types of ice surfaces being considered.

Definitions

Real Ice – A real ice surface is one that involves natural ice that is made through using an ice rink chiller (refrigeration system) to cool a surface to about 20 degrees so that ice can be made using water. This system includes a chiller plant where the refrigeration process takes place along with piping that goes from the chiller to tubing embedded into the floor of the rink that is used to cool the concrete surface. Real ice is made once water is applied to the floor and built is up to a level to able to be used for ice skating.

Synthetic Ice – Synthetic ice is a plastic/resin product that is made in 4' x 8' sheets and approximately 3/8" to ½" thick. This plastic is laid down and connected to provide a surface that can be skated on using regular ice skates. The shape of the surface can be customized and cut to fit many different configurations for the facility.

Pros and Cons of each system

Pros of a real ice system – A real ice surface creates a true experience of what ice skating is all about. The feel of skating on real ice versus synthetic ice is completely different. The effort required to glide across real ice versus synthetic ice is considerably different. With real ice, a skater has a true sense of gliding across the ice rink with minimal effort. With an outdoor rink in a northern climate (where users may have been exposed to ice skating in the past) area such as Ames, Iowa, the look and feel of a natural ice rink surface will take on a vastly different experience as compared to skating on a plastic surface. Real ice rinks also allow for logos and other signage to be placed within the ice surface for promotional purposes or even for sponsorship opportunities.

Cons of a real ice system – Cost of the system as well as increased maintenance. The cost of a real ice system is capital intensive as you need a chiller plant as well as a refrigerated floor surface to allow for ice making. This chiller plant can be rented monthly, or one can be purchased for long term use. To keep the ice in great condition, maintenance, and resurfacing must take place on a regular basis. The city will have to allow space (indoor or outdoor) to house the chiller unit that will run the ice system. This needs to be considered when facilities are planned for this space.

Pros of a synthetic ice system – The cost of this system is considerably lower than a real ice system as noted above. There is less maintenance involved as the surface does not have to be resurfaced as often as needed with real ice. There is no need to have a commercial refrigeration company hired to do annual service on the mechanical system as needed compared with a chiller plant used with a real ice system. Staffing levels may be slightly lower with a plastic ice surface due to the lower level of required ongoing maintenance and resurfacing.

Cons of a synthetic/plastic ice rink – As mentioned above, the feel of skating on plastic ice is completely different than real ice and many people that have skated on real ice will not enjoy the experience of skating on plastic. I have included information from a well-established national Ice Rink Management company below that has experience with both real ice and synthetic to give you their opinion on how they feel on the two options. This company generates revenue based on the number of users that pay to skate on these same types of rinks and they have some strong feelings on this topic of what type of ice is required to generate the level of interest from uses of these rinks.

Plastic rinks are put down in sheets and are very susceptible to expansion and contraction of these sheets of plastic which can lead to safety issues with skaters, especially beginner skaters that could trip and fall over these "ridges" in the surface. Some synthetic ice manufactures will recommend having built-in gaps to allow for this expansion, but this further minimizes the experience of trying to skate.

Installation and tear down of the synthetic ice can be very complicated when used for a ribbon style rink. Due to the shape of the rink being considered, complete 4'x8' sheets will be used in approximately 30-40% of the floor. The initial installation process of cutting 4'x8' sheets to size will be a significant project as 60% or more of the sheets will have one or more cuts to make. Any imperfection in this cutting process will be very visible as gaps in the floor and pose a potential safety and liability risk. The rink floor will be a huge jigsaw puzzle that must be marked in a manner that it can be put back together the next season. There will be many very small pieces that will be smaller than 1 square foot and various shapes that will need to be fit back into place every year. The interlocking connection design of these panels will not be usable on many of the smaller panels which will cause issues as they will just be "floating" on the concrete sub-floor. All these smaller pieces will be on the perimeter boarder of the rink, causing a safety issue for skaters when the small panels move (which they will shift around as they cannot be connected to adjacent floor panels). These smaller "floating" panels will also be a significant issue when removing snow or shavings from the surface as there will be nothing

holding them in place and the staff will be putting these small pieces back in place every time the plastic surface in cleaned.

Many beginner skaters on plastic ice will not skate for more than 5-10 minutes as they find they are essentially walking on the plastic sheet with ice skates (according to Lance Curren, Tri State Rink Management). If you don't have a much experience skating, it is difficult to quickly learn to glide when on a plastic surface as it is much stickier as compared to real ice. Ice skates that are used on plastic ice will lose their edge much quicker than on real ice requiring resharpening daily or even more often depending on how often they are used.

Ice Rink Management Companies Experiences

There are several Ice Rink Management companies in the US that are hired by both private and publicly owned agencies to manage ice rink facilities. Most commonly, these companies are paid a fee to operate the complete facility once it is built and handle the day-to-day operations including promotion, maintenance, and staffing. It is very common that these companies are also compensated based on the number of users of a facility so they have a lot of incentive to do whatever they can to drive high numbers of people to the ice rink facility.

American Arena has worked with a couple of the prominent management companies in this industry:

> ***Tri State Ice Management*** **"www.tristateicemanagement.com" based out of Annapolis, MD. Contact person is Lance Curren – contact phone 443-995-4002**

Tri-State manages approximately 6-10 ice skating facilities per year across the US. Most of these are outdoor rinks but they have experience with indoor skating facilities as well. The large majority of the ice rink facilities that Tri State has worked with over the past 25 years have been real ice. Tri State has managed three facilities that started with synthetic ice (Ford Center in Detroit, Cleveland Science Center in Ohio and The Met in New York). All three have either closed or switched to real ice due to low participation levels at their facility, according to Tri State Ice Management.

> ***Rink Management Services Corp.*** **– www.rinkmanagement.com based in Mechanicsville, VA Contact person is Jim Littlejohn – 804-986-3976**

RMS is a very similar company to Tri State as mentioned above. They compete for the same business of managing ice rink facilities across the US. RMS has worked with over 75

facilities in the past and they can only recall two that have been synthetic ice. Their experience with these two facilities that were built with synthetic ice is noted below.

1) Stony Point Fashion Park Mall - Richmond, VA Started with synthetic ice and changed to real ice within a few years as the rink did not draw the people as expected and the synthetic ice "wore out" according to the Mall Facilities staff. They have had real ice for the past 5 years and they have significantly more users compared to the 3-4 years that they have synthetic ice.

2) The Shops at Fallen Timbers – Maumee, OH This rink was managed by RMS. It was built with synthetic ice and charged admission in year one. Attendance was not as expected, and the mall decided to offer the skating as a free amenity in year two. Attendance did not improve, and the rink was closed after two years in operation. RMS believes strongly that there was very little interest in large part because it simply was not a "real" ice skating experience for the clientele.

Summarizing the thoughts of the two ice rink management companies mentioned above – both companies feel there is a place that synthetic ice makes sense. These would include locations in the southern US where more users will not have previous experience with real ice. Indoor locations such as malls, smaller recreation centers and other similar set ups that utilize square or rectangular rink designs that would be conducive and more efficient to use and maintain (set up and tear down).

***Kwik Rink* – Manufacture of synthetic ice systems**

Kwik Rink has provided their synthetic ice product to be used at the rink including to be used for the first time this season in Johnston, Iowa. Unfortunately, we don't have any relevant performance history to draw upon with this rink since it will be used for the first time this winter. I asked the owner (Don Mason) of Kwik Rink for references of any other public ice rink facilities (specifically ribbon style rinks) that I could use for this report. I was provided a list of three facilities that use his product for public ice skating (Pikeville, KY, Mighty Children's

Museum in Chillicothe, OH and another museum in Kernersville, NC). All three of these rinks were rectangular rinks approximately 30' x 60' and the two museum rinks oriented towards younger children as part of their museum experience. Don also referenced a few locations that have used his product for smaller facilities and for training locations where users practice shooting and for hockey goalies train for their sport. Kwik Rink has customers that include NHL hockey teams that have used his product for these types of uses. None of the reference provided

were similar to the rink design (ribbon shape) being considered in Ames and they are all relatively new (within 2-5 years old).

Budgetary cost estimates of both types of ice systems

	Synthetic Ice	Real Ice
Embedded ice piping/insulation	N/A	$200,000
Concrete surface	Included in other budgetary line item	
Synthetic Ice product	$125,000	N/A
Chiller rental	N/A	$12,000 per month
Chiller purchase (with install)	N/A	$400,000
Ice Resurfacing machine	N/A	$30,000 - $90,000
Railing system interior and exterior of rink	$ 130,000	$130,000

In summary, there is a place for both types of ice rink surfaces to be used but it really comes down to how much money the client is willing to spend to build an ice system and how important it is for their customers to have a "true" skating experience at their facility. The opinion expressed by Tri-State Ice Management is that if you want to have a successful ice rink facility and get the community excited about using the ribbon rink and coming back for more, the only option to consider is a real ice system. If the city is unable to spend the dollars on a real ice system, a synthetic surface is an option that is available but understand that the experience of the users of this rink will be different and the overall number of users of the rink will be quite different with the two types of surfaces under consideration. Additionally, due to the nature of the rink design and the total number of smaller pieces of plastic ice, there will be considerable maintenance, safety, and liability issues to contend with on a regular basis for the city.

American Arena appreciates the opportunity to provide the analysis above and we welcome the chance to answer any follow up questions to assist you in making the best decision for the city.

Sincerely,

Dan Metcalfe - American Arena

ATTACHMENT B

Real Ice vs. Synthetic Ice

Comments from US Rink Association Members

1. "No comparison when it comes to drag coefficient. Never seen plastic that has characteristics of ice."

David Loverock, Vice President at Jet Ice

2. "Never seen the plastic but for folks just doing the Sunday skate thing that may work fine."

John Towler, Buffone Arena, Worcester, Massachusetts

3. "Omaha has tried it, nobody likes it. It just isn't very close to the same thing."

Maddy Joey Vasquez, Omaha, Nebraska

4. " It has a lot to do with the details. If you maintain the rental skates well and keep a 5/8 or ¾ hollow on them and sure people who bring their own know what works best on it, synthetic isn't too bad. It's not ice but at the end of the day it is a lot cheaper. The new stuff doesn't require Glyde enhancer like my sheet does. I haven't had my full sheet up yet but I have skated on a few of the panels. My rink is a 2013 model that came from Jupiter, FL. IT was the city rink. People loved it and it went over well, until they couldn't staff to maintain the rental skates. At that point people quit coming and it was put on ebay."

Ryan Alex, Poynette, Wisconsin

5. "I've worked with both. Pros and cons to both but overall the synthetic came out and refrigeration went in its place. Synthetic is great for a basement/garage/backyard for practice (knowing that you can't really "skate" on it). For a community reink I've seen it be a novelty and once people tried it and really didn't have the same glide factor, they were disappointed and didn't return. Synthetic ice has its place in the market. It is very expensive if not marketed correctly and your business model fails."

Chad Hrehor, CMH Rink Builders, Johnson City, New York

6. "Dave (comment 1) is 100% correct. It's like comparing sand to boulders."

Bernie Hurley, Oromocto, Canada

7. "What Dave (comment 1) said."

BJ Gagnon, Abbotsford, British Columbia

8. “Ice, Ice…Baby.”

   Larry Thatcher, East Alton Ice Arena, East Alton, Illinois

9. “Skating on Synthetic Ice is akin to riding a bicycle with flat tires.”

   Art Sutherland, Accent Refrigeration Systems, Victoria, British Columbia

10. “I trained hockey players on Synthetic Ice for 13 years. Then Art Sutherland and his guys put in real ice 4 years ago. We should have gone real ice years ago!!!”

    Darren Hersh, Loudoun Ice Centre, Sterling Virginia

11. “Synthetic Ice is best used for the entertainment world.”

    Paige Carroll Scott, San Francisco, California

12. “Wouldn’t do synthetic! Check out the outdoor rink work in Phoenix. Can’t recall the name, amazing though! Skate Westgate in Glendale! Synthetic is a tough sell to skaters!”

    Gary Paterson, City of Nanaimo Government, Nanaimo, British Columbia

13. “Skip the plastic ice…they drag that stuff out every 5 years, give it a crazy new name and say it is almost as good as ice…it isn’t! Install a real ice rink and you won’t regret it.”

    Bob Mock, Alpha Ice Complex, Pittsburgh, Pennsylvania

14. “Real Ice. Did it in Vegas. Fake Ice doesn’t cut it.”

    Kollin Johnson, Super Rink, Minneapolis, Minnesota

15. “Plastic ice is like skating on plywood. And dulls skates.”

    Rich Szturm, Northland Ice Center, Evendale, Ohio