Northfield Ice Arena

Facility Condition Assessment

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1.0 INTRODUCTION

Recognizing the need for a facility assessment and the value of a long range plan for building condition, the City of Northfield commissioned the team of ATS&R Planners, Architects and Engineers, and Stantec to conduct a comprehensive study to assess the physical condition of the Northfield Ice Arena and identify long range deferred maintenance needs and priorities.

Prior to the building assessments, meetings were conducted with City of Northfield representatives and Northfield Ice Arena building maintenance personnel to identify items of concern relative to the building condition and to discuss a rating system to assist in the prioritization of the deficiencies identified.

As a part of the building assessment process ATS&R architect, landscape architect, mechanical engineer and electrical designer, and a Stantec recreational facilities civil engineer, conducted a review of the ice arena building noting current conditions of the site, building envelope, building materials, mechanical and electrical systems as well as the ice refrigeration system.

PRIORITIES: Deferred maintenance items where identified then reviewed and prioritized by City of Northfield staff and ATS&R architects and engineers. The items were rated based on a 3 point system as follows:

Priority 1:	Immediate Need	0 – 3 years
	Building Code Requirement	
	Preservation of Facility / Operation	
	Energy Savings Payback	1 – 5 years
Priority 2:	Mid-term Need	4 – 6 years
	Energy Savings Payback	6 – 10 years
Priority 3:	Long term Need	7 – 10 years

GENERAL BUILDING HISTORY

Northfield Ice Arena, located at 1280 Bollenbacher Drive in Northfield, MN, began operation as a single sheet ice skating facility in approximately the mid to late 1970's. The original facility was approximately 24,300 square feet and included seven team rooms, a coaches and a referees room, skate rental and sharpening, concessions, storage, tiered spectator seating, meeting room, and mechanical and refrigeration spaces. In approximately 2000 a 1,320 square foot addition was constructed that contains the main office, lobby, ticket booth and men's and women's toilet facilities.

The original facility and the addition were constructed as pre-engineered metal buildings with steel columns and beams, insulated metal roof and insulated metal exterior wall panels. The floor is a concrete

slab on grade with interior partition walls constructed mostly of painted concrete masonry units (CMU). It should be noted that very little existing information was obtained regarding the construction of these facilities in terms of original construction drawings or project specifications. Information on the construction, materials and systems was primarily obtained through site observation and field measurements.

All-new ice rink systems were installed in the facility in 2008 that are capable of maintaining ice on a 9 month per year basis. The ice rink systems consist of a nearly regulation size (85' x 196') concrete surface rink floor, heavy-duty dasher boards with metal framing and polyethylene facing, and an industrial quality indirect-style refrigeration plant that uses R-22 as its' primary refrigerant. New ceiling insulation and a ceiling liner were also installed as part of this project.

Refer to the Appendix for First Floor and Second Floor building reference plans; Plan 1 and Plan 2.

ESTIMATED CONSTRUCTION COSTS

Estimated construction costs for various upgrades or improvement are included in each section of this report. The estimated construction costs are based upon anticipated bid prices for the 2017 construction season and include 5% for construction contingencies. If work is proposed to be performed later than the 2017 construction season, it is recommended that an inflation factor of 5% per year be added to all estimates.

Estimates do not include an estimated 10% for architectural and engineering, legal and administration costs. Estimates do not include additional project costs such as permits, surveys, soil borings and construction testing, and they do not include removal of hazardous materials.

2.0 ARCHITECTURAL ASSESSMENT

GENERAL BUILDING CONDITION

The overall general building condition appeared to be well maintained and in relatively good physical shape considering its age of approximately 40 years for the original facility. The building structure appears to be satisfactory, with little or no indications of material deterioration, distress or settlement. (Note that these statements are based on visual observation and that no physical testing was performed and no calculations have been performed to determine the adequacy of the structural systems).

Building Condition Deficiencies, also referred to as deferred maintenance items, were observed as follows:

1. Dented exterior metal wall panels: the exterior metal wall panels, constructed of industry-standard "R" panels with ribs on 12" centers, are dented primarily along the west elevation of the original building and the addition, due to snow sliding off the metal roof and falling against the metal panel walls. There is also damage to miscellaneous panels around the perimeter of the building, likely cause by snow removal or mowing equipment. The dented panels are not a structural concern but are primarily an aesthetic issue. The estimated construction cost to replace the exterior metal panels along the entire west elevation is $27,500.

2. Leaking metal roof of original building: according to arena personnel the existing sloping metal roof of the original building (approximately 25,520 S.F.) and the addition (approximately 1,440 S.F.) is experiencing numerous leaks including over the rink, over the spectator seating area, in the lobby, in the women's toilet room and in the locker room corridor. It is suggested that, in lieu of removing and replacing the existing metal roof, that a white, synthetic, solvent-based rubber coated be applied over the existing roof. This rubber roof has a ten year non prorated warranty on material and labor.
   The estimated construction cost to install a synthetic rubber over the existing metal roof of the original building and the addition is $92,675.

   The estimated construction cost to repair the leaks is $10,000. This is considered a short term solution until the entire roof is provided the rubber coating system.

Building Constraints / Physical Needs: Meetings were conducted with ATS&R Architects and representatives of Northfield Ice Arena user groups, including St. Olaf College, Carlton College, Northfield Public Schools, Northfield Skating School and the Northfield Youth Hockey Association. The purpose of the meetings was to gather information about what is lacking or needed at the existing facility as well as to obtain an understanding for the demand on ice time.

Refer to the Appendix for Memorandum No. 1, which documents items discussed at the user group meetings.

Building Constraints / Needs were identified as follows:

1. Small Team Locker Rooms – the facility contains seven team locker rooms, 6 of them are 145 S.F. in size and one is 196 S.F. Another space, Team Room 8, is actually an open space at the end of the corridor that is enclosed by a curtain. Modern day team rooms range in size from 300 – 480 S.F. Because the existing team rooms are so small, one team must occupy at least two rooms. This is very difficult for supervision and there is not space to gather the entire team for coaching between periods. A typical one sheet ice arena would contain a minimum of four appropriately-sized team rooms.

2. Player Toilet Facilities – there are no toilet facilities adjacent to the team rooms, therefore players must use the public toilet facilities located near the Lobby. The public toilet facilities are small and remote to the team rooms, causing delays and overcrowding. As these are the only toilet facilities, the home and visiting teams occupy the toilet room at the same time which can result in safety concerns. It is common to provide toilet facilities adjacent to the team rooms for player use. It appropriate to note here that the facility does not contain the appropriate number of plumbing fixtures based on current building code and building use.

3. Congested Lobby – Due to its small size and because it serves as the main building entrance and queuing space for the concessions and pro shop activities, the lobby gets very crowded as people enter and exit, as well as gather to observe a game, while at the same time players are attempting to use the public toilets. In addition, one team is often exiting the ice through this area to get to the locker rooms, resulting in interactions between players and spectators from the opposing team which can result in safety concerns. The lobby gets especially crowded if a game goes into overtime and another group of spectators and players are attempting to enter.

4. Lack of Dedicated High School Junior Varsity/Varsity Locker Rooms – due to the small size and quantity of existing locker rooms the Northfield High School J.V. and Varsity players have to store their equipment off site as well as share locker room space with other users. Modern day facilities often provide designated high school boys and girls locker rooms.

5. Lack of Equipment Storage – there is very limited space for storage of hockey gear and equipment. The team rooms are small and the corridor outside the team rooms is very narrow,

providing limited space to store hockey bags and causing congestion in the team rooms and corridor.

6. Player Showers – there are no showers for player use. It is common to provide showers adjacent to the team rooms for player use, especially by older players.

7. Lack of Meeting Space – there is a meeting room located on the mezzanine above the resurfacer room, however, this space is not handicap accessible and it is not appropriate to exit through the mechanical space to access the meeting room. An accessible meeting room is desired for skating school parent meetings, team meetings, etc.

8. Dry land / Off-Ice Training Space – there is currently no space for off-ice training which previously occurred in the mezzanine which is now occupied by mechanical equipment.

9. Staff Toilets – as there are no dedicated staff toilets, ice arena staff must share the public toilet facilities with younger users; dedicated staff toilets are desired.

10. Exhibit Use Heating System – there is not heating system in the ice arena other than the radiant heaters above the spectator seating area. The arena is cold when used for exhibit functions.

ICE RINK USAGE

One of the goals of the user group meetings was to obtain an understanding for the demand on ice time. (Refer to the Appendix for Memorandum No. 1, which documents items discussed at the user group meetings). The following is a highlight of the items discussed:

1. St. Olaf College uses a large amount of ice time (approx. 350 hours during the 2015-16 season) from 1:00 – 4:00 PM Monday thru Friday. This is time that is not desired by other user groups. If St. Olaf builds a new ice rink the revenue from these rental hours will likely be lost.

2. St. Olaf College used a total of 388.5 hours of ice time during the 2015-16 season. 38 of these hours occurred after 5:30 PM. If St. Olaf builds a new ice rink these hours would likely be picked up by other users such as NHA or NHS.

3. Northfield Skating School could likely use more ice time and hold “Learn to Skate” programs if the facility deficiencies, including the rink length, were improved.

   The Northfield Skating School used 23.75 hours of ice time in 2014 and 23.5 hours in 2015.

4. Desired ice time hours from Monday thru Friday are approximately from 3:45 – 9:45 PM. User groups such as NHA and NHS expressed the need for additional ice time during these hours, however, due to other groups using the ice at these times additional hours can only be achieved

by adding another sheet of ice. Currently these groups go to Shattuck or Faribault to obtain desired ice times.

5. Northfield Youth Hockey used 482.5 hours of ice time at the Northfield Arena and used 67 hours of ice time elsewhere. It is likely that these hours that were used elsewhere would not be gained at the Northfield Arena unless a second sheet of ice was provided.

6. Northfield High School Varsity and Junior Varsity teams practice at the same time. Typically these teams would practice at different times however due to lack of ice time during the desired hours they are forced to conduct combined practices. Ice usage would be increased by NHS if more ice time was available during desired hours.

CODE ANALYSIS

As part of the facility conditions assessment a preliminary code analysis was conducted of the existing ice arena. The building codes have changed since the original building and addition were constructed, however, an owner is not required to make changes to an existing building to comply with current building codes **unless** a repair, alteration, addition, or a change of occupancy is undertaken. In regard to repairs, the building code states that "the (repair) work shall not make the building less conforming to the building, plumbing, mechanical, electrical or fire codes of the jurisdiction,… than it was before the repair was made.". It is recommended that prior to any of the above-referenced work proceeding at this facility that the local building official be contacted to assure compliance with applicable codes.

Based on a preliminary code review the following code deficiencies / concerns were observed:

- Refrigeration Room Fire-rated Doors - are required to close automatically and latch. These existing doors do not have closers. Estimated construction cost to add two closers to the fire-rated doors is $1,250.

- Rink use for Exhibits (such as the Book Fair and the Home and Garden Show) – occupant loads that exceed 500 occupants are required to have a minimum of 3 exits; occupants loads over 1,000 need a minimum of 4 exits. It was mentioned during interviews that the existing dasher boards are left in place while the rink is used for exhibits and the only exit provided is the 10 feet wide gate at the resurfacer entrance. Leaving the dasher boards in place during exhibit shows does not provide appropriate exit widths or appropriate distance between exits; dasher boards should be removed in strategic locations. This should be reviewed by the local Building Official / Fire Marshall.

- Posted Maximum Occupant Load – the posted maximum occupant level for "dry floor shows" (exhibits) is indicated at 1,874 occupants. Based on an analysis using the current building code the maximum exit width available in the building can accommodate a maximum occupant load of 1,340 occupants. The posted occupant loads and occupant exiting should be reviewed by the local Building Official / Fire Marshall.

- IF an addition were constructed to the existing facility the existing building would be required to comply with the new building code in terms of building area, building height and the number of stories. Also, up to 20% of the construction cost of the addition would be required to be allocated to handicap accessibility.

Refer to the Appendix for code plans; Code 1, Code 2, Code 3 and Code 4.

3.0 SITE ASSESSMENT

PARKING

Existing parking spaces comply with the City of Northfield zoning ordinance. There are a total of 113 parking spaces at the arena site.

Arena staff indicated that during St. Olaf and high school hockey games and exhibition uses such as the Book Fair and the Home and Garden Show, parking spaces are lacking. There are approximately 45 regular season games between St. Olaf and the high school and 4 youth association tournaments each year. St. Olaf indicated that they sell up to 450 tickets during a hockey tournament. During these events attendees are able to park along the north side of Bollenbacher Drive where designated, or they try to find parking at nearby establishments, which is not appreciated by the establishment operators. During exhibitions it is understood that arrangements have been made with Polzin Glass Company to allow parking in their grass field area on the north side of their property for overflow parking.

Additional parking spaces could potentially be added at the location of the existing outdoor rink on the east side of the property. This outdoor rink is located in a road right-of-way. It is estimated that approximately 40 parking spaces could be added at this location.

Refer to the Appendix for aerial site plans EX-1 and EX-2.

GENERAL SITE CONDITION

The existing Ice Arena site is experiencing normal and typical signs of wear, with the following items that will require additional maintenance in the near to distant future:

1. Asphalt Pavement Maintenance
   - Full Depth Crack Cleaning and Filling
   - Seal Coating Surface
   - Restriping & Markings of Parking Lot
   - Estimated Construction Cost $ 15,642.

   Notes: The asphalt pavement appears to have a heavy stone mixture which has potentially benefitted the Ice Arena over the years and provided additional resistance to wear. The overall surface is in relatively good shape, except for the cracking of pavement.

- When the lot is seal coated it will also need to be restriped and will be required to be brought up to current State of Minnesota ADA Accessibility Codes. These requirements will mean that (2) additional ADA Accessible Parking Spaces be included and that the ADA Access Isles be made to the minimum 8’-0” width, with additional signage at the front end of the parking spaces being included. This will mean the potential loss of up to (2) two parking spaces from the overall parking lot spaces availability.

2. Low Spot in the Asphalt Pavement
   - Full Depth Asphalt Removal and Replacement
   - Requires re-grading of Base Aggregate for Surface to Drain Properly
   - Estimated Construction Cost $ 62,500.

   Note: A portion of the north drive lane has a lot spot in the pavement that will only become more deteriorated over the next few years. Potentially this is a base aggregate issue, thus the pavement surface no longer drains properly or reaches the parking lot catch basins. A relatively large portion of the pavement will need to be completely removed and reconstructed.

3. Removal and Replacement of Cracked or Chipped Concrete and Concrete Curb & Gutters
   - Removal of Curb & Gutter Will Require Asphalt Removal and Replacement
   - Estimated Construction Cost $ 13,250.

   Note: Various concrete curb and gutters are in need of repair or have settled, along with the curb and gutter removal & replacement will require that certain portions of the asphalt surface to be corrected.

Additional Items to be considered:

- Overall maintenance of the east practice rink
- Straighten up of one light pole to the east practice rink
- Tree trimming and pruning throughout

4.0 MECHANICAL SYSTEMS ASSESSMENT

This category includes the fire sprinkler system, plumbing systems and heating, ventilation and air conditioning (HVAC) systems including dehumidification.

4.1 FIRE SPRINKLERS

The building is currently not sprinklered. The City of Northfield may consider contacting its insurance provider to determine to what extent the cost of installing a fire sprinkler system could potentially be offset by reduced insurance rates. IF an addition where to be added to the arena facility a fire sprinkler system would likely be required throughout the existing buildings and addition based on current building code requirements. Estimated construction cost to provide a wet pipe fire sprinkler system in the existing building is $225,000.

Note: no testing was conducted to determine the pressure of the water service; it is assumed that the pressure is appropriate for a sprinkler system.

4.2 PLUMBING

The 1970's building has a sanitary sewer main that currently runs below the locker rooms area and leaves the building to the North end of the facility. It services the plumbing fixtures in the concessions area, the storage rooms and mechanical rooms as well as the Zamboni room. In the past there had been issues with back-ups on this main near the locker areas, but has since been repaired. There is a second sanitary main in the addition that was added for office, entry and toilet rooms. This sanitary main services the Men's and Women's toilet rooms and runs out the North side of that addition, through the parking lot and connects to the original sanitary sewer main at the back of the North end of the original building.

The plumbing fixtures appear to be on fair condition, the plumbing fixture counts are addressed in the architectural code review section of this report. The china fixtures are durable, and are expected to provide another 15 years of service. Present day fixtures would be more water efficient, and could replace the existing fixtures if there is a design directive to conserve natural resources. Replacement of flush valves and faucets should be an expected maintenance expense during the next 15 years as these components have moving parts that wear out with use. Estimated construction cost to replace 8 flush valves and 5 faucets is $13,000.

The water heater serving the resurfacer is an A.O. Smith Cyclone (2007), high efficiency water heater that feeds into a 120 gallon water storage tank. While the water heater appears to be in good shape, the existing reverse osmosis water softening system has caused internal corrosion and it is recommended that it be replaced in the next 3 years. The storage tank is beyond its normal service life and should also be replaced.

Estimated construction cost to provide a new duplex stainless steel inner shell water storage tank is $15,000

Estimated construction cost replace the water heater is $25,000.

The restrooms in the addition are serviced from a smaller electric Bradford White water heater in the storage room between the locker rooms. It is in fair shape. Replacement would not be needed for over 5 years.

The main water service is brought into the building below floor into the storage/mechanical room between the locker rooms. We would recommend that the hot and cold domestic piping be insulated to save energy as that water is fed to water heaters and will cause additional energy usage as the rink will cause the water to cool in the pipes. Estimated construction cost to provide pipe insulation is $9,900.

4.3 HVAC

The current locker rooms are small in size and have only a recirculating heating system which consists of a furnace located in a storage room with supply ductwork overhead and return ductwork between the dasher boards and the stands. All of the existing ductwork is un-insulated and cases heating issues with the locker rooms furthest from the furnace. Additionally, there is no exhaust in these spaces; current code requirements would require that an exhaust system be in place with make-up air to properly ventilate the space.

These spaces need to be addressed from a heating (comfort) standpoint as well as ventilation. Estimated construction cost to provide a new locker room exhaust with make-up air and replace existing ductwork is $56,250.

The dehumidifier is newer (2008) and in good shape. It uses waste heat from the refrigeration system to produce hot water and a refrigeration coil to dehumidify the air in the arena. This system is operating good as it is currently operating. The distribution of the supply ductwork is through a round sheet metal duct which then goes to a fabric duct supplying the air to the arena. The distribution system is in good condition.

The radiant heaters at the spectator seating area use vacuum assisted venting and combustion air from the outdoors. The system is using insulated flex duct for the combustion air from the outdoors, which is keeping the intake duct from sweating and extending the life of those units. These units are currently beyond their service life and should be replaced. One unit has been replaced after it failed recently. Estimated construction cost to replace the 5 radiant heaters is $20,000.

The front office is served by a residential furnace unit that was installed in 2000 and has an expected life of 15 years and based on its condition it should be replaced within the next 5 years. Estimated construction cost to replace the residential furnace unit is $9,375.

The toilet room area has an in-line exhaust fan above the ceiling that discharges to the outdoors through a louver at the wall; that system appears to be working and in fair condition.

The rink area exhaust system that is used to purge the building at times when the resurfacer is operating is in poor shape and is in need of replacement. The current propane resurfacer discharges CO into the space when it is used and can cause poor indoor air quality (IAQ) within the rink. Estimated construction cost

to replace the rink exhaust system is $10,000. This system could be minimized in use if an electric resurfacer was provided.

Electric Resurfacer - the Northfield Ice rink can achieve a much improved IAQ from what is experienced in the rink today. Currently the facility has a very old and outdated exhaust system for purging the CO (carbon monoxide) and/or NO2 (Nitrogen Dioxide) whenever the rink is resurfaced from the currently used propane powered resurfacing machine. The intake and the exhaust are both located high in the facility and do not sweep air across the ice surface to remove the pollutants from the building. A new electric resurfacing machine would help greatly improve IAQ by the elimination of the gases produced from the older propane one currently in use at our facility. We are not sure of how bad the IAQ facility currently gets in the facility even with having sensors for CO and CO2 as the sensors are not mounted near the floor. Currently arena staff use hand sensors to conduct the required testing 2 times per week to comply with state testing requirements. It is our recommendation that the City of Northfield obtains an electric resurfacing machine and an electric edger, and move the existing IAQ sensors near the ice to better track conditions and improve the health and conditions of our facility and the people that use it. Estimated cost to provide an electric resurfacer (in lieu of replacing the rink exhaust system) is $135,000.

5.0 ICE SYSTEM ASSESSMENT

REFRIGERANT R-22 ISSUES

R-22 (Freon) is an efficient and safe refrigerant that has been widely used for ice rink refrigeration as well as building air conditioning applications for many years. Beginning in 2004, the Montreal Protocol, enforced by the US Environmental Protection Agency (EPA), required a gradual phase-out in the use of CFC (chlorofluorocarbon) refrigerants such as R-22 due to their relatively high ozone depletion potential and global warming potential. The long term availability of the refrigerant R-22 at a reasonable price is difficult to forecast. A reliable supply of R-22 is needed on a regular basis to make up for minor system leaks in the refrigeration system and possibly for replacement of the full system charge if a major leak should develop. The production of new stocks of R-22 has been drastically reduced by EPA regulations. This has led to panic buying and stockpiling, and regular price increases. Levels of price increases have risen each year since 2004, reaching a peak cost of nearly $22 per pound in 2013, although the price has dropped somewhat to the current price of approximately $20 per pound. Additional future increases are likely as available supplies are further reduced. The full system refrigerant charge for the existing plant of approximately 1,000 pounds, which cost approximately $1,500 in the year 2000, would now cost $20,000, and could potentially exceed $40,000 or more in coming years. By the year 2020 production of new R-22 will stop, and only reclaimed R-22 will be available, further depleting available supply and increasing the cost. It is also possible that the federal government will add a special tax to the sale of R-22 to further discourage its use, as was done with R-12 several years ago. We recommend that the City monitor the price of R-22 in coming months and years, and factor that cost into decisions as to if and when the refrigeration system is replaced. We also recommend that maintenance staff perform regular leak testing of all equipment and piping systems to identify and repair small leaks as soon as possible.

Knowing that an R-22 phase-out was underway, many ice arenas that have installed new refrigeration systems in the last 5 to 10 years have utilized HFC (hydro fluorocarbon) refrigerants such as R-507, R-407C, or R-134A. Although HFC refrigerants have minimal impact on the ozone layer, they have high global warming potential. The EPA is considering future phasing out of HFC refrigerants, although a timetable has not yet been set.

The arena has used an average of approximately 80 lbs of refrigerant per year from 2011 – 2016, not including refrigerant lost to leaks in the system. Leaks occurred in 2011 and 2012.

EXISTING REFRIGERATION SYSTEM

The ice rink systems consist of concrete surface rink floor, heavy-duty dasher boards with metal framing and polyethylene facing, and an industrial quality indirect-style refrigeration plant that uses R-22 as its' primary refrigerant. The 2008 ice rink system is capable of maintaining ice on a 9 month per year basis. The typical useful operating life of the ice system components is 25 to 30 years. The ice rink systems have all performed well, and are in very good operating condition; however the impending phase-out of the production of new R-22 refrigerant has resulted in the need to consider the future renovation or

replacement of the refrigeration plant. Since the existing rink floor and dasher boards are only 8 years old and are performing well, no replacement of those features is contemplated in the near future.

A description of the existing refrigeration system follows:

All components are sized to provide approximately115 tons refrigeration capacity, using R-22 as the primary refrigerant and calcium chloride brine as the circulation fluid. The system is configured to allow the future addition of a third compressor if a second rink is added to the facility. Components were assembled off-site on steel skids, to allow the system to be easily moved to another building if the existing arena is demolished or a new facility is constructed. Specific equipment components include:

Two industrial quality open reciprocating compressors, each equipped with high efficiency electric motor, oil separator, and microprocessor controller. The compressors are Vilter 350 Series models, which unlike 450 Series models are not convertible to use with ammonia refrigerant.

1. Flooded chiller vessel with surge drum and level controls.
2. Evaporative style condenser, indoor remote sump tank, and water pump.
3. Two centrifugal pumps used to circulate chilled calcium chloride brine liquid through the ice rink floor.
4. A supplemental heat system that uses waste heat generated by the compressors for recharging the Munters desiccant dehumidifier.
5. No rink subsoil heating system is present, which limits the season of operation to prevent frost heaving of the floor. The length of time a refrigerated rink can operate without a subsoil heating system varies depending on many factors, including:
    - Type of subsoil below the rink – free-draining granular or rocky subsoil are less likely to contain large amounts of moisture
    - Presence of moisture in the subsoil – if the subsoil contains excess moisture, the moisture can freeze and expand, lifting the rink slab upwards
    - Thickness and type of insulation below the refrigerated floor – more insulation R-value delays freezing/frost heaving of the subsoil
    - Rink operation temperature – if the rink is run at a colder temperature the creation of subsoil frost will be accelerated

    In general, most rinks without subsoil heat systems are operated no more than 6 months per year. Although the 2008 construction drawings indicate that a subsoil temperature monitoring probe was installed below the rink floor, operations staff and the rink contractor say the probe was not installed. Since there is no easy way to monitor whether the subsoils are frozen, it is our recommendation that the rink not be operated more than 6 months per year. If the City does extend the ice season beyond 6 months, accurate survey equipment should be used to shoot the elevation of the rink floor near its center point on at least a weekly basis to verify the floor is heaving, and refrigeration of the rink should immediate stop if heaving is detected.

CONCLUSSIONS AND RECOMMENDATIONS

The existing R-22 refrigeration plant is in good condition, and is capable of providing quality ice at a reasonably low operating cost. Conversion of the plant to a different refrigerant is not recommended at this time, since conversion to ammonia is expensive because of the need to fully replace several key components, and because conversion to any other available HFC refrigerant would result in a reduction in available tonnage, an increase in power use, and the possibility that the EPA could someday also phase out the replacement. Various manufacturers have released refrigerants that they claim can be used as direct replacements ("drop-in replacements") for R-22, however no replacement has yet proven to have a long history of successful use, and so we are hesitant to recommend any drop-in refrigerant conversion at this time.

Our recommendations as to the scope of the ice system work to be designed and constructed are as described below:

Recommended Scope – Retain Existing Refrigeration System with Minimal Changes

1. Continue use of the existing R-22 refrigerant plant for at least the next several years, or until maintenance costs and R-22 pricing/availability indicate that replacement is warranted. Although the EPA does not currently allow the installation of new R-22 systems, there are no restrictions on continued maintenance of existing systems, and the existence of large stockpiles of R-22 indicates that the material will be readily available for at least the foreseeable future.

2. Purchase a significant quantity of reclaimed R-22 refrigerant in the near future, and store in the existing refrigeration equipment room and at other locations. Reclaimed R-22 has been processed to have identical properties as new R-22, and is currently available for approximately $16 per pound. Although it is not uncommon to store very large quantities of extra refrigerant in an equipment room, ASHRAE Standard 15, which is referenced by building codes, allows a maximum of 330 pounds in the room unless pressure relief valves and piping are also provided. Any amount over 330 pounds should be stored elsewhere in an approved storage facility.

3. When warranted, remove the existing R-22 plant and construct a new 100 ton ammonia indirect refrigeration system in the existing refrigeration room, using industrial quality components. Industrial quality systems provide 10 years longer life than commercial quality systems, and the best efficiency of the non-geothermal systems. Ammonia is also the most environmentally friendly refrigerant available. Technological advances may make the future use of a CO2 system a feasible option rather than ammonia – this option should be investigated at the time of the replacement. The arena would be unavailable for skating for 10 to 15 weeks while the replacement of the refrigeration system occurs.

4. Replace or renovate existing rink floor, dasher boards, and shielding with new components when the existing components have reached the end of their useful life in 15 to 20 years.

5. Optional Scope – Convert Existing Refrigeration Plant to Operate with Ammonia Refrigerant Rather than R-22

6. Convert the existing refrigeration plant to use with ammonia refrigerant. The existing compressors cannot be converted to ammonia use, and so would need to be replaced with heavier duty ammonia compressors. The existing flooded chiller could possibly be reconstructed to allow the use of ammonia, however the conversion would not likely be feasible from a cost standpoint, and so replacement with a new chiller would be necessary. The existing evaporative condenser and remote sump tank are usable with ammonia. The rink circulation pumps can also be used without changes. Various changes and adjustments would be required to system piping, valves, and controls. The converted refrigeration plant would have a useful life of 25 to 30 years, although replacement or rebuilding of the evaporative condenser and pumps would be at an earlier point.

7. Provide safety improvements to the refrigeration equipment room to accommodate the use of ammonia. All walls, ceilings, and doors will need a minimum 1-hour fire rating. The room's ventilation rate may need to be increased. Leak detection and alarm systems would require modifications or replacement to operate with ammonia.

8. Replace compressors – the typical life range for the existing compressors is 15 – 25 years, however, since the compressors only operate part of the year, an even longer life is possible. It is a good idea to budget for the compressor replacement in the next 10 years. It is recommended that when replaced the new compressors are Vilter 450 Series, which are higher quality and have a longer life span. When the compressors are replaced it may be best to also convert the system to another refrigerant such as ammonia at this time as it is unlikely that the R-22 refrigerant will be available at a reasonable cost.

ESTIMATED CONSTRUCTION COSTS

Estimated construction costs for each proposed improvement option discussed in this report are summarized below.

RECOMMENDED SCOPE – RETAIN EXISTING REFRIGERATION SYSTEM WITH MINIMAL CHANGES

Purchase and store 330 lb. R-22 refrigerant in containers in the refrigeration room	$ 6,600
Purchase and store 670 lb. R-22 refrigerant at offsite facility w/ safety features	$ 28,000
Total estimated construction cost of Recommended Scope	$ 34,600

OPTIONAL SCOPE – CONVERT EXISTING REFRIGERATION PLANT TO OPERATE WITH AMMONIA REFRIGERANT RATHER THAN R-22

Demolish and replace both reciprocating compressors and accessories	$ 160,000
Demolish and replace flooded chiller and accessories	$ 120,000
Piping and valving improvements	$ 80,000
Electrical and control changes	$ 60,000
Improvements to building, ventilation, and alarm systems	$ 25,000
Total estimated construction cost of Optional Scope	$ 445,000

OPTIONAL SCOPE – REPLACE EXISTING COMPRESSORS WITH VILTER 450 SERIES COMPRESSORS

Remove existing compressors and provide Vilter 450 Series compressors	$ 120,000
Increase electrical feed from 75 HP to 100 HP	$ 20,000
Total estimated construction cost of Optional Scope	$ 140,000

6.0 ELECTRICAL SYSTEMS ASSESSMENT

ELECTRICAL DISTRIBUTION SYSTEM

The existing electrical power distribution system consists of the following components:

1. 277/480 Volt 3 Phase Main service switchboard
2. 277/480V 3 phase power panel; 225 amp (Chiller room)
3. 277/480V 3 phase lighting panel; 400 amp (Chiller room)
4. 50 KVA 480/240/120v 1 phase transformer (Chiller room)
5. 120/240V 1 phase panel; 200 amp (Chiller room)
6. 120/240V 1 phase panel; 200 amp (Storage room)

Most of the switchboard equipment, distribution panels and transformer are from the original construction and are estimated to be over 40 years old and are approaching the end of their useful. It is recommended that this equipment be replaced. The estimated construction cost to replace the following equipment is as follows:

- Main service switchboard	$80,000
-3 phase power panel; 225 amp (Chiller room)	$10,000
- 3 phase lighting panel; 400 amp (Chiller room)	$15,000
- 1 phase transformer (Chiller room)	$6,000
- 1 phase panel; 200 amp (Chiller room)	$8,000
- 1 phase panel; 200 amp (Storage room)	$6,000
Total	$125,000

Arena staff indicated a desire to add electrical circuits to the overhead power grid above the rink as exhibitors have experienced tripping of the breakers in the distribution panels. They are also tripping breakers at the power that servers the scorer's table. Estimated construction cost to add 5 - 20 amp single phase circuits is $10,000.

RINK LIGHTING

The existing rink is illuminated with 45 – 6 lamp fluorescent light fixtures. The light level seems adequate; however these fixtures need re-lamping approximately every 5 years, depending on rink usage, and require the use of a lift. Replacing these fluorescent fixtures with LED fixtures would significantly reduce the cost of re-lamping and save energy. The life expectancy of LED lamps is approximately 20 years. The anticipated payback based on reduced energy usage and subtracting the cost of re-lamping is approximately 5 years. The estimated construction cost to provide new LED light fixtures at the rink is $28,125.

FIRE ALARM SYSTEM

There is no fire alarm system. IF an addition where to be added to the arena facility a fire alarm system would likely be required throughout the existing buildings and addition based on current code requirements. (Current Safety State Fire Code Section 2 states "A fire alarm system is required when the occupancy is 300 or above" in an assembly occupancy). Estimated construction cost to provide a fire alarm system in the existing building is $50,000.

EMERGENCY LIGHTING

Emergency lighting consisting of battery back-up fixtures are provided in the building. Code requires a minimum of one (1) foot-candle of illumination throughout the path of egress. Based on site observation additional emergency lights should be provided in the spectator seating and locker room areas (8 total) and at exterior exit doors (6 total). Estimated construction cost to add 14 emergency lights is $7,500.

PARKING LOT LIGHTING

Parking lot lighting appeared to provide adequate light levels and was in good condition. It was observed that one concrete light pole base was damaged and is recommended to be replaced. The estimated construction cost to replace the light pole base is $3,750.

7.0 APPENDIX

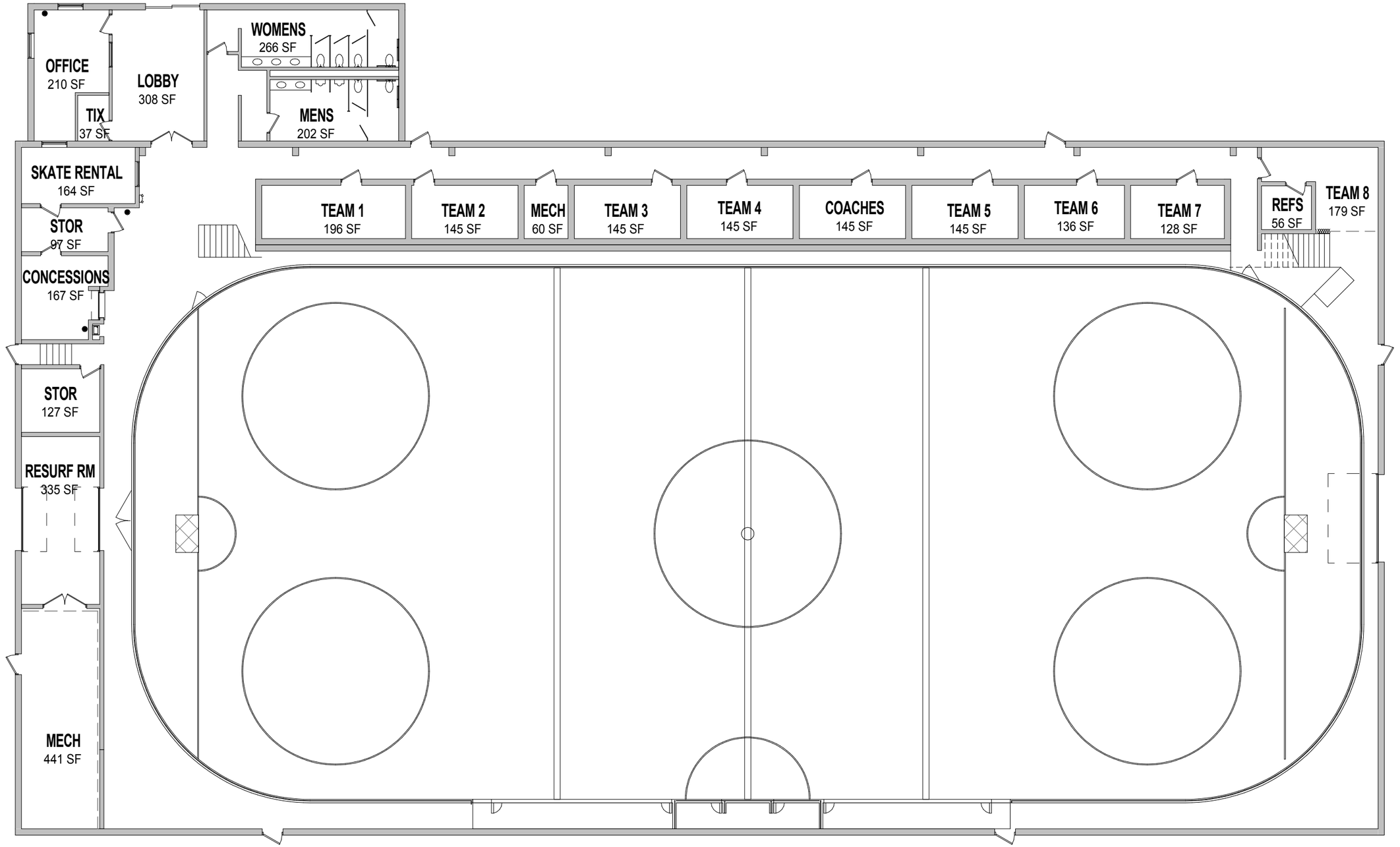
LEVEL 1 AND LEVEL 2 FLOOR PLANS; Plan 1 and Plan 2

LEVEL 1 AND LEVEL2 CODE PLANS; Code 1, Code 2, Code 3, and Code

CONTEXT AND ARENA AERIAL PLANS; EX-1 and EX-2

MEMORANDUM NO. 1 MEETING MINUTES

CONSTRUCTION COST ESTIMATES



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ARMSTRONG TORSETH SKOLD & RYDEEN
ARCHITECTURE ENGINEERING
PLANNING TECHNOLOGY
INTERIOR DESIGN LANDSCAPE ARCHITECTURE

SCALE

0' 8' 16' 32'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Sheet Title: FIRST FLOOR PLAN

Date: 10/31/16
Project: 16038
Drawn: . tap

Sheet Number: Plan1

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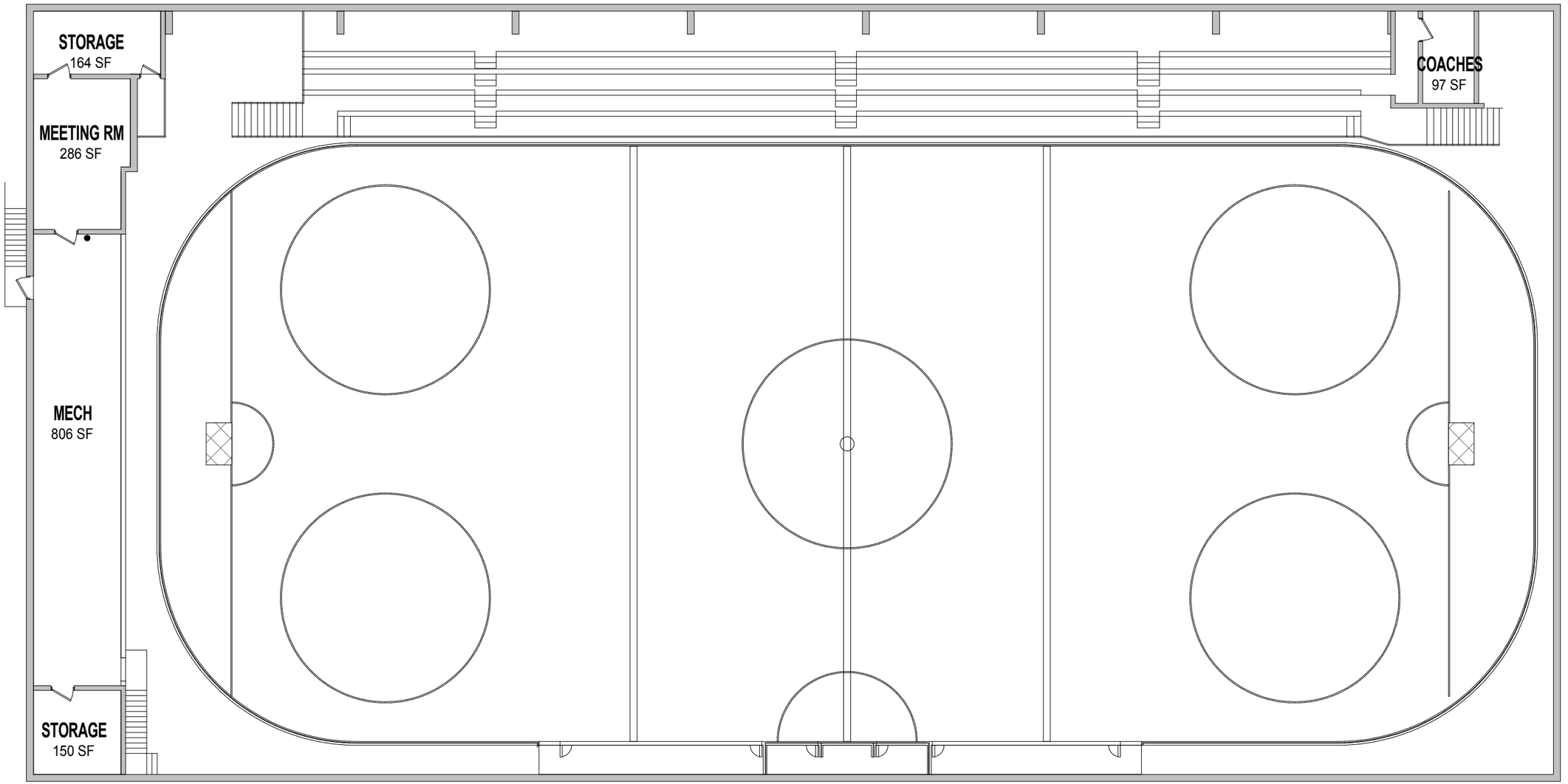

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INTERIOR DESIGN LANDSCAPE ARCHITECTURE

SCALE

0' 8' 16' 32'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Sheet Title: SECOND FLOOR PLAN

Date: 10/31/16
Project: 16038
Drawn: TAP

Sheet Number: Plan2

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LEGEND

- EXIT SIGN & EMERGENCY LIGHT
- EMERGENCY LIGHT
- FIRE EXTINGUISHER (FE)
- (1) TOTAL OCCUANTS PER ROOM
- X "X" = NUMBER OF EXITING OCCUPANTS
- 1 HOUR FIRE BARRIER (60 MIN RATING AT SHAFT ENCLOSURES, 45 MIN RATING AT INCIDENTAL USE AND OCCUPANCY SEPERATIONS)

OFFICE 210 SF
LOBBY 308 SF
TIX 37 SF
WOMENS 266 SF
MENS 202 SF
SKATE RENTAL 164 SF
STOR 97 SF
CONCESSIONS 167 SF
STOR 127 SF
RESURF RM 335 SF
MECH 441 SF
FE

4" EXIT WIDTH REQ
32" EXIT PROVIDED

76" EXIT WIDTH REQ
76" EXIT PROVIDED

380

18

0

0" EXIT WIDTH REQ
32" EXIT PROVIDED

32" EXIT WIDTH REQ
32" EXIT PROVIDED

160

RAMP UP

1036

MAIN RINK EXHIBIT (A-3)
(TEAM ROOMS AND BLEACHERS ABOVE NOT USED)
15,540 / 15 SF/OCC = 1036 OCC
(4 EXITS REQ / 5 EXITS PROVIDED)

310

60" EXIT WIDTH PROVIDED
80" EXIT WIDTH REQ

300 (396)

32" EXIT WIDTH REQ
32" EXIT PROVIDED

3 HR RATED DOOR

160

32" EXIT WIDTH REQ
32" EXIT PROVIDED

32" EXIT WIDTH REQ
32" EXIT PROVIDED

SCALE
0' 8' 16' 32'

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INTERIOR DESIGN LANDSCAPE ARCHITECTURE

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Sheet Title: FIRST FLOOR CODE PLAN (EXHIBIT)

Date: 10/31/16
Project: 16038
Drawn: . tap

Sheet Number: Code1

8501 GOLDEN VALLEY ROAD SUITE 300 MINNEAPOLIS, MN 55427
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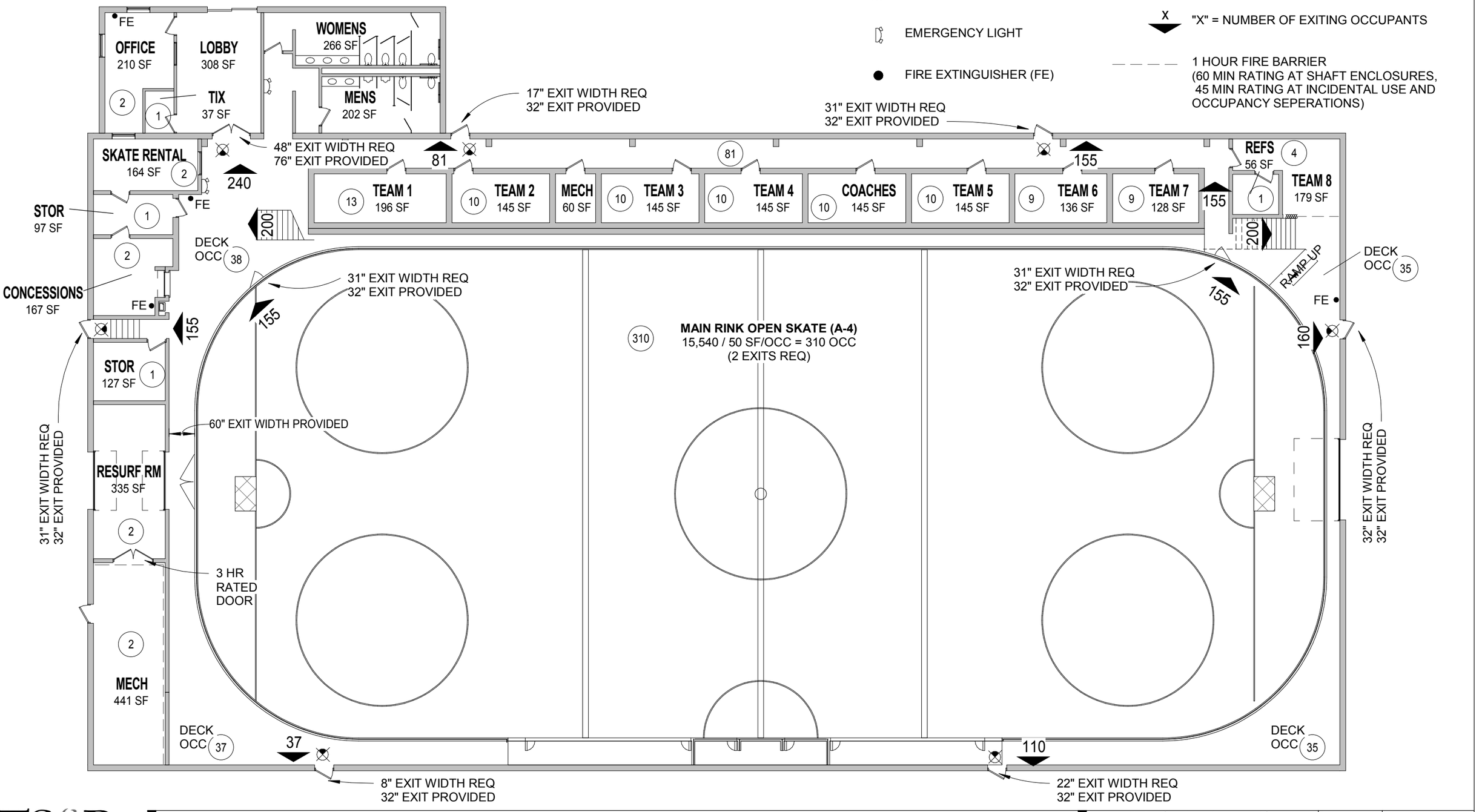
LEGEND

- EXIT SIGN & EMERGENCY LIGHT
- EMERGENCY LIGHT
- FIRE EXTINGUISHER (FE)
- (1) TOTAL OCCUANTS PER ROOM
- X "X" = NUMBER OF EXITING OCCUPANTS
- 1 HOUR FIRE BARRIER (60 MIN RATING AT SHAFT ENCLOSURES, 45 MIN RATING AT INCIDENTAL USE AND OCCUPANCY SEPERATIONS)



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PLANNING TECHNOLOGY
INTERIOR DESIGN LANDSCAPE ARCHITECTURE

SCALE

0' 8' 16' 32'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Sheet Title: FIRST FLOOR CODE PLAN (OPEN SKATE)

Date: 10/31/16
Project: 16038
Drawn: TAP

Sheet Number: Code2

8501 GOLDEN VALLEY ROAD SUITE 300 MINNEAPOLIS, MN 55427
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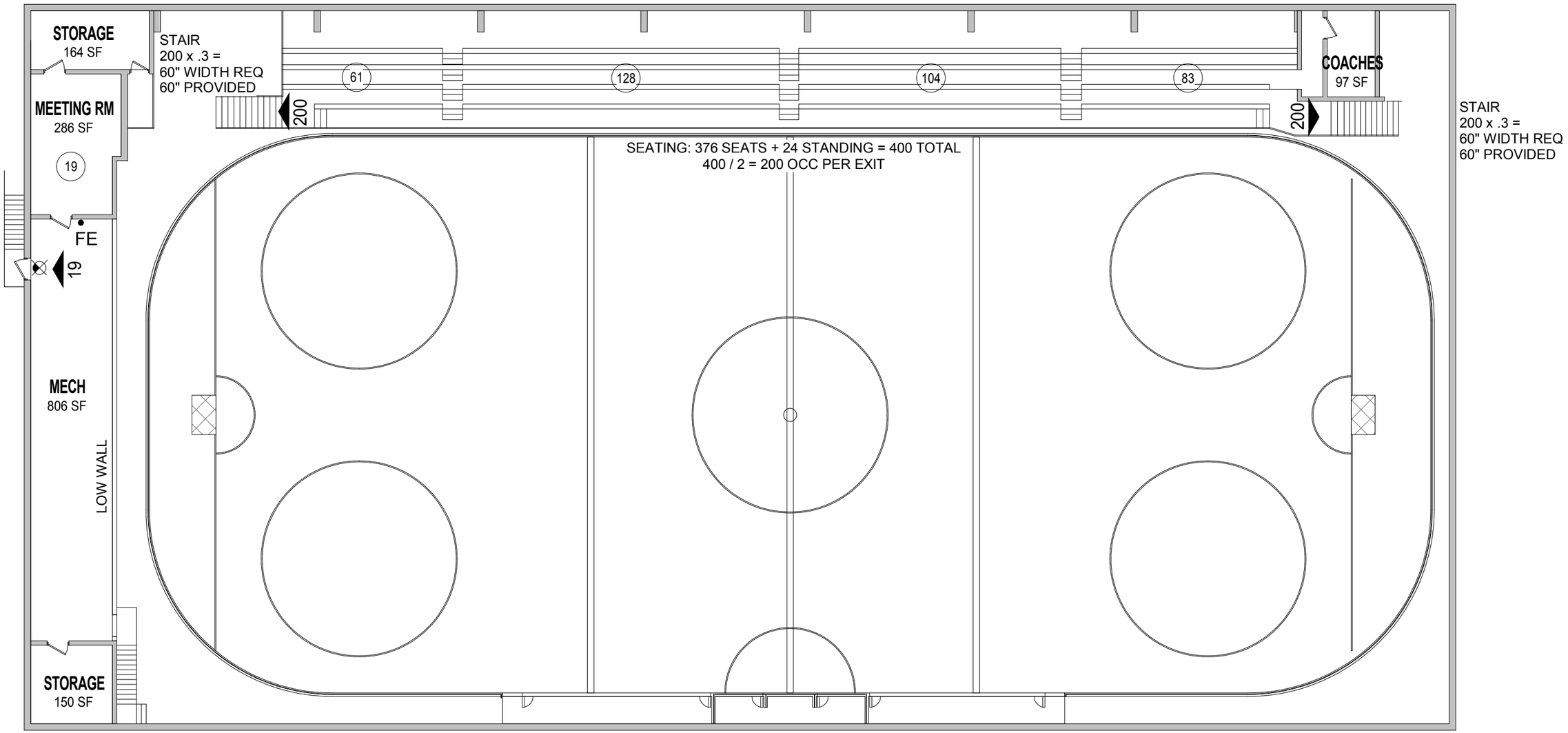
LEGEND

- EXIT SIGN & EMERGENCY LIGHT
- EMERGENCY LIGHT
- FIRE EXTINGUISHER (FE)
- (1) TOTAL OCCUANTS PER ROOM
- X "X" = NUMBER OF EXITING OCCUPANTS
- 1 HOUR FIRE BARRIER (60 MIN RATING AT SHAFT ENCLOSURES, 45 MIN RATING AT INCIDENTAL USE AND OCCUPANCY SEPERATIONS)



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PLANNING TECHNOLOGY
INTERIOR DESIGN LANDSCAPE ARCHITECTURE

SCALE

0' 8' 16' 32'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Date: 10/31/16
Project: 16038
Drawn: . tap
Sheet Number: Code3
Sheet Title: SECOND FLOOR CODE PLAN

8501 GOLDEN VALLEY ROAD SUITE 300 MINNEAPOLIS, MN 55427
TEL: 763.545.3731 FAX: 763.525.3289 WEB: www.atsr.com

PLUMBING FIXTURE CALCULATIONS

RINK EXHIBIT A-3

EXHIBIT FUNCTION AT MAIN RINK,
MEETING ROOMS FULL OCCUPANCY

1,036 OCC EXHIBIT
5 OCC OFFICE
2 OCC CONCESSIONS
1,043 OCC EXHIBIT TOTAL

1043 OCC / 2 = 522 BOYS, 522 GIRLS

REQUIRED	TOILETS	URINALS	LAVATORIES
MEN (1:125)	3	2	(1:200) 3
WOMEN (1:65)	8	-	(1:200) 3

PROVIDED	TOILETS	URINALS	LAVS
MEN	2	2	2
WOMEN	4	-	3

DRINKING FOUNTAINS: 1043/500=
1:500 OCC REQUIRED = 3
PROVIDED = 1

RINK OPEN SKATE A-4

MEETING ROOMS FULL OCCUPANCY

310 OCC MAIN RINK
145 OCC DECK STANDING
400 OCC BLEACHERS
81 OCC TEAM ROOMS
5 OCC OFFICE
2 OCC CONCESSIONS
943 OCC TOTAL

943 OCC / 2 = 472 BOYS, 472 GIRLS

REQUIRED	TOILETS	URINALS	LAVATORIES
MEN (1:75)	7	4	(1:200) 3
WOMEN (1:40)	12	-	(1:150) 4

PROVIDED	TOILETS	URINALS	LAVATORIES
MEN	2	2	2
WOMEN	4	-	3

DRINKING FOUNTAINS: 943/500=
1:500 OCC REQUIRED = 1
PROVIDED = 1

OCCUPANCY EXG BLDG IS NOT SPRINKLED	**A-3 / A-4**
CONSTRUCTION TYPE	II-B
ALLOWABLE HEIGHT	55'
ALLOWABLE STORIES	2
TABULAR AREA PER FLOOR (TABLE 503) = FRONTAGE INCR - IBC EQUATION 5-2 I_f = 100 [700'/700' - .25] 30/30	9,500 SQ FT =75%
SPRINKLER INCREASE I_s - SINGLE STORY	= NA
ALLOWABLE AREA PER FLOOR A IBC EQUATION 5-1	9,500 SF + 7,125 SF
TOTAL ALLOWABLE AREA PER FLOOR A_a =	16,625 SF
TOTAL ALLOWABLE FLOOR AREA	33,250 SQ FT
TOTAL ACTUAL NET FLOOR AREA (MAIN LEVEL) (UPPPER LEVEL)	24,936 SQ FT 4,351 SQ FT
TOTAL ACTUAL FLOOR AREA	29,287 SQ FT

GENERAL CODE NOTES:

1. CODE ANALYSIS IS BASED ON THE 2015 MINNESOTA STATE BUILDING CODE WITH AMENDMENTS AND THE 2012 INTERNATIONSL BUILDING CODE.
2. BUILDING IS NOT SPRINKLED (CURRENT BUILDING CODE REQUIRES A SPRINKLER SYSTEM IN A-3 AND A-4 OCCUPANCIES WITH AN AREA OF 12,000 SF AND/OR AN OCCUPANT LOAD OF 300 OR MORE).
3. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT EACH LEVEL (INCLUDING MEZZANINES) PER MN ACCESSIBILITY CODE 1104.4.1
4. MAXIMUM TRAVEL DISTANCE TO NEAREST EXIT IS **200** FEET (NON-SPRINKLED) FOR A OCCUPANCIES.
5. PROVIDE OCCUPANT LOAD SIGNAGE FOR ALL ASSEMBLY SPACES PER 1004.3. REFER TO SPECIFICATION FOR SIGN TYPE.
6. BASED ON EXISTING EXIT WIDTH (268"), MAXIMUM BUILDING OCCUPANCY IS 1,340 OCCUPANTS

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INTERIOR DESIGN LANDSCAPE ARCHITECTURE

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Date: 10/31/16
Project: 16038
Drawn: TAP

Sheet Title: GENERAL CODE INFO

Sheet Number: Code4

8501 GOLDEN VALLEY ROAD SUITE 300 MINNEAPOLIS, MN 55427
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SITE/CODE INFORMATION:

NORTHFIELD ICE ARENA

ZONING (PI–S) PUBLIC & INSTITUTIONAL

BUILDING SQFT. AREA
(AFTER RULES FOR COMPUTATION) = ± 22,000 SQFT

PARKING REQUIREMENTS BASED ON PI–S
USE CATEGORY "RECREATIONAL FACILITIES"

1. STANDARD A – MINIMUM = 2 SPACES/1000 SQFT.
2. STANDARD B – MAXIMUM = 4 SPACES/1000 SQFT.
3. ON STREET PARKING IS ALLOWED (AND CURRENTLY POSTED ON ONE SIDE OF STREET)

PARKING REQUIRED STANDARD A = 44 SPACES
PARKING REQUIRED STANDARD B = 88 SPACES

CURRENT ICE ARENA PARKING

EXISTING SPACES	= 110 SPACES
EXISTING ADA ACCESSIBLE SPACES	= 3 SPACES
TOTAL ON SITE PARKING SPACES	= 113 SPACES
EXISTING ON STREET PARKING	= ±28 SPACES
TOTAL AVAILABLE PARKING SPACES	= 141 SPACES

NOTE: DURING LARGER EXHIBIT EVENTS ARRANGEMENTS HAVE BEEN MADE WITH POLZIN GLASS COMPANY FOR THE USE OF THEIR GRASS FIELD AREA FOR USE AS OVERFLOW PARKING. (SEE EX–2, CONTEXT AERIAL PLAN)

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1
EX–1

ARENA AERIAL PLAN

SCALE: 1" = 50'

0' 25' 50' 100'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Date: 10/20/16
Project: 16038
Drawn: RJS
Sheet Number: EX-1
Sheet Title: ARENA AERIAL PLAN

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1
EX-2

CONTEXT AERIAL PLAN

SCALE: 1" = 80'

0' 40' 80' 160'

Facility Conditions Assessment for:
Northfield Ice Area
1280 Bollenbacher Drive
Northfield, Minnesota 55057

Date: 10/20/16
Project: 16038
Drawn: RJS
Sheet Number: EX-2
Sheet Title: CONTEXT AERIAL PLAN

8501 GOLDEN VALLEY ROAD SUITE 300 MINNEAPOLIS, MN 55427
TEL: 763.545.3731 FAX: 763.525.3289 WEB: www.atsr.com

DATE September 22, 2016

PROJECT Northfield Ice Arena Facility Study

PRESENT Present: Mark Hayes – ATS&R

SUBJECT Facility Condition Assessment – User Group Meetings

BY Mark Hayes

As part of the Facility Condition Assessment of the Northfield Ice Arena, meetings were conducted with representatives of the Arena's user groups. The purpose of the meetings was to identify the facility program needs as well as to obtain an understanding of the usage of the facility. (How much ice isn't available when it is needed? The following items were discussed:

1. Carlton College

   Present: Gerald Young – Carlton College Athletic Director, Aaron Chaput – Carlton College Club Athletic Director

   a. Scheduled usage:
      i. Men's Club Team (15-20) – Tuesday/Thursday 10:00PM-11:00PM
      ii. Women's Club Team (15-20) – Monday/Wednesday 10:00PM-11:PM
      iii. Schedule – January/February (Two months)
      iv. 5+/- Friday PM games : 10:00PM –Midnight
         1. Early times are desired but not available.
      v. Fan Bus – Parking is not an issue.
      vi. For St. Olaf games: limit tickets to 500 spectators
   b. Needs:
      i. Lack of locker rooms/small locker rooms: Currently home and visitors use (2) each due to the small size, and the next teams coming in needing (4) rooms. There are not enough team rooms; Need (4) appropriately sized (400 sqft +/-) team rooms
      ii. Temporarily set up a team room at the end of the corridor, yet players and spectators exit through this area.
      iii. Showers desired.
      iv. Tight/small circulation/corridor space.
      v. Congestion at lobby when one group arrives as another is leaving, especially if the game goes into overtime.

2. Northfield Ice Arena

   Present: Tom Spooner, Recreation Operator

   i. 500 people + for book fair.
   ii. Only open 10 foot wide gate for exiting the rink; they keep dasher boards up.

3. Northfield Skating School

   Present: Carrie Tinkleberg – Northfield Skating School

   a. Schedule/Usage:
      i. Sundays only: 10:30AM-1:30PM (3-8 week sessions).
      ii. Sometimes they get bumped due to scheduling conflicts.
      iii. Could possibly use more ice time (if facilities were appropriate.)
      iv. 40-50 up to 180 +/- group size.
      v. 30 minute groups
   b. Needs:
      i. Meeting space; (currently meet off-site for 50-70 parent; 20 staff.)
      ii. Dry land training space (1) at 900 -1,000 square feet.
         1. Mirrors
      iii. Concessions – larger selection, healthier options
      iv. Larger locker rooms
         1. Use up to 2-3 team rooms; problem if coincides with a tournament/game.
         2. Electricity in the rooms.
         3. Larger coach's room.
   c. Hosting a "Learn to Skate" USA Program, but having the event at Shattuck due to deficient facilities. "Learn to Skate" event requires:
      i. Regulation rink; 200 feet long.
      ii. (2) Meeting rooms with power point capability.
      iii. Updated facility
      iv. Parking
      v. Off-site
      vi. Cannot host and official figure skating event due to short rink size. (Should be 200 feet long in lieu of 196)
   d. Deficient facilities make it difficult to attract more and higher level participants and therefore inability to retain and attract higher level instructors.
   e. Teamed with youth hockey association to provide "Hockey Skating & Skills Program" combination of "Learning to Skate" and "Learning to Play". – There was good interest for this.

4. St. Olaf

   Present: Ryan Bowles – St. Olaf Athletic Director

   a. Undergoing a study to build a new single sheet ice arena on campus.
      i. If St. Olaf builds their own facility the city will likely lose approximately 350 hours of rental time as no other groups would use the facility from 1:00-4:00PM, Monday through Friday.
   b. Schedule/Usage:
      i. 1:00PM-3:30PM Monday –Friday, September 15 through March 1.
      ii. Preferred time is 3:00-7:00PM but ice is not available. Students have class until 3:00 and miss practice.
      iii. Women's Team does not practice here (go to Fairbault)
      iv. Home games on Friday and Saturday, PM (Men &Women) 6:00-10:00 PM
      v. Desire designated men's and women's locker rooms. Cannot store equipment onsite.

   c. Needs:
      i. Lack of locker room/small locker rooms; need (4) appropriately sized.
      ii. No toilets in the locker rooms.
      iii. No showers in the locker rooms.
      iv. Visiting teams do not like coming here.

5. Northfield Public Schools

   Present: Melissa Berhard – Community Education/Northfield Schools, Brent Bielenber – High School Girls Hockey/Northfield Schools

   a. Schedule/Usage:
      i. Boys and Girls: 3:45-6:45PM, Monday through Thursday, November 1st – March 1st, and 3:45-6:00PM, Fridays due to the St. Olaf games; and 6:30-7:30 AM before school.
      ii. Games: 5:30-9:30, Tuesday and Thursday and sometimes Saturday. (Noon-4:00PM)
      iii. Currently, JV and Varsity teams practice together! (32-35 players on the ice at the same time is not desirable.)
      iv. Could double the amount of ice time if available so that JV and Varsity could practice separately. But this only works if there are two ice sheets.
   b. Needs:
      i. Locker rooms are small: use (3) team rooms/visitors use (3) team rooms then there are no rooms for a waiting team.
      ii. Limited meeting space; existing space is not ADA accessible.
      iii. No ADA access to bleachers.
      iv. Dry land training area is needed.
      v. No toilets for the players.

vi. No showers; might be used by boys and visitors.
vii. Desire dedicated varsity/JV boys and girls locker rooms
viii. Spectator seating area does not have a net which can be dangerous.
ix. Parking is limited for games such as High School Boy's Hockey; people park along the street, in Tokyo Grill, Etc.

6. Practice Rink
    a. Not used by High School or Youth. It is not dependable due to the weather.

7. Youth Hockey Association

    Present: Kyle Willkomm – Youth Hockey Association, Ice Scheduler

    a. Schedule/Usage:
        i. 7:00-10:00PM, Monday through Friday. 8:00 AM – 8:00 PM on Saturday and Sunday. (When others are not using it.) Can use anytime the ice is available.
        ii. Boys and Girls: (16) teams total – grades 4-9.
        iii. Used (67) hours of ice time away at Faribault if earlier hours are available at Faribault, they tend to go there.
        iv. IF hours were available at Northfield, Farmington and Lakeville MAY use hours at Northfield. Rosemount and Apple Valley could possibly be interested in ice time.
    b. Needs:
        i. More available ice time (so they do not have to practice elsewhere or extend the season.
        ii. Schedule outdoor arena when available. (3-4 weeks a year only.)
            1. But this is not scheduled time.
            2. IF outdoor arena was gone, it would NOT impact the Youth Hockey schedule.
        iii. Locker rooms are small.
        iv. Games cannot be scheduled before other games due to limited space and parking.

MGH:af

Northfield Ice Arena - Facility Condition Assessment

				Item			Oct. 31, 2016	
	Priority 1			Immediate Need: 0 - 3 Years / Building Code / Preservation of Facility / Energy Saving Payback 0 - 5 Years				
	Priority 2			Mid Term Need: 4-6 Years / Energy Savings Payback 6 - 10 Years				
	Priority 3			Long Term Need: 7 - 10 Years				
	Priority	**Category**		**Item**	**Quantity**	**Unit**	**Construction Cost**	
Def Maint	3	01 00 00	A	Replace dented exterior metal wall panels along entire west elevation of original building and addition	220	LF	$27,500	x
Def Maint	1	01 10 10	A	Repair leaks in metal roof	1	LS	$10,000	x
Def Maint	2	01 10 10	A	Provide white, synthetic solvent based rubber coating on roofs of original building and addition (10 year warranty)	26,960	SF	$92,675	x
Code	1	08 00 00	A	Closers on Refrigeration Room Fire-rated Doors	2	LS	$1,250	x
Code	0	22 00 00	M	Plumbing - Provide wet pipe fire sprinkler system in entire existing building; extend waterline to nearest water main	30,000	SF	$225,000	x
Def Maint	3	22 00 00	M	Plumbing - Replace 8 flush valves and 5 faucets at plumbing fixtures	13	EA	$13,000	x
Def Maint	1	22 00 00	M	Plumbing - Replace water heater	1	LS	$25,000	x
Def Maint	1	22 00 00	M	Plumbing - Replace water heater storage tank	1	LS	$15,000	x
Def Maint	1	22 00 00	M	Plumbing - Insulate domestic hot and cold water piping	1	LS	$9,900	x
Def Maint	1	23 00 00	M	HVAC - Replace Locker room exhaust with make-up air, including replacement of existing duct work	1	LS	$56,250	x
Def Maint	2	23 00 00	M	HVAC - Replace radiant heaters at spectator seating area	5	EA	$20,000	x
Def Maint	2	23 00 00	M	HVAC - Replace front office area residential furnace	1	LS	$9,375	x
Def Maint	2	23 00 00	M	HVAC - Replace rink area exhaust system. (This would be eliminated with an electric resurfacer)	1	LS	$10,000	x
Def Maint	2	23 00 00	M	HVAC - Provide electric resurfacer	1	LS	$135,000	x
Def Maint	1	23 00 00	M	Ice Refrigeration System - Retain existing R-22 refrigeration system; purchase and stockpile 1,000 lbs. of R-22 refrigerant	1	LS	$34,600	x
Def Maint	3	23 00 00	M	Ice Refrigeration System - Convert existing R-22 refrigeration system to ammonia refrigerant	1	LS	$445,000	x

Def Maint	3	23 00 00	M	Ice Refrigeration System - Replace compressors and increase electrcical feeder	1	LS	$140,000	x
Def Maint	3	26 00 00	E	Electric Service - replace original main service panel and distribution panels that are approaching the end of their useful life.	1	LS	$125,000	x
Def Maint	2	26 00 00	E	Electrical Distribution - add 5 - 20 amp single phase circuits (to rink overhead grid and at scorer's table)	1	LS	$10,000	x
Def Maint	2	26 00 00	E	Interior Lighting - Replace existing flourescent rink firtures with LED light fixtuers (45 thus)	1	LS	$28,125	x
Code	0	26 00 00	E	Fire Alarm Systems - Provide fire alarm system throughout existing facility	1	LS	$50,000	x
Code	1	26 00 00	E	Emergency Lighting -provide additional battery back-up emergency lights at spectator seating and locker room areas.	1	LS	$7,500	x
Def Maint	3	26 00 00	E	Exterior Lighting - Replace damaged parking lot light pole base.	1	EA	$3,750	x
Def Maint	1	32 00 00	S	Parking Lot - crack fill, seal coat and restriping; provide ADA parking signs	1	LS	$15,642	x
Def Maint	3	32 00 00	S	Parking Lot - repair low spot in pavement; full depth asphalt removal and re-grading of base to drain properly	1	LS	$62,500	x
Def Maint	3	32 00 00	S	Parking Lot - removal and replacment of cracked or chipped concrete curbs and gutters	1	LS	$13,250	x
Priority 1	TOTAL PRELIMINARY CONSTRUCTION COST ESTIMATE PRIORITY 1				$175,100			
Priority 2	TOTAL PRELIMINARY CONSTRUCTION COST ESTIMATE PRIORITY 2				$305,200			
Priority 3	TOTAL PRELIMINARY CONSTRUCTION COST ESTIMATE PRIORITY 3				$830,000			
	TOTAL INITIAL PRELIMINARY CONSTRUCTION COST ESTIMATE				**$1,310,300**			