



Lunenburg Cemetery Commission Presentation Restoration of North Cemetery Boundaries

**Cemetery Commission - Town Hall Meeting
September 26, 2023**

Presented by: Nancy Foss-Yasko, Chair

Lunenburg Cemetery Commission Presentation

The **CEMETERY COMMISSION** stood before the Select Board Members and Town Manager to Present Recovery Options to Repair the North Cemetery Boundary and Request Funding from the ***American Rescue Plan Act.***

Lunenburg Cemetery Commission Presentation

- Bottom Line Up Front (BLUF):

- The current condition of the 100 year-old Arborvitae Hedge Boundary – needs to be restored to preserve the ***Peace, Tranquility*** and ***Honor*** contained within the North Cemetery.
- Replacement cost of Hemlock Hedges are estimated at approximately \$185K.
- Replacement hedges will need additional electricity, water, and yearly maintenance, which will raise the *life-cycle* cost significantly.
- Preferred Solution – Permanent ***New England*** Rustic Field-Stone Wall – estimated cost at approximately \$288K to \$388K. This reduces the *life-cycle* cost associated with this asset.
- The **CEMETERY COMMISSION** recommended to the Select Board Members to move forward with securing from the ***American Rescue Plan Act*** – significant funding for a ***New England*** Rustic Field-Stone Wall vs Hemlock Hedges.

Lunenburg Cemetery Commission Presentation

- Facts:

- North Cemetery 100 year-old Arborvitae Hedges were severely pruned in 2023.
 - Following the pruning, several licensed and professional arborists were called in by the Cemetery Commission to make recommendations regarding the recovery options to the 100 year-old Arborvitae Hedges.
 - Recommendations were simple – because of the lack of historical maintenance and limited access to water, the landmark hedges are likely beyond recovery. Arborists advised not to put good money toward working to improve their health, due to an expected poor outcome, and instead recommend removing them.

Lunenburg Cemetery Commission Presentation

- Facts:

- Replacement cost of Hemlock Hedges are estimated at approximately \$185K.
 - Anderson Landscape Construction Horticulture Preservation walked the Cemetery Commission and DPW Director through this process.
 - Recommendation and estimate provided to install and plant 173 young trees up to 6 – 7 feet tall. Extraction and disposal of stumps, set in new planting bed with mulch and watering allowance for one season. **Key Note:** three seasons of water needs to be complete, which is going to be cost prohibitive – due to lack of water and irrigation at the North Cemetery.
 - Complete estimate from Anderson Landscape Construction Horticulture Preservation has been provided and given to each Select Board Member and Town Manager for review.

Lunenburg Cemetery Commission Presentation

■ Facts and Concerns:

- Additional Cost for newly planted Hemlock trees.
 - Having 173 newly planted Hemlock trees will cost a significant amount of money for both the watering and maintenance care of these trees for three years, and beyond. One year of watering will cost the Cemetery Commission and DPW – estimated at \$3K. This will raise the *life-cycle cost* significantly.
 - There is no electricity at the North Cemetery for required well pump to water new plants. Both of these requirements will require additional funding.
 - North Cemetery cannot handle the water flow for the additional amount of water needed to keep these newly planted trees alive. Additional cost of \$25K or more for a well to be drilled. This does not include the cost for a pump, piping and electricity. A possible solution is tie into the water system on Highland Street – cost and feasibility to be determined.

Lunenburg Cemetery Commission Presentation

- Preferred Solution:

- Permanent **New England** Rustic Field-Stone Wall – estimated range at approximately \$288K to \$388K, which reduces the *life-cycle* cost associated with this asset.
- Ramsden Stone Walls and Waterproofing, LLC – provided an estimate of a free-standing **New England** Rustic Field-Stone Wall at North Cemetery.
- Highlights Include: removal of nearly 1,000 linear feet of large hedges, disposal of hedges and stumps, excavation and installation of crushed stone footing, measuring 36 inches wide with a minimum depth of 12 inches deep, a 6,180 square face feet of free-standing rustic semi formal dry, stacked – **New England** Field-Stone Wall at \$40.00 per face feet.
- Complete estimate from Ramsden Stone Walls and Waterproofing, LLC – has been provided and given to each Select Board Member and Town Manager for review.

Lunenburg Cemetery Commission Presentation

- Request:

- **\$350K** for Restoration of North Cemetery Boundaries.
- The **CEMETERY COMMISSION** would like to advocate for the North Cemetery with her ***beauty*** and ***tranquility*** from within.
- Building a **New England** Rustic Field-Stone Wall will compliment the already free-standing stone walls from within her boundaries.
- Many Lunenburg Town Families and Veterans have long passed and are at their final resting place. This design honors their contributions to our Town, and provides lasting ***beautification*** for at least the next 300 hundred years.
- The **CEMETERY COMMISSION** will support the Select Board request to use the Stabilization Fund at this Fall's Town Meeting, so more funds are available for **ARPA** Distribution.

Lunenburg Cemetery Commission Presentation

- Wall
 - Wall initial outlay for project full funding.
 - Little to no maintenance or additional costs over time.
 - Usable life span estimate 100 plus years, more likely 200+.
 - Significantly less vulnerability to storm and weather damage.
 - Minimal to no impact of inflation for ongoing costs.
 - Model shows estimated wall break even in year 16 vs hedge costs.
 - Aesthetically the wall blends in nicely to the existing wall boundaries.
- Hedges
 - Hedge replacement require ongoing costs for annual maintenance and failure/replacement over time.
 - Additional project costs and expense associated with maintaining living hedge – include providing water source (well to be drilled), pump house to support well, electricity installed to support the well pump and annual electric billing.
 - Usable life span estimate with professional maintenance 50 – 75 years – then replace again.
 - Subject to storm and weather damage as well as insect and disease vulnerability – requiring replacement of sections.
 - Financial impact of inflation on maintenance costs over anticipated life span are significant and will be borne by the tax payers.

Lunenburg Cemetery Commission Presentation

■ Life Cycle Cost (LCC) Analysis:

- Definition – Life Cycle Cost means considering all the costs that will be incurred during the lifetime of the product, work or service: Purchase price and all associated costs.
- Life cycle costing provides an estimate of the cost that an asset will incur in its lifetime. Life cycle costing calculation generally involves adding six types of costs; purchase costs, maintenance costs, operational costs, financing costs, depreciation costs, and end-of-life costs.
- Life Cycle Cost incorporates a model to help examine the total cost of the Wall or Hedge installation.
- Life Cycle Cost is using a 3.0% annual inflation factor based on historical run rates, current data and estimated future factors.
- Then Year Costs or Future Dollars – is a financial term that means the cost reflects the money as it is spent including the effects of inflation. For this model purposes the base year is 2024.
- Current Dollars – income in the year in which a person, household, or family receives it. For example, the income someone received in 1989 UN-adjusted for inflation is in current dollars.

Lunenburg Cemetery Commission Presentation – Bottom Line at the End

- Wall
 - One time sunk cost little to no ongoing expense for maintenance.
 - Risk is mitigated by permanent infrastructure.
 - Virtually impervious by weather, climate, external factors and budgetary shortfalls.
 - Significantly less risk in lean budget years.
 - Inflation / Consumer Price Index (CPI) is virtually eliminated saving taxpayer dollars in ongoing maintenance.
 - Wall will aesthetically blend in with the historical environment and existing boundary walls.
 - Break even at year 16.
- Hedges
 - Maintenance over a finite life span – then disposal and replacement costs – subject to Then Year costs.
 - Inflation will escalate costs over the life of the hedge growth – increased taxes to cover maintenance, disposal and replacement expense.
 - When years are revenue lean hedge maintenance will receive low priority or be deferred for years.
 - Delayed maintenance escalates risk of damage.
 - Risk is elevated by weather, climate change, animals, plant disease and improper maintenance.

Life Cycle Cost Model

		Life Cycle Cost Model																				
Years	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
300,000	Item 1																					
0	Stone wall	300,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	periodic maintenance / repair	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
300,000	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
300,000	Total	300,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
180,000	Item 2																					
30,000	Hedge purchase and installation	180,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
30,000	Annual Maint. professional svcs	3,000	3,000	3,000	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500		
2,450	Failure rate / replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
25,000	Install Well and Pump	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8,000	Construct pump control house	8,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10,000	Install electricity	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7,000	Construction Contingency/Risk	7,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10,000	Disposal cost EOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5,100	Operational costs electric	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
279,550	Total	230,100	3,100	3,100	3,100	600	600	600	600	600	600	600	600	600	600	600	600	600	600	1,350		
349,670	Total Cumulative in Current \$\$	230,100	233,200	236,300	239,400	240,000	240,600	241,200	241,800	242,400	244,000	244,600	245,200	245,800	246,400	247,000	247,600	248,200	248,800	250,150		
0.03	2% inflation factor																					
3 % inflation Then year costs		3,100	3,193	3,289	3,387	3,489	3,594	3,702	3,813	3,927	4,045	4,166	4,281	4,420	4,552	4,689	4,830	4,975	5,124			
629,220	Total Item 2 in Then Year costs																					
230,100	Total Cumulative Then Year \$\$	230,100	236,300	242,593	248,982	252,969	257,058	261,252	265,554	269,966	275,493	280,138	284,904	289,795	294,815	299,968	305,257	310,686	316,261	322,735		
Years	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38			
Cal Year	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061			
Stone wall	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
periodic maintenance / repair	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Hedge purchase and installation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Annual Maint. professional svcs	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500		
Failure rate / replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Install Well and Pump	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Construct pump control house	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Install electricity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Construction Contingency/Risk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Operational costs EOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Operational costs electric	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
600	Total	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600		
250,750	Total Cumulative current \$\$	250,750	251,350	251,950	252,550	253,150	253,750	254,350	254,950	256,050	256,650	257,250	257,850	258,450	259,050	259,650	260,250	260,850	261,650	262,250		
5,278	3% Inflation factor Then Year	5,278	5,436	5,599	5,767	5,940	6,118	6,302	6,491	6,685	6,886	7,093	7,305	7,525	7,750	7,983	8,222	8,469	8,723	8,985		
326,612	Total Cumulative Then Year \$\$	326,612	334,648	340,847	347,214	353,754	360,472	367,374	374,464	382,250	389,736	397,428	405,334	413,458	421,809	430,391	439,214	448,282	457,805	467,390		
Years	39	40	41	42	43	44	45	46	47	48	49	50	51									
Cal Year	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074									
Stone wall	0	0	0	0	0	0	0	0	0	0	0	0	0									
periodic maintenance / repair	0	0	0	0	0	0	0	0	0	0	0	0	0									
other	0	0	0	0	0	0	0	0	0	0	0	0	0									
other	0	0	0	0	0	0	0	0	0	0	0	0	0									
Total	0	0	0	0	0	0	0	0	0	0	0	0	0									
Hedge purchase and installation	0	0	0	0	0	0	0	0	0	0	0	0	0									
Annual Maint. professional svcs	500	500	500	500	500	500	500	500	500	500	500	500	500									
Failure rate / replacement	0	0	0	0	0	0	0	0	0	0	0	0	0									
Install Well and Pump	0	0	0	0	0	0	0	0	0	0	0	0	0									
Construct pump control house	0	0	0	0	0	0	0	0	0	0	0	0	0									
Install electricity	0	0	0	0	0	0	0	0	0	0	0	0	0									
Construction Contingency/Risk	0	0	0	0	0	0	0	0	0	0	0	0	0									
Operational costs EOL	0	0	0	0	0	0	0	0	0	0	0	0	0									
10,000	Operational costs electric	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	10,000		
600	Total	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	10,100		
262,850	Total Cumulative current \$\$	262,850	263,450	264,050	264,650	265,250	265,850	266,450	267,050	267,650	268,250	268,850	269,450	270,550								
9,254	3% Inflation factor Then Year	9,254	9,532	9,818	10,112	10,416	10,728	11,050	11,382	11,723	12,075	12,437	12,810	13,194	13,590							
477,244	Total Cumulative Then Year \$\$	477,244	487,376	497,794	508,506	519,522	530,850	542,500	554,482	566,805	579,479	592,516	605,926	629,220								

Lunenburg Cemetery Commission Presentation

■ Wall spread sheet model assumptions:

- New England Rustic Field-Stone Wall (item 1) is a one time sunk cost with no ongoing associated costs projected.
- Components of (item 2) are based on contractors and vendors estimates, not quotes.
- Failure rate is the cost dollars to cover the estimated risk of environmental factors and other horticultural events that may occur.
- Installation of living hedges assumes a requirement for water, which must be drawn from a newly constructed deep well.
- To enable the deep well, electricity must be provided – including the required housing and infrastructure to support this commodity.
- A risk contingency factor is included as common with all construction projects to mitigate risks that may arise (i.e. well depth, ledge, etc.)
- Electric power will consume minimal Kw hours, however, there is a monthly fee to be paid even if there is little to no usage included.
- A Consumer Price Index (CPI) inflation factor of 3.0% is calculated for all ongoing annual costs.
- The 3.0% inflation adjusted annual amount is used in place of the Current Total dollars when expressing the Then year amounts.
- Professional hedge trimming costs are represented by amortizing a 3 - 4 year expense at \$500.00 expense every year – trimming may be required at 3 – 4 year intervals at estimated \$2,000.00 per incident.

Lunenburg Cemetery Commission Presentation

The **CEMETERY COMMISSION** would like to ask for the Lunenburg Community Support for the Restoration of North Cemetery Boundaries – by building a ***New England*** Rustic Field-Stone Wall. **You** can do your part by getting out to **Vote** on

November 14, 2023 – 7:00 PM

Lunenburg Cemetery Commission Presentation

■ A Special Thank-You:

- The **CEMETERY COMMISSION** would like to show their appreciation to the following individuals and establishments:
 - Select Board Members – allowing the Cemetery Commission to present this presentation during your weekly Town Meeting a few weeks ago.
 - Stan Dillis – Dillis & Roy Civil Design Group
 - Jeff Schwarz – Alphagraphics - Shirley
 - Fred Anderson – Anderson Landscape Construction Horticulture Preservation
 - Brett Ramsden – Ramsden Stone Walls and Waterproofing, LLC
 - Matt May – Lakeview Landscaping & Irrigation
 - Mark Flagg – M Flagg Tree Service/Arborist
 - Central Mass Gardens
 - Einstein's Solution
 - David Dorren – Vice-Chair & Clerk, Cemetery Commission
 - Bill Bernard – DPW, Director