



AGENDA ITEM #9.5

REPORT TO CITY COUNCIL

Report Prepared by: Nancy Malecha

Date: August 2, 2016

Subject: Facility Addition Feasibility Study

Report: The following is a succinct list of Council's comments from the June and July Council Meetings that Tim Houle and I compiled regarding the Maintenance Department Facility Addition Feasibility Study.

1. A new Maintenance Facility using a pre-engineered timber column structure instead of a pre-engineered steel building system (both with in-floor heat). The estimated cost would go from \$120 per square foot for the latter to \$100 per square foot for the former.
2. A new Maintenance Facility using either of the two above building construction types would require an automatic sprinkler system.
3. With the estimated cost difference between a stick-built versus a fabric dome type salt shed, list out some pros and cons of both. Determine the useful life and replacement cost of a

fabric dome shed versus stick-built salt shed.

4. Mention solar and ground source heat pump – reasons why or why not and the upfront costs associated with these in relation to the long-term benefits.
5. Clarify what the triggers are for taking care of present non-compliant items in the existing building.
6. In comparisons, pull out addressing the non-compliant items because they should be addressed sooner or later, even without a potential addition.
7. Have other departments weigh in on present and future space needs in the present building? In other words, do not add on so the Public Works is “set”, and then find out the Fire Department thinks it will need more space in the present facility 5 years from now.
8. Future development has been talked about in the northwest quadrant of the new Hwy 371 – CSAH 11 interchange, east of the present City Hall facility and parcel. What might it consist of? Will public works operations at the present site really be detrimental to such future development? Is there no way to screen public works activities from future development?
9. Be clearer on how the need for sanitary sewer and watermain for future development in the northwest quadrant of the new Hwy 371 – CSAH 11 interchange, east of the present City Hall facility and parcel, might impact the need for sanitary sewer and water service for an expanded Maintenance Facility.
10. Where did the 9,000 square feet for a new facility come from? What are the present pieces of equipment that would be housed in a building? What are the future equipment needs

and projections up to 20 years from now? Maybe a table of equipment and associated space needs for each.

11. Cost comparison for contracting of certain services versus City providing the services. Would this alleviate the need for more space and/or new facility?
12. Should the present outbuilding(s) north of the existing building be expanded (or demolished and a new larger structure) constructed?
13. Financing options for both an addition and new building need to be prepared.

Staff would like the Council to provide clear direction and a consensus as to what key points should be included in the final version of the Study.

Council Action Requested: Council consensus on key points to include in the final version of the Maintenance Department Facility Addition Feasibility Study.



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CITY OF PEQUOT LAKES MAINTENANCE DEPARTMENT FACILITY ADDITION FEASIBILITY STUDY



PEQUOT LAKES, MINNESOTA

WSN No. 0130B0057.000

April 28, 2016



CITY OF PEQUOT LAKES MAINTENANCE DEPARTMENT FACILITY ADDITION

FEASIBILITY STUDY

Pequot Lakes, Minnesota

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CERTIFICATIONS

ARCHITECTURE

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.

Erica D. Marcussen
Date: April 28, 2016 Reg. No. 43851

CIVIL ENGINEERING

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Timothy M. Houle
Date: April 28, 2016 Reg. No. 25132

STRUCTURAL ENGINEERING

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Mark V. Hallan
Date: April 28, 2016 Reg. No. 24997

MECHANICAL ENGINEERING

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Eric F. Jendro
Date: April 28, 2016 Reg. No. 45426



ELECTRICAL ENGINEERING

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

John P. Pilegaard

Date: April 28, 2016

Reg. No. 15006



CITY OF PEQUOT LAKES MAINTENANCE DEPARTMENT FACILITY ADDITION FEASIBILITY STUDY

Pequot Lakes, Minnesota

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Building Observation Date: January 13, 2016
Building Representative: Lance Ray, Maintenance Worker
WSN Personnel: Erica Marcussen, A.I.A.
Ashley Martel, Architectural Designer
Eric Jendro, P.E.
John Pilegaard, P.E.
Tim Houle, P.E.
WSN Project No.: 0130B0057
Building Designed: 1998 (Spring)
Building Footprint: 22,000 Square Feet

Executive Summary

Widseth Smith Nolting was hired by the City of Pequot Lakes to complete a study for an addition to the north portion of the existing City Hall building for the City's Maintenance Department. The north portion of the existing City Hall building includes spaces – offices, meeting rooms, and vehicle storage - for the Police, Fire, and Maintenance Departments. The study includes evaluating code compliance, building life-safety, and structural adequacy. The study also includes a new salt shed at the City Hall site. As an alternative to the option of additions to the existing site, the study reviews an alternate site for the Maintenance Department.

Mechanical and electrical engineers and an architect from WSN spent time going through the existing building on January 13, 2016 with the maintenance personnel to gain the knowledge and familiarity necessary to prepare this evaluation. The following pages of this study summarizes the major issues relating to areas of architecture, civil, structural, mechanical systems, and electrical systems in and around the existing building.

The existing building is constructed of a pre-manufactured steel structure with a metal panel roof and exterior and interior wall finish and slab-on-grade concrete floor. In general, the building is in relatively good condition and has the structural capacity for an addition to the north. However, fire protection and the heating, cooling, ventilation and exhaust systems were all found to be **non-compliant** in the parking garage area of the building and will need to be corrected as part of the addition.

The estimated probable construction costs for Option 1 (Building Addition and Upgrades) are \$823,000. The estimated probable construction costs for Option 2 (New Buildings on Alternate Site) ranges from \$1,368,000 to 1,476,000. A breakdown of the costs can be found in the last section of this study.



Architectural Summary

This review is based on the 2015 MN State Building Code, the 2012 International Building Code (IBC) and the International Existing Building Code (IEBC). Although the city has not adopted the State Building Code they are still required to comply with accessibility, plumbing and electrical requirements.

Allowable Area (MSBC Chapter 5):

During our on-site review, it was observed that there is an existing fire wall separating the parking garage area and the front office area. The parking garage portion of the existing facility and proposed addition were reviewed in general to determine whether they meet the allowable area requirements of the building code and whether any additional modifications would be required. The parking garage portion of the building is 15,817 sq. ft. in area. The construction type would be a Type V-B construction, which consists of any materials permitted by code. A parking garage is classified as an S-2 occupancy with an allowable area of 13,500 sq. ft. However, this amount can be increased based upon the amount of open space surrounding the building.

When the formula for allowable area increases (factoring unsprinkled) is applied to the parking garage portion of the facility, the maximum area allowed is 19,575 sq. ft., which is greater than 18,617 sq. ft. (15,817 sq. ft. existing + 2,800 sq. ft. addition) area. The total of the existing and proposed building areas is within the limits allowed by code and would be **compliant**.

Height (MSBC Table 503):

A building with an S-2 occupancy cannot exceed two stories or 40 feet. The existing parking garage area and proposed addition is two stories and under 40 feet tall and is **in compliance**.

Occupancy & Required Separations (MSBC Chapter 3 and Section 508):

The primary occupancy of the parking garage area is S-2. The existing meeting room is classified as an A-3 assembly occupancy and the office area is classified as an accessory occupancy to the primary occupancy. These spaces are not required to have any fire separations between the different occupancies and are **in compliance**.

Fire Protection (IEBC Chapter 11 and MSBC Chapter 9):

An automatic sprinkler system shall be provided throughout existing fire areas increased by an addition as well as the addition where the fire area of the enclosed parking garage exceeds 12,000 sq. ft. As stated above the parking garage portion of the existing building is 15,817 sq. ft. which exceeds the maximum allowable fire area and is **not compliant**. Therefore, an automatic sprinkler system would be required in the existing parking garage area as well as the addition. Requirements of the system are listed in the fire protection portion of the mechanical systems summary.

An alternate option in lieu of installing an automatic sprinkler system would be to construct a separate fire wall just to the north of the existing north exterior wall with opening(s) protected by rolling coil fire door(s). The existing fire area would then not be increase and a sprinkler system would not be required. However, through our experience the cost to build the fire wall with coiling door(s) typically has been higher than installing a sprinkler system and does not provide the additional incentives such as increased allowable areas and exit travel distances as well as potential insurance credits.



The required fire resistance rating for exterior walls is based on the fire separation distance, type of construction and occupancy group. Due to the proximity of the adjacent building to the north being 49'-2" the addition would be required to be 39'-0" or less in order for the north exterior wall to remain non-rated. The addition is proposed as 35'-0" not requiring the north exterior wall or openings in the wall to be rated.

Exits (MSBC Chapter 10):

The quantity and types of exits required for a building are dependent on the maximum number of occupants that could potentially be in the building based on building code criteria. Below is a table indicating the number of occupants in the existing vehicle storage area based on the code requirements, along with the calculated width of exits required.

Existing First Floor		
Parking Garage	13,738 sq. ft./200	= 68.7
Meeting Room	880 sq. ft./15	= 58.7
Office Area	562 sq. ft./100	= 5.6
Storage	185 sq. ft./300	= .6
Toilets	N/A	
Proposed First Floor		
Parking Garage	2,000 sq. ft./200	= 10.0
Office	120 sq. ft./100	= 1.2
Storage	600 sq. ft./300	= 2.0
Toilet	N/A	
Existing Second Floor		
Storage Mezzanine	916 sq. ft./300	= 3.1
Offices	442 sq. ft./100	= 4.4
Mechanical/Storage	430 sq. ft./300	= 1.4
	TOTAL	155.7 occupants

The required width is then calculated by multiplying the number of occupants by a specified factor for an unsprinkled building.

$$155.7 \text{ occupants} \times 0.2 \text{ inches per occupant} = 31.1'' \text{ required.}$$

The actual total width provided for all exits is 144" and well exceeds the required 31.1" (**compliant**).

The maximum travel distance to an exit in an unsprinkled S-2 occupancy is 300-feet. Based on the distribution of the existing and proposed exits in the parking garage area, the facility will **comply**.

Plumbing Systems (MSBC Chapter 29 and MAC Chapter 11):

Required Fixtures

- Male W.C. = 1
- Female W.C. = 1
- Lavatories = 2

Fixtures Provided

- Male W.C. = 1
- Female W.C. = 1
- Accessible Unisex W.C. = 1
- Lavatories = 2

The unisex toilet in the addition meets accessible toilet requirements for the parking garage portion of the facility and therefore would be **in compliance**.



Civil Summary

The existing site includes several City services to its citizens: City offices / administration, Police Department, Fire Department, and Maintenance Department (as well as the water treatment plant immediately north of the “City Hall” site). From a Maintenance Department’s perspective, this combination of services and visibility to the public with on-going operations can be challenging at times.

The Maintenance Department has an accessory garage and a salt storage shed (lean to) as well as material storage towards the north end of the site.

With increased road mileage and maintenance responsibilities, the existing salt storage shed would be removed and a new larger salt storage building would be constructed. It would either be ‘stick built’, a similar structure used by other comparable size communities, or it would be a concrete side wall – fabric dome type, used by some public works’ entities.

The accessory garage is to remain and would have some minor refurbishment to continue its usefulness.

With the increased roadway mileage and corresponding equipment and material responsibilities, while the present site is workable, it will become relatively tight. There are only a few options for siting the new salt storage structure while maintaining the needed turning radii and working space.

There are currently holding tanks for the floor drain system in the main building (towards the northeast side) and the accessory garage (north side). The owner has stated there have been freezing problems in the piping to the holding tank north of the accessory garage and would like to extend the drain piping from the accessory garage to a new holding tank for the main building east of the addition. This would entail removal of existing bituminous and excavation to extend drain piping and facilitate having one wastewater service line connection should a sanitary sewer main become available in the future.

Structural Summary

Existing Exterior North Wall:

North end exterior wall is comprised of 5 steel columns (A, B, D, F, G) spaced at 16’ or 24’ along column line 12. An exterior overhead door not shown on the original plans was add at the northwest corner between columns A and B. Manufactured building (Butler) drawings are not available to confirm the vertical bracing that is present at the north end wall but likely present between two of the existing columns to transfer horizontal wind loads to the foundation. Existing bracing will need to remain or the new building addition designed to continue the existing roof bracing to the addition north wall and adequate vertical bracing design for both existing and new building horizontal wind loads. Existing foundation system along column line 12 (existing exterior north wall) is a continuous concrete strip footing with two #5 reinforcement bars. The foundation system is **adequate** to support new roof/building loads transferred to the existing columns. Existing columns may require reinforcement in the Y-Y axis with the purlins removed and costs have been allocated for this minor structural work.

Mechanical Systems Summary

Plumbing:

Plumbing fixtures appear to be in **good** condition.



Fire Protection:

There is **not** a fire protection system installed, nor any provisions for one to be added. The existing water service would not be of sufficient size to add a sprinkler system. A new 6-inch water supply line would be required to provide the needed flow capacity from the city distribution system. With the city water tower being in close proximity, adequate pressure and flow should be available for a sprinkler system. However, a hydrant flow test would have to be completed to confirm existing water pressure and flow rates before a sprinkler system could be designed.

Heating and Cooling Systems (Minnesota Mechanical and Fuel Gas Code):

The meeting room/office area is heated and cooled by a gas-fired furnace with a direct expansion cooling coil and condensing unit. This system **does not** meet the outside air requirements for the occupants of these spaces. The existing furnace would need an energy recovery ventilator connected to the existing duct system to provide the required amount of outside air.

The existing dispatch area is heated by a gas-fired furnace. An outdoor air duct **would need** to be added to this furnace to provide code required ventilation. Cooling is provided by a through-wall air conditioner.

The parking garage area's heating consists of natural gas unit heaters. These unit heaters are **not** of the sealed combustion type and use the internal air space for combustion air. There are no sources to provide the proper combustion air for these units per the International Fuel Gas Code.

Ventilation and Exhaust System

The parking garage area is currently served by exhaust fans and a make-up air unit that are **not** functional or **do not** function well due to their current condition – the existing equipment is **incapable** of providing code required ventilation. A new exhaust system with a CO/NO₂ detection system and make-up air units would be required for proper ventilation within these spaces.

There is a natural gas hot water pressure washer located in this area as well with **no** combustion air source. A new combustion air ductwork system interlocked with the pressure washer burner would need to be installed for proper operation.

Electrical Systems Summary

The electrical systems in the building appear to be in good condition and **adequate** for future expansion.

Power Distribution:

The existing electrical distribution system is **adequate** since it was designed for a manufacturing facility. The service is 1,200 Amps, 120/208V, 3 phase, 4 wire. There are six panelboards for distribution of power throughout the building. An additional panelboard would be required for the addition.

Lighting:

Lighting is **adequate** throughout the building. The offices have lay-in fluorescent troffers and the garage areas have high bay T8 fluorescent fixtures. Exit and emergency lighting is present and appears to be adequate. Battery condition was not tested.

Communications:

There is a voice telephone system and a data network system in the building.

Security and Safety:

There is an addressable fire alarm system which is in **good** condition. There is an access control system.



Probable Project Construction Costs

The financial impact of notations above summarized by the architect, civil engineer, structural engineer, mechanical engineer and electrical engineer are as indicated below. All items are estimated in today's dollars. No factor was applied for future inflation. Contractor's General Requirements, Overhead and Profit are included in the numbers below.

Option 1 (Building Addition and Upgrades)

Maintenance Upgrades/Remodel to Existing

The estimate of probable construction costs listed below is based on the work required to upgrade the existing mechanical systems as well as combining the two existing holding tanks. Also included are the requested improvements to extend the far north floor drains to the west and construct a new divider wall to the underside of the existing structure between the existing northern Fire Department stalls and the southern Maintenance Department stalls.

Architectural Items	\$26,000
Civil Items	\$35,000
Mechanical Items	\$110,000
Fire Suppression Items	\$70,000
Electrical Items	\$2,500
Structural Items	<u>\$2,500</u>
Sub-Total	\$246,000

Building Addition

Construction shall include removal of a majority of the existing north exterior wall. Subsequent new construction shall consist of a 35'-0" x 80'-0" addition to the north of the parking garage portion of the existing building. The addition would include a 25'-0" bay for two vehicle/equipment parking spaces along with an office, accessible toilet and storage room.

The addition would consist of a pre-engineered steel building like the existing building and include one 16'-0" x 14'-0" overhead door. The following is a square foot estimate of probable cost.

Addition	2,800 sq.ft. x \$100/sq.ft. = \$280,000
New Salt Storage Shed (Stick Built Construction)	2,000 sq.ft. x \$ 80/sq.ft. = <u>\$160,000*</u>
Sub-Total	\$440,000

** Includes demolition of existing salt storage shed.*

Upgrades/Remodel to Existing	\$246,000
Project Contingency (20%)	<u>\$137,000</u>
Total (Option 1)	\$823,000

Note: Due to the smaller scale and maintenance upgrades/remodeling factor of this project, costs typically run higher than a larger new construction project benefitting from the economy of scale.



Option 2 (New Buildings (2) on Alternate Site)

The new Maintenance Department parking garage would consist of a pre-engineered steel building system with in-floor heat and the salt shed would consist of either stick built construction with metal panel siding and roof or concrete sidewall-fabric dome type. The following is a square foot estimate of probable cost.

Maintenance Department Parking Garage	9,000 sq.ft. x \$120/sq.ft. = \$1,080,000
Salt Storage Shed (Stick Built Construction)	2,000 sq.ft. x \$ 75/sq.ft. = \$ 150,000
	Sub-Total <u>\$1,230,000</u>
Project Contingency (20%)	<u>\$ 246,000</u>
	Total (Option 2) \$1,476,000

-OR-

Maintenance Department Parking Garage	9,000 sq.ft. x \$120/sq.ft. = \$1,080,000
Salt Storage Shed (Concrete Sidewall-Fabric Dome)	2,000 sq.ft. x \$ 30/sq.ft. = \$ 60,000
	Sub-Total <u>\$1,140,000</u>
Project Contingency (20%)	<u>\$ 228,000</u>
	Total (Option 2) \$1,368,000

Financial Summary

Based on the above totals the cost per square foot comparison for just the Maintenance Building improvements is as follows:

Option 1 (Building Addition and Upgrades)

Maintenance Upgrades/Remodel to Existing Building Addition	\$ 246,000/15,817 sq.ft. = \$ 16/sq.ft.
	\$ 280,000/ 2,800 sq.ft. = <u>\$100/sq.ft.</u>
	Sub-Total <u>\$116/sq.ft.</u>

Option 2 (New Buildings (2) on Alternate Site)

Maintenance Department Parking Garage	\$1,080,000/ 9,000 sq.ft. = \$120/sq.ft.
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The difference being \$4/sq.ft. more for Option 2 (New Building/Alternate Site) than Option 1 (Building Addition and Upgrades). However, other factors to also consider are location of the Maintenance Building in proximity to the service area as well as safety and convenience to and from the site and the Maintenance Department having a total of 6,800 sq.ft of floor area with Option 1 versus 9,000 sq.ft. with Option 2.