CALL TO ORDER:

CALL OF ROLL:

DETERMINATION OF A QUORUM:

1. Presentation of Arena Feasibility Study – JLG Architects & Consultants
2. Discussion on South Bridge Hydraulic Study – David Murphy
3. Request to Prepare Report of Feasibility for 20th Street NW & 5th Avenue NW – Mayor Gander

ADJOURN:

**Upcoming Meetings**

Regular Council Meeting – Tuesday, November 19, 2019 – 5:00 PM – Council Chambers
Work Session – Tuesday, November 26, 2019 – 5:00 PM – Training Room
Regular Council Meeting – Tuesday, December 3, 2019 – 5:00 PM – Council Chambers
Work Session – Tuesday, December 10, 2019 – 5:00 PM – Training Room
Request for Council Action

Date: Nov. 12, 2019

To: East Grand Forks City Council Mayor Steve Gander, Council President Mark Olstad, Vice President Chad Grassel, Council members Clarence Vetter, Dale Helms, Tim Riopelle, Tim Johnson, and Marc DeMers.

Cc: File

From: Reid Huttunen, Parks & Recreation

RE: Presentation of Arena Feasibility Study by JLG Architects

Background:
As directed by City Council, JLG Architects and its team of consultants has spent the last few months conducting a facility assessment and review of our Civic Center and VFW Memorial Ice Arena’s. Members of our assessment team from JLG Architects, B32 Engineering, and Obermiller Nelson Engineering (ONE) will join us at the Nov. 12th work session to present the findings of their building reviews and present recommendations and feasibility for improvements at the arena.

The Arena Feasibility report will detail the following requested scope of work:
- Replacement of Ice System at Civic Center, including a review of if the current rink floor could be re-used with a new ice plant, or should be replaced.
- Addition of an additional ice rink adjoining the Civic Center, with adjoining locker rooms and community area connecting the two ice rinks.
- Review the structure and accessibility of the Civic Center’s current locker room and player’s entrance configuration.
- Review the maintenance, accessibility, and code required needs of the VFW Memorial Arena to have the buildings primary function transition from an ice arena into an all-season multi-purpose arena, housing indoor turf.

A final draft version of the Arena Feasibility Study and building assessments is attached for your review.

Recommendation:
Looking for discussion and direction from City Council on the provided Study and options for arena improvements.

Enclosure:
Arena Feasibility Study
Full Appendix including building assessments
# Table of Contents

Table of Contents ............................................................... ii  
Acknowledgements ........................................................... iv  
Summary .............................................................................. 1  
Study Purpose ................................................................. 1  
Goals of the Study ......................................................... 2  
Study Process and Timeline ........................................ 3  
Existing Facility Assessments ........................................... 4  
Summary ................................................................. 4  
Facility Condition Assessments ...................................... 6  
Facility Program Needs .................................................. 8  
Recommendations ........................................................... 10  
Recommendations Budget Summary .............................. 12  
Facility Investment List .................................................. 14  
Facility Investment List .................................................. 16  
Site Diagrams ............................................................... 22
STUDY PURPOSE

The East Grand Forks Civic Center, originally built in 1974, serves as the home of the East Grand Forks Green Wave hockey programs as well as youth hockey and figure skating for the community. The building’s structure has undergone many larger construction projects and renovations throughout its history, but limited improvements have been made to the arena’s ice plant. The current rink is served by an indirect flooded R22/glycol system with air-cooled condensers. The R22 plant is currently working as intended, but does require annual maintenance and is at an age that various components are at risk of failing at any time. The arena floor, installed in 1993, has a subfloor heating system, but that is no longer working as intended and it is unknown for how long it has not been working.

The VFW Memorial Arena, originally built in 1982, serves both the youth figure skating and youth hockey community. The VFW Memorial Arena has one rink (85’x190’) with a seating capacity for approximately 500 people. The building structure has remained largely the same since a locker room addition was completed in the early 1990’s, and the arena’s ice plant was replaced with a used ice plant in 1997 following major flooding. The current ice rink is served by a direct R22 system with water and air-cooled condensers. The direct R22 compressors have been rebuilt in the last year and are currently working as expected. Various parts of the systems such as the direct filled pump barrels, solenoids, and water tanks for the condensers have needed regular maintenance in recent years and are all considered to be at risk of failing at any time. The arena floor is original with the building and at 37 years old is no longer cost effective to operate (25 years is typical).

The purpose of this study is to further evaluate the conditions of the existing facilities, the ice systems, and the long term programmatic needs for arena space for the East Grand Forks Community. R22 will no longer be imported into or manufactured in the U.S. after 2020, so now is the time to evaluate how these buildings and systems should be addressed for the long term needs of the community.
GOALS OF THE STUDY
1. Review and consider the viability of the existing ice floor for possible reuse. This may affect the ability to install underfloor heating piping.

2. Consider alternative refrigeration solutions for R-22 at the Civic Center.

3. Consider the addition of a 2nd ice sheet at the Civic Center (public access, player access, locker rooms, home team lockers, resurfacer access, tournament use, full building accessibility).

4. Review the structure and access to the current Civic locker room areas (accessibility is critical, facility needs to be easy to use).

5. Review the VFW needs and consider the facility for turf conversion (needs to be effective, simple, and flexible).

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STUDY PROCESS AND TIMELINE
The Arena Feasibility Study was developed between July and November of 2019. Below is a graphic timeline of the study process to date, as well as anticipated public and stakeholder meetings in the future.
Existing Facility Assessments

SUMMARY
The facility assessments of the Civic Center Arena and the VFW Arena cover two different aspects. The first is the physical condition of each facility, which consists of the various categories highlighted below:

SITE IMPROVEMENTS
- ENVELOPE
- CODE COMPLIANCE/ADA
- SAFETY
- INTERIOR AND FINISHES
- INDOOR AIR QUALITY
- MECHANICAL
- ELECTRICAL/I.T./TECHNOLOGY
- ICE SYSTEMS
- MAJOR PROJECT/RENOVATION

These categories are each highlighted with a color designation that corresponds to items listed in the investment matrix (see pages 20-23), and are used a visual guide to illustrate the type of improvement.

The second area studied were the program needs as identified by steering committee meetings, meetings with the parks and recreation staff, and confirmation of dimensions and space layouts during site visits.

These two aspects have been investigated together to help determine the best approach for addressing the major concerns and deficiencies in these buildings - with the goal of how to best address these in a manner that provides a long term solution for the community.

FINDINGS
The condition of the ice systems is the biggest factor in deciding the next steps for these facilities. Both systems are aging, and are due for major repairs or replacement in the near future. Both systems use R-22 refrigeration systems. This type of system is no longer a viable type of system to install in today’s arena facilities due to the phasing out of R-22 due to environmental and safety concerns (see appendix page 73 for more information).

Because both systems are in need of replacement soon, there is an opportunity to consolidate the system and rinks at one location, which would be less expensive to operate long term. The direct cost of replacing the system and rink floor at the VFW to an ammonia system is approximately $1.2 million. The direct cost of replacement of the ice system at the Civic Center (no rink floor replacement) is approximately $650 thousand. For comparison, a consolidated system (one system serving two rinks) would have a direct cost of about $825,000 dollars, with about $550,000 for a second ice rink floor. The latter option is roughly $450-500 thousand less in terms of ice system replacement costs.

In terms of structure and envelope, both facilities are in good condition, with some recommended modifications needed to the VFW. The following are other major deficiency items at each facility:

CIVIC CENTER NEEDS:
- Lack of accessibility to the ice rink floor for the public and for players to and from the lockers. Not enough available accessible parking or ADA viewing areas.
- Size and quantity of the lockers is lacking for the space. The location of the lockers is also not ideal.
- Egress width of aisles and main concourse width are narrow.
- The building is not sprinkled (required by today’s code requirements due to type and size of building).
- Major mechanical items in need of replacement (air handling units, one water heater, lower level furnaces).
- Major electrical items in need of replacement (main service and distribution, fluorescent lighting replacement, expand emergency lighting and fire alarm system, no security cameras or card access).

VFW NEEDS:
- Poor exterior drainage and need of more parking spaces.
- Water tightness of roof at the corners of the arena, installation of additional gutters at the north end, and installation of insulation at the exterior walls (interior perimeter side).
- The building is not sprinkled.
- Major mechanical items in need of replacement (water heaters, insulated plumbing, natural gas hot water boilers, main arena air handling unit, proper ventilation at lockers and auxiliary spaces).
- Major electrical item needs (lighting replacement, expansion of emergency lights, install security systems, install fire alarm/voice notification systems).
**VFW Arena Condition Assessment**

**Year Built:** 1982  
**Square Footage:** 45,725 SF  
**Additions/Renovations:** ~1992  
**Seating Capacity:** 500

### SITE IMPROVEMENTS
- Poor drainage at the NW corner of the building, should be addressed to prevent water from seeping into foundation and floor. Water flows under doors in heavy rain events.
- Ground heaving at the north and east exterior doors prevents these doors from opening in the winter.
- Lack of parking, and parking lot lighting.

### ENVELOPE
- North facade. Gutters need to be added at the roof to keep water away from eroding soil at grade.
- Generally, exterior stoops/landings are heaved and noticeable gaps at the building edge.
- Overall, exterior brick is in good condition.
- Noticiable areas of water leaking at the NW and SW corners of the main arena space.
- Exterior walls of arena space are not insulated.

### MECHANICAL/INDOOR AIR QUALITY
- Majority of building is heated through electric unit heaters.
- Two natural gas hot water boilers for ice rink are 30 years old and not operational.
- Ice rink has a dedicated air handling unit, original to the building. No air conditioning.
- Building auxiliary spaces (lockers, restrooms) are not being provided with ventilation air. Lobby restrooms do not have exhaust installed. Locker room exhaust does not have airflow rates that meet current code requirements.
- Very limited temperature control systems.

### ELECTRICAL/I.T./TECHNOLOGY
- Existing services and power distribution were replaced/refurbished after the 1997 flood and in good condition.
- Lighting throughout is mostly florescent.
- Very limited automatic lighting controls.
- Emergency lighting needs to be expanded.
- No card access installed.
- No security cameras are installed.
- No fire alarm/voice notification system in building.

### ICE SYSTEMS
- Existing system is a direct R-22 refrigeration system manufactured by Holmsen Ice Rinks installed after the 1997 flood, and was a used system at the time of installation and nearing 25 year life expectancy.
- The ice rink floor is original to the facility that was built in 1982 and has lasted much longer than expected.

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**Civic Center Condition Assessment**

**Year Built:** 1973  
**Square Footage:** 65,400 SF  
**Additions/Renovations:** 2006,2015  
**Seating Capacity:** 3,400

### SITE IMPROVEMENTS
- Parking lot paving and drainage is in poor condition.
- Inadequate number of ADA parking spaces and some of the current designated spaces are on the drive with a cross slope greater than 2%.
- There is positive drainage around the building.

### ENVELOPE
- The wall panel and trim is in good condition, but damaged and dented near grade.
- The closure trim at the NE concourse door shows corrosion.
- Window sealant (south facade) is brittle and discolored.
- There is a lower right at grade on the west end that has potential for water to get into the building. Patch or relocate.
- Overall, the building envelope is in good condition.

### CODE COMPLIANCE/ADA
- Lacking ideal quantity of designated accessible seating in the arena.
- Narrow egress width at the manconcourse. Aisle widths at seating are also about 6" narrower than code required, and no hand rails are provided.
- No accessible route (elevator or other) provided to the rink level.

### INTERIOR AND FINISHES
- Finishes in recent renovated areas are in good condition.
- Finishes in the locker room areas on the lower level (east side) are in fair or below average condition.
- There is some paint that is bubbling on the perimeter (east side) are in fair or below average condition.
- Finishes in the locker room area, offices).

### MECHANICAL/INDOOR AIR QUALITY
- The building is not sprinkled.
- Air handling units in the ice arena are starting to fail.
- Lighting throughout is mostly fluoresart.
- Many areas in need of an upgrade. The Arena has updated high-bay LEDS that are in great condition.
- Emergency lighting needs to be expanded to properly cover the spaces.
- Some card access installed.
- No fire alarm/voice notification system in building.
- Very limited automatic lighting controls.
- Emergency lighting needs to be expanded.
- No card access installed.
- No security cameras are installed.
- No fire alarm/voice notification system in building.
Civic Center  
Program Needs

Year Built: 1973  
Square Footage: 65,400 SF  
Seating Capacity: 3,400

**ICE SHEET**
- 200x85 (NHL size).

**BOWL SEATING**
- The amount of seating is sufficient for tournaments and largest events.
- Narrow aisles and no handrails at aisles. This is problematic for people with mobility issues as well as an egress safety issue.
- No wheelchair seating at the ice level. Space available at the south end to further evaluate this.

**CONCOURSE**
- Concourse width is narrow, especially for the home team side. There are also an insufficient number of ADA seating spaces.
- Current press area locations are too low to see the entire ice sheet (television games, etc.).
- A typical game has 2 stations, big games have 4-6 stations.
- For big games, makeshift platforms are installed that turn lobby concessions into the ticketing stations.

**LOCKER ROOM NEEDS**
- 13 total locker rooms needed.
  - 10 locker rooms.
  - Guest locker room @ 400 sf is ideal.
  - 2 varsity locker rooms.
  - 1 figure skating locker room.

**PLAYER AREAS**
- Player and penalty rooms - not currently full size, undersized player bench.
- Weight room - enlarged room at facility available to all hockey and figure skating members.
- Training room currently has two sets of steps up and down to the players boxes, not ideal.
- Player’s entrance on the east end is problematic (stairs down, not accessible at all).
- Locker rooms downstairs a half-level on the east side of the building is also problematic.
- Space underneath the west arena seating is used for game warm-ups and puck shooting, not ideal space (access, size, lighting, proximity, etc.)

**OTHER**
- Generally lacking storage in the facility
- Zamboni bay 90 degree orientation requires a 3-point turn. No snow pit.
- Zamboni operator’s office is not easy to find for visitors, and there is no direct route from the community locker rooms.
- Security - no way to secure ice equipment during game warm-ups and puck shooting.
- Locker rooms down a half-level on the east side of the building is also problematic.
- Player’s entrance on the east end is problematic (stairs down, not accessible at all).
- Locker rooms downstairs a half-level on the east side of the building is also problematic.
- Space underneath the west arena seating is used for game warm-ups and puck shooting, not ideal space (access, size, lighting, proximity, etc.)

**LOCKER ROOMS**
- Currently there is a total of 7 locker rooms.
  - 2 varsity locker rooms.
    - Women’s home locker is 30 lockers, at or near locker capacity.
    - Men’s home team is 40 lockers.
  - 10 locker rooms.
  - 1 picture skater locker room.
  - 1 varsity locker room.
  - 2 referee locker rooms with shared shower space.
  - 1 visitor/general locker room @ 250 sf. (small).
  - 1 small changing room for figure skating.
  - Shared bathroom/shower rooms to locker is problematic.

**PARKING AND BUILDING ACCESS**
- Consider replacing ice rink with field turf.
- 4-lane running/walking track around the main field turf area.
- Ability to host baseball, softball, football, soccer, golf, lacrosse, and track practices.
- No need for permanent seating, use aluminum rollin as needed.
- Consider opportunities to bring natural light into the space.

**CONCESSIONS AREA**
- Concessions area needs to be renovated with updated equipment. Can be used to serve possible events with turf/track programming (tournaments, etc.).
- Lobby restrooms need to be renovated to be ADA compliant.
- Multi-purpose room on second floor is not accessible (no elevator).
- If converted to a multipurpose facility, consider the zamboni and ice mechanical rooms for storage or operations desk.
- Need to add permanent seating, use aluminum rollin for temporary seating.
- Consider opportunities to bring natural light into the space.
- No need for permanent seating, use aluminum rollin as needed.
- Consider opportunities to bring natural light into the space.

**LOCKERS**
- Use two of the lockers as lockers, re-purpose rest of the space (if converted to multipurpose facility).
- Old figure skater locker could be converted to a multi-purpose facility, consider the zamboni and ice mechanical rooms for storage or operations desk.

**VEHICLE ACCESS**
- Consider replacing ice rink with field turf.
- 4-lane running/walking track around the main field turf area.
- Ability to host baseball, softball, football, soccer, golf, lacrosse, and track practices.
- No need for permanent seating, use aluminum rollin as needed.
- Consider opportunities to bring natural light into the space.

**ADDITIONAL TECHNIQUES**
- Use two of the lockers as lockers, re-purpose rest of the space (if converted to multipurpose facility).
- Old figure skater locker could be converted to a multi-purpose facility, consider the zamboni and ice mechanical rooms for storage or operations desk.
Recommendations

STATE OF THE FACILITIES

Both the Civic Center Arena and the VFW Arena have provided significant value over the last 35 - 45 years for the East Grand Forks community. Now, in 2019, there are several realities that have brought a need to evaluate what is next for the these two facilities.

East Grand Forks and surrounding communities fully utilize 2 ice sheets, which the Civic and VFW now provide together. However, if major factors are considered, the prospect of a second ice sheet at the Civic is very strongly supported:

• Both rinks need new ice refrigeration systems. The VFW also needs the refrigerated floor slab to be replaced, and the Civic will need the same in a relatively short timeframe. Combining both new ice plants into one and putting the new ice slab in a new building would be a logical primary investment.
• Consolidating two of the city's indoor ice sheets under one roof helps keep costs down for staffing, utilities, and maintenance.
• The primary competition rink (Civic) is badly in need of locker room upgrades and accessibility needs. A new ice sheet could provide a solution for these items without additional costly renovations to the Civic.
• Visitors to EGF for events such as tournaments will have a far better experience by being able to use one facility instead of two separate ones.
• Two rinks in the same building allows a greater opportunity for dry floor/off season events.
• EGF has invested in several renovations and upgrades to the Civic Center; it is the primary choice for events due to its location, capacity, and fan experience. Adding a second ice sheet furthers this investment and strengthens all of these amenities.

Because both ice sheets would be at the Civic Center Arena, the VFW Arena has the opportunity to be converted to a fieldhouse facility. This includes field turf with a 4-lane walking/running track around it. The conversion also could provide space for football, baseball, softball, soccer, golf, lacrosse, track, and other athletic programs in town.

This option also provides the ability for the City of East Grand Forks to determine the level of renovation work needed at both of the existing facilities. Most of the major scope items could happen with the option, but they can also be phased in at a later date if that is desired.

There would always be two ice sheets operational for this option as expansion and renovations occurred. The expansion of the Civic Center Arena would happen first, allowing both the existing Civic Center Arena and the VFW Arena to remain in operation (especially during hockey season). Once the expansion is completed, the renovations at the VFW to convert it to a fieldhouse would take place.

The expansion adds roughly and additional 45,000 sf of building to the community to serve two ice rinks and a multipurpose facility. The total cost per square foot (in today’s dollars) for construction and renovation costs for this option would be approximately $133 per sf. Additional soft costs (fixtures, equipment, design, management, surveys, misc.) would be roughly $2.3 million depending on the amount of new equipment, furniture, and features would be included as part of this option.

The following pages provide more detailed summaries of two versions of this option.

WHY AN AMMONIA SYSTEM?

While synthetic refrigerants like R-22, R-507, etc. are being phased out due to their Ozone Depleting Potentials (ODP) and Global Warming Potentials (GWP), natural refrigerants like ammonia are making a comeback.

The benefits of ammonia refrigerant include:
• a natural and pure refrigerant; friendly to the environment;
• one of the most efficient refrigerants used in the ice rink industry today;
• has been widely used in the ice rink industry since artificial ice was first used;
• used in industrial grade systems with proven performance, dependability and longevity (30+ years); lower cost refrigerant, and service contractors and parts are readily available.

There are new synthetic refrigerants entering the market with lower GWP than the old synthetic refrigerants (500 to 700 GWP) but still are much higher than ammonia (0 GWP). These new synthetic refrigerants are blends of two to four different type of refrigerants and are much less efficient than ammonia. Often the synthetic refrigerants are used with more commercial level or quality of systems with a lower life expectancy (20 years).
The budget summary on page 13 (right) represents a budget overview of the recommendations. Included in the summary are items that are in need of repair and replacement on the existing Civic Center Arena and VFW Arena (included in ‘Renovation’ costs in the budget summary).

This summary includes costs for a future civic center expansion, renovation costs at each facility, site costs (parking, grading, accessibility), contingency, and a breakdown of what the soft costs might look like if the recommended option moved forward.

The 15% contingency is a number that is used to account for all of the unknowns that will be discovered as an actual plan and design gets developed. This number typically will get smaller and smaller as scope becomes more specific and this placeholder is then utilized to cover the design and construction of the project.

The following pages provide an comprehensive list of all of the items that were identified and discussed with the Steering Committee. Items highlighted in green in the options tab (far right column) on the detailed investment list (page 14-22) represent what is included in the total budget summary.

The investment list is meant to be a flexible document that can be modified based on further discussions, priorities, and timeline of implementation. It is a guide to help identify the best way to address deferred maintenance items in the context of a master plan for these facilities.

### Recommendations Budget Summary

#### CONSTRUCTION COSTS

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<td><strong>SUBTOTAL</strong></td>
<td></td>
<td></td>
<td>$2,681,308</td>
</tr>
</tbody>
</table>

**TOTAL CONSTRUCTION COSTS**

$20,962,049

### SOFT COSTS (OWNER)

- Professional Fees: $1,755,000
- Reimbursable Expenses: $12,000
- Furniture, fixtures and equipment (FFE): $785,000
- Technology Security and Equipment: $435,000
- Site Survey(s): $12,000
- Geotechnical Report: $12,000
- Special Inspections and Testing: $26,501
- Permits: $12,000

**TOTAL SOFT COSTS**

$3,049,501

**TOTAL PROJECT COST**

$24,011,550

### OPTION LIST

**Civic:**
- Add accessible seating and concourse width: $404,800
- Install a dedicated dehumidification unit for year-round rink operation (sized for one rink): $517,500
- Convert weight room to toilets & concessions to serve Itts Williams fields: $215,050
- Convert furnace-serviced areas to hot water (req’s boiler plant): $357,982

**VFW:**
- Install elevator to 2nd level: $168,750
- Translucent panel, arena clerestory: $85,608

**SUBTOTAL** $1,749,690
## Facility Investment List

### Reading the Investment List

The investment list is an inventory of all condition and program items discussed to date, along with an analysis on the cost of each item. These items include overall project costs (soft costs, site, contingency, inflation, etc.) and are tallied at the bottom for each option.

### Key: Work Categories

**Site Improvements**
- **Envelope**
- **Code Compliance/ADA**
- **Safety**
- **Interior and Finishes**
- **Indoor Air Quality**
- **Mechanical**
- **Electrical/LT/Technology**
- **Ice Systems**
- **Major Project**

### Work Categories

- **Regular Investment and Other Improvements**
- **Soft Costs**
- **Yearly Costs**
- **Escalation**
- **Notes**

#### Regular Investment and Other Improvements

<table>
<thead>
<tr>
<th>Site Description</th>
<th>QTY</th>
<th>COST</th>
<th>SUBTOTAL</th>
<th>CONTINGENCY</th>
<th>SOFT COSTS @ 15%</th>
<th>SOFT COSTS @ 10%</th>
<th>SOFT COSTS @ 20%</th>
<th>TOTAL COST</th>
<th>ESCALATION @ 3% PER YEAR (n-1)</th>
<th>IN OPTION?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resurface E parking lot (earthwork, mill and overlay)</td>
<td>1</td>
<td>61,000 SF</td>
<td>$3.00</td>
<td>$183,000.00</td>
<td>$27,450.00</td>
<td>$21,045.00</td>
<td>$23,149.00</td>
<td>$231,495.00</td>
<td>$516,577.63</td>
<td>$ -</td>
</tr>
<tr>
<td>Resurface W parking lot, sized for W addition (earthwork, mill and overlay)</td>
<td>1</td>
<td>93,000 SF</td>
<td>$3.00</td>
<td>$279,000.00</td>
<td>$41,850.00</td>
<td>$32,045.00</td>
<td>$35,293.00</td>
<td>$352,936.00</td>
<td>$516,577.63</td>
<td>$ -</td>
</tr>
<tr>
<td>Total: Resurface E &amp; W parking lots (earthwork, mill &amp; overlay)</td>
<td></td>
<td>154,000 SF</td>
<td></td>
<td>$462,000.00</td>
<td>$69,300.00</td>
<td>$53,090.00</td>
<td>$58,442.00</td>
<td>$584,442.00</td>
<td>$1,043,625.00</td>
<td>$ -</td>
</tr>
</tbody>
</table>

#### Notes

- Assume cost captured in new addition, therefore exclude line item.
- Cost captured in another line item, therefore exclude.
- Optional pair; either-or.

---

**EGF Civic Center**

- Year can be used to estimate costs at a future date, i.e. escalation.
- Subtotal plus contingency represents total construction costs.
- Soft costs are estimated at either 15% or 20%.
- Escalation estimates the total project cost in future dollars. Items assigned to year 1 are not escalated.
- Only items checked and highlighted in green are totaled.

---

**19147 Arena Feasibility Study**

- Regular Investment and Other Improvements
- Soft Costs
- Yearly Costs
- Escalation
- Only items checked and highlighted in green are totaled.

---

2019 Arena Feasibility Study | Facility Investment List | 15
## Facility Investment List

### EGF CIVIC CENTER

#### Regular Investment and Other Improvements

<table>
<thead>
<tr>
<th>Item Description</th>
<th>QTY</th>
<th>COST</th>
<th>SUBTOTAL</th>
<th>CONSTRUCT @ 15%</th>
<th>SOFT @ 20%</th>
<th>TOTAL</th>
<th>ESCALATION @ 3% PER YEAR (1-10)</th>
<th>IN OPTION?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Replace e parking lot (earthwork, mill and overlay)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Total reconstruction, E parking lot (+ stormwater)</td>
<td>2018 engineer's estimate*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Replace W parking lot, used for M parking (earthwork, mill and overlay)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Total reconstruction, W parking lot (+ stormwater)</td>
<td>2018 engineer's estimate*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Construct S parking lot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Building</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Replace damaged wall panels and trim</td>
<td>1</td>
<td>$2,700.00</td>
<td>$2,700.00</td>
<td>$4,200.00</td>
<td>$3,220.00</td>
<td>$35,420.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Replace damaged vents near SE door</td>
<td>1</td>
<td>$1,120.00</td>
<td>$1,120.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Correct cause of corrosion at NE concourse door</td>
<td>1</td>
<td>$300.00</td>
<td>$300.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Replace ceiling drains in gyms (mechanics, locker, coaches)</td>
<td>1</td>
<td>$157.50</td>
<td>$157.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Replace door knobs with lever, new locksets</td>
<td>1</td>
<td>$900.00</td>
<td>$900.00</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Rebuild Compressor Room ramp to be accessible</td>
<td>1</td>
<td>$480.00</td>
<td>$480.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Reconfigure for pull valve clearances at Zim Office</td>
<td>1</td>
<td>$450.00</td>
<td>$450.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Modify curb at Shop door</td>
<td>1</td>
<td>$1,725.00</td>
<td>$1,725.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Reconfigure Boys' Locker room toilets and showers for ADA clearances</td>
<td>1</td>
<td>$6,750.00</td>
<td>$6,750.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10. Replace existing rink floor</td>
<td>1</td>
<td>$4,200.00</td>
<td>$4,200.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Replace refrigeration system (Ammonia system) - like size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Make improvements to existing R-22 system (not recommended)</td>
<td>1</td>
<td>$0.00</td>
<td>$0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Install new digital controls (DDC) system w/ central monitoring</td>
<td>1</td>
<td>$54,050.00</td>
<td>$54,050.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Replace air handling units</td>
<td>1</td>
<td>$11,500.00</td>
<td>$11,500.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15. Add elevator</td>
<td>1</td>
<td>$18,750.00</td>
<td>$18,750.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Major building expansion for second ice sheet</td>
<td>1</td>
<td>$138,250.00</td>
<td>$138,250.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17. Replace 2011 water heater</td>
<td>1</td>
<td>$0.00</td>
<td>$0.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Major building expansion for second ice sheet</td>
<td>1</td>
<td>$54,050.00</td>
<td>$54,050.00</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>19. Major building expansion for second ice sheet</td>
<td>1</td>
<td>$138,250.00</td>
<td>$138,250.00</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Mechanical</strong></td>
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<tr>
<td>20. Add fire gas meter throughout</td>
<td>1</td>
<td>$49,050.00</td>
<td>$49,050.00</td>
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<td></td>
</tr>
<tr>
<td>21. Replace 1997 water heater</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000.00</td>
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<tr>
<td>22. Replace 2011 water heater</td>
<td>1</td>
<td>$12,000.00</td>
<td>$12,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Install hot water heating plant w/ high efficiency boilers</td>
<td>1</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Replace air handling units</td>
<td>1</td>
<td>$6,750.00</td>
<td>$6,750.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Replace Leaver hot bathroom exhaust fans</td>
<td>1</td>
<td>$7,050.00</td>
<td>$7,050.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Replace 2006 furnaces</td>
<td>10</td>
<td>$0.00</td>
<td>$0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Install new digital controls (DDC) system w/ central monitoring</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Replace refrigeration system (Ammonia system) - like size</td>
<td>1</td>
<td>$97,500.00</td>
<td>$97,500.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Upgrade existing electrical equipment and associated feeders</td>
<td>1</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Replace non-GFCI devices in locker rooms w/ GFCI type (assume 20)</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Replace all interior lighting (except at arena ice)</td>
<td>1</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Install occupancy sensor controlled lighting throughout building</td>
<td>1</td>
<td>$12,000.00</td>
<td>$12,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Install controller or relay-based lighting control for arena lighting, secure location</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Add additional emergency lighting for proper coverage</td>
<td>1</td>
<td>$4,000.00</td>
<td>$4,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Add exterior emergency lighting</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Replace arena sound system</td>
<td>1</td>
<td>$100,000.00</td>
<td>$100,000.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Install electronic access control system (15 doors)</td>
<td>1</td>
<td>$44,250.00</td>
<td>$44,250.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Install surveillance camera system ($10k + 1200 /camera, assume 15)</td>
<td>1</td>
<td>$35,420.00</td>
<td>$35,420.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>39. New addressable fire alarm system</td>
<td>1</td>
<td>$165,462.00</td>
<td>$165,462.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Total Recommended Investments at Civic Center** | $19,588,279.15 | | | | | | | |
### VFV Arena

#### Regular Investment and Other Improvements

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Year</th>
<th>QTY</th>
<th>Cost</th>
<th>SubTotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace stairs at N &amp; E exterior doors to prevent tripping</td>
<td>1</td>
<td>2 EA</td>
<td>$7,000</td>
<td>$14,000</td>
</tr>
<tr>
<td>Re-grade site at building perimeter</td>
<td>1</td>
<td>1 LS</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Replace apron at N elevation (allow awning)</td>
<td>1</td>
<td>1 LS</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Install stairs at main entry doors</td>
<td>9</td>
<td>1 LS</td>
<td>$9,200</td>
<td>$9,200</td>
</tr>
<tr>
<td>Reconfigure 5 parking lot perpendicular to VFV, add lighting and curbs &amp; gutter</td>
<td>1</td>
<td>73,300 SF</td>
<td>$12,000</td>
<td>$876,800</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>$311,940</td>
<td>$87,961.20</td>
</tr>
</tbody>
</table>

### Building

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Year</th>
<th>QTY</th>
<th>Cost</th>
<th>SubTotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install gutter and downspouts at N roof edge</td>
<td>1</td>
<td>240 LF</td>
<td>$15.00</td>
<td>$3,600</td>
</tr>
<tr>
<td>Replace metal doors, east side</td>
<td>1</td>
<td>2 EA</td>
<td>$800.00</td>
<td>$1,600</td>
</tr>
<tr>
<td>Replace damaged wall panel trim at entry useful</td>
<td>1</td>
<td>38 LF</td>
<td>$57.50</td>
<td>$2,213.50</td>
</tr>
<tr>
<td>Reverse door swing at center n'th Office (provide 18&quot; CLR at door w/ closer)</td>
<td>1</td>
<td>1 LS</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>Install grab bars in Conference rm Toilet/Server</td>
<td>1</td>
<td>3 EA</td>
<td>$100.00</td>
<td>$300</td>
</tr>
<tr>
<td>Replace door hinges in Lobby</td>
<td>4</td>
<td>1,200 SF</td>
<td>$11.00</td>
<td>$13,200</td>
</tr>
<tr>
<td>Install additional emergency lighting for proper coverage</td>
<td>1</td>
<td>2 EA</td>
<td>$200.00</td>
<td>$400</td>
</tr>
<tr>
<td>Replace door knobs with levers, new latches</td>
<td>1</td>
<td>1 LS</td>
<td>$8,000</td>
<td>$8,000</td>
</tr>
<tr>
<td>Refurbish lobby ramp for accessible, include handrail both sides</td>
<td>5</td>
<td>430 SF</td>
<td>$12.00</td>
<td>$5,160</td>
</tr>
<tr>
<td>Replace flooring at Lobby Rooms with non-porous material</td>
<td>5</td>
<td>420 SF</td>
<td>$22.00</td>
<td>$9,240</td>
</tr>
<tr>
<td>Install additional emergency lighting for proper coverage</td>
<td>6</td>
<td>250 SF</td>
<td>$120.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Replace door frame at Lobby Concessions</td>
<td>6</td>
<td>1 LS</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>Replace carpet in Lobby Locker Room</td>
<td>6</td>
<td>350 SF</td>
<td>$1,751.25</td>
<td>$575,000</td>
</tr>
<tr>
<td>Repair/re-flash roof where leaking onto Concourse</td>
<td>1</td>
<td>1 LS</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Reconfigure Lobby Locker Restrooms to include ADA stalls, grab bars</td>
<td>1</td>
<td>10 EA</td>
<td>$4,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>Install toilet partitions in Locker Rooms Restrooms to meet ADA Force reqs</td>
<td>10</td>
<td>1 EA</td>
<td>$1,700</td>
<td>$17,000</td>
</tr>
<tr>
<td>Relocate hallway drinking fountain to ADA compliant height</td>
<td>1</td>
<td>1 EA</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>Provide tactile signage</td>
<td>1</td>
<td>1 LS</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Reverse door swing at center n'th Office (provide 18&quot; CLR at door w/ closer)</td>
<td>1</td>
<td>4,130 SF</td>
<td>$12.00</td>
<td>$49,560</td>
</tr>
<tr>
<td>Replace Lockers and Locker Rooms Restrooms w/ espy</td>
<td>1</td>
<td>4,130 SF</td>
<td>$11.00</td>
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<tr>
<td>Replace servicer equipment to dedicated room</td>
<td>1</td>
<td>1 LS</td>
<td>$12,000</td>
<td>$12,000</td>
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<tr>
<td>Install new exterior walls, spray foam, install liner panel and netting</td>
<td>8</td>
<td>17,580 SF</td>
<td>$12.00</td>
<td>$210,960</td>
</tr>
<tr>
<td>Install field of view</td>
<td>1</td>
<td>22,500 SF</td>
<td>$10.00</td>
<td>$225,000</td>
</tr>
<tr>
<td>Install four lane Walking Track</td>
<td>1</td>
<td>8,000 SF</td>
<td>$12.00</td>
<td>$96,000</td>
</tr>
<tr>
<td>Install additional emergency lighting for proper coverage</td>
<td>1</td>
<td>1,400 SF</td>
<td>$5.00</td>
<td>$7,025</td>
</tr>
<tr>
<td>Reconfigure sambors and mechanical rooms</td>
<td>1</td>
<td>45,725 SF</td>
<td>$5.00</td>
<td>$228,625</td>
</tr>
<tr>
<td>Adr fire sprinkler throughout</td>
<td>1</td>
<td>45,725 SF</td>
<td>$5.00</td>
<td>$228,625</td>
</tr>
<tr>
<td>Replace water heater - gas (locker rooms)</td>
<td>1</td>
<td>2 EA</td>
<td>$20,000</td>
<td>$40,000</td>
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<tr>
<td>Replace water heater - electric (locker rooms)</td>
<td>1</td>
<td>1 EA</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>Insulate demarc. cold, hot, &amp; hot water recirculation piping</td>
<td>1</td>
<td>1 LS</td>
<td>$65,000</td>
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<tr>
<td>Install new exterior walls, spray foam, install liner panel and netting</td>
<td>1</td>
<td>12 EA</td>
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<td>Install field of view</td>
<td>1</td>
<td>1 LS</td>
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<td>Install four lane Walking Track</td>
<td>1</td>
<td>1 LS</td>
<td>$250,000</td>
<td>$250,000</td>
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<tr>
<td>Install a dedicated dehumidification unit for year-round risk operation</td>
<td>1</td>
<td>1 LS</td>
<td>$500,000</td>
<td>$500,000</td>
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<tr>
<td>Install new digital control (DCC) system w/ centralized monitoring</td>
<td>1</td>
<td>1 LS</td>
<td>$100,000</td>
<td>$100,000</td>
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<tr>
<td>Replace ice system and rink floor with indirect system</td>
<td>1</td>
<td>1 LS</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
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<tr>
<td>Replace existing electrical panels (front of building)</td>
<td>1</td>
<td>3 EA</td>
<td>$6,000</td>
<td>$18,000</td>
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<tr>
<td>Replace existing electrical panels, feeders, and main switch</td>
<td>8</td>
<td>1 LS</td>
<td>$9,500</td>
<td>$95,000</td>
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<tr>
<td>Replace non-GFCI devices in locker rooms w/ GFCI type (assure 40)</td>
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<td>40 EA</td>
<td>$3,500</td>
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<tr>
<td>Replace all interior lighting</td>
<td>45</td>
<td>45,725 SF</td>
<td>$5.00</td>
<td>$228,625</td>
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<tr>
<td>Install occupancy sensor controlled lighting through building</td>
<td>45</td>
<td>45,725 SF</td>
<td>$1.25</td>
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<td>Install controller or relay-based lighting control for arena lighting</td>
<td>1</td>
<td>1 LS</td>
<td>$100,000</td>
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<tr>
<td>Replace remaining HID lighting w/ LED</td>
<td>1</td>
<td>1 LS</td>
<td>$3,000</td>
<td>$3,000</td>
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<tr>
<td>Add additional emergency lighting for proper coverage</td>
<td>1</td>
<td>1 LS</td>
<td>$18,000</td>
<td>$18,000</td>
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<tr>
<td>Add exterior emergency lighting</td>
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<td>1 LS</td>
<td>$4,000</td>
<td>$4,000</td>
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<tr>
<td>Install electronic access control system (2 doors)</td>
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<td>$15,000</td>
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<td>Install surveillance camera system ($10k + 1200 /camera, assume 9)</td>
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<tr>
<td>New addressable fire alarm system</td>
<td>1</td>
<td>45,725 SF</td>
<td>$2.00</td>
<td>$95,450</td>
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### Total

| Total Recommendations at VFV / 3 |      |      | $3,412,470.10 |
**COST SUMMARY**

Below is the estimated total project cost to build an additional ice sheet at the Civic Center and convert the VFW to a fieldhouse. This grand total is broken down by construction cost (including contingency) and soft costs. The grand total does not include improvements identified as Alternates, which are detailed below.

![Total Recommended Investments at Civic Center](image)

**ALTERNATE ITEMS**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>QTY</th>
<th>COST</th>
<th>CONTG/CY @ 15%</th>
<th>SOFT COSTS @ 10%</th>
<th>TOTAL @ 20%</th>
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<td>Civic Center</td>
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<tr>
<td>1</td>
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<td>$320,000.00</td>
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<td>2</td>
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<td>$450,000.00</td>
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<td>3</td>
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<td>3</td>
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<tr>
<td>1</td>
<td>1 LS</td>
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<td></td>
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<td></td>
<td>TOTAL $1,749,690.35</td>
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</table>

*Note: Escalation rate is 3% per year.*

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**Other Improvements**

- Install hot water heating plant with high efficiency boilers
- Install a dedicated dehumidification unit for year-round ice operation (sized for one rink)
- Convert weight room to restrooms & concessions to serve Itts Fieldhouse
- Install electronic access control system (15 doors)
- Replace remaining exterior HID lighting with LED
- Install contactor or relay-based lighting control for arena lighting
- Add exterior emergency lighting
- Replace all interior lighting
- Install occupancy sensor controlled lighting throughout building
- Replace existing electrical panels, feeders, and main switchgear
- Replace all interior lighting (except at arena ice)
- Install new digital controls (DDC) system with central monitoring
- Replace existing rink floor
- Replace refrigeration system (Ammonia system) - like size
- Replace existing air handling unit serving ice arena, re-use ductwork
- Replace refrigerant with R-448A or similar
- Replace lower level, Lobby bathroom exhaust fans

**Total Recommended Investments at VFW**

$4,423,470.30

**Total Recommended Investments at Civic Center**

$19,508,079.55

**Grand Total**

$24,011,550
This design option places the new ice sheet to the west of the existing Civic Center, connected by a “spine” between both rinks and capped by a new entry space on the south side of the building. Parking is still provided to the east and west, with the majority of spaces to the west. A third parking area is opened up to the south of the new entry. This arrangement eliminates the current player entrance on the east and focuses all building users to the north and south ends of the building. The concept suggests a drop off lane at the front entry in which players can be dropped at a separate door from other patrons. As a combined facility, the new entry area remains focused to the south/southwest.

Placing the new rink in this orientation solves several design issues:
1. The new entry contains elevator and stairs to take patrons to the ice level of both rinks. It is part of the new construction and can be tailored to handle existing and new spaces.
2. The spine contains all new general locker rooms for both ice sheets. They can be on an accessible level and users can access either ice sheet from this centralized area. The spine could also host an upper level concourse gathering and viewing areas as well as other building support spaces such as meeting rooms and offices.
3. The new ice plant would be centrally located to serve both rinks. Although a design challenge, the desire would be to also have a shared ice resurfacer area that serves both ice sheets.
4. Rather than attempt to renovate and provide necessary access to the existing boys’ hockey locker room, new space would be provided within the facility. It may be possible to use some of the open floor area under the Civic west seating for this.
5. The existing east player entrance would be discontinued for use by the public and would only be used for emergency exiting from that side of the building.
6. Existing locker rooms along the east side of the Civic would be converted to building storage, which may include some lower level floor infill. This would eliminate the need for updated HVAC systems for the existing lockers which are extremely undersized. Essentially the entire east lower level would revert to non-public use.
7. A secondary player entrance may be considered at the north end of the building but potential conflicts with the resurfacer activity may make this an unattractive solution.
8. The existing west Civic wall below grade has shown some bowing over the years. Placing new construction on this side of the building would remove that soil pressure and any issues it might eventually cause.
Place the new ice sheet to the East of the Civic ends up being very similar to the West option in terms of site use. South entry, drop off locations, added south parking area are all essentially a mirror of the West option. If desired, the East option might allow the ability to include some support spaces for the ball fields at Its-Williams such as toilet rooms or maybe even a concessions area. East placement would all but eliminate the east parking spaces and force nearly all users to the south and west.

While the interior space use would generally be similar to the West option, some differences would make this option much less desirable:

1. The lower level spaces on the west side of the Civic are relatively good for renovation and expansion on that side. These spaces are open and/or would become open due to reconfiguration, and most importantly are on the same level as the ice. The same spaces on the east side are sunken several feet below the ice surface and would require significant demolition and renovation to make the usable and accessible. This would drive cost up compared to the West option.

2. The player entrance assembly would likely need to be removed completely which would require relocation of the player weight room and add cost.

3. There has historically been a high water table on the east side of the building site (east of the Civic Center). If geotechnical studies prove this out, dewatering costs for construction and building operation would need to be considered.

4. Main utility connections are on the west side of the Civic Center. Placing a major addition on the east would increase cost of extending utilities around, through, under the building.
No significant changes would happen to the exterior of the VFW Arena in terms of building size, placement, or access. In order to convert to indoor turf and track use, minor renovation of public spaces on the lobby side would be the most noticeable—concessions, toilet rooms, and accessible path to the event floor. Within the arena volume, the removal of the bleacher seating, the turf and track system, and more lighting and HVAC would be evident.

At the facility site, building access to the main entry and amount/orientation of parking would be improved through a significant re-thinking of how the parking lot is placed on the site. In addition to the VFW Arena patron parking, consideration must be given to parking, drop off, and access to the Blue Line Arena, the pickleball courts, and playground at this location. Currently during the winter months if an event is happening at both the VFW and Blue Line arenas, traffic within the parking area is difficult at best. A new site design allows patrons to get to the Blue Line Arena through the rest of the parking without seriously clogging the way. Overflow for the BLA could be provided by using the south parking area next to the Blue Line and creating a new sidewalk path from that to the BLA main door.
# Table of Contents

Table of Contents ............................................................................... ii

<table>
<thead>
<tr>
<th>Civic Center Arena</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Condition Assessment</td>
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<td>Structural Condition Assessment</td>
<td>9</td>
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<tr>
<td>Mechanical System Assessment</td>
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<td>Electrical System Assessment</td>
<td>17</td>
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<td>Walkthrough Photos</td>
<td>23</td>
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<table>
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<tr>
<th>VFW Arena</th>
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</thead>
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<td>Physical Condition Assessment</td>
<td>35</td>
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<tr>
<td>Mechanical System Assessment</td>
<td>43</td>
</tr>
<tr>
<td>Electrical System Assessment</td>
<td>49</td>
</tr>
<tr>
<td>Walkthrough Photos</td>
<td>55</td>
</tr>
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</table>

| Ice System Assessment | 73 |

| Existing Floor Plans | 76 |
| Civic Center Arena | 76 |
| VFW Arena | 80 |
## Condition Assessment Report

### Building Information

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Gross Square Feet</th>
<th>Year Built</th>
<th>Existing Drawings</th>
<th>Renovation Date</th>
<th>Renovation Cost</th>
</tr>
</thead>
</table>

### Rating Legend

1. **5** System condition is in new or near new condition.
2. **4** System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3. **3** System is suitable, but requires specific upgrades to meet performance and operational objectives.
4. **2** System has serious deficiencies.
5. **1** System is unsuitable for intended use.

### RATINGS

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SYSTEMS</th>
<th>EXCELLENT</th>
<th>ABOVE AVERAGE</th>
<th>AVERAGE</th>
<th>BELOW AVERAGE</th>
<th>POOR</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>Site</td>
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<td>2</td>
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<td>Drainage</td>
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<td>3</td>
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<td>3</td>
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<tr>
<td></td>
<td>Accessibility</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Exterior Building Condition

**East**

- **Foundation**
  - 5 4 3 2 1
- **Walls**
  - 5 4 3 2 1
- **Roof**
  - 5 4 3 2 1
- **Windows/Doors**
  - 5 4 3 2 1
- **Trim**
  - 5 4 3 2 1

**South**

- **Foundation**
  - 5 4 3 2 1
- **Walls**
  - 5 4 3 2 1
- **Roof**
  - 5 4 3 2 1
- **Windows/Doors**
  - 5 4 3 2 1
- **Trim**
  - 5 4 3 2 1

**West**

- **Foundation**
  - 5 4 3 2 1
- **Walls**
  - 5 4 3 2 1
- **Roof**
  - 5 4 3 2 1
- **Windows/Doors**
  - 5 4 3 2 1
- **Trim**
  - 5 4 3 2 1

**Comments**

- Water moves away from building very well.
- Unconventional ADA parking configuration. Some ADA stalls and aisles appear to have more than 2% cross slope.
- Parking lot is in poor condition.

- Wall panel and trim is relatively new, but very beat up near ground (likely due to lawn mowing).
- Vents near SE doors similarly damaged.
- Closure trim at NE concourse door shows corrosion.
- Window sealant is brittle and discolored.
- Sealant needed at pipe penetration north of transformer.
- Louver at grade. Patch or relocate to avoid water flow into building.
- Wall panel and trim is relatively new, but very beat up near ground (likely due to lawn mowing).
### Condition Assessment Report

#### Interior Building Condition

<table>
<thead>
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<th>Room Name, Room #</th>
<th>Category</th>
<th>Systems</th>
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<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
<th>Poor</th>
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<tbody>
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<td>Interior Building Condition</td>
<td>Floors</td>
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<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- New finishes from most recent renovation.</td>
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<tr>
<td></td>
<td></td>
<td>Walls</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- New finishes from most recent renovation.</td>
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<tr>
<td></td>
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<td>Ceilings</td>
<td>5</td>
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<td>3</td>
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<tr>
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<td>Door(s)</td>
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<td>Accessibility</td>
<td>5</td>
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<td>Coach Office #104</td>
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<td>- New finishes from most recent renovation.</td>
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<tr>
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<td>1</td>
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<tr>
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<td>1</td>
<td>- New finishes from most recent renovation.</td>
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<td>Door(s)</td>
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<tr>
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<tr>
<td>Girls' Locker Room #104</td>
<td>Interior Building Condition</td>
<td>Floors</td>
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<td>- New finishes from most recent renovation.</td>
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<tr>
<td></td>
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<td>- New finishes from most recent renovation.</td>
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<td>- New finishes from most recent renovation.</td>
</tr>
<tr>
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<tr>
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<tr>
<td>Boys' HS Locker Room #104</td>
<td>Interior Building Condition</td>
<td>Floors</td>
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<td>4</td>
<td>3</td>
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<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walls</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceilings</td>
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<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fixed Equipment</td>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
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<tr>
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<td>Window(s)</td>
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<td>3</td>
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<td>1</td>
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</tr>
<tr>
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<td>Door(s)</td>
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<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accessibility</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>- Ramp down to floor. Door knob, no lever.</td>
</tr>
</tbody>
</table>

#### Comments

- Door knob, no lever. Door scrapes on floor.
- Door knob, no lever. Not enough floor area at door.
- Door knob, no lever. Not enough floor area at door.
- Door knob, no lever. Not enough floor area at door.
- Ramp down to floor. Door knob, no lever. Door scrapes on floor.
- Ramp down to floor. Door knob, no lever. Door scrapes on floor.
## Interior Building Condition

<table>
<thead>
<tr>
<th>Category</th>
<th>Systems</th>
<th>Excellent</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
<th>Poor</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players' Entrance (east addition)</td>
<td>Room 1</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>Major cracking in exterior wall of players' entrance east addition</td>
</tr>
<tr>
<td>Floor(s)</td>
<td>Room 2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>Floors in good condition, dirty.</td>
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<tr>
<td>Walls</td>
<td>Room 3</td>
<td>5</td>
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<td>3</td>
<td>2</td>
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<td>Adventurous ceiling condition.</td>
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<tr>
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<td>Room 4</td>
<td>5</td>
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<td>3</td>
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<td>There is some water damage on exterior wall at this level.</td>
</tr>
<tr>
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<td>Room 5</td>
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<td>3</td>
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<tr>
<td>Window(s)</td>
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<td>No accessible route from the exterior of the building for portion of ADA</td>
</tr>
<tr>
<td>Door(s)</td>
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</tr>
<tr>
<td>Accessibility</td>
<td>Room 8</td>
<td>5</td>
<td>4</td>
<td>3</td>
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<td>1</td>
<td>There is some water damage on exterior wall at this level.</td>
</tr>
<tr>
<td>Room Lobby/Office/Restrooms</td>
<td>Room 9</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>No accessible route from the exterior of the building for portion of ADA</td>
</tr>
<tr>
<td>Floor(s)</td>
<td>Room 10</td>
<td>5</td>
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<td>3</td>
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</tr>
<tr>
<td>Walls</td>
<td>Room 11</td>
<td>5</td>
<td>4</td>
<td>3</td>
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<td>Ceilings</td>
<td>Room 12</td>
<td>5</td>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>No accessible route from the exterior of the building for portion of ADA</td>
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<tr>
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<td>5</td>
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<td>3</td>
<td>2</td>
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<tr>
<td>Window(s)</td>
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<td>5</td>
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<td>3</td>
<td>2</td>
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<tr>
<td>Door(s)</td>
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<td>5</td>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>There is some water damage on exterior wall at this level.</td>
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<tr>
<td>Accessibility</td>
<td>Room 16</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>There is some water damage on exterior wall at this level.</td>
</tr>
<tr>
<td>Room Arena Upper Name-Bowl Seating</td>
<td>Room 17</td>
<td>5</td>
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<td>3</td>
<td>2</td>
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<td>There is some water damage on exterior wall at this level.</td>
</tr>
<tr>
<td>Floor(s)</td>
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<td>5</td>
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<td>3</td>
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<td>1</td>
<td>There is some water damage on exterior wall at this level.</td>
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<tr>
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<td>Room 19</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
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</tr>
<tr>
<td>Ceilings</td>
<td>Room 20</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>Fixed Equipment</td>
<td>Room 21</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Window(s)</td>
<td>Room 22</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Door(s)</td>
<td>Room 23</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>Accessibility</td>
<td>Room 24</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>There is some water damage on exterior wall at this level.</td>
</tr>
</tbody>
</table>
OVERALL COMMENTS

Heating provided through gas fired furnaces for locker rooms and auxiliary spaces. Furnaces are generally fairly new and in operating condition. Heating for the rink comes from electric coils in the air handling units. Ventilation for the ice rink provided through multiple dedicated air handling units. Exhaust fans are provided in the space for relief air. Locker rooms provide with exhaust fans or heat recovery ventilators. Spaces with only exhaust fans get ventilation air through transfer from rink space. Generally, the building is not air conditioned. One water heater is past its useful life and will need to be replaced. Other water heaters are in good condition. Recent remodeled spaces have new code compliant fixtures. Some old locker room spaces have original fixtures in poor condition and will need code updates. No fire protection system installed in the building. Standalone programmable thermostats provided on new furnaces throughout the building. No building automation system present. Refer to mechanical assessment writeup for detailed information and recommendations.

OVERALL COMMENTS

Original 1970's 480V Electrical Service and Distribution is ready for upgrade. Lighting throughout is mostly fluorescent. Many areas are in need of an upgrade. Arena has updated high-bay LED’s in great condition. Very few areas have automatic lighting controls. Emergency lighting needs to be expanded to properly cover the spaces. Data infrastructure is adequate but limited. No card access is installed. No security cameras are installed. Fire alarm has been installed in many areas as they've been remodeled. Some areas are missing. The system does not support voice notification which is now required for assembly occupancies in MN. See Electrical Assessment Narrative for additional information.
September 30th, 2019

JLG Architects
Attn: Michael McLean
124 N 3rd Street
Grand Forks, ND 58203

Re: Civic Center Condition Assessment Report
East Grand Forks, MN
HE – 039.0156

Mr. McLean:

Upon your request, Heyer Engineering (Heyer) made a site visit to the above referenced site on the afternoon of Tuesday, August 20th, 2019. The purpose of the site visit was to perform a structural observation of portions of the building to determine the nature and severity of bowing and cracking observed in its exterior basement walls. Heyer’s observation was limited to a visual observation only. No destructive or invasive means of testing or observation was to be performed.

Existing Structure and Observations

The subject structure, originally constructed in the mid 1970’s, is primarily an ice rink facility with stadium riser seating. The primary roof structure consists of large main trusses supported by steel columns. Secondary structural roof elements consists of steel bar joists and steel roof deck. Concourse is primarily poured concrete over metal deck. Exterior and foundation walls are Concrete Masonry Units (CMU). The CMU walls are pinned by the concourse slab structure approximately 12’ above the lower level. Scans of the existing building drawings were provided to Heyer by JLG, however drawings were in rough condition and some items on the drawings were not legible.

While observing the exterior of the building, the soil is currently soil banked up against the exterior walls at various heights. In general, the soil is at its highest (approximately at concourse elevation) at egress doors and dips to lower elevations between doors. Exact soil elevations were not determined in our visual observation.

To our understanding, the existing CMU walls below exterior grade are exhibiting cracking and inward movement. Upon walking and observing the lower level, Heyer did observe a number of areas along the exterior walls where inward movement of the CMU block has occurred. Steel column braces had been previously installed in select locations to brace the wall from further inward movement. The braces appeared to be structurally working as intended in their area of influence.

Conclusions and Interpretations

The structural issues observed, bowing walls and crack pattern exhibited, are not unusual for CMU walls retaining soil. It is Heyer’s opinion that the inward bowing is being caused by the lateral pressure of the embanked soil against the lower level CMU walls. Heyer assumes that native clayey soils were used in the backfill of the wall. Clayey soils tend to absorb moisture more that granular fills and as such swell under wet
conditions causing lateral pressure on retaining walls. However, some small amount of lateral deflection of the CMU wall should be expected considering the consistent soil load against the wall.

Because of the condition of the scanned drawings provided to Heyer, the actual amount of design reinforcement used in the walls in not able to be determined. The information is either on a drawing not provided or is not legible on the provided drawings. In review of what can be found on the existing drawings, it would appear that the designers would have most likely thought that soil was banked roughly up 9’ of the total 12’ height of the 12” CMU wall. While observing the exterior of the building, the current soil elevation on average appears to be roughly consistent with the 9’ elevation shown in the drawings. Using the assumed height of 9’, and by making some normal assumptions for backfill (clay) properties, Heyer estimates that wall should be reinforced with (1) #5 @ 8” or (1) #6 @ 16” oc. Because the wall is still largely intact, Heyer is of the opinion that some reinforcing must be within the wall, however we cannot confirm its structural adequacy. The only way to determine the actual amount of reinforcing utilized in the wall is to perform more testing. Based on previous experience, typical historical design criteria for CMU, and the amount of movements observed, it is Heyer’s opinion that the wall is possibly under-reinforced by today’s standards. Because of the large number of assumptions that were needed to be made an estimate analysis, Heyer would recommend further testing be performed.

Heyer also recommend monitoring of all lower level walls for continued movement. In areas, where excessive bowing in of the CMU walls are observed (“1” or more), Heyer recommends installing column braces, similar to what has been previously installed in other areas. Design of the type and number of column braces is beyond the scope of this report, but Heyer would be happy to assist in the preparation of that design. Another supplemental remediation measure that could also be utilized would be to excavate the backfilled soils adjacent to the structure and install a free draining granular material. If the current soils are clay, the replacement free draining granular material would not hold as much moisture and more rapidly move ground water to the buildings sump system. Reducing the moisture in the soil would lessen the lateral pressure against the walls.

On a related matter, Heyer is of the understanding that a second ice sheet addition to the building is being contemplated. A building addition directly adjacent to the existing building would also remove the backfill pressure against the walls. The addition would therefore likely eliminate the need to brace the existing walls or perform soils corrections in those areas.

Again, it is to be noted that Heyer’s opinions are based on the limited visual nature of Heyer’s observations. Most of the structural component of the building not able to be directly observed. Heyer did not perform any destructive or other invasive means of testing. If during the renovation process additional damage is found, reassessment and modification the opinions and recommendations stated above can be made.

If you have any questions or comments, please do contact us.

Sincerely,
HEYER ENGINEERING, INC

Eric A. Greiff, PE
Principal
1. 2015 Minnesota Mechanical Fuel & Gas Code
2. 2015 Minnesota Plumbing Code
3. 2015 Minnesota Energy Code
6. NFPA 13 Installation of Fire Protection Systems
7. Americans with Disabilities Act (ADA).
8. ASHRAE 90.1

PART 2. SPRINKLER SYSTEMS (DIVISION 21)

2.1 EXISTING FIRE PROTECTION SYSTEM:
A. The building is currently not sprinkled.

B. Recommendations:
1. Requirement for fire protection system is dependent on architectural code analysis. A new 6” water line would be brought into the building to provide a fire protection service with a wet sprinkler system installed throughout. Galvanized piping would be utilized in ice rink space.
   a. Cost: $5/square foot (does not include water service, typically $10,000 to 20,000 depending on civil)

PART 3. PLUMBING SYSTEMS (DIVISION 22)

3.1 EXISTING PLUMBING SYSTEM:
A. The two main water heaters are natural gas fired units and are located in the lower level Storage 148 area. One water heater was manufactured in 1997, is now 22 years old and is past its useful life. The other water heater was installed in 2011 and is still in good condition. A recirculating pump system is installed for these water heaters and serves a portion of the building. Additional electric hot water heaters installed in 2015 at concessions areas at either end of the building. These water heaters are in good condition.

B. Plumbing fixtures overall appear to be in working order and in good condition. Some recent remodel areas have had plumbing fixtures replaced within the last few years. Newer fixtures are generally sensor operation type and wall hung water closets. Wraps provided under newer sinks to meet ADA requirements.

C. Some plumbing fixtures in the older locker rooms do not meet current standards as stated in the Minnesota Plumbing Code and therefore should not be reinstalled during any remodel work. Public use lavatory faucets are not provided with ASSE 1070 rated thermostatic mixing valves to protect against scalding. Showers have a shared central floor drain where water would pass under other bathers.

D. Recommendations:
1. The 1997 water heater should be replaced with new. The rest of the existing water heaters are in good condition and should remain.
   a. Cost: $20,000

2. During remodel, any old plumbing fixture should be replaced with new as well as ASSE 1070 rated thermostatic mixing valves being provided to protect against scalding. The architect will need to determine the requirements to meet current ADA standards for the toilet room layout.
   a. Cost: $5,000 per plumbing fixture

PART 4. HVAC (DIVISION 23)

4.1 EXISTING DEHUMIDIFICATION SYSTEM:
A. The building is not currently equipped with a dehumidification system. If year-round ice operation is desired this is a greater concern since excess humidification can degrade ice quality, create fog in the air, and can condense and damage finish surfaces.

4.2 EXISTING HEATING PLANT:
A. The ice arena bowl is heated using electric heating coils in the arena air handling units. The electric source is less desirable due to higher operating costs and maintenance compared to a hot water system. Gas furnaces were provided in area recently remodeled locker room and concession spaces. Electric cove heaters and unit heaters provide supplemental heat in entryways and restrooms.

4.3 EXISTING VENTILATION & AIR CONDITIONING SYSTEMS:
A. The ice rink has multiple dedicated air handling units around the perimeter of the space to provide ventilation to the rink. Power roof mounted relief fans and roof hoods are located on one end of the rink to relieve air. The units are equipment with waste heat coils from the ice refrigeration system as well as electric heating coils. These units do not have air conditioning and are original to the ice arena. Two of the units are currently not operational and the rest of the units are past their useful life.

B. An air handling unit with a cooling coil is located in the space but no refrigerant lines or condensing unit are installed.

C. Concessions areas are provided with gas fired furnaces. These units do not have air conditioning installed. Exhaust is being provided from each of the concessions areas. These furnaces are new and in good operating shape.

D. Lower level locker rooms were provided with new furnaces, exhaust fans, and heat recovery ventilators during remodels in 2006 and 2015. These units are in operating condition and provide the code required ventilation to the spaces. These units are not equipped with air conditioning.
Units installed in 2006 are approaching the end of their useful life (15 years) and can be replaced as they fail.

E. Some lower level exhaust fans are original to the building and are reaching the end of their useful life.

F. Air conditioning is not installed in the building with the exception of a weight room on the east side of the building. The furnace and condensing unit for this space is still operating but is approaching the end of its useful life.

G. Recommendations:

1. Provide hot water heating plant with high efficiency boilers. Hot water heat will be the most efficient and cost effective long term option for heating the building. All new equipment would be hot water heat and existing electric heating elements would be replaced with hot water. As gas fired furnaces fail, they could be replaced with hot water equipment. Boiler plant would be sized to handle the entire load of the building including equipment converted to hot water at a later date.
   a. Cost: $400,000

2. Replace air handling units in ice arena with new units. Existing units are beyond useful life and starting to fail. Basis for new units would be hot water heat with DX cooling to condition the space. Units would be sized to handle the ventilation required in the hockey rink.
   a. Cost: $650,000

3. A dedicated dehumidification unit should be provided for the ice rink if year-round operation is desired. This will allow for the code required ventilation airflow rate to be provided without the humidity in the space going beyond acceptable limits. The unit would be sized to account for the additional air required when operating a Zamboni. Unit would have a hot water heating coil and DX cooling coil to control discharge air temperature.
   a. Cost: $450,000

4. Lower level exhaust fans are at the ends of their useful life. New exhaust fans should be provided to replace existing original exhaust fans as they fail.
   a. Cost: $8,000 per fan

5. Furnaces installed in the 2006 remodel are in good working condition but are approaching the end of their expected life. These should be planned to be replaced in the coming years as they fail.
   a. Cost: $20,000

6. Areas equipped with gas fired furnaces could be converted to hot water if a boiler plant is added to the building. This would give the equipment better temperature control and is more efficient with lower operating costs. These renovations could be done as equipment fails or all at once.
   a. Cost: $30/square foot of area changed

PART 5. AUTOMATIC TEMPERATURE CONTROLS (DIVISION 25)

5.1 EXISTING AUTOMATIC TEMPERATURE CONTROL SYSTEMS:

A. The existing building has very limited controls, with all equipment being stand alone. Line voltage programmable thermostat provided on furnaces for locker rooms and concessions. These thermostats would meet the code requirements but give limited information to the owner.

B. Recommendations:

1. A new digital controls (DDC) system with central monitoring capabilities should be installed in the building. This will allow set back and energy conservation strategies to be setup when new equipment is installed. Additionally, new controls will help the building meet current code requirements and provide increased indoor air quality. The system shall also alarm all equipment so maintenance personnel can maintain and troubleshoot all equipment remotely with limited staff.
   a. Cost: $420,000

Respectfully,
Obermiller Nelson Engineering, Inc.

Ross Young

Attachment(s): None
Cc: file
PART 1. ELECTRICAL GENERAL INFORMATION

1.1 OVERVIEW

A. The existing facility in East Grand Forks, MN currently contains a large assembly space with an ice arena as well as a large amount of ancillary spaces for mechanical/electrical, offices, locker rooms, restrooms, and kitchen/concessions.

1.2 SCOPE

A. This narrative document summarizes the schematic design for the major electrical systems (Division 26), electronic communications systems (Division 27), and electronic safety and security systems (Division 28) to be included in the project.

B. Electrical systems (Division 26) included in this document:
   1. Low voltage power distribution system.
   2. Interior and exterior lighting systems.
   3. Lighting control systems.
   4. Emergency interior and exterior lighting systems and egress signage (exit signs).

C. Electronic communications systems (Division 27) included in this document:
   1. Structured cabling for voice / data communication systems.
   2. Sound systems.

D. Electronic safety and security systems (Division 28) included in this document:
   1. Fire alarm system.
   2. Security Camera System.
   3. Electronic Access Control and Door Monitoring System.

PART 2. DESCRIPTION OF ELECTRICAL SYSTEMS

2.1 LOW VOLTAGE ELECTRICAL POWER DISTRIBUTION

A. The existing electrical services consist of (1) 3000A, 480V, 3-phase service in the lower level of the west side of the building. Electrical distribution also consists of step-down transformers to feed 208V distribution equipment. Main service and distribution equipment are original to the 1975 era building and are past their expected life.
B. All electrical distribution equipment is original to the area that it serves. Most panels are beyond expected life and are due for replacement.

C. In the main service room there is a panel that is tapped from the incoming service conductors that originally served as an emergency power panel. This method of providing emergency power is not longer valid and the panel would no longer be considered emergency power (see emergency lighting notes).

D. Several panels are located in locations that are accessible to the public (like corridors and concourses) where they could be susceptible to tampering. Two panelboards are located in the men’s bathroom near the south side entrance to the building. These panels should be removed from the restroom and replaced with new panels at a new location to get them out of a public space where there are potentially wet conditions and where they could be subject to tampering.

E. Cover heaters in the existing south upper level bathrooms are showing signs of age and the paint is peeling.

F. Existing devices: There are some existing non-GFCI devices in locker rooms that should be replaced with GFCI type.

G. Recommendations:
   1. Aged existing electrical equipment and associated feeders should be placed on a schedule for upgrade.
      a. Cost: $200,000 (these upgrades could be absorbed by other renovation or expansion projects)
   2. Replace existing non-GFCI devices in locker rooms that should be replaced with GFCI type.
      a. Cost: $75 per device.

2.2 GENERAL INTERIOR AND EXTERIOR LIGHTING SYSTEMS

A. Most of the general interior lighting in the building is linear fluorescent (T8 lamps) fixtures. There are several recessed prismatic troffers and surface mounted fixtures with either wraparound prismatic lenses or strip lights with bare lamps. The older visitor locker rooms have old jelly-jar type fixtures with screw-in base lamps.

B. Exterior lighting has all been upgraded to LED wall mounted lighting.

C. The arena lighting has been upgraded to modern LED high bay fixtures. The perimeter of the arena concourse has linear direct/indirect fluorescent fixtures.

D. Interior light levels appear to be adequate in most public spaces, but several service areas are lacking light (including all spaces under the bleacher areas).

E. Recommendations:
   1. Replace all existing interior lighting (except the arena ice area) with new LED light fixtures for better efficiency (not necessary to meet any codes, just a recommendation for upgrade).
      a. Cost: $5 per square foot (not including the arena floor area).

2.3 LIGHTING CONTROL SYSTEMS

A. Most lighting controls in the building are manual switches only. Occupancy sensors for lighting control have been installed only in some of the updated restrooms.

B. Arena lighting is controlled manually by switches at inconvenient locations (accessible to the public).

C. Recommendation:
   1. Provide occupancy sensor controlled lighting throughout the building as required by current energy codes. Low voltage switches and dimmers would be utilized to allow for manual-on, auto-off control of the lighting as is now required by the energy codes. Mechanical and electrical rooms would be left with manual control of the lighting.
      a. Cost: $1.25 per SF for affected areas (not including arena).
   
   2. Provide contactor or relay-based lighting control for the arena lighting and move the centralized control location to a secure location accessible only by staff or those authorized to control it.
      a. Cost: $10,000

2.4 EMERGENCY LIGHTING AND EGRESS SIGNAGE

A. Exit signs are mostly LED type with integral batteries and most appear to be in good condition.

B. Emergency egress lighting is self-contained emergency lighting with integral batteries and adjustable light heads. Most of the fixtures are in acceptable condition. Some of the existing emergency lights are older and should be replaced with new to ensure proper battery life.

C. Coverage appears to be acceptable in some areas except at the perimeter of the arena concourse, seating, arena floor, and some corridors in the lower level. There are emergency fixtures installed, but the coverage will not meet code requirements for occupied spaces. There is also no emergency lighting installed in the weight room and some of the mechanical and electrical service areas.

D. There is no existing exterior emergency lighting.

E. Recommendations:
   1. Add additional emergency lighting for proper coverage at the arena concourse, seating areas, floor area, and lower level. Include centralized battery inverter and dedicated emergency fixtures for arena.
      a. Cost: $27,000 (cost will vary depending on the areas involved)
   
   2. Add exterior emergency lighting.
2.5 STRUCTURED CABLELING FOR VOICE AND DATA COMMUNICATIONS
A. Communications wiring and wireless access points are currently installed as necessary to meet the facility’s needs which are relatively limited. No issues were reported.
B. Communications demark is located in the electrical service room on the west side.
C. **Recommendations:** None for the existing facility, however, a building expansion or renovation project should consider the addition of a secured and temperature controlled centralized data closet(s).

2.6 AUDIO SYSTEMS
A. The current arena sound system is aging. Staff reports that there are some areas where audible coverage is not adequate.
B. **Recommendations:** Consider the installation of a new sound system for the arena. This is not a code item and the cost can vary greatly depending on the system and coverage desired.
   1. A full Audio system review is beyond the scope of this assessment, but consider the scale of cost of upgrade for just the arena to be in the $100 to $200k range for a very good system.

PART 3. ELECTRONIC SAFETY AND SECURITY SYSTEMS

3.1 ELECTRONIC DOOR ACCESS CONTROL
A. The building does not currently have any electronic access control system installed.
B. **Recommendations:** Consider the installation of a new electronic access control system to monitor the position of exterior doors and allow more secure and controlled access to the space.
   1. Cost: $35,000 (15 doors).

3.2 SECURITY AND SURVEILLANCE CAMERA SYSTEMS
A. There is currently no security or surveillance camera system.
B. **Recommendations:** Consider the installation of a surveillance camera system for better security, asset protection, and liability protection.
   1. Cost: Cost is greatly dependent on scope but assume a cost of $1200 per camera plus an additional $10,000 for control and recording equipment.

3.3 FIRE ALARM SYSTEM
A. There is an existing Simplex 4006 panel serving the building. The existing system is older technology and supports only hard-wired, non-intelligent systems. The system also supports only horns and strobes, but no voice type notification as is required for assembly occupancies like this in MN.
B. The system covers areas that have been touched by renovation, but there still are remaining areas (mostly in the lower level and in the weight room area) that do not yet have fire alarm notification or detection installed. These spaces include many of the service corridors and rooms as well as the older visitor locker rooms.
C. The newer, remodeled team locker rooms do have proper notification and detection installed.
D. According to the Minnesota amendments to the IBC:
   1. A fire alarm system shall be installed in Group A occupancies having an occupant load of 300 or more. However, a fire alarm system is not required in buildings with an occupant load of less than 1,000 when a sprinkler system is installed throughout the building. Currently there is no sprinkler system installed.
   2. Automatic fire detectors (smoke or heat detectors) are required to be installed in laundry rooms, boiler and furnace rooms, mechanical and electrical rooms, shops, kitchens, trash collection rooms, storage rooms, and similar areas.
   3. Audible notification shall be voice type.
E. Fire alarm coverage for notification is not adequate for the arena. There is only horn/strobe coverage at the east and west hallways and does not appear to properly cover the entire space.
F. The existing air handlers for the arena do not have duct smoke detectors installed.
G. **Recommendations:** Provide an all new addressable fire alarm system with voice notification throughout the building.
   1. Cost: $2 per square foot for all new system.

4.1 CODES AND STANDARDS
A. The following is a partial list of applicable codes governing the systems described herein:
B. The following is a partial list of design and installation standards governing the systems described herein:

Respectfully,
Obermiller Nelson Engineering, Inc.

Tony Nelson

Attachment(s): none
Cc: ICS, file.
Note: Standing water in parking lot after rainfall. Pavement/drainage in poor condition

Note: Damaged wall panel and trim along bottom of building

Note: Positive drainage around the building

Note: Closure trim at NE concourse door shows corrosion from water
JLG 19147 – EGF CIVIC CENTER ARENA
RE: EFG ARENA STUDY
July 19th, 2019

Note: High School boys locker room

Note: Louver at grade can be a potential for water penetration.

Note: Sealant needed around pipe penetration

Note: Players entrance at east side of building
Note: No grab bars at north Women’s restroom ADA stall. Width is impeded by column in stall.

Note: Paint bubbling up at exterior wall/column at main level

Note: No railing behind seating area at north main level, safety concern

Note: Damaged tile at main level concession seating
Note: Seating aisle steps have steel tread nosing every other step that makes the riser height vary each step. Can be a potential tripping hazard.

Note: West exterior wall below seating has bowed in over years, additional structural column and beam to support it. Some water damage is visible.

Note: East players’ entrance addition has major cracking in the exterior bearing wall.
FACILITY ASSESSMENT
JLG 19147 – EGF CIVIC CENTER ARENA
RE: EFG ARENA STUDY
July 19th, 2019

Note: Original Switchgear and Panelboards are past expected life.

Note: Arena LED Lighting

Note: 1997 Water Heater (Left)

Note: Typical natural gas furnace serving auxiliary spaces. Many install in 2006 with no cooling.

Note: Air Conditioning Unit Serving Bowl. Refrigerant coil not connected to any condensing unit.
Note: Typical air handling unit serving bowl original to building. Electric heat with no cooling.

Note: Typical exhaust fan. Original to building.

Condition Assessment Report

Building Information

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Gross Square Feet</th>
<th>Year Built</th>
<th>Existing Drawings</th>
<th>Renovation Date</th>
<th>Renovation Cost</th>
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<tbody>
<tr>
<td>VPW Arena</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating Legend

5  System condition is in new or near new condition.
4  System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3  System is suitable, but requires specific upgrades to meet performance and operational objectives.
2  System has serious deficiencies.
1  System is unsuitable for intended use.

Exterior Building Condition

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SYSTEMS</th>
<th>EXCELLENT</th>
<th>ABOVE AVERAGE</th>
<th>AVERAGE</th>
<th>BELOW AVERAGE</th>
<th>POOR</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>Site</td>
<td></td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pavement</td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td>- Ground heaving prevents north and east exterior doors from opening in winter time.</td>
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<tr>
<td></td>
<td>Drainage</td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td>- Water flows under doors during heavy rain events.</td>
</tr>
<tr>
<td></td>
<td>Signage</td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td>- Possible tree debris on SW corner of roof (difficult to see).</td>
</tr>
<tr>
<td></td>
<td>Lighting</td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessibility</td>
<td>5  4  3</td>
<td>6  5  4</td>
<td>7  6  5</td>
<td>8  7  6</td>
<td>9  8  7</td>
<td></td>
</tr>
</tbody>
</table>

Exterior Building Condition

| NORTH | FOUNDATION | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - No gutter at roof edge; water sheet draining off roof. |
|       | Walls      | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Water from roof has eroded 12” of soil from grade, creating a back-slope toward the building. |
|       | Roof       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Water from roof is landing at door/stoop, likely exasperates heaving. |
|       | Windows/Doors | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
|       | Trim       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |

Exterior Building Condition

| EAST | FOUNDATION | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Widening gap between OH zam. door and exterior apron. |
|      | Walls      | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Stoop/loft has been completely removed at one door. |
|      | Roof       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - One door is badly dented. |
|      | Windows/Doors | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
|      | Trim       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |

Exterior Building Condition

| SOUTH | FOUNDATION | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Brick is in generally good condition. |
|       | Walls      | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Two large dents in panel trim at front entry sill. |
|       | Roof       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Up to 2” gap between foundation and concrete flatwork (no stoop). |
|       | Windows/Doors | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
|       | Trim       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |

Exterior Building Condition

| WEST | FOUNDATION | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Water has eroded soil from grade, creating a back-slope toward the building. |
|      | Walls      | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 | - Some dents in high panel from inside. |
|      | Roof       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
|      | Windows/Doors | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
|      | Trim       | 5  4  3 | 6  5  4 | 7  6  5 | 8  7  6 | 9  8  7 |                     |
| Room Name / Overlook - Room #_________ | Condition Assessment Report
|----------------------------------------|
| Floors                                 | 5 4 3 2 1
| Walls                                  | 5 4 3 2 1
| Ceilings                               | 5 4 3 2 1
| Fixed Equipment                        | 5 4 3 2 1
| Window(s)                              | 5 4 3 2 1
| Door(s)                                | 5 4 4 2 1
| Accessibility                          | 5 4 3 2 1

- Area is in an unfinished state following water damage. Unfinished walls, no window trim, wall panels removed for drying. - No elevator access to upper level.

| Room Name / Multi-Purpose Name / Exercise - Room #_________ | Condition Assessment Report
|-------------------------------------------------------------|
| Floors                                                     | 5 4 3 2 1
| Walls                                                     | 5 4 3 2 1
| Ceilings                                                  | 5 4 3 2 1
| Fixed Equipment                                           | 5 4 3 2 1
| Window(s)                                                 | 5 4 3 2 1
| Door(s)                                                   | 5 4 3 2 1
| Accessibility                                             | 5 4 3 2 1

- Partially finished state. New flooring, lights, and paint. No window trim, no air diffusers. - No elevator access.

| Room Name / Office - 2nd Room #_________ | Condition Assessment Report
|-----------------------------------------|
| Floors                                  | 5 4 3 2 1
| Walls                                   | 5 4 3 2 1
| Ceilings                                | 5 4 3 2 1
| Fixed Equipment                         | 5 4 3 2 1
| Window(s)                               | 5 4 3 2 1
| Door(s)                                 | 5 4 3 2 1
| Accessibility                           | 5 4 3 2 1

- All new finishes. - No elevator access.

| Room Name / Office - 2nd Room #_________ | Condition Assessment Report
|-----------------------------------------|
| Floors                                  | 5 4 3 2 1
| Walls                                   | 5 4 3 2 1
| Ceilings                                | 5 4 3 2 1
| Fixed Equipment                         | 5 4 3 2 1
| Window(s)                               | 5 4 3 2 1
| Door(s)                                 | 5 4 3 2 1
| Accessibility                           | 5 4 3 2 1

- Less than 18" between wall and door with closer. Consider reversing swing.

| Room Name / Office - 2nd Room #_________ | Condition Assessment Report
|-----------------------------------------|
| Floors                                  | 5 4 3 2 1
| Walls                                   | 5 4 3 2 1
| Ceilings                                | 5 4 3 2 1
| Fixed Equipment                         | 5 4 3 2 1
| Window(s)                               | 5 4 3 2 1
| Door(s)                                 | 5 4 3 2 1
| Accessibility                           | 5 4 3 2 1

- All new finishes.
## Condition Assessment Report

<table>
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<tr>
<th>CATEGORY Building Condition</th>
<th>SYSTEMS</th>
<th>EXCELLENT</th>
<th>ABOVE AVERAGE</th>
<th>AVERAGE</th>
<th>BELOW AVERAGE</th>
<th>POOR</th>
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<td>Doors</td>
<td>5</td>
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<td>2</td>
<td>1</td>
<td></td>
<td>- Carpet is worn in Locker Room</td>
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<tr>
<td>Accessibility</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<td></td>
</tr>
</tbody>
</table>

#### Room Name: Locker Room

- **Room**: 5
- **Floor**: 1
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: Door knob/hardware not ADA compliant.

#### Room Name: Arena Rink

- **Room**: 1
- **Floor**: 1
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: The rink floor appears uneven and has noticeable bumps.

#### Room Name: Locker Room

- **Room**: 4
- **Floor**: 1
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: No grab bars, no ADA stalls. No protected piping under lavatories. Restroom stall doors exceed force requirements to open for ADA compliance (too heavy). Drinking fountain in hallway exceeds minimum height for ADA compliance. No tactile signage.

#### Room Name: Locker Room

- **Room**: 4
- **Floor**: 2
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: Door is buckling and is a trip hazard. Rubber flooring doesn't finish tight to the wall edge in all places, and is a place for accumulation of moisture and dirt. Doors are dented, and no ADA knobs.

#### Room Name: Locker Room

- **Room**: 4
- **Floor**: 3
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: Accessible.

#### Room Name: Locker Room

- **Room**: 4
- **Floor**: 4
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: Accessible.

#### Room Name: Locker Room

- **Room**: 4
- **Floor**: 5
- **Walls**: 4
- **Ceilings**: 4
- **Fixed Equipment**: 4
- **Window(s)**: 3
- **Door(s)**: 3
- **Accessibility**: 3
- **Comments**: Accessible.
**Mechanical Assessment**

<table>
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<tr>
<th>CATEGORY</th>
<th>SYSTEMS</th>
<th>RATINGS</th>
<th>COMMENTS</th>
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<tr>
<td></td>
<td>Fire Protection Systems</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td></td>
</tr>
</tbody>
</table>

**Overall Comments**

Heating provided through electric unit heaters for majority of the building. The ice rink space has a dedicated air handling unit with hot water heat but the boilers are not operational. Remodeled exercise area has a gas fired furnace.

Ventilation provided for ice rink through dedicated air handling unit. Restrooms and locker rooms do not have adequate exhaust airflow. Make up air for restrooms comes from ice rink space and no dedicated make up air is provided for locker rooms.

Water heaters are at the end of their useful life. Plumbing fixtures overall are in working order but original to the construction. Anti-scald valves and some piping insulation are missing which would be required per code.

No fire protection system installed in the building.

Some stand alone controls provided for some equipment but are limited and aging. Electric heaters have integral thermostats. Programmable controls not present.

Refer to mechanical assessment writeup for detailed information and recommendations.

---

**Electrical Assessment**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SYSTEMS</th>
<th>RATINGS</th>
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</table>

**Overall Comments**

Electrical services and power distribution were replaced/refurbished after the 1997 flood. Lighting is mostly linear fluorescent fixtures. Good opportunity to upgrade to LED for energy savings. Lighting controls are primarily manual. Very few automatic lighting controls.

Emergency lighting needs to be expanded to properly cover the spaces.

Data infrastructure is adequate but limited.

No card access is installed.

No security cameras are installed.

The building does not have a fire alarm system. A voice notification system should be installed throughout the building.

See Electrical Assessment Narrative for additional information.
MECHANICAL SYSTEM ASSESSMENT – M01

PART 1. MECHANICAL GENERAL INFORMATION

1.1 OVERVIEW
A. The existing facility currently houses an ice rink and auxiliary spaces including locker rooms, exercise room, and offices. The original building was constructed in 1981 with additions more recently. The total area of the building is roughly 45,000 square feet.

1.2 SCOPE
A. This narrative document summarizes the design concepts for the major mechanical systems including Fire Protection (Division 21), Plumbing (Division 22), HVAC (Division 23) and Temperature Controls (Division 25).
B. Fire Protection Systems (Division 21) included in this document:
   1. Existing Fire Protection System
   2. Recommendation for the Fire Protection System
C. Plumbing systems (Division 22) included in this document:
   1. Existing Plumbing System
   2. Recommendation for the Plumbing System
D. HVAC (Division 23) included in this document:
   1. Existing Dehumidification System
   2. Existing Heating Plant
   3. Existing Ventilation and Air Conditioning System
   4. Recommendation for the Dehumidification, Heating, Ventilation, & Air Conditioning Systems
E. Temperature Controls (Division 25) included in this document:
   1. Existing Temperature Control Systems
   2. Recommendation for the Temperature Control Systems

1.3 TECHNICAL CRITERIA
A. Codes: The following is a partial list of applicable codes governing the systems described herein:
   1. 2015 Minnesota Mechanical Fuel & Gas Code
1. New water heaters should be provided to replace existing units.
   a. Cost: $20,000 per each natural gas water heater, $12,000 for electric water heater

2. All domestic cold, hot & hot water recirculation piping should be insulated with new fiberglass thermal insulation to prevent the cold water piping from condensation as well as meeting the Minnesota Plumbing Code for hot water piping.
   a. Cost: $65,000 (extents of piping need to be verified)

3. A hot water recirculation piping and pump system should be added to the electric water heater to provide hot water quickly to the plumbing fixtures.
   a. Cost: $15,000

4. During any toilet room remodel, all plumbing fixture should be replaced with new as well as ASSE 1070 rated thermostatic mixing valves being provided to protect against scalding. The architect will need to determine the requirements to meet current ADA standards for the toilet room layout.
   a. Cost: $5,000 per plumbing fixture

PART 2. SPRINKLER SYSTEMS (DIVISION 21)

2.1 EXISTING FIRE PROTECTION SYSTEM:
   A. The building is currently not sprinkled.

B. Recommendations:
   1. Requirement for fire protection system is dependent on architectural code analysis. A new 6" water line would be brought into the building to provide a fire protection service with a wet sprinkler system installed throughout. Galvanized piping would be utilized in ice rink space.
      a. Cost: $5/square foot (does not include water service, typically $10,000 to 20,000 depending on civil)

PART 3. PLUMBING SYSTEMS (DIVISION 22)

3.1 EXISTING PLUMBING SYSTEM:
   A. The two main water heaters are natural gas fired units and are located in the main level mechanical room. These water heaters were manufactured in 2000, are now 19 years old and are past the end of their useful life. A recirculating pump system is installed for these water heaters.

   B. An electric water heater is installed in the front portion of the building serving the fixtures in that area. The water heater was manufactured in 1997 and is at the end of its useful life. No hot water recirculation system installed for this water heater.

   C. Existing domestic water piping is generally not insulated throughout the building.

   D. Plumbing fixtures overall appear to be in working order, but most are 30 years old or more. Fixtures are manual operator type with a mix of wall hung flush valve and tank type water closets. Not all of the fixtures meet current standards as stated in the Minnesota Plumbing Code and therefore should not be reinstalled during any remodel work. Public use lavatory faucets are not provided with ASSE 1070 rated thermostatic mixing valves to protect against scalding. Showers have a shared central floor drain where water would pass under other bathers.

E. Recommendations:
5. Automatic Temperature Controls (Division 25)

5.1 Existing Automatic Temperature Control Systems:

A. The existing building has very limited controls on all heating and ventilation devices in the building, with all equipment being stand alone. Electric unit heaters have built-in thermostats. Line voltage thermostat provided on furnace serving exercise area. These systems can be ineffective in providing proper space temperature control and energy savings. It is expected that most of these control components do not have reset control strategies associated with them that would be required for the current energy code requirements.

B. Recommendations:

C. A new digital controls (DDC) system with central monitoring capabilities should be installed in the building. This will allow set back and energy conservation strategies to be setup when new equipment is installed. Additionally, new controls will help the building meet current code requirements and provide increased indoor air quality. The DDC system should control all heating and air conditioning equipment to allow for automatic temperature control, seasonal adjustments, and maximize HVAC system efficiencies. The system shall also alarm all equipment so maintenance personnel can maintain and troubleshoot all equipment remotely with limited staff.

1. Cost: $225,000

Respectfully,
Obermiller Nelson Engineering, Inc.
Ross Young

Attachment(s): None
Cc: file

B. The building auxiliary spaces are not being provided with ventilation air. Bathrooms at the front of the building do not have exhaust installed. Locker rooms typically have some exhaust at the locker restrooms, but airflow rates would not meet the code requirements for locker rooms and restrooms. No make up air is provided in the auxiliary spaces and would be drawn in through doorways from the rink space. Exhaust fans are sidewall mounted on the exterior and appear to be original to the building.

C. Air conditioning is not installed in the building with the exception of a wall hung split system unit installed in one of the locker rooms. A furnace serving the exercise room and office has a DX cooling coil but no associated condensing unit.

D. Recommendations:

1. The remaining original hot water boiler and their associated components are at the end of their useful life and should be replaced. Any additional new boilers would match the new high efficiency boiler already being installed. All of the piping, pumps, and controls in the boiler room should be replaced. We recommend 50% ethylene glycol be used to re-fill the system for freeze protection. The size of the heating plant should be increased to pick up the additional load for the spaces previously provided with electric heat. Ventilation air for all spaces would be provided with hot water heat to condition the outside air. Hot water heat will be the most efficient and cost effective long term option for heating the building.
   a. Cost: $240,000

2. Replace existing air handling unit serving ice arena in its place, re-using ductwork. Existing unit is beyond its useful life and starting to fail. Basis for new unit would be hot water heat with DX cooling to condition the space. Unit would be sized to handle the ventilation required in the hockey rink.
   a. Cost: $250,000

3. A dedicated dehumidification unit should be provided for the ice rink if year-round operation is desired. This will allow for the code required ventilation airflow rate to be provided without the humidity in the space going beyond acceptable limits. The unit would be sized to account for the additional air required when operating a Zamboni. Unit would have a hot water heating coil and DX cooling coil to control discharge air temperature.
   a. Cost: $400,000

4. New air handling units should be provided for locker rooms and restrooms throughout the building to provide the code required ventilation and exhaust. The units would have energy recovery as required by code. Ductwork would be replaced to be properly sized for the code required airflow. Units would be hot water utilizing the building boiler plant.
   a. Cost: $500,000

PART 5. AUTOMATIC TEMPERATURE CONTROLS (DIVISION 25)

5.1 EXISTING AUTOMATIC TEMPERATURE CONTROL SYSTEMS:

A. The existing building has very limited controls on all heating and ventilation devices in the building, with all equipment being stand alone. Electric unit heaters have built in thermostats. Line voltage thermostat provided on furnace serving exercise area. These systems can be ineffective in providing proper space temperature control and energy savings. It is expected that most of these control components do not have reset control strategies associated with them that would be required for the current energy code requirements.

B. Recommendations:

C. A new digital controls (DDC) system with central monitoring capabilities should be installed in the building. This will allow set back and energy conservation strategies to be setup when new equipment is installed. Additionally, new controls will help the building meet current code requirements and provide increased indoor air quality. The DDC system should control all heating and air conditioning equipment to allow for automatic temperature control, seasonal adjustments, and maximize HVAC system efficiencies. The system shall also alarm all equipment so maintenance personnel can maintain and troubleshoot all equipment remotely with limited staff.

1. Cost: $225,000

Respectfully,
Obermiller Nelson Engineering, Inc.
Ross Young

Attachment(s): None
Cc: file
PART 1. ELECTRICAL GENERAL INFORMATION

1.1 OVERVIEW
A. The existing facility in East Grand Forks, MN currently contains a large assembly space with an ice arena as well as some ancillary spaces for mechanical/electrical, offices, locker rooms, restrooms, and concessions.

1.2 SCOPE
A. This narrative document summarizes the schematic design for the major electrical systems (Division 26), electronic communications systems (Division 27), and electronic safety and security systems (Division 28) to be included in the project.

B. Electrical systems (Division 26) included in this document:
   1. Low voltage power distribution system.
   2. Interior and exterior lighting systems.
   3. Lighting control systems.
   4. Emergency interior and exterior lighting systems and egress signage (exit signs).

C. Electronic communications systems (Division 27) included in this document:
   1. Structured cabling for voice / data communication systems.
   2. Audio systems.

D. Electronic safety and security systems (Division 28) included in this document:
   1. Fire alarm system.
   2. Security Camera System.
   3. Electronic Access Control and Door Monitoring System.

PART 2. DESCRIPTION OF ELECTRICAL SYSTEMS

2.1 LOW VOLTAGE ELECTRICAL POWER DISTRIBUTION
A. The existing electrical services consist of (1) 2000A, 208V, 3-phase service and (1) 800A, 480V, 3-phase service. Both are located on the east side of the building in the compressor room. In addition, there is (1) smaller 400A, 208V electrical service on the west side by the concessions area.
2.3 LIGHTING CONTROL SYSTEMS

A. Most lighting controls in the building are manual switches only. Occupancy sensors for lighting control have been installed only in a couple locations.

B. Arena lighting is controlled manually by switching the circuit breakers at the 277V panel that feeds the lighting.

C. Recommendation:
1. Provide occupancy sensor controlled lighting throughout the building as required by current energy codes. Low voltage switches and dimmers would be utilized to allow for manual-on, auto-off control of the lighting as is now required by the energy codes. Mechanical and electrical rooms would be left with manual control of the lighting.
   a. Cost: $1.25 per SF for affected areas (not including arena)
2. Provide contactor or relay-based lighting control for the arena to avoid controlling the lighting at the breakers.
   a. Cost: $10,000

2.4 EMERGENCY LIGHTING AND EGRESS SIGNAGE

A. Exit signs are mostly LED thermoplastic body type with integral batteries.

B. Emergency egress lighting is self-contained emergency lighting with integral batteries and adjustable light heads. Most of the fixtures are in acceptable condition, but coverage is poor for an assembly occupancy. Some of the existing emergency lights are older and should be replaced with new to ensure proper battery life.

C. There is no existing exterior emergency lighting.

D. Recommendations:
1. Add additional emergency lighting for proper interior coverage. Include centralized battery inverter and dedicated emergency fixtures for arena.
   a. Cost: $18,000
2. Add exterior emergency lighting.
   a. Cost: $4000

2.5 STRUCTURED CABLES FOR VOICE AND DATA COMMUNICATIONS

A. Communications wiring and wireless access points are currently installed as necessary to meet the facility’s needs which are limited. No issues were reported.

B. Communications demarks are located at the west side by concessions and at the east side in the compressor room.
C. **Recommendations:** None for the existing facility, however, a building expansion project should consider the addition of a secured and temperature controlled centralized data closet(s).

### 2.6 AUDIO SYSTEMS

A. The current arena sound system is aging, but still meets the needs of the facility.

B. **Recommendations:** None.

### PART 3. ELECTRONIC SAFETY AND SECURITY SYSTEMS

#### 3.1 ELECTRONIC DOOR ACCESS CONTROL

A. The building does not currently have any electronic access control system installed.

B. **Recommendations:** Consider the installation of a new electronic access control system to monitor the position of exterior doors and allow more secure and controlled access to the space.

1. Cost: $22,500 (9 doors).

#### 3.2 SECURITY AND SURVEILLANCE CAMERA SYSTEMS

A. There is currently no security or surveillance camera system.

B. **Recommendations:** Consider the installation of a surveillance camera system for better security, asset protection, and liability protection.

1. Cost: Cost is greatly dependent on scope but assume a cost of $1200 per camera plus an additional $10,000 for control and recording equipment.

#### 3.3 FIRE ALARM SYSTEM

A. There is currently not a fire alarm system installed in the building. According to the Minnesota amendments to the IBC:

1. A fire alarm system shall be installed in in Group A occupancies having an occupant load of 300 or more. However, a fire alarm system is not required in buildings with an occupant load of less than 1,000 when a sprinkler system is installed throughout the building. Currently there is no sprinkler system installed.
2. Automatic fire detectors (smoke or heat detectors) are required to be installed in laundry rooms, boiler and furnace rooms, mechanical and electrical rooms, shops, kitchens, trash collection rooms, storage rooms, and similar areas.
3. Audible notification shall be voice type.

B. **Recommendations:** Provide an addressable fire alarm system with voice notification throughout the building:

1. Cost: $2 per square foot.

### PART 4, TECHNICAL CRITERIA

#### 4.1 CODES AND STANDARDS

A. The following is a partial list of applicable codes governing the systems described herein:


B. The following is a partial list of design and installation standards governing the systems described herein:


Respectfully,
Obermiller Nelson Engineering, Inc.

Tony Nelson

Attachment(s): none
Cc: ICS, file.
FACILITY ASSESSMENT
JLG 19147 – EGF VFW ARENA
RE: EFG ARENA STUDY
July 19th, 2019

Note: Main Building entrance

Note: Condition of parking lot paving is below average
Note: Concrete path has settled away from building entrance doors (no stoops)

Note: Sealant needed around wall penetration

Note: Missing trim around mechanical louver

Note: Uncontrolled water has eroded soil creating backslope toward building, especially at north and west faces.
Note: Eroded soil at west building face

Note: Missing stoop and damaged doors, east face

Note: Failing retaining wall near northwest corner

Note: Damaged fence and gate
Note: Pooling water at exterior of mechanical and Zamboni rooms.

Note: Ramp to game level exceeds allowable slope; no handrails.

Note: Waterlogged concrete heaves in winter and interferes with egress doors.

Note: Porous flooring in Lobby restrooms.
Note: Porous flooring in Lobby Concessions

Note: Water is infiltrating the concourse, likely due to soil erosion, and pooling causing mold.

Note: Errant pucks have damaged the roof insulation.

Note: Evidence of water infiltration at concourse.
Note: Evidence of water leaking from roof, southeast corner. Bubbling paint caused by water vapor driving through the CMU wall.

Note: Bubbled flooring in locker rooms is a trip hazard.

Note: Condition of the rink floor

Note: Bubbled flooring in locker rooms is a trip hazard.
Note: No ADA stall or grab bars provided in restrooms. Partition doors exceed ADA maximum force requirements.

Note: Debris in egress stair.

Note: Ongoing repairs from roof leak at Overlook.

Note: Ongoing repairs from roof leak in Multi-Purpose/Exercise room.
Note: Significant cracking in exterior wall of mechanical room, likely settling.

Note: Electric heat used throughout the axillary spaces.

Note: Scald protection not provided on public lavatories.

Note: Domestic water piping uninsulated throughout locker room spaces.

Note: Water Heaters installed in 2000 are at end of useful life.
Note: Exhaust from locker rooms and no make up air provided into spaces.

Note: Sidewall exhaust fans original to building.

Note: Air handling unit serving arena. Hot water heat and no cooling.

Note: New Switchgear after the 1997 Flood.

Note: Panelboards replaced/refurbished after the 97 flood.
ICE SYSTEM PRELIMINARY ASSESSMENT

VFW Memorial Arena and Civic Center
East Grand Forks, MN
8.7.9

1.0 Introduction
The following report is a very brief and preliminary assessment of the ice systems and recommended improvements at the VFW Memorial Arena and the Civic Center. The ice system includes the refrigeration system, ice rink floor, waste heat recovery system and dasher board system.

2.0 VFW Arena
The VFW arena is a smaller ice arena facility with minimal spectator seating. The existing ice system is a direct R-22 refrigeration system manufactured by Holmsten Ice Rinks. The refrigeration system was installed after the flood in 1997 and was a used refrigeration system at the time of installation. The system is over 22 years old and is nearing or has exceeded its 25 year life expectancy. The ice rink floor is original to the facility that was built in 1982. The floor system is over 37 years old and has greatly exceeded its useful life.

If this facility will continue to be used as an ice arena facility, we recommend the following ice system options.

1. Continue to use the existing ice system as-is. This is a direct refrigeration system that circulates R-22 refrigerant throughout the rink floor. The quantity of R-22 in the system is very high and likely around 6,000 pounds. The greatest risk to the system is a leak in the aging piping systems (either the floor or refrigeration system) that releases the entire charge of R-22. This would have an estimated cost of $60,000 to $120,000. The City could purchase spare used parts from similar systems as backup to lessen the possible financial impact and downtime caused by a failure. Parts may include; used compressors, starters, fill and dump solenoid valves, etc. The University of Minnesota Duluth is currently removing a Holmsten Refrigeration System.

Holmsten Ice Rink’s R-22 direct-type ice system is one of the most efficient systems designed for ice rink applications. However, because of the following factors, this type of system is no longer a viable type of system to install in today’s ice arena facilities:

a. Safety concerns - Refrigerant is circulated through the ice rink floor systems, potentially exposing spectators to refrigerant if a leak occurs.

b. Environmental concerns - Requires a large quantity of R-22 refrigerant (6,000 pounds vs. 500 to 1,800 pounds on a modern indirect system). R-22 refrigerant has a high ozone depleting potential.

c. Availability and cost - R-22 is currently on a phase out schedule mandated by the EPA. R-22 refrigerant will no longer be manufactured in the U.S. or imported into the U.S. after 2020.

d. Cost of replacement - The rink floor, with its ½ inch diameter steel piping, is typically the first part of the system to fail. The supply of the tubing has been limited since 2005 and alternate material is labor intensive to install, making the replacement of a direct floor very costly.

2. Replace the entire ice system. The second option would be to replace the entire refrigeration system and ice rink floor system with a new indirect system. The refrigeration options range from a lower cost commercial grade system to a more industrial quality (similar in quality to the existing system), more...
efficient ammonia system. In either case the ice rink floor would require replacement and the refrigeration room may need to be improved. This would provide an opportunity to also increase the size of the existing rink floor from 85’ x 190’ to today’s standard size of 85’ x 200’.

3.0 Civic Center

The Civic Center is a larger facility with a seating capacity of approximately 3400. The existing ice system is an indirect R-22/glycol refrigeration “stick built” system with an air-cooled condenser. The system was originally installed with the building in 1974 (45 years old). Some of the major equipment has been replaced such as Compressor 1 was replaced in 2008, Compressor 2 was replaced in 2015 and the air-cooled condensers were replaced 2012 or 2015. The electrical motor control center, pumps and other equipment appears to be the original equipment.

The ice rink floor was replaced in 1993 (26 years old) and has reached is expected life. The arena flooded in 1997, however, there are no reported problems with the performance or visible condition of the ice rink floor other than the subfloor heating system does not work. Without the subfloor heating system in good operating condition the length of the ice season should be limited to approximately 6-7 months to avoid frost build up in the subsoils under the rink floor.

The existing dasher board system was installed somewhere between 2013 and 2015 and are not very accessible. The length of benches in the players boxes are very limited due to existing stairs accessing the locker rooms.

We have outlined the following improvement options with recommendations.

1. Continue to use the system as-is. Most of the major components of the system are fairly new. The City could continue to operate this system for few more years until repairs to the original parts of the system become too time consuming or costly. Keeping in mind that R-22 will no longer be imported into or manufactured in the U.S. after 2020. If the ice system in the VFW is removed or replaced, the existing R-22 refrigerant could be stored and used for the Civic Center facility.

2. Make improvements to the existing system. Replace the remaining original components of the refrigeration system including the motor control center, pumps, heat exchangers etc. Given the age of this system and its use of R-22, this option is not recommended.

3. Replace the R-22 refrigerant with a new blended refrigerant like R-448A. Blended refrigerants are not recommended to be used in flooded type systems and, with the excess supply of R-22 in the marketplace, the refrigerant replacement is unnecessary and would result in a loss of efficiency. The refrigerant replacement can be performed at a later date if desired.

4. Replace the refrigeration system. This option would include replacing the existing refrigeration system, most likely in a new location. The existing equipment room is limited on space and egress. The existing Managers Tool Room is one location that would likely work well for a new refrigeration room and provide options for expanding the refrigeration system to serve a new second sheet. A new industrial grade refrigeration system would cost approximately $650,000 and approximately an additional $175,000 to upsize the major components so the system could serve a second sheet in the future.

5. Replace the ice rink floor. The ice rink floor has exceeded its life expectancy but is not showing signs of failure and has reportedly been working well. The replacement of the rink floor could take a place at a later date.

END
CIVIC CENTER ARENA
FIRST FLOOR PLAN

- Competition & Spectator
- Office
- Varsity Locker Room
- Training & Practice
- Locker Room
- Public Restroom
- Concessions & Ticketing
- Mech., Elec., & Ice Systems
- Custodial, Storage, & Support

Scale: 0 - 10'-8" 21'-4" 42'-8"

EAST GRAND FORKS PARKS AND RECREATION | 2019 Arena Feasibility Study APPENDIX
DRAFT 11/08/19
Request for Council Action

Date: November 12th, 2019

To: East Grand Forks City Council Mayor Steve Gander, Council members Clarence Vetter, Dale Helms, Tim Riopelle, Tim Johnson, Mark Olstad, Chad Grassel, and Marc DeMers.

Cc: File

From: David Murphy, East Grand Forks City Administrator

RE: South Bridge Hydraulic Study

Background.

The MPO will be contracting with a consultant to conduct a hydraulic study to determine the feasibility of placement of a South end bridge between East Grand Forks and Grand Forks. The City of Grand Forks has voted to authorize the consultant to focus on three locations: Elks Dr., 32nd Ave and 47th Ave. The City of East Grand Forks has voted to authorize the consultants to focus on one location – 32nd Ave.

The City of Grand Forks has acknowledged that 47th Ave is outside of the Flood Protection system for East Grand Forks and has agreed to fund that portion of the study in full. Grand Forks has agreed to split the cost of the study for Elks and 32nd at a 50/50 rate.

Issue

Should the City of East Grand Forks amend the resolution approving the hydraulic study for 32nd Ave only to include the Elks Dr. location? The cost for studying each site is estimated at $30,000. The proposed 50/50 cost split would require East Grand Forks to contribute $30,000 to the study.

Recommendation

Discussion on proposal.
Request for Council Action

Date: 11/7/19

To: East Grand Forks City Council Mayor Steve Gander, Council President Mark Olstad, Council Vice-President Chad Grassel, Council members Clarence Vetter, Dale Helms, Tim Riopelle, Tim Johnson, and Marc DeMers.

Cc: File

From: Mayor’s Office

RE: Request to Prepare Report of Feasibility for 20th St NW & 5th Ave NW

Mayor Gander would like to host a neighborhood meeting to inform residents living on 20th Street NW and 5th Avenue NW about the petition process they would need to initiate for the Council to consider the reconstruction of these roads that are in need of being replaced. The preparation of a report of feasibility is a necessary step in advance of a neighborhood meeting so residents could see what the potential costs of this project will be and how they will be affected.

The request is being made to have the Council consider authorizing the City Engineer to prepare the report of feasibility. There is no separate cost to the city to prepare a report of feasibility because the cost will be included in the future project.