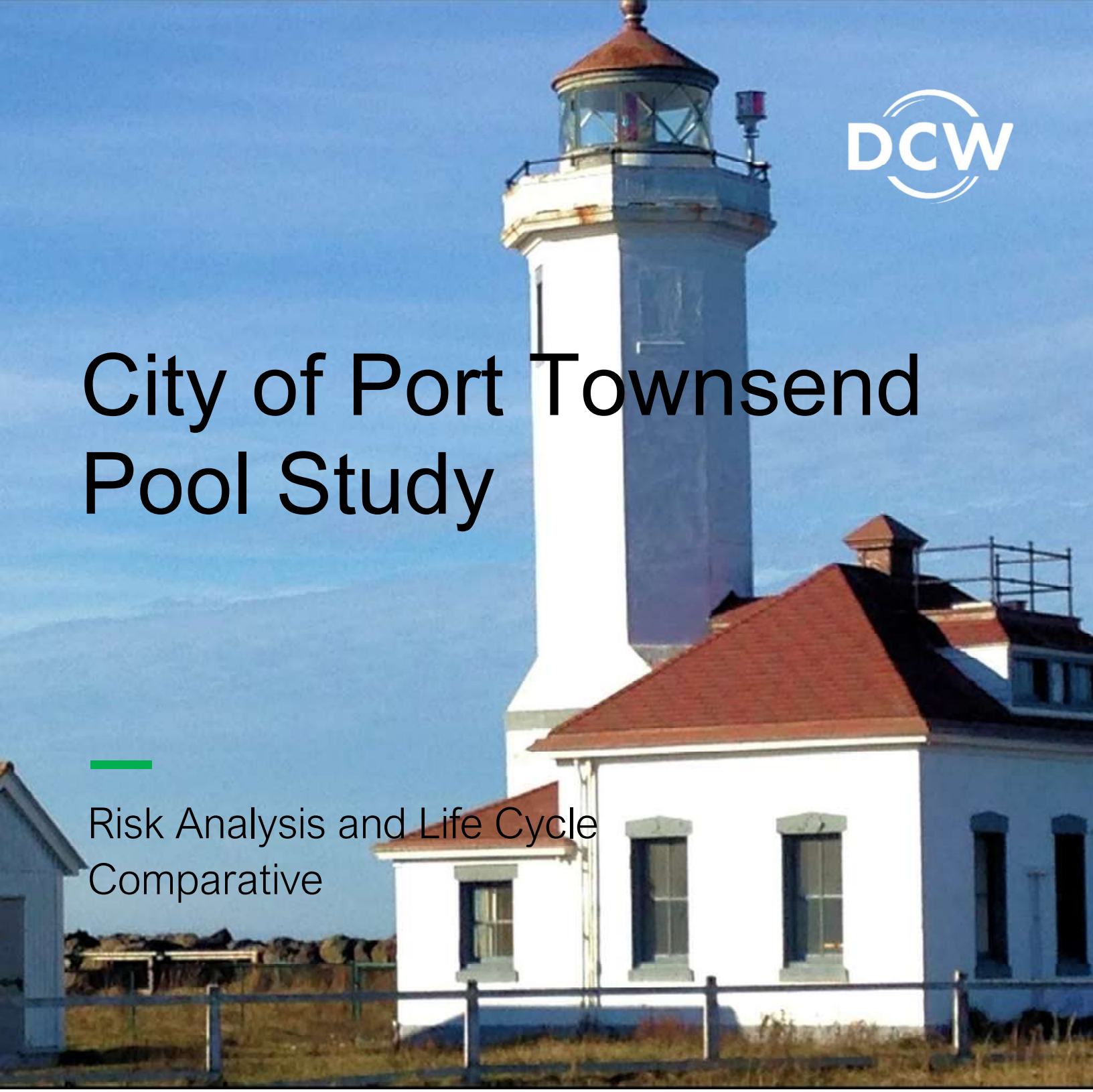

City of Port Townsend Pool Study

Risk Analysis and Life Cycle Comparative

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City of Port Townsend
Pool Study

Risk Analysis and Life Cycle Comparative

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Executive Summary

The City of Port Townsend has proposed the construction of a new Health and Wellness facility. As stated in the RFP dated November 18, 2022, the purpose is, "To provide long-term infrastructure and opportunities for improving community health and wellness by building on previous collaborative efforts and meeting the evolving needs of our community. Specifically, to reengage previous partners and the community to establish a health and wellness center with a modern aquatic component."

A design effort began in early 2023 and a preferred design and related cost estimates were provided for the new construction of the facility. Subsequently, DCW was asked to consider two additional approaches.

This report is provided to assess the proposed options for construction and their qualities. The elements of the report include Capital cost analysis (first cost) a high-level risks and opportunities analysis and a lifecycle cost analysis. No recommendations are provided. This is to serve as a roadmap for decision making purposes. A "do nothing" assessment has not been provided in this report.

Projects Priorities

Priority 1:

- Lap / Competition Pool
- Recreation Pool

Priority 2:

- Group Exercise
- Fitness (Cardio /Weights)
- Classroom/Teaching Kitchen
- Birthday Party/Event Room
- Childcare/Child Watch
- Physical Therapy

Priority 3:

- Gymnasium

Construction Options

The three approaches include:

- Existing Pool Building Renovation
- New Construction
- New Construction - Sprung Structure

Assessment

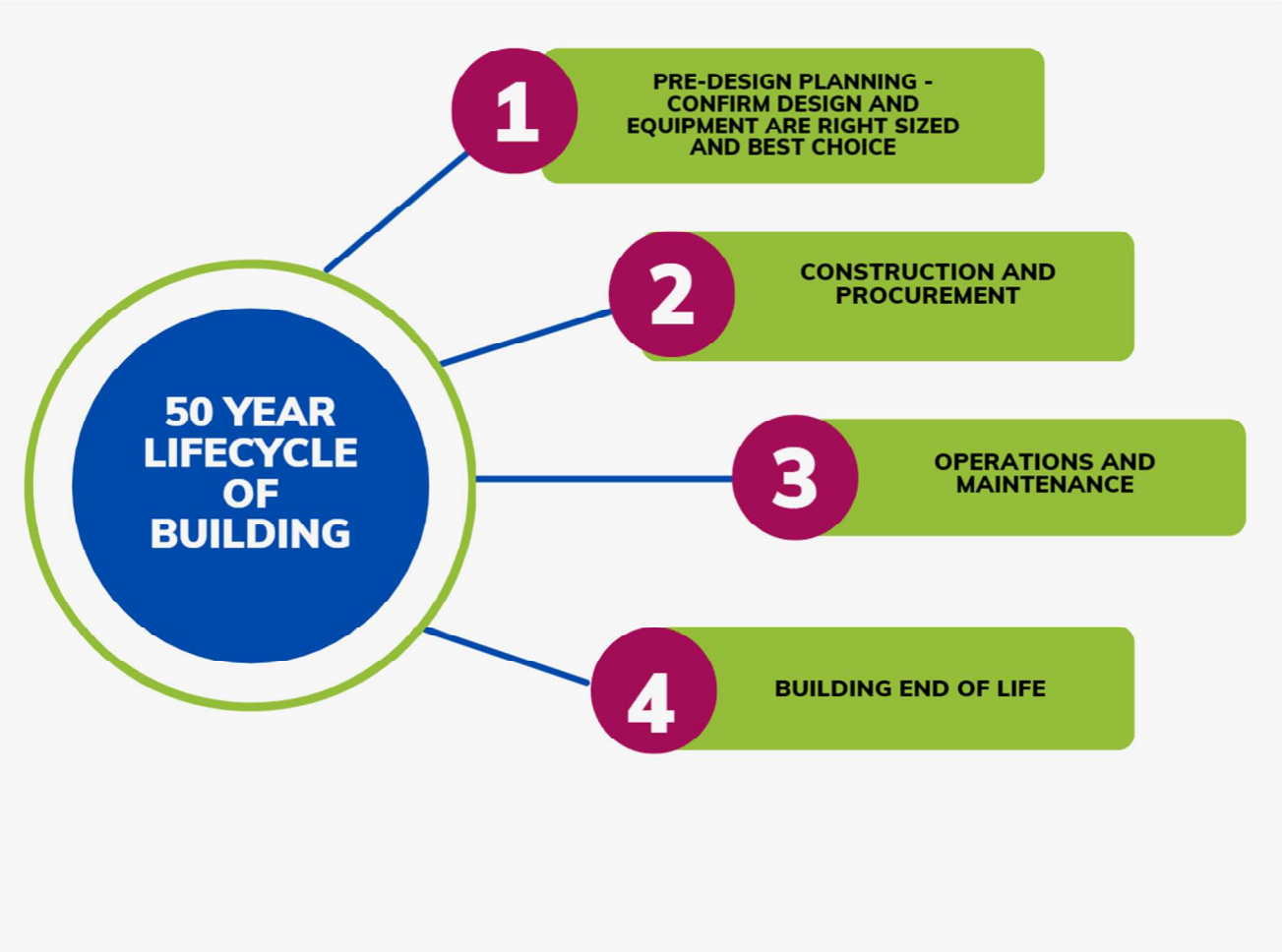
Data regarding design is provided for comparative purposes. Program elements, square footage and site considerations are included.

The Risk and Opportunity assessment provides high level observations with associated commentary and related cost where applicable. These items are provided to show any differentiation from the other options.

Life span for building elements is provided by multiple sources and compiled by DCW. These sources include ENR, CCPIA, Office of Financial Management and the Washington State Department of Transportation.

Lifecycle approach

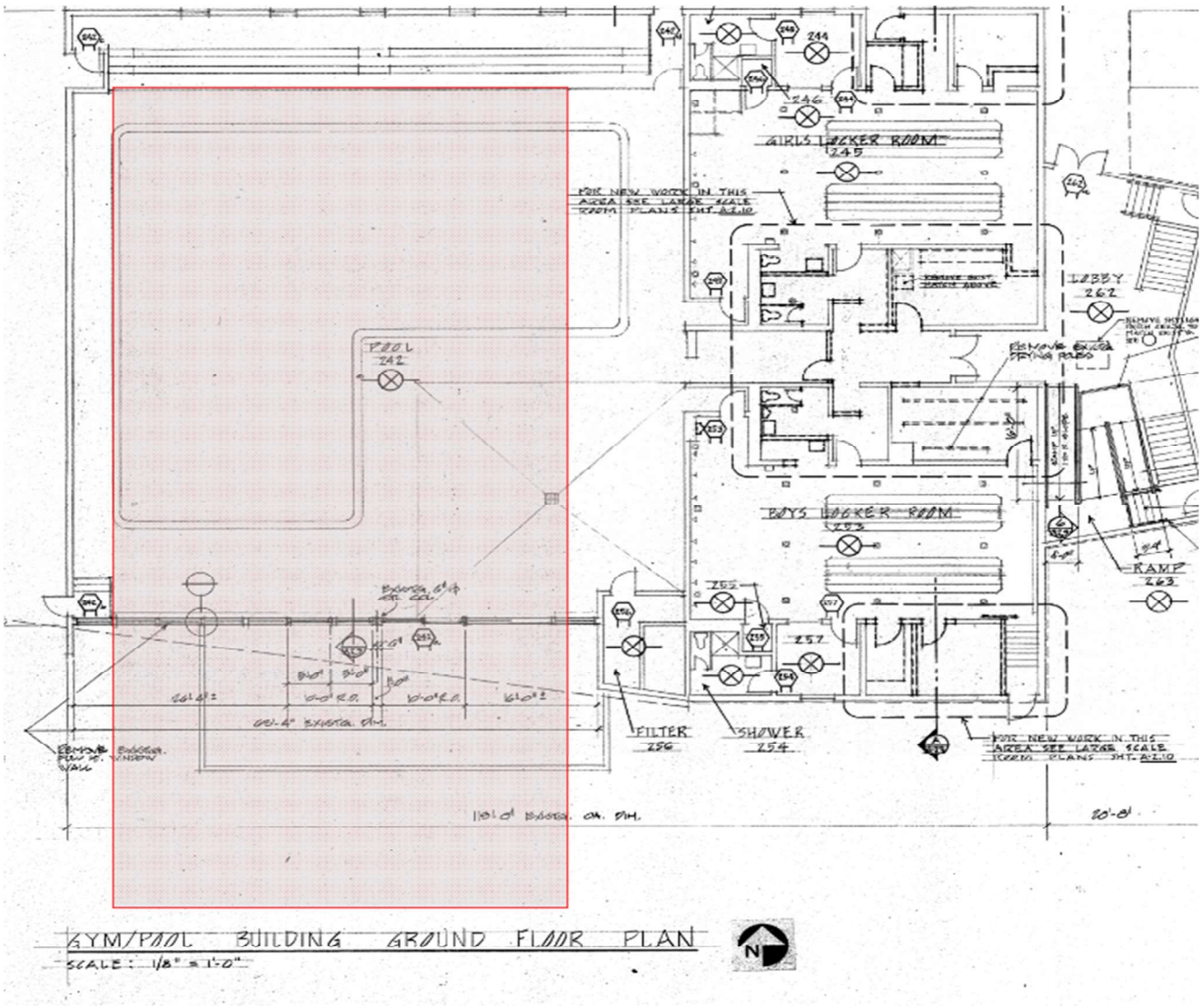
A lifecycle cost analysis considers multiple factors to determine a functional comparative. Each of these elements below are considered to determine the lifecycle of a building.



Existing Pool Building Renovation

Design

The existing YMCA pool was originally constructed as an outdoor pool. From the documentation provided, the pool was enclosed with what appears to be a tilt- enclosure and membrane roof system. The building is located on Blaine Street with parking and a drive isle in front of the building. The building's entry is on the south side. For the cost study only the entry, locker room and natatorium are considered. The gym portion of the building was excluded. The cost study for the renovation provides a new competition pool by removing the existing pool and north natatorium wall to extend the structure and install a replacement pool. The space presumably does not include an activity pool or spa. The existing locker rooms and restrooms will be repaired and upgraded to meet ADA requirements, The acoustic panels that were painted over will be removed and replaced. There will be new mechanical and electrical systems, bleachers, and pool equipment. The sitework includes modifications to the parking and drive-isle to provide ADA access.



Risks and opportunities

Risk	Measure	Risk Level	Action Notes	Potential cost risk
No destructive observations under pool deck to investigate concrete and steel condition.	Below pool deck area	High	Destructive testing before construction is required.	Without assessment: $2M+ – structural reconstruction
Stormwater management – Areas of flooding occur in below grade mechanical room and utility duct bank.	N/A	Mid- investigation and remediation plan required.	Excessive stormwater is inherent in this region. Costs are currently being incurred with stop gap mitigation strategies.	Not assessed.
Contractor availability	N/A	Mid- It is difficult to find qualified contractors willing to do renovations that include end-of-life systems.	If this option is selected, conduct a contractor information mandatory meeting and skills assessment to assure contractor capabilities.	+/- 20%.
No design or engineering	N/A	High- Design and engineering require to assure accurate costing	Engage design and engineering professionals are versed in this type of renovation.	+/- 20%

Opportunity	Measure	Benefit Level	Action Notes	Savings
Least cost option	24000 SF	Mid to high	Provides system and code requirement	20%+ on current energy expenditure
Achieves goal for competition pool	24000 SF	Mid to high	Retains community engagement however does not meet goals for project by excluding the recreation pool.	Not quantified
Remediation	24000 SF	Mid to low	Most of the hazardous materials were abated during previous renovations.	Not qualified
ADA upgrades	Site wide	Mid- ADA compliant	ADA parking, accessway and activity area access.	Cost is included in construction cost as code required.

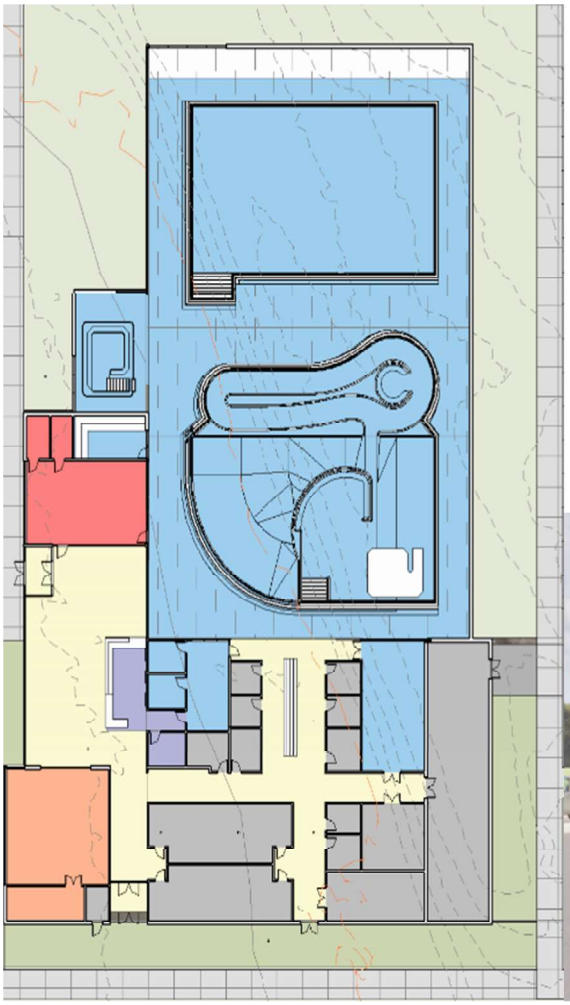
Life Cycle

Building Element	Lifecycle/ Yrs Remaining	Maintenance/Yrs	End Of Life
Foundations	30	10	Land fill
Superstructure	20	10	Recycle
Exterior Enclosure	20	5	Recycle
Roofing	2	20	Land fill
Interior Construction	10	5	RE/LF
Stairways	N/A	N/A	N/A
Interior Finishes	2	2	N/A
Conveying Systems	N/A	N/A	N/A
Plumbing Systems	10	3	Recycle
Heating, Ventilation & Air Conditioning	10	2	RE/LF
Fire Protection	30	5	Recycle
Electrical Lighting, Power & Communications	15	2	RE/LF
Equipment	10	1	RE/LF
Furnishings	15	3	Re/LF
Special Construction -Pools	20	15	LF
Concrete surfaces	10	5	RE/LF
Asphalt	10	4	RE/LF

New Construction

Design

The New Construction facility was designed as a timber framed structure. The building construction location is shown to be on Blaine Street between the YMCA and the Recyclery. The building is planned for 27,900 square feet (SF) and includes a competition lap pool, an activity pool and spa. The additional build out program includes locker rooms, restrooms, mechanical spaces, office, and storage space. The sitework includes access paving, ADA ramps and a 47,000 SF parking area.



Risks and opportunities

Risk	Measure	Risk Level	Action Notes	Potential cost risk
Sub surfaces conditions	Blaine Site 30,000 SF (building footprint)	Low- if geo-technical testing has been completed	Subsurface obstructions are common, pre-construction evaluation is essential	Without assessment: $300 k – structural import/export
Stormwater Management	50,000 SF of site area	Low- A stormwater management plan is required.	Excessive stormwater is inherent in this region	Cost is included in construction cost. Risk could add $15k to base cost.
Contractor availability	N/A	Mid- Construction climate remains volatile	Conduct a benefits analysis on delivery methods. Assure construction/cost management plan is in place	+/- 10% without plan and cost oversight.

Opportunity	Measure	Benefit Level	Action Notes	Savings
New facility -energy	30,000 SF	Mid to high- Reduced energy use	Energy efficient enclosure system, mechanical and electrical systems	15%+ on current energy expenditure
New facility - ADA	30,000 SF plus site 50,000 SF	Mid- ADA parking, accessway and activity area ace	ADA parking, accessway and activity area access.	Cost is included in construction cost as code required.
New facility – Community retainment	30,000 SF	Mid- Continued and enhanced service offering	Providing a competition pool retains current users and increases use for students.	Not quantified. Allows for local businesses to benefit (coffee shops, restaurants) since the pool is local.

Life Cycle

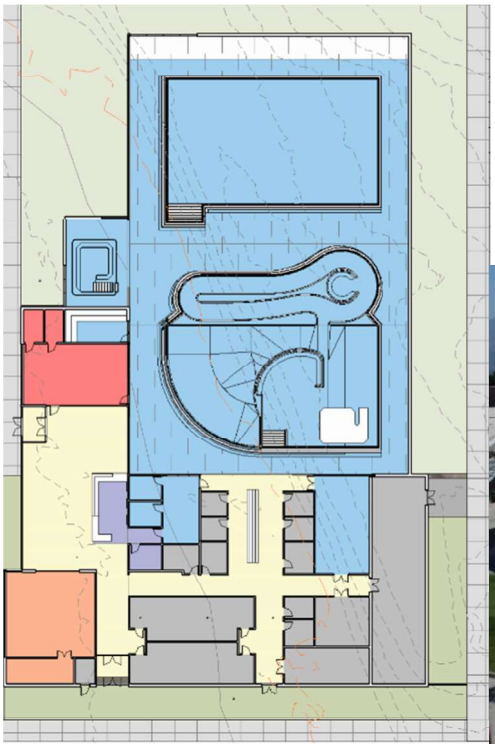
Building Element	Lifecycle/ Yrs	Maintenance/Yrs	End Of Life
Foundations	100	50	Land fill
Superstructure	75	25	Recycle
Exterior Enclosure	50	10	Recycle
Roofing	25	25	Land fill
Interior Construction	35	15	RE/LF
Stairways	N/A	N/A	N/A
Interior Finishes	15	3	N/A
Conveying Systems	N/A	N/A	N/A
Plumbing Systems	60	3	Recycle
Heating, Ventilation & Air Conditioning	40	3	RE/LF
Fire Protection	50	5	Recycle
Electrical Lighting, Power & Communications	40	3	RE/LF
Equipment	30	1	RE/LF
Furnishings	25	5	Re/LF
Special Construction -Pools	50	15	LF
Concrete surfaces	70	5	RE/LF
Asphalt	35	4	RE/LF

New Construction - Sprung Structure

Design

Using the design and location for the new construction pool and support areas, the building enclosure is a Sprung Structure. The building is 27,900 square feet (SF) and includes a competition lap pool, an activity pool and spa. The additional build out program includes locker rooms, restrooms, mechanical spaces, office, and storage space. The sitework includes access paving, ADA ramps and a 47,000 SF parking area.

The Sprung structure is a fully insulated system assembled on site. The structure is aluminum, and the enclosure is a membrane system. Sprung Structures only provides the enclosure system. The entire structure build and build out, pools and equipment are site built by a general contractor.



Risks and opportunities

Risk	Measure	Risk Level	Action Notes	Potential cost risk
Sub surfaces conditions	Blaine Site 30,000 SF (building footprint)	Low- if geo-technical testing has been completed	Subsurface obstructions are common, pre-construction evaluation is essential	Without assessment: $300 k – structural import/export
Stormwater Management	50,000 SF of site area	Low- A stormwater management plan is required.	Excessive stormwater is inherent in this region	Cost is included in construction cost. Risk could add $15k to base cost.
Contractor availability	N/A	Mid- Construction climate remains volatile	Conduct a benefits analysis on delivery methods. Assure construction/cost management plan is in place	+/- 10% without plan and cost oversight.
Appearance	N/A	Low- Less esthetically pleasing, vandal cuts are possible	Graphics could be considered; security lighting and repair kits should be included	$40k

Opportunity	Measure	Benefit Level	Action Notes	Savings
Cost saving on enclosure system	N/A	Mid to High- Achieves similar enclosure efficiencies as new construction.	N/A	30% on enclosure system
New facility -energy	30,000 SF	Mid to high- Reduced energy use	Energy efficient enclosure system, mechanical and electrical systems	15%+ on current energy expenditure
New facility - ADA	30,000 SF plus site 50,000 SF	Mid- ADA parking, accessway and activity area ace	ADA parking, accessway and activity area access.	Cost is included in construction cost as code required.
New facility – Community retainment	30,000 SF	Mid- Continued and enhanced service offering	Providing a competition pool retains current users and increases use for students.	Not quantified. Allows for local businesses to benefit (coffee shops, restaurants) since pool is local.

Life Cycle

Building Element	Lifecycle/ Yrs	Maintenance/Yrs	End Of Life
Foundations	100	50	Land fill
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Exterior Enclosure	25	10	Recycle
Roofing	25	10	Land fill
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Interior Finishes	15	3	N/A
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Fire Protection	50	5	Recycle
Electrical Lighting, Power & Communications	40	3	RE/LF
Equipment	30	1	RE/LF
Furnishings	25	5	Re/LF
Special Construction -Pools	50	15	LF
Concrete surfaces	70	5	RE/LF
Asphalt	35	4	RE/LF

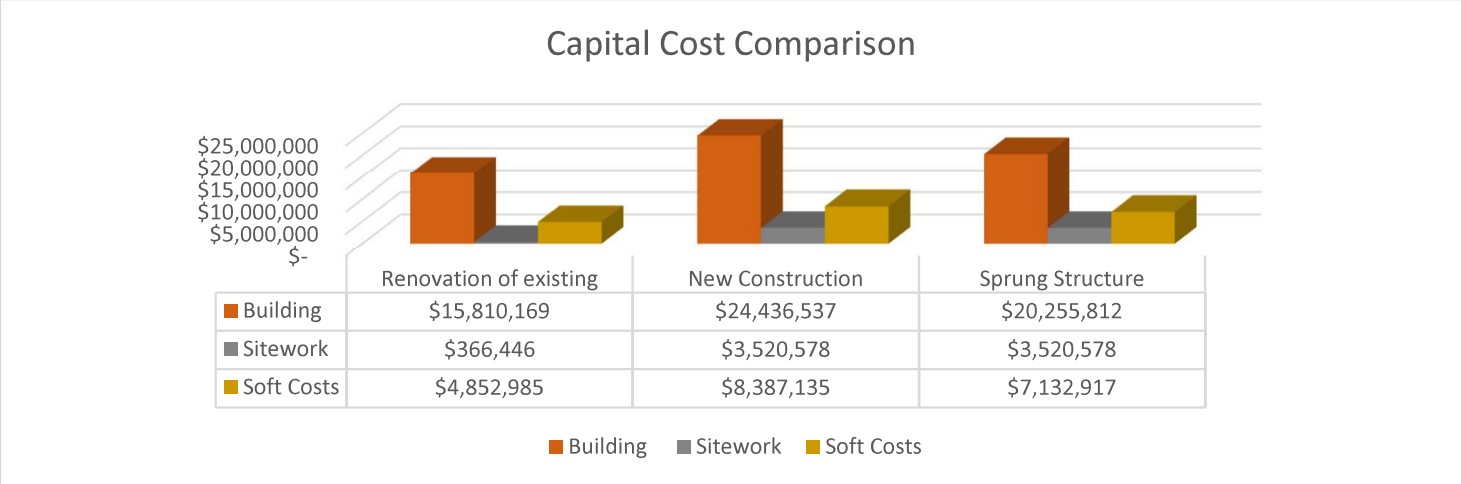
Assessment

Maximum Life Expectance

TYPE	YRS
Renovate Existing	30
New Construction	75
Sprung Structure	50

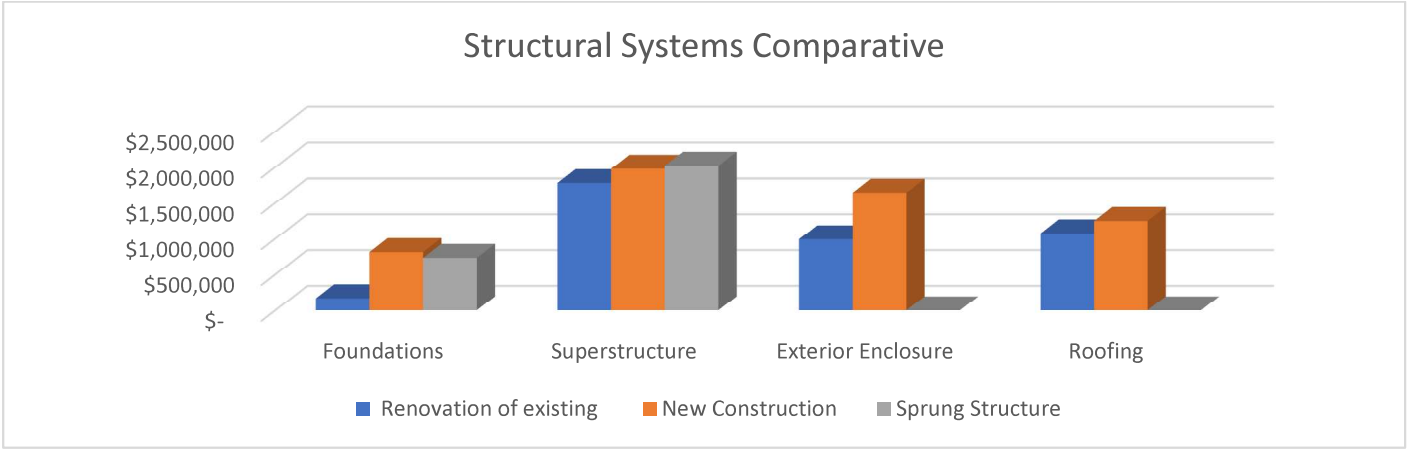
Cost Comparatives

Capital costs are compared here considering first expenditures for renovation or construction. It does not include future expenditures for maintenance.



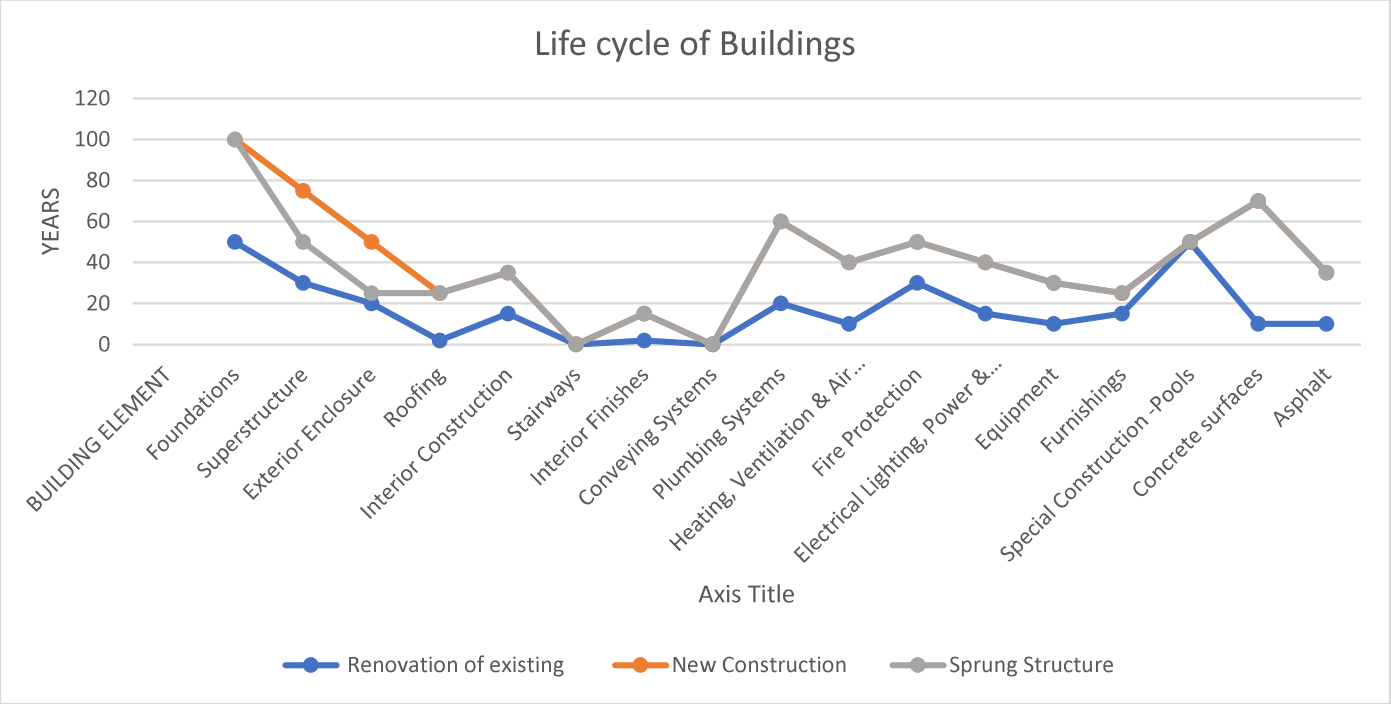
Structural systems

The primary difference between the three options for consideration is in the structural systems. The renovation of the existing building has limited improvements compared to the new construction with all new surfaces. It is important to note that the enclosure and structural system for the Sprung Structure is included under the Superstructure cost since it is an all-inclusive structural system.



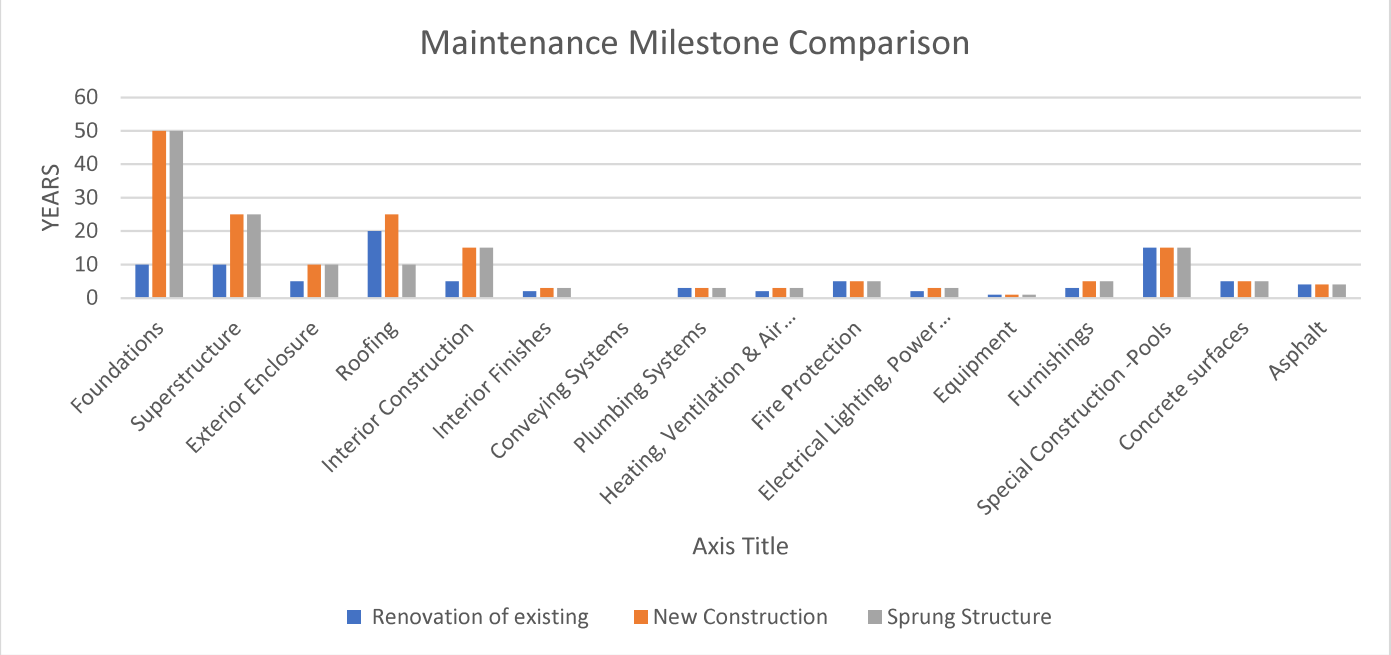
Life Cycle Comparative

The life cycle of the new construction types follows a similar trajectory where the renovation shows a shorter lifespan on remaining systems.



Maintenance Milestones

The maintenance milestone demonstrates the comparative durations for each system by building type. It is important to note that the most expensive systems, which include electrical, mechanical, and plumbing systems, should be regularly maintained for maximum efficiency.



Conclusion

The evaluation criterion illuminates key factors for decision making.

Factor 1: The renovation is the least expensive first cost, with the highest cost risk and maintenance cost. It is unable to meet the same program as the new construction types since the building capacity is smaller and cannot accommodate a recreational pool. The life cycle of the building elements that are not replaced will require attention of the remaining life cycle of the building.

Factor 2: The new construction building is the most expensive first cost. The building meets the program and ADA needs. It allows for more flexibility for future additions. The maintenance costs are less than the other structures over the course of 50 years.

Factor 3: The Sprung Structure enclosure system is less cost than the new construction wood-frame. The exterior system is flexible but can be prone to vandalism. Measures can be put in place that would make it less vulnerable while still being less cost than the wood-framed structure. The aluminum frame is warranted for 50 years, and the membrane system is warranted for 25 years. Maintenance of the system is more expensive than the new construction option. Further investigation into the de-humidification system is required.

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