Town of Manchester-By-The-Sea

Facility Condition Assessment

Town Of Manchester-By-The-Sea April 02, 2021

in partnership with

Alpha™ Facilities Solutions

Dude Solutions

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Building perspective.

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EXECUTIVE SUMMARY

Introduction

Town Of Manchester-By-The-Sea entered into a contract with Dude Solutions whom is partnered with ALPHA Facilities Solutions, LLC (ALPHA) to provide facility condition assessment and implementation services for Capital Forecast (CF), SchoolDude's Cloud-based capital planning solution used to forecast facility needs and justify funding requirements. The project was completed by a team consisting of engineers, architects, and construction professionals. Data collected during the Facility Condition Assessment phase of the project was input into CF in order to estimate current and future funding requirements for facility sustainment. This predictive approach to asset management is known as Capital Planning and is used to anticipate funding and maintenance needs many years into the future.

The scope of work included the following:

1. Identify and document current and forecasted conditions of approximately 74,486 square feet of facilities.
2. Identify and document current site needs.
3. Identify and document remaining service life of major building systems to include envelope; architectural finishes; roofs; electrical; plumbing; and heating, ventilation, and air conditioning (HVAC).
4. Provide Rough Order of Magnitude (ROM) cost estimates for building system renewal and site repairs.
5. Forecast facility renewal requirements based on lifecycle analysis of existing systems over the span of the next 20 years for each facility.
6. Provide a Facility Condition Index (FCI) measurement to illustrate the relative condition of all facilities.
7. Input the facility condition information and current site needs information into the CapitalForecast software.

Acknowledgement

Finally, the ALPHA Team would like to take this opportunity to thank Town Of Manchester-By-The-Sea for allowing ALPHA to help the Town achieve its goals. We would also like to thank Nate Desrosiers and their staff for investing a substantial amount of their valuable time to work with us on this project; their knowledge of the facilities was superb and their contributions were invaluable.

Facility Condition Assessment Approach

Capital Forecast (CF) was used to document facility conditions, to determine current requirements, and to forecast future requirements for facilities within the Town Of Manchester-By-The-Sea. Parametric cost models contained within CF were assigned to most buildings while new cost models were developed in instances where an appropriate cost model did not exist. New cost models developed by the ALPHA Team are also contained within CF. System and component life cycles used within the cost models are based on average service life as shown in the Preventive Maintenance Guidebook: Best Practices to Maintain Efficient and Sustainable Buildings published by Building Owners and Managers Association (BOMA) International. When life cycle information is not provided by BOMA, we used our experience and professional judgment to suggest appropriate average service life for those components and systems. Unit costs, which are used to calculate renewal requirements, are also built into the cost models. Life cycles and unit costs have been adjusted on a location-specific basis as appropriate or as requested by Town personnel.

Although there are many factors that are important to obtain a successful outcome for a facility condition assessment, three provide the foundation for establishing a reliable cost model for each building. Those three factors are related to the following basic building information:

- Gross area
- Date built
- Building/location name

The gross area of a building, also known as gross square footage (GSF), is one of the basic building blocks for determining current replacement value (CRV) and generating system renewal costs, which are major components of a parametric-based effort. The date built for each facility provides the basis for establishing life cycles for many, and in some cases, all major building systems. Finally, although not critical to the outcome of the project, agreeing upon a building/location naming convention that is meaningful to all stakeholders enhances the usefulness and readability of the facility condition assessment report. Please note that GSF for each building was provided by the Town and generally was not validated as part of this project. It should be noted that some building names may have changed at the direction of the Town from what was indicated in documentation initially provided. Locations, names, dates built, and GSF data contained in this report are as shown in your Capital Forecast account.

In order to determine basic building information, the ALPHA Team met with designated Town personnel to discuss Town-specific information such as building construction/renovation programs and building naming conventions. Scaled floor and site plans were generally not available, so square footages associated with additions and site features were obtained from a combination of sources to include Town records, satellite imagery, and professional judgment.

It is worth noting that, although most concealed systems may appear to be functional, the risk of failure increases with time when they have exceeded the average service life as predicted by BOMA. Consequently, this effort assumes that replacement of concealed systems that have exceeded the average service life as predicted by BOMA is appropriate. Based on the availability of resources and the tolerance for risk or potential out-of-service conditions, the Town may elect to defer immediate replacement of concealed systems that have exceeded average service life as appropriate.

Building condition requirements and site infrastructure requirements are documented within Capital Forecast and based on estimated quantities, RS Means, and client supplied data when available.

Prioritization of Needs

Finally, all needs contained within CF have been assigned a default priority based on importance to mission performance. Therefore, systems whose failure might render a building not suitable for occupancy have been ranked with a higher priority than those systems that have minimal or no impact on a facility's suitability for occupancy. For example, replacement of an HVAC system might take priority over replacement of flooring. The priority for a specific need can be changed if required and priorities can be further refined if desired by assignment of scores of one through 99. Although additional priorities are available within CF, priorities used for this project are:

- High
- Medium
- Low

Needs contained within CF have been ranked in terms of urgency in order to aid in the prioritization for allocation of funds. The priorities of applicable systems for this project are as follows:

High

- Electrical - Branch Wiring
- Electrical - Lighting
- Electrical - Other Electrical Systems
- Electrical - Service & Distribution
- Fire Protection - Other Fire Protection Systems
- Fire Protection - Sprinklers
- HVAC - Cooling Generating Systems
- HVAC - Distribution Systems
- HVAC - Heat Generating Systems
- HVAC - Terminal & Package Units
- Roofing

Medium

- Exterior Enclosure - Exterior Doors
- Exterior Enclosure - Exterior Walls
- Exterior Enclosure - Exterior Windows
- Interior Construction - Interior Doors
- Pedestrian Pavements
- Plumbing - Domestic Water Distribution
- Plumbing - Plumbing Fixtures
- Plumbing - Sanitary Waste

Low

- Interior Construction - Fittings
- Interior Finishes - Ceiling Finishes Interior Finishes - Floor Finishes
- Interior Finishes - Wall Finishes
- Vehicular Pavements

Building Performance Metrics

As part of the FCA process, a facility condition index (FCI) was calculated for each facility. The FCI is used to quantify a facility's physical condition at a specific point in time and is calculated using the expired system replacement costs (costs associated with systems that are beyond average service life) and the current replacement value (CRV) of the building. Expired system replacement costs consist of work that is necessary to restore the facility to a condition equivalent to its original (like new) state.

The FCI can be helpful in several ways to include:

- Comparing the condition of one facility to a group of facilities
- Tracking trends (the extent of improvement or deterioration over time)
- Prioritizing capital improvement projects
- Making renovation versus replacement decisions

The FCI is calculated as shown in the example below.

Example 1: Total expired system replacement costs (Requirements) = $3,000,000

Current Replacement Value (CRV) = $10,000,000

$$FCI = \frac{\$3{,}000{,}000}{\$10{,}000{,}000} = .30$$

It is important to note there is no recognized standard for what constitutes an acceptable or unacceptable FCI. For example, the International Facility Management Association (IFMA) indicates that building condition is often defined in terms of the FCI as follows:

1. Good - 0% to 10%,
2. Fair - 11% to 20%,
3. Poor - greater than 20%

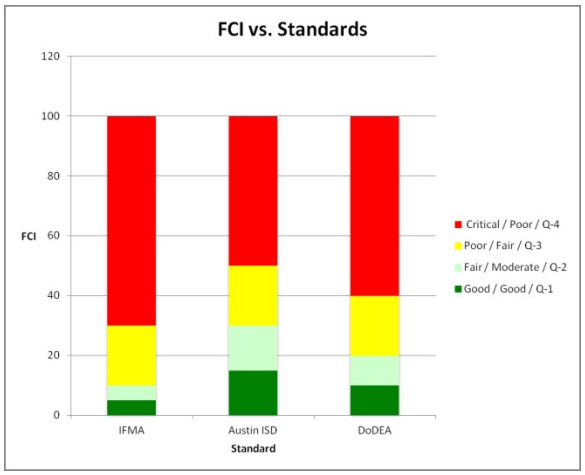


Figure 1. FCI Standards

The Renovate Versus Replacement Question

A question that often arises is at what point does it make sense to replace a facility rather than to renovate it? Again, there is no industry standard, but conventional thinking is that replacement of a facility should be seriously considered when the FCI rises above 50%. However, the FCI is not the only consideration when making renovation versus replacement decisions. One consideration that should be taken into account is whether a facility is functionally adequate for the intended use. Another consideration revolves around the magnitude of needed renovations. For example, when cost of renovation reaches or exceeds 50% of the replacement cost of the facility, requirements to meet Americans with Disabilities Act (ADA), Life Safety and possibly other codes may be triggered. When the requirement to meet current building codes or civil rights statutes, such as those mentioned above are triggered, additional costs will be incurred. Although it is not possible to predict what the additional costs will be until project requirements are identified and cost estimates are prepared, it has been our experience that additional cost can be expected to range from 5% to 20% depending upon the age of the facility.

Categorization of Costs

At this point, it is appropriate to review the different types of costs associated with facility renovation and construction and how they apply to this project. According to the American Institute of Architects (AIA), facility capital costs are normally subdivided into three major categories - site costs, hard costs, and soft costs. Site costs are normally associated with the owner's initial land acquisition and development costs for a project and are not a consideration in the context of this project. Hard costs are associated with direct construction costs while soft costs can be defined as any indirect costs incurred in addition to the direct construction costs. Soft costs include a variety of costs such as design fees, legal fees, taxes, insurance, owner's administration costs, and financing costs. Cost data produced by the parametric cost models within CFD includes hard costs including consideration of renewal costs, which accounts for the additional cost associated with replacing an existing building system versus constructing the system in a new facility. Cost information within this report does not include soft costs.

It is important to remember that cost models are intended to produce rough order of magnitude (ROM) costs for purposes of developing a baseline from which to establish an FCI for each facility and to facilitate capital planning. It is not unusual for those new to the parametric cost estimating/life cycle analysis process to have expectations that are not completely in alignment with what the process is intended to yield. For example, the parametric cost estimating/life cycle analysis process generates ROM budgeting-level costs while costs that are more detailed are derived during formal preliminary design and final design cost estimating processes.

As a point of interest, *APPA: Leadership in Educational Facilities* published a paper citing research conducted by the *Building Research Board of the National Research Council* indicating, “Underfunding of maintenance and repair is a widespread and persistent problem.” The council concluded, “That an appropriate total budget allocation for routine maintenance and capital renewal is in the range of two to four percent of the aggregate current replacement value (CRV) of those facilities (excluding major infrastructure). When a backlog of deferred maintenance has been allowed to accumulate, spending must exceed this minimum level until the backlog has been eliminated.

Facility Condition Assessment

Facility-related data contained in this report was developed at the building level, which in turn, was rolled up at the campus level. Likewise, site infrastructure requirements were rolled up at the campus level. All data was then rolled up to provide an aggregate view of District facilities. Data within this report has been grouped as follows:

- City

This report includes the following content, which is found at campus and/or Executive Summary levels:

- Facility Description: Summary of Findings
- Current Needs (2021)
- Forecasted Needs (2026)
- Current and Forecasted Needs: Summarized by Reporting Period
- Current and Forecasted Needs: Summarized by System
- Need Priorities (High - Medium - Low)

Appendix B - Supplemental Information provides additional information the reader may find useful.

Site and Infrastructure Condition Assessment

A site infrastructure assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

- Good condition
- In need of repair
- In need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth Aerial photographs were used in lieu of site plans.

The site assessment was performed and the subsequent results grouped by location. Findings for each location were divided as follows:

- Pedestrian Pavements
- Vehicular Pavements
- Site Development

Please note that not all locations have all of the various infrastructure systems present.

We determined unit pricing for the various deficiency requirements by referencing 2021 RSMeans Building Construction Cost Data and Assembly Cost Data when available; industry sources were used as a supplemental source for unit pricing when needed.

Overview of Findings

The Facility Condition Assessment and Town implementation project included 9 permanent facilities, totaling74,486 square feet. The average FCI for the facilities assessed is 14 while the average FCI in five years is estimated to be 18 assuming current facility sustainment funding levels. The assessment team made the following general observations:

1. The facilities assessed where generally in fair condition. The common age of the systems placed many just out of their expected useful life according to BOMA. In some cases, additional testing such as Infrared electrical testing and water quality testing could add addition useful life to expired systems. If extended a reassessment is recommended in 3-5 years to properly anticipate capital replacement.
2. The Seaside 1 building did not have any fire extinguishers present.
3. Some of the buildings assessed were constructed prior to 1985. It is recommended that any building constructed before 1985, have a water quality test performed on regular basis. Pre-1985 construction materials included lead-based solder used for pipe joint union.
4. The emergency generators at the Fire Department and Town Hall are beyond their expected useful service life and need to be replaced.
5. Some of the electrical service and distribution systems were past their useful life as defined by BOMA. It is recommended that infrared testing be performed on these systems prior to extending their life cycles.
6. The slate shingle roof at Crowell Cemetery and the roof at WWTP were reported to have a leaking issue. These locations should be addressed immediately before more systems are affected as a result of leaking roofs.
7. Many of the asphalt pavements had longitudinal cracking, transverse cracking, and degradation throughout the pavement. A more extensive seal coating program will extend useful life of pavements and reduce the necessity of reconstruction.
8. At the Town Hall building, no fire alarm system or sprinkler system were present.
9. Some of the plumbing fixtures throughout the facilities were observed to have rust or mineral buildup present.

Facility Condition Assessment Findings

At the time of the assessment there were nine permanent buildings and zero relocatable structures located at Town of Manchester-By-The-Sea. The team entered all accessible spaces in the permanent buildings to include administrative, restrooms, mezzanines, and mechanical rooms. This data was input into your capital forecast solution. Additionally, please note the following:

- The team did not enter any "permit - required confined spaces" as defined by the Occupational Safety & Health Administration.
- Building systems are assessed based on the predominant material type and condition.
- There was no invasive testing performed on concealed systems to justify extending the useful life. These concealed systems were given an assessment considering current age and additional information from Client provided escorts.
- Life safety systems are assessed based on visual inspections, client provided information, and current inspection tags. ALPHA follows the Building Owners and Manager's Association's recommended life cycles for capital renewal forecasting purposes.

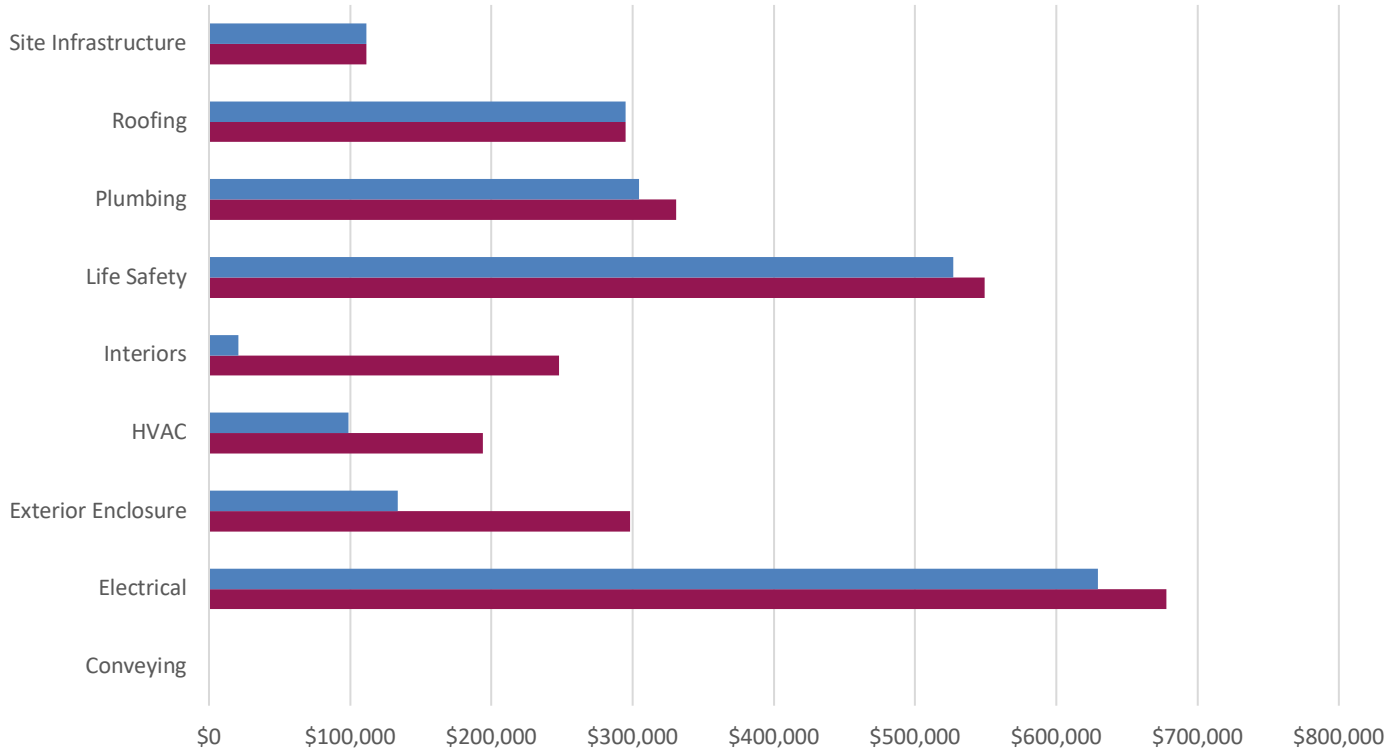
The table below contains building-specific information regarding current and forecast Facility Condition Indices. A comprehensive list of expired systems and those expected to expire between now and the Year 2041 is shown in the Current and Forecasted Needs Summarized by System table.

Table 1. Facility Description: Summary of Findings: Town of Manchester-By-The-Sea

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Cemetery Office	1976	900	$43,399	$207,441	21	$51,065	25
Crowell Chappel	1900	4,688	$46,210	$1,495,284	3	$68,478	5
DPW	1976	6,693	$380,762	$1,542,670	25	$382,749	25
Fire Dept	1974	10,391	$468,239	$2,694,386	17	$480,584	18
Library	1886	6,923	$234,454	$1,736,219	14	$322,632	19
Seaside 1	1885	1,600	$63,357	$329,328	19	$100,946	31
Town Hall/ Police Dept	1970	15,353	$381,061	$3,120,344	12	$528,573	17
WTP	1996	13,172	$147,922	$1,657,038	9	$396,246	24
WWTP	1972	14,766	$243,702	$1,857,563	13	$261,244	14
SUBTOTAL	***-***	***74,486***	***$2,009,106***	***$14,640,273***	***14***	***$2,592,518***	***18***
Site and Infrastructure (excluded from FCI calculations)			$111,375			$111,375	
TOTALS		**74,486**	**$2,120,481**	**$14,640,273**		**$2,703,893**	

Note: The cumulative FCI for the Town of Manchester-By-The-Sea facilities assessed is 14 while the cumulative FCI in 5 years is estimated to be 18 assuming current sustainment levels.

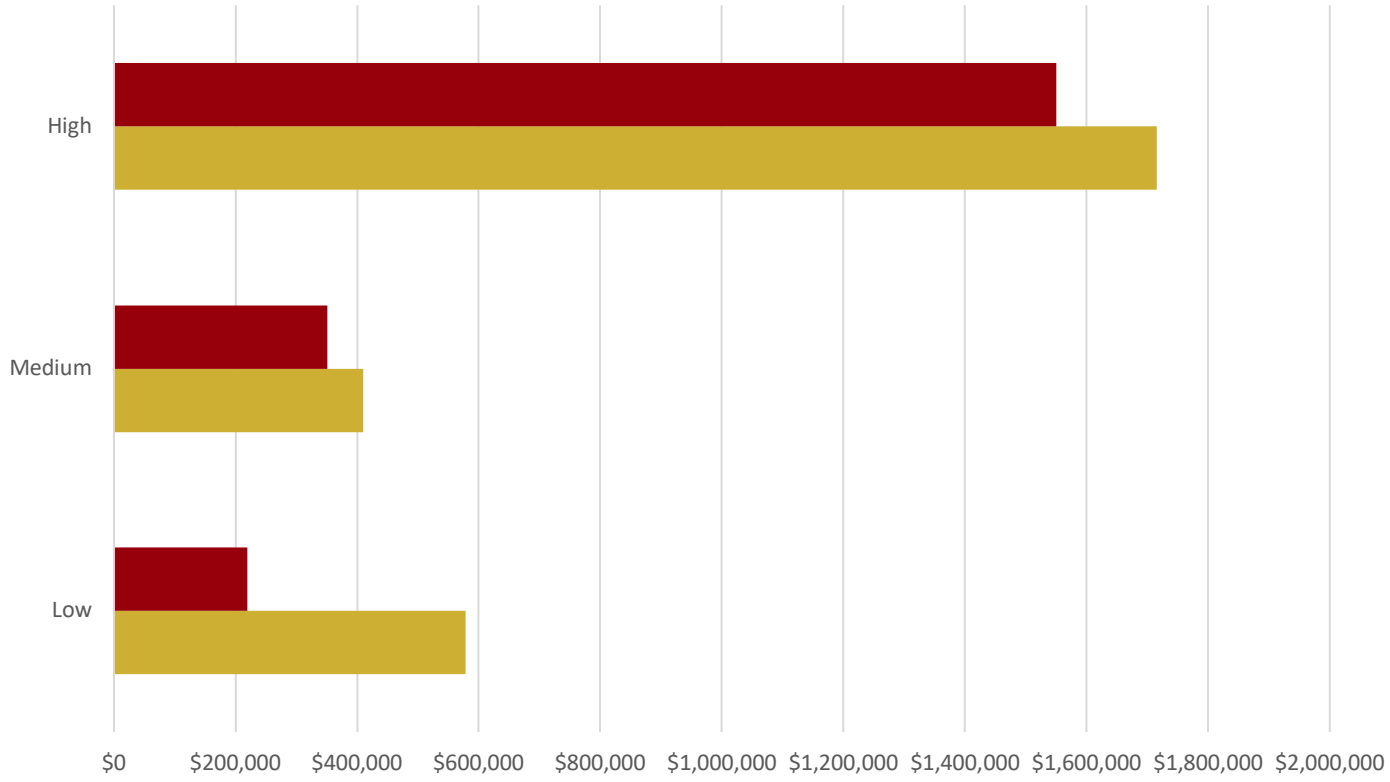
Figure 2. Comparison of 2021 Current Needs vs. 2026 Forecasted Needs by System Group: Town of Manchester-By-The-Sea



	Conveying	Electrical	Exterior Enclosure	HVAC	Interiors	Life Safety	Plumbing	Roofing	Site Infrastructure
2021	$0	$629,448	$133,459	$98,900	$20,872	$527,060	$304,522	$294,844	$111,375
2026	$0	$677,808	$298,073	$193,810	$247,656	$549,328	$330,998	$294,844	$111,375

Note: Forecasted Needs (2026) include Current Needs (2021)

Figure 3. Comparison of 2021 Current Needs vs. 2026 Forecasted Needs by Priority: Town of Manchester-By-The-Sea



	Low	Medium	High
2021	$219,605	$350,624	$1,550,252
2026	$577,927	$410,175	$1,715,790

Renewal Forecast

The renewal forecast below shows the current maintenance and repair backlog and projected facility sustainment requirements over the next 20 years. Please note the renewal forecast does not include potential costs associated with seismic evaluation; seismic retrofitting; hazardous material inspection, evaluation, and mitigation, including asbestos abatement; and NFPA 101 and ADA upgrades. The renewal forecast is shown below:

Figure 4. Current and Forecasted Needs: Summarized by Reporting Period (Current +10 Years): Town of Manchester-By-The-Sea

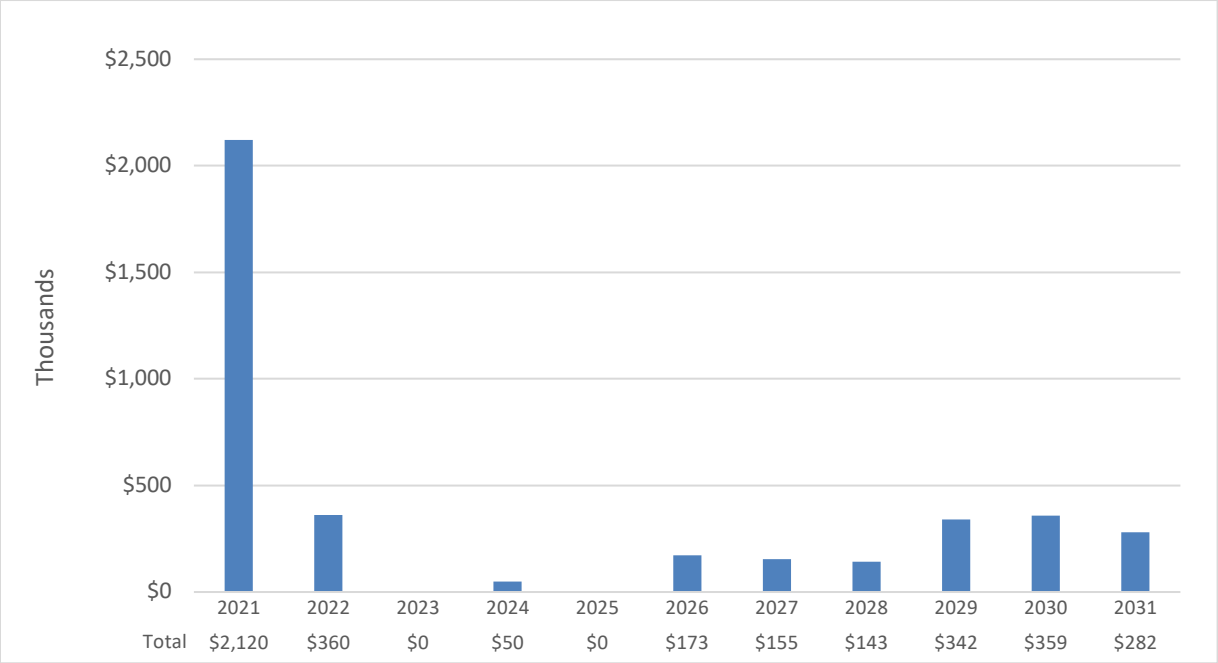


Figure 5. Current and Forecasted Needs: Summarized by Reporting Period (Years 11-20): Town of Manchester-By-The-Sea

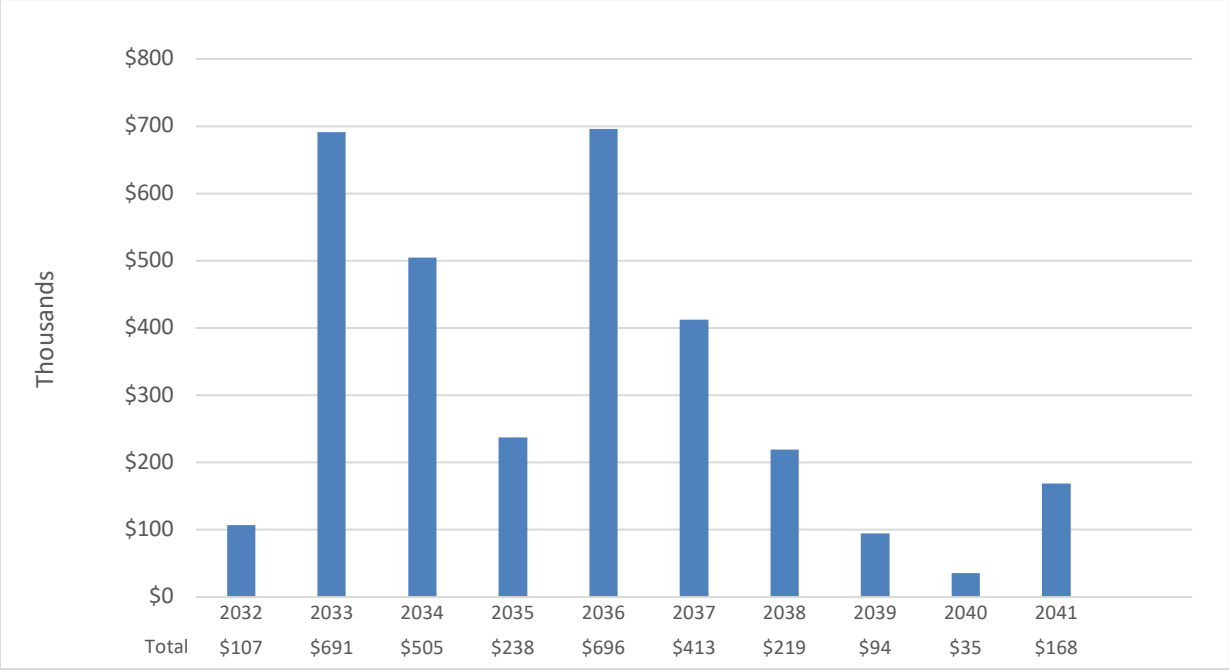


Table 2. Current and Forecasted Needs Summarized by System (Current + 5 years): Town of Manchester-By-The-Sea

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$2,120,481***	***$2,480,527***	***$2,480,527***	***$2,530,483***	***$2,530,483***	***$2,703,893***
Needs by Year	***$2,120,481***	***$360,046***	***$0***	***$49,957***	***$0***	***$173,410***
Exterior Enclosure	**$133,459**	**$164,614**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$105,924	$131,539	$0	$0	$0	$0
Exterior Windows	$27,535	$33,076	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$294,844**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$294,844	$0	$0	$0	$0	$0
Interior Construction	**$16,492**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$16,492	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$4,381**	**$153,256**	**$0**	**$27,689**	**$0**	**$45,839**
Ceiling Finishes	$0	$4,437	$0	$0	$0	$16,896
Floor Finishes	$2,393	$147,750	$0	$0	$0	$0
Wall Finishes	$1,988	$1,069	$0	$27,689	$0	$28,943
Plumbing	**$304,522**	**$8,825**	**$0**	**$0**	**$0**	**$17,650**
Domestic Water Distribution	$112,323	$0	$0	$0	$0	$8,825
Plumbing Fixtures	$0	$8,825	$0	$0	$0	$0
Sanitary Waste	$192,199	$0	$0	$0	$0	$8,825
HVAC	**$98,900**	**$28,985**	**$0**	**$0**	**$0**	**$65,926**
Cooling Generation	$0	$13,365	$0	$0	$0	$0
Distribution System	$98,900	$4,235	$0	$0	$0	$65,926
Heat Generation	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$11,385	$0	$0	$0	$0
Fire Protection	**$527,060**	**$0**	**$0**	**$22,268**	**$0**	**$0**
Fire Alarms	$206,185	$0	$0	$22,268	$0	$0
Sprinklers & Standpipe	$320,875	$0	$0	$0	$0	$0
Electrical	**$629,448**	**$4,365**	**$0**	**$0**	**$0**	**$43,994**
Branch Wiring	$363,984	$0	$0	$0	$0	$43,994
Lighting	$0	$0	$0	$0	$0	$0
Service Distribution	$32,461	$4,365	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$233,003	$0	$0	$0	$0	$0
Site Infrastructure	**$111,375**	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$2,075	$0	$0	$0	$0	$0
Vehicular Pavements	$109,300	$0	$0	$0	$0	$0

Table 3. Current and Forecasted Needs Summarized by System (Years 6 - 10): Town of Manchester-By-The-Sea

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$2,858,599***	***$3,001,607***	***$3,343,259***	***$3,702,520***	***$3,984,193***
Needs by Year	***$154,706***	***$143,009***	***$341,652***	***$359,260***	***$281,673***
Exterior Enclosure	**$0**	**$0**	**$42,556**	**$52,131**	**$9,864**
Exterior Walls (Finishes)	$0	$0	$42,556	$0	$9,864
Exterior Windows	$0	$0	$0	$52,131	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$6,050**	**$0**
Roof Coverings	$0	$0	$0	$6,050	$0
Interior Construction	**$0**	**$0**	**$160,312**	**$0**	**$0**
Interior Doors	$0	$0	$32,974	$0	$0
Specialties	$0	$0	$127,338	$0	$0
Interiors	**$73,031**	**$0**	**$138,784**	**$28,476**	**$67,815**
Ceiling Finishes	$65,405	$0	$0	$28,476	$67,815
Floor Finishes	$0	$0	$138,784	$0	$0
Wall Finishes	$7,626	$0	$0	$0	$0
Plumbing	**$0**	**$19,786**	**$0**	**$180,699**	**$0**
Domestic Water Distribution	$0	$9,893	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$180,699	$0
Sanitary Waste	$0	$9,893	$0	$0	$0
HVAC	**$81,675**	**$73,904**	**$0**	**$91,905**	**$133,210**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$81,675	$73,904	$0	$0	$128,535
Heat Generation	$0	$0	$0	$50,710	$0
Terminal & Package Units	$0	$0	$0	$41,195	$4,675
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$23,123**
Fire Alarms	$0	$0	$0	$0	$23,123
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$49,318**	**$0**	**$0**	**$47,662**
Branch Wiring	$0	$49,318	$0	$0	$0
Lighting	$0	$0	$0	$0	$47,662
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

Table 4. Current and Forecasted Needs Summarized by System (Years 11 - 15): Town of Manchester-By-The-Sea

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$4,091,129***	***$4,781,973***	***$5,286,846***	***$5,524,437***	***$6,220,397***
Needs by Year	***$106,936***	***$690,843***	***$504,874***	***$237,591***	***$695,961***
Exterior Enclosure	**$0**	**$175,729**	**$22,024**	**$0**	**$21,982**
Exterior Walls (Finishes)	$0	$23,928	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$21,982
Exterior Doors	$0	$151,802	$22,024	$0	$0
Roofing	**$0**	**$38,500**	**$45,650**	**$0**	**$92,400**
Roof Coverings	$0	$38,500	$45,650	$0	$92,400
Interior Construction	**$0**	**$389,567**	**$211,035**	**$35,053**	**$0**
Interior Doors	$0	$227,594	$66,008	$0	$0
Specialties	$0	$161,973	$145,027	$35,053	$0
Interiors	**$25,020**	**$87,047**	**$21,802**	**$73,544**	**$65,853**
Ceiling Finishes	$11,006	$0	$21,802	$0	$65,853
Floor Finishes	$14,014	$87,047	$0	$73,544	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$115,548**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$115,548
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$24,640**	**$0**	**$0**	**$6,215**	**$389,180**
Cooling Generation	$0	$0	$0	$0	$243,320
Distribution System	$10,615	$0	$0	$6,215	$0
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$14,025	$0	$0	$0	$145,860
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$57,276**	**$0**	**$204,364**	**$122,778**	**$10,999**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$57,276	$0	$0	$104,554	$10,999
Service Distribution	$0	$0	$147,213	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$57,151	$18,225	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

Table 5. Current and Forecasted Needs Summarized by System (Years 16-20): Town of Manchester-By-The-Sea

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$6,633,139***	***$6,851,957***	***$6,946,184***	***$6,981,577***	***$7,150,027***
Needs by Year	***$412,742***	***$218,819***	***$94,226***	***$35,393***	***$168,450***
Exterior Enclosure	**$16,518**	**$0**	**$0**	**$0**	**$168,450**
Exterior Walls (Finishes)	$0	$0	$0	$0	$121,934
Exterior Windows	$16,518	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$46,516
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$33,169**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$33,169	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$9,893**	**$0**	**$0**	**$33,853**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$9,893	$0	$0	$33,853	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$190,630**	**$10,175**	**$23,463**	**$1,540**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$23,463	$1,540	$0
Heat Generation	$132,055	$0	$0	$0	$0
Terminal & Package Units	$58,575	$10,175	$0	$0	$0
Fire Protection	**$0**	**$159,325**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$159,325	$0	$0	$0
Electrical	**$162,531**	**$49,318**	**$70,763**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$135,472	$49,318	$70,763	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$27,060	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

CEMETERY OFFICE

Table 6: Facility Description: Town of Manchester-By-The-Sea - Cemetery Office

Summary of Findings		
Construction Type	One-Story Structure	
Roof Type	Asphalt Shingle	
Ceiling Type	Painted and Suspended Acoustical Tile	
Lighting	Fluorescent	
HVAC	Unit Heaters	
Elevator	No	
Fire Sprinkler	No	
Fire Alarm	No	

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Cemetery Office	1976	900	$43,399	$207,441	21	$51,065	25
Site Information			$0			$0	
TOTAL			$43,399			$51,065	

General Observations:

- The facility is generally in poor condition. Many of the major building systems were observed to be deteriorated and have exceeded their BOMA recommended useful life. Due to the condition of some systems, a higher level of maintenance will be required to keep systems safe and operational.
- The asphalt shingle roof is beyond its expected useful lifecycle.
- There was no emergency exit lighting present.

Electrical

The electrical branch wiring is beyond its recommended useful life. The fluorescent lighting was in good condition. The service and distribution system was in poor condition due to observed outdated panels.

Exterior Enclosure

The wooden doors were in good condition. The single-pane windows were in poor condition due to observed damaged frames. The wood siding walls were in poor condition due to observed damaged finishes.

Interiors

The vinyl tile floor finishes were in poor condition due to observed damage. The painted wall finishes were in poor condition due to observed damage. The painted ceiling finishes were in good condition; however, the suspended acoustical tile ceilings were in poor condition due to observed damage.

Plumbing

The manual and porcelain plumbing fixtures were in good condition. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 7. Current and Forecasted Needs Summarized by System (Current + 5 years): Cemetery Office

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$43,399***	***$50,263***	***$50,263***	***$50,263***	***$50,263***	***$51,065***
Needs by Year	***$43,399***	***$6,865***	***$0***	***$0***	***$0***	***$802***
Exterior Enclosure	**$19,978**	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$14,474	$0	$0	$0	$0	$0
Exterior Windows	$5,504	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$6,600**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$6,600	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$2,393**	**$2,500**	**$0**	**$0**	**$0**	**$802**
Ceiling Finishes	$0	$1,431	$0	$0	$0	$802
Floor Finishes	$2,393	$0	$0	$0	$0	$0
Wall Finishes	$0	$1,069	$0	$0	$0	$0
Plumbing	**$5,985**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$2,250	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$3,735	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Electrical	**$8,442**	**$4,365**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$8,442	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Service Distribution	$0	$4,365	$0	$0	$0	$0

Table 8. Current and Forecasted Needs Summarized by System (Years 6 - 10): Cemetery Office

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$51,065***	***$51,065***	***$51,065***	***$51,065***	***$59,507***
Needs by Year	***$0***	***$0***	***$0***	***$0***	***$8,442***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Terminal & Package Units	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$8,442**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$8,442
Service Distribution	$0	$0	$0	$0	$0

Table 9. Current and Forecasted Needs Summarized by System (Years 11 - 15): Cemetery Office

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$59,507***	***$87,999***	***$87,999***	***$87,999***	***$105,749***
Needs by Year	***$0***	***$28,492***	***$0***	***$0***	***$17,750***
Exterior Enclosure	**$0**	**$21,998**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$21,998	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$6,494**	**$0**	**$0**	**$0**
Interior Doors	$0	$4,950	$0	$0	$0
Specialties	$0	$1,544	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$6,750**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$6,750
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$11,000**
Terminal & Package Units	$0	$0	$0	$0	$11,000
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0

Table 10. Current and Forecasted Needs Summarized by System (Years 16-20): Cemetery Office

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$105,749***	***$105,749***	***$105,749***	***$105,749***	***$105,749***
Needs by Year	***$0***	***$0***	***$0***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Terminal & Package Units	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0

Table 11. Expired Systems 2021: Town of Manchester-By-The-Sea – Cemetery Office

Building	System Category	System	Priority	2021 Needs
Cemetery Office	Electrical	Branch Wiring	High	$8,442
Cemetery Office	Exterior Enclosure	Exterior Walls (Finishes)	Low	$14,474
Cemetery Office	Exterior Enclosure	Exterior Windows	Medium	$5,504
Cemetery Office	Interiors	Floor Finishes	Low	$2,393
Cemetery Office	Plumbing	Domestic Water Distribution	Medium	$2,250
Cemetery Office	Plumbing	Sanitary Waste	Medium	$3,735
Cemetery Office	Roofing	Roof Coverings	High	$6,600
			TOTAL	**$43,399**

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CROWELL CHAPPEL

Table 12: Facility Description: Town of Manchester-By-The-Sea - Crowell Chappel

Summary of Findings		
Construction Type	One-Story Structure with Basement	
Roof Type	Slate Shingle	
Ceiling Type	Wood	
Lighting	Fluorescent and Incandescent	
HVAC	Furnace	
Elevator	No	
Fire Sprinkler	Yes	
Fire Alarm	Yes	

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Crowell Chappel	1900	4,688	$46,210	$1,495,284	3	$68,478	5
Site Information			$0			$0	
TOTAL			$46,210			$68,478	

General Observations:

- The facility is generally in good condition. The majority of the building systems are within their expected service life. Routine maintenance activities appear to be conducted in an effective manner. Regular maintenance is recommended to assure the useful life of major and minor building systems.
- A renovation occurred in 2015, consisting of updates to the fire sprinkler system, electrical distribution, branch wiring, domestic water distribution, sanitary waste, exit signs, and interior walls.
- The slate shingle roof was reported to be leaking.

Electrical

The electrical branch wiring is within its recommended useful life. The fluorescent and incandescent lighting was in good condition. The service and distribution system was in good condition. The emergency and exit lighting is within its recommended useful life.

Exterior Enclosure

The wooden doors were in good condition. The single-pane windows were in fair condition due to observed deteriorated window sealant. The split-face stone veneer walls were in good condition.

Interiors

The hardwood floor finishes were in good condition. The painted wall finishes were in good condition. The wood ceiling finishes were in good condition.

Plumbing

The manual and porcelain plumbing fixtures were in good condition. The domestic water distribution system is within its recommended useful life. The sanitary waste system is within its recommended useful life.

Table 13. Current and Forecasted Needs Summarized by System (Current + 5 years): Crowell Chappel

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$46,210***	***$46,210***	***$46,210***	***$68,478***	***$68,478***	***$68,478***
Needs by Year	***$46,210***	***$0***	***$0***	***$22,268***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$46,210**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$46,210	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Distribution System	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$22,268**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$22,268	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Lighting	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0	$0

Table 14. Current and Forecasted Needs Summarized by System (Years 6 - 10): Crowell Chappel

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$74,047***	***$74,047***	***$74,047***	***$129,973***	***$129,973***
Needs by Year	***$5,569***	***$0***	***$0***	***$55,926***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$52,131**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$52,131	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$5,569**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$5,569	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Plumbing Fixtures	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$3,795**	**$0**
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$3,795	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0

Table 15. Current and Forecasted Needs Summarized by System (Years 11 - 15): Crowell Chappel

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$181,025***	***$345,321***	***$345,321***	***$355,869***	***$459,384***
Needs by Year	***$51,052***	***$164,296***	***$0***	***$10,548***	***$103,516***
Exterior Enclosure	**$0**	**$30,528**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$23,928	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$6,601	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$46,721**	**$0**	**$0**	**$0**
Interior Doors	$0	$16,502	$0	$0	$0
Specialties	$0	$30,219	$0	$0	$0
Interiors	**$0**	**$87,047**	**$0**	**$0**	**$44,916**
Ceiling Finishes	$0	$0	$0	$0	$44,916
Floor Finishes	$0	$87,047	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$58,600**
Plumbing Fixtures	$0	$0	$0	$0	$58,600
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$51,052**	**$0**	**$0**	**$10,548**	**$0**
Lighting	$51,052	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$10,548	$0

Table 16. Current and Forecasted Needs Summarized by System (Years 16-20): Crowell Chappel

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$459,384***	***$459,384***	***$482,848***	***$482,848***	***$482,848***
Needs by Year	***$0***	***$0***	***$23,463***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Plumbing Fixtures	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$23,463**	**$0**	**$0**
Distribution System	$0	$0	$23,463	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0

Table 17. Expired Systems 2021: Town of Manchester-By-The-Sea – Crowell Chappel

Building	System Category	System	Priority	2021 Needs
Crowell Chappel	Roofing	Roof Coverings	High	$46,210
			TOTAL	**$46,210**

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DPW

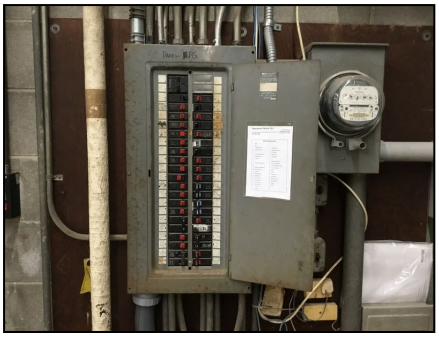
Table 18: Facility Description: Town of Manchester-By-The-Sea - DPW

Summary of Findings		
Construction Type	One-Story Structure	
Roof Type	Metal Panel and Asphalt Shingle	
Ceiling Type	Painted	
Lighting	LED	
HVAC	Unit Heaters	
Elevator	No	
Fire Sprinkler	No	
Fire Alarm	No	

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
DPW	1976	6,693	$380,762	$1,542,670	25	$382,749	25
Site Information			$36,000			$36,000	
TOTAL			$416,762			$418,749	

General Observations:

- The facility is generally in poor condition. Many of the major building systems were observed to be deteriorated and have exceeded their BOMA recommended useful life. Due to the condition of some systems, a higher level of maintenance will be required to keep systems safe and operational.
- The lighting and emergency exit lighting was upgraded to LED in 2017 along with the addition of one office.
- There is a large piece of concrete missing from the restroom floor, diverting water from flowing into the floor drain.
- All rollup doors were replaced in 2016.
- The metal panel and asphalt shingle roof coverings were beyond their recommended useful life, and the asphalt shingle roof had missing shingles.
- The interior metal doors had rusted panels.



Electrical

The electrical branch wiring is beyond its recommended useful life. The LED lighting was in good condition. The service and distribution system was in poor condition due to observed rusted enclosures. The emergency and exit lighting is within its recommended useful life.

Exterior Enclosure

The metal doors were in good condition. The single-pane windows were in poor condition due to observed damaged frames. A portion of the wood siding walls were in good condition; however, a portion of the wood walls and the CMU walls were in poor condition due to observed stained and damaged finishes.

Interiors

The painted wall finishes were in poor condition due to observed stains and damage. The painted ceiling finishes were in good condition.

Plumbing

The manual and porcelain plumbing fixtures were in good condition. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 19. Current and Forecasted Needs Summarized by System (Current + 5 years): DPW

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$416,762***	***$416,762***	***$416,762***	***$416,762***	***$416,762***	***$418,749***
Needs by Year	***$416,762***	***$0***	***$0***	***$0***	***$0***	***$1,988***
Exterior Enclosure	**$35,592**	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$30,071	$0	$0	$0	$0	$0
Exterior Windows	$5,522	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$84,337**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$84,337	$0	$0	$0	$0	$0
Interior Construction	**$16,492**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$16,492	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$1,988**	**$0**	**$0**	**$0**	**$0**	**$1,988**
Ceiling Finishes	$0	$0	$0	$0	$0	$1,988
Wall Finishes	$1,988	$0	$0	$0	$0	$0
Plumbing	**$44,508**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$16,733	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$27,776	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$102,604**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$39,020	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$63,584	$0	$0	$0	$0	$0
Electrical	**$95,241**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$62,780	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Service Distribution	$32,461	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0	$0
Site Infrastructure	**$36,000**	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$36,000	$0	$0	$0	$0	$0

Table 20. Current and Forecasted Needs Summarized by System (Years 6 - 10): DPW

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$418,749***	***$418,749***	***$418,749***	***$418,749***	***$428,613***
Needs by Year	***$0***	***$0***	***$0***	***$0***	***$9,864***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$9,864**
Exterior Walls (Finishes)	$0	$0	$0	$0	$9,864
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 21. Current and Forecasted Needs Summarized by System (Years 11 - 15): DPW

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$428,613***	***$472,640***	***$472,640***	***$472,640***	***$528,337***
Needs by Year	***$0***	***$44,027***	***$0***	***$0***	***$55,698***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$44,027**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$44,027	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$50,198**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$50,198
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$5,500**
Terminal & Package Units	$0	$0	$0	$0	$5,500
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 22. Current and Forecasted Needs Summarized by System (Years 16-20): DPW

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$626,024***	***$631,524***	***$631,524***	***$631,524***	***$678,040***
Needs by Year	***$97,686***	***$5,500***	***$0***	***$0***	***$46,516***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$46,516**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$46,516
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$16,500**	**$5,500**	**$0**	**$0**	**$0**
Terminal & Package Units	$16,500	$5,500	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$81,186**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$62,780	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$18,406	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 23. Expired Systems 2021: Town of Manchester-By-The-Sea – DPW

Building	System Category	System	Priority	2021 Needs
DPW	Electrical	Branch Wiring	High	$62,780
DPW	Electrical	Service Distribution	High	$32,461
DPW	Exterior Enclosure	Exterior Walls (Finishes)	Low	$9,864
DPW	Exterior Enclosure	Exterior Walls (Finishes)	Low	$20,206
DPW	Exterior Enclosure	Exterior Windows	Medium	$5,522
DPW	Fire Protection	Fire Alarms	High	$39,020
DPW	Fire Protection	Sprinklers & Standpipe	High	$63,584
DPW	Interior Construction	Interior Doors	Medium	$16,492
DPW	Interiors	Wall Finishes	Low	$1,988
DPW	Plumbing	Domestic Water Distribution	Medium	$16,733
DPW	Plumbing	Sanitary Waste	Medium	$27,776
DPW	Roofing	Roof Coverings	High	$4,675
DPW	Roofing	Roof Coverings	High	$79,662
			TOTAL	**$380,762**

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Site and Infrastructure Assessment Findings

Site General Condition

The following site conditions and/or deficiencies were observed during the assessment.

• The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

Site Improvements

A site infrastructure condition assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

• Good condition

• Poor condition and in need of repair

• Poor condition and in need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth aerial photographs were used in lieu of site plans. The site assessment was performed, and the subsequent results grouped by location. Findings for each location were divided as follows:

• Pedestrian Pavements

• Vehicular Pavements

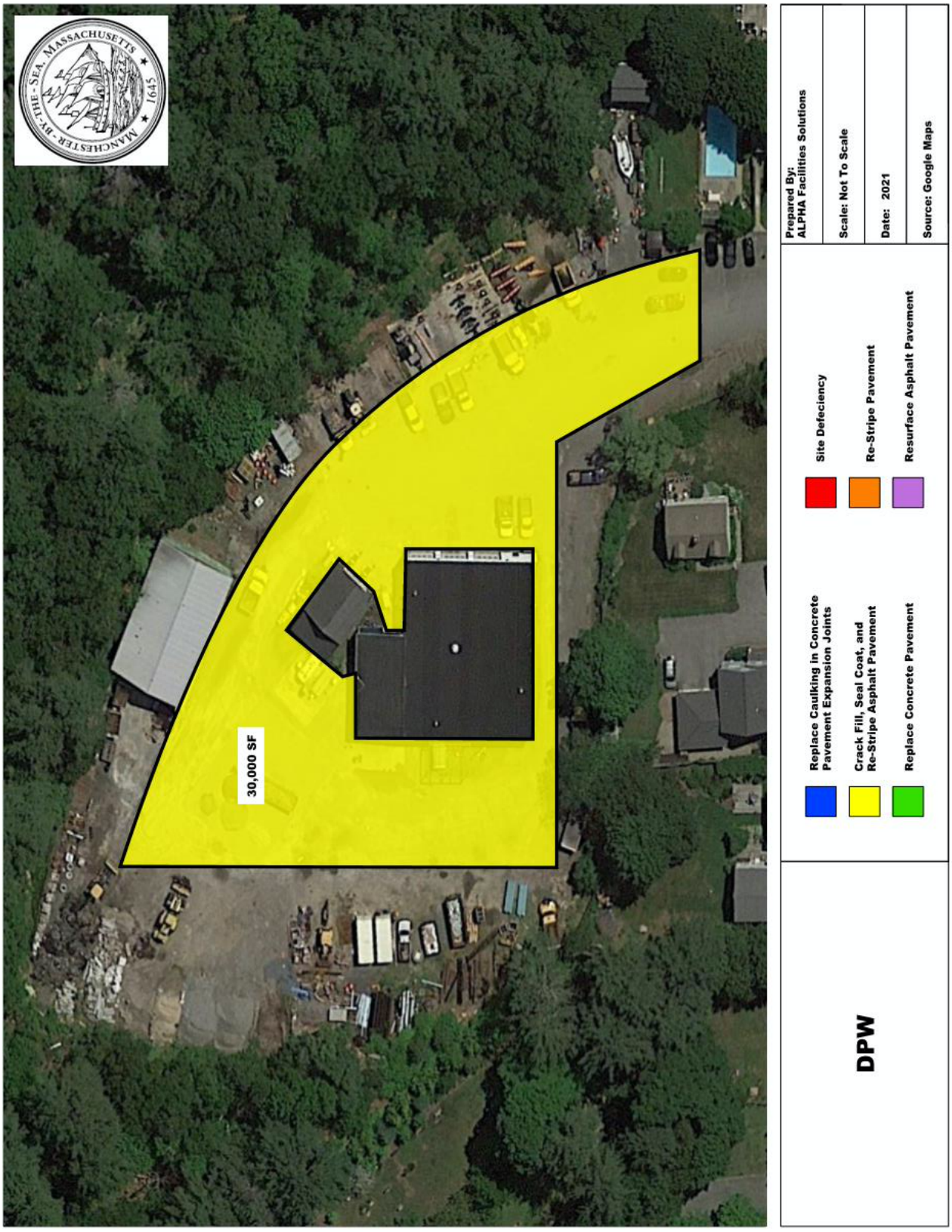
• Site Development

Please note that not all locations have all of the various infrastructure systems present. We determined unit pricing for the various deficiency requirements by referencing 2021 RS Means Building Construction Cost Data and Assembly Cost Data when available. Industry sources were used as a supplemental source for unit pricing when needed.

Table 24. Summary of 2021 Site and Infrastructure Deficiencies: DPW

Asset Description	Corrective Action	Notes	Priority	Current Needs	Year
Vehicular Pavements	Crack Fill, Seal Coat, and Restripe Asphalt Pavements	30000 SF @ $1.2 Per SF	Low	$36,000	2021
			Total 2021 Needs	**$36,000**	

Figure 6. Site and Infrastructure Deficiencies Markup: DPW



Site Infrastructure

The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

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FIRE DEPT

Table 25: Facility Description: Town of Manchester-By-The-Sea - Fire Dept

Summary of Findings	
Construction Type	One-Story Structure with Basement
Roof Type	Asphalt Shingle
Ceiling Type	Cement-Fiber Panelboards and Suspended Acoustical Tile
Lighting	LED
HVAC	Unit Heaters and Boilers
Elevator	No
Fire Sprinkler	No
Fire Alarm	No

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Fire Dept	1974	10,391	$468,239	$2,694,386	17	$480,584	18
Site Information			$13,300			$13,300	
TOTAL			$481,539			$493,884	

General Observations:

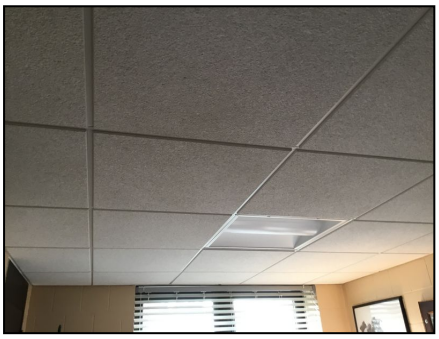
- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- The asphalt shingle roof, carpet, suspended acoustical tile, electrical service and distribution, and emergency exit lighting were renovated in 2014.
- The HVAC distribution is beyond its expected useful service life.
- The lighting was upgraded to LED in 2019.

Electrical

The electrical branch wiring is beyond its recommended useful life. The LED lighting was in good condition. The service and distribution system was in good condition. The emergency and exit lighting is within its recommended useful life.

Exterior Enclosure

The metal doors were in good condition. The single-pane windows were in good condition. The brick veneer walls were in poor condition due to observed efflorescence and stained finishes.



Interiors

The carpet floor finishes were in good condition. The painted wall finishes were in good condition. The cement-fiber panel board and suspended acoustical tile ceiling finishes were in good condition.

Plumbing

The manual and porcelain plumbing fixtures were in fair condition due to observed rust. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 26. Current and Forecasted Needs Summarized by System (Current + 5 years): Fire Dept

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$481,539***	***$481,539***	***$481,539***	***$481,539***	***$481,539***	***$493,884***
Needs by Year	***$481,539***	***$0***	***$0***	***$0***	***$0***	***$12,345***
Exterior Enclosure	**$61,380**	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$61,380	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**	**$12,345**
Ceiling Finishes	$0	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0	$12,345
Plumbing	**$143,188**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$62,658	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$80,530	$0	$0	$0	$0	$0
HVAC	**$52,007**	**$0**	**$0**	**$0**	**$0**	**$0**
Distribution System	$52,007	$0	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$140,902**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$27,121	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$113,781	$0	$0	$0	$0	$0
Electrical	**$70,763**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$70,763	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0	$0
Site Infrastructure	**$13,300**	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$13,300	$0	$0	$0	$0	$0

Table 27. Current and Forecasted Needs Summarized by System (Years 6 - 10): Fire Dept

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$493,884***	***$493,884***	***$521,645***	***$723,536***	***$767,877***
Needs by Year	***$0***	***$0***	***$27,761***	***$201,891***	***$44,341***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$27,761**	**$0**	**$44,341**
Ceiling Finishes	$0	$0	$0	$0	$44,341
Floor Finishes	$0	$0	$27,761	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$113,781**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$113,781	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$88,110**	**$0**
Distribution System	$0	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$50,710	$0
Terminal & Package Units	$0	$0	$0	$37,400	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 28. Current and Forecasted Needs Summarized by System (Years 11 - 15): Fire Dept

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$772,277***	***$935,499***	***$1,060,101***	***$1,060,101***	***$1,076,561***
Needs by Year	***$4,400***	***$163,222***	***$124,602***	***$0***	***$16,459***
Exterior Enclosure	**$0**	**$44,006**	**$0**	**$0**	**$16,459**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$16,459
Exterior Doors	$0	$44,006	$0	$0	$0
Roofing	**$0**	**$0**	**$45,650**	**$0**	**$0**
Roof Coverings	$0	$0	$45,650	$0	$0
Interior Construction	**$0**	**$119,216**	**$0**	**$0**	**$0**
Interior Doors	$0	$33,033	$0	$0	$0
Specialties	$0	$86,183	$0	$0	$0
Interiors	**$0**	**$0**	**$21,802**	**$0**	**$0**
Ceiling Finishes	$0	$0	$21,802	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$4,400**	**$0**	**$0**	**$0**	**$0**
Distribution System	$4,400	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$57,151**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$57,151	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 29. Current and Forecasted Needs Summarized by System (Years 16-20): Fire Dept

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$1,076,561***	***$1,076,561***	***$1,147,323***	***$1,147,323***	***$1,147,323***
Needs by Year	***$0***	***$0***	***$70,763***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Distribution System	$0	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$70,763**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$70,763	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 30. Expired Systems 2021: Town of Manchester-By-The-Sea – Fire Dept

Building	System Category	System	Priority	2021 Needs
Fire Dept	Electrical	Branch Wiring	High	$70,763
Fire Dept	Exterior Enclosure	Exterior Walls (Finishes)	Low	$61,380
Fire Dept	Fire Protection	Fire Alarms	High	$27,121
Fire Dept	Fire Protection	Sprinklers & Standpipe	High	$113,781
Fire Dept	HVAC	Distribution System	High	$52,007
Fire Dept	Plumbing	Domestic Water Distribution	Medium	$62,658
Fire Dept	Plumbing	Sanitary Waste	Medium	$80,530
			TOTAL	**$468,239**

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Site and Infrastructure Assessment Findings

Site General Condition

The following site conditions and/or deficiencies were observed during the assessment.

• The asphalt pavements were in poor condition and in need of resurfacing as longitudinal cracking, transverse cracking, and degradation were observed throughout the pavement.

Site Improvements

A site infrastructure condition assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

• Good condition

• Poor condition and in need of repair

• Poor condition and in need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth aerial photographs were used in lieu of site plans. The site assessment was performed, and the subsequent results grouped by location. Findings for each location were divided as follows:

• Pedestrian Pavements

• Vehicular Pavements

• Site Development

Please note that not all locations have all of the various infrastructure systems present. We determined unit pricing for the various deficiency requirements by referencing 2021 RS Means Building Construction Cost Data and Assembly Cost Data when available. Industry sources were used as a supplemental source for unit pricing when needed.

Table 31. Summary of 2021 Site and Infrastructure Deficiencies: Fire Dept

Asset Description	Corrective Action	Notes	Priority	Current Needs	Year
Vehicular Pavements	Resurface Asphalt Pavements	3800 SF @ $3.5 Per SF	Low	$13,300	2021
			Total 2021 Needs	**$13,300**	

Figure 7. Site and Infrastructure Deficiencies Markup: Fire Dept

Site Infrastructure

The asphalt pavements were in poor condition and in need of resurfacing as longitudinal cracking, transverse cracking, and degradation were observed throughout the pavement.

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LIBRARY

Table 32: Facility Description: Town of Manchester-By-The-Sea - Library

Summary of Findings	
Construction Type	Two-Story Structure with Basement
Roof Type	Slate Shingle
Ceiling Type	Wood, Painted and Suspended Acoustical Tile
Lighting	Fluorescent
HVAC	Split-DX and Radiant Heat
Elevator	No
Fire Sprinkler	No
Fire Alarm	Yes

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Library	1886	6,923	$234,454	$1,736,219	14	$322,632	19
Site Information			$325			$325	
TOTAL			$234,779			$322,957	

General Observations:

- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- The casework, carpet, wooden ceilings, and painted walls were renovated in 2006. The children's area had an architectural renovation to the interior floors, walls and ceiling finishes in 2012. The fire alarm detection system was replaced in 2016. The lightning, emergency exit lighting, electrical distribution, and architectural finishes in the office area were upgraded in 2017.
- The HVAC distribution is beyond its expected useful service life, and the air handler in the basement was not functioning.
- The slate shingle roof is beyond its expected useful service life.

Electrical

The electrical branch wiring is beyond its recommended useful life. The fluorescent lighting was in good condition. The service and distribution system was in good condition. The emergency and exit lighting is within its recommended useful life.

Exterior Enclosure

The wooden and metal doors were in good condition. The single-pane windows were in poor condition due to observed deteriorated window sealant. The split-face stone veneer walls were in poor condition due to observed biological growth.

Interiors

The carpet floor finishes were in good condition. The painted wall finishes were in good condition; however, a portion of the walls were in fair condition due to observed damage and cracking above the windows. The wood ceiling finishes were in good condition; however, the painted ceilings were in poor condition due to observed stains and damage.

Plumbing

The manual and porcelain plumbing fixtures were in good condition. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 33. Current and Forecasted Needs Summarized by System (Current + 5 years): Library

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$234,779***	***$318,844***	***$318,844***	***$322,957***	***$322,957***	***$322,957***
Needs by Year	***$234,779***	***$84,065***	***$0***	***$4,113***	***$0***	***$0***
Exterior Enclosure	**$0**	**$63,969**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$47,443	$0	$0	$0	$0
Exterior Windows	$0	$16,525	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$79,817**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$79,817	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$2,056**	**$0**	**$4,113**	**$0**	**$0**
Ceiling Finishes	$0	$2,056	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$4,113	$0	$0
Plumbing	**$43,061**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$16,823	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$26,238	$0	$0	$0	$0	$0
HVAC	**$38,885**	**$18,040**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$4,455	$0	$0	$0	$0
Distribution System	$38,885	$4,235	$0	$0	$0	$0
Terminal & Package Units	$0	$9,350	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0	$0
Electrical	**$72,692**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$72,692	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0	$0
Site Infrastructure	**$325**	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$325	$0	$0	$0	$0	$0

Table 34. Current and Forecasted Needs Summarized by System (Years 6 - 10): Library

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$325,014***	***$325,014***	***$400,030***	***$400,030***	***$423,153***
Needs by Year	***$2,056***	***$0***	***$75,017***	***$0***	***$23,123***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$32,974**	**$0**	**$0**
Interior Doors	$0	$0	$32,974	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$2,056**	**$0**	**$42,043**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$42,043	$0	$0
Wall Finishes	$2,056	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$23,123**
Fire Alarms	$0	$0	$0	$0	$23,123
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0

Table 35. Current and Forecasted Needs Summarized by System (Years 11 - 15): Library

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$448,173***	***$454,798***	***$454,798***	***$484,695***	***$484,695***
Needs by Year	***$25,020***	***$6,625***	***$0***	***$29,897***	***$0***
Exterior Enclosure	**$0**	**$6,625**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$6,625	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$29,897**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$29,897	$0
Interiors	**$25,020**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$11,006	$0	$0	$0	$0
Floor Finishes	$14,014	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0

Table 36. Current and Forecasted Needs Summarized by System (Years 16-20): Library

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$599,210***	***$599,210***	***$599,210***	***$633,063***	***$633,063***
Needs by Year	***$114,515***	***$0***	***$0***	***$33,853***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$33,169**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$33,169	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$33,853**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$33,853	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$81,345**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$72,692	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$8,654	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0

Table 37. Expired Systems 2021: Town of Manchester-By-The-Sea – Library

Building	System Category	System	Priority	2021 Needs
Library	Electrical	Branch Wiring	High	$72,692
Library	HVAC	Distribution System	High	$4,235
Library	HVAC	Distribution System	High	$34,650
Library	Plumbing	Domestic Water Distribution	Medium	$16,823
Library	Plumbing	Sanitary Waste	Medium	$26,238
Library	Roofing	Roof Coverings	High	$79,817
			TOTAL	**$234,454**

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Site and Infrastructure Assessment Findings

Site General Condition

The following site conditions and/or deficiencies were observed during the assessment.

• Replacement of the sealant in the expansion joints as part of routine maintenance would extend the overall life of the concrete pedestrian walkways.

Site Improvements

A site infrastructure condition assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

• Good condition

• Poor condition and in need of repair

• Poor condition and in need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth aerial photographs were used in lieu of site plans. The site assessment was performed, and the subsequent results grouped by location. Findings for each location were divided as follows:

• Pedestrian Pavements

• Vehicular Pavements

• Site Development

Please note that not all locations have all of the various infrastructure systems present. We determined unit pricing for the various deficiency requirements by referencing 2021 RS Means Building Construction Cost Data and Assembly Cost Data when available. Industry sources were used as a supplemental source for unit pricing when needed.

Table 38. Summary of 2021 Site and Infrastructure Deficiencies: Library

Asset Description	Corrective Action	Notes	Priority	Current Needs	Year
Pedestrian Pavements	Replace Caulking in Concrete Pavements	500 SF @ $0.65 Per SF	Medium	$325	2021
			Total 2021 Needs	**$325**	

Figure 8. Site and Infrastructure Deficiencies Markup: Library

Site Infrastructure

Replacement of the sealant in the expansion joints as part of routine maintenance would extend the overall life of the concrete pedestrian walkways.

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SEASIDE 1

Table 39: Facility Description: Town of Manchester-By-The-Sea - Seaside 1

Summary of Findings		
Construction Type	Two-Story Structure	
Roof Type	Asphalt Shingle	
Ceiling Type	Painted	
Lighting	Fluorescent	
HVAC	Split-DX	
Elevator	No	
Fire Sprinkler	No	
Fire Alarm	Yes	

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Seaside 1	1885	1,600	$63,357	$329,328	19	$100,946	31
Site Information			$0			$0	
TOTAL			$63,357			$100,946	

General Observations:

- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- The lighting was upgraded to fluorescent and the electrical distribution panels were replaced in 2007.
- The exterior wood siding will be repainted in 2021.
- The HVAC distribution was beyond its expected useful service life.
- The bottom floor's casework, wall and ceiling finishes were renovated in 1999 when the floor was converted into a museum.
- The second story's wall and ceiling finishes were renovated in 2009.

Electrical

The electrical branch wiring is beyond its recommended useful life. The system was observed to contain functioning GFCI plugs. The fluorescent lighting was in good condition. The service and distribution system was in good condition.

Exterior Enclosure

The wooden doors were in good condition. The single-pane windows were in poor condition due to observed damaged frames and deteriorated window sealant. The wood siding walls were in poor condition due to observed damaged finishes.

Interiors

The hardwood floor finishes were in fair condition due to observed deterioration. The painted wall finishes were in good condition; however, a portion of the walls were in fair condition due to observed damage. The painted ceiling finishes were in good condition; however, a portion of the finishes were in poor condition due to observed stains.

Plumbing

The manual and porcelain plumbing fixtures were in good condition; however, a portion of the fixtures were in fair condition due to observed mineral build-up. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 40. Current and Forecasted Needs Summarized by System (Current + 5 years): Seaside 1

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$63,357***	***$98,095***	***$98,095***	***$99,045***	***$99,045***	***$100,946***
Needs by Year	***$63,357***	***$34,738***	***$0***	***$950***	***$0***	***$1,901***
Exterior Enclosure	**$16,509**	**$27,298**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$27,298	$0	$0	$0	$0
Exterior Windows	$16,509	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$950**	**$0**	**$950**	**$0**	**$1,901**
Ceiling Finishes	$0	$950	$0	$0	$0	$950
Floor Finishes	$0	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$950	$0	$950
Plumbing	**$6,368**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$2,192	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$4,176	$0	$0	$0	$0	$0
HVAC	**$8,008**	**$6,490**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$4,455	$0	$0	$0	$0
Distribution System	$8,008	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$2,035	$0	$0	$0	$0
Fire Protection	**$18,424**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$5,568	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$12,856	$0	$0	$0	$0	$0
Electrical	**$14,048**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$14,048	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0

Table 41. Current and Forecasted Needs Summarized by System (Years 6 - 10): Seaside 1

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$100,946***	***$100,946***	***$130,655***	***$140,061***	***$146,285***
Needs by Year	***$0***	***$0***	***$29,709***	***$9,406***	***$6,224***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$6,050**	**$0**
Roof Coverings	$0	$0	$0	$6,050	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$29,709**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$29,709	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$3,356**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$3,356	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$6,224**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$6,224

Table 42. Current and Forecasted Needs Summarized by System (Years 11 - 15): Seaside 1

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$152,509***	***$175,618***	***$180,774***	***$185,931***	***$185,931***
Needs by Year	***$6,224***	***$23,109***	***$5,157***	***$5,157***	***$0***
Exterior Enclosure	**$0**	**$6,600**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$6,600	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$16,509**	**$5,157**	**$5,157**	**$0**
Interior Doors	$0	$16,509	$0	$0	$0
Specialties	$0	$0	$5,157	$5,157	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$6,224**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$6,224	$0	$0	$0	$0

Table 43. Current and Forecasted Needs Summarized by System (Years 16-20): Seaside 1

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$185,931***	***$190,606***	***$190,606***	***$190,606***	***$190,606***
Needs by Year	***$0***	***$4,675***	***$0***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$4,675**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$4,675	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0

Table 44. Expired Systems 2021: Town of Manchester-By-The-Sea – Seaside 1

Building	System Category	System	Priority	2021 Needs
Seaside 1	Electrical	Branch Wiring	High	$14,048
Seaside 1	Exterior Enclosure	Exterior Windows	Medium	$16,509
Seaside 1	Fire Protection	Fire Alarms	High	$5,568
Seaside 1	Fire Protection	Sprinklers & Standpipe	High	$12,856
Seaside 1	HVAC	Distribution System	High	$8,008
Seaside 1	Plumbing	Domestic Water Distribution	Medium	$2,192
Seaside 1	Plumbing	Sanitary Waste	Medium	$4,176
			TOTAL	**$63,357**

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TOWN HALL/ POLICE DEPT

Table 45: Facility Description: Town of Manchester-By-The-Sea - Town Hall/ Police Dept

Summary of Findings	
Construction Type	Two-Story Structure with Basement
Roof Type	Asphalt Shingle
Ceiling Type	Suspended and Adhered Acoustical Tile
Lighting	LED
HVAC	Variable Refrigerant Split System
Elevator	Yes
Fire Sprinkler	No
Fire Alarm	No

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
Town Hall/ Police Dept	1970	15,353	$381,061	$3,120,344	12	$528,573	17
Site Information			$37,750			$37,750	
TOTAL			$418,811			$566,323	

General Observations:

- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- The lighting was upgraded to LED in 2015, and the electrical distribution was being updated at the time of assessment.
- The electric baseboard heating system was being replaced by the VRF Split system at the time of assessment.
- There were no fire protection systems present, but the client expressed a need for them to be added.
- It was reported by the client that the linoleum flooring is asbestos backed, additional testing is recommended.
- The exterior wheelchair ramp and brick sidewalk were replaced in 2020, and the exterior stairs leading to the main entrance needs a mortar replacement.

Electrical

The electrical branch wiring is beyond its recommended useful life. The system was observed to contain motion sensor switches and functioning GFCI plugs. The LED lighting was in good condition. The service and distribution system was in fair condition due to observed outdated panels; however, a portion of the system was in good condition. The emergency and exit lighting is within its recommended useful life.

Exterior Enclosure

The metal doors were in good condition. The single-pane windows were in poor condition due to observed deteriorated window sealant. The brick veneer walls were in good condition.

Interiors

The vinyl tile and carpet floor finishes were in poor condition due to observed damage and stains. The painted wall finishes were in fair condition due to observed stains and damage. The suspended acoustical tile and adhered acoustical tile ceiling finishes were in fair condition due to observed deterioration and deterioration.

Plumbing

The manual and porcelain plumbing fixtures were in fair condition due to observed rust and malfunctioning hardware that cause the fixtures to continuously flush. The domestic water distribution system is beyond its recommended useful life. The sanitary waste system is beyond its recommended useful life.

Table 46. Current and Forecasted Needs Summarized by System (Current + 5 years): Town Hall/ Police Dept

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$418,811***	***$548,084***	***$548,084***	***$566,323***	***$566,323***	***$566,323***
Needs by Year	***$418,811***	***$129,273***	***$0***	***$18,239***	***$0***	***$0***
Exterior Enclosure	**$0**	**$16,551**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0	$0
Exterior Windows	$0	$16,551	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$112,722**	**$0**	**$18,239**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0	$0
Floor Finishes	$0	$112,722	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$18,239	$0	$0
Plumbing	**$61,412**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$11,668	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$49,744	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$184,390**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$53,736	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$130,654	$0	$0	$0	$0	$0
Electrical	**$135,260**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$135,260	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0	$0
Site Infrastructure	**$37,750**	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$1,750	$0	$0	$0	$0	$0
Vehicular Pavements	$36,000	$0	$0	$0	$0	$0

Table 47. Current and Forecasted Needs Summarized by System (Years 6 - 10): Town Hall/ Police Dept

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$631,728***	***$631,728***	***$759,066***	***$851,103***	***$851,103***
Needs by Year	***$65,405***	***$0***	***$127,338***	***$92,037***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$127,338**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$127,338	$0	$0
Interiors	**$65,405**	**$0**	**$0**	**$28,476**	**$0**
Ceiling Finishes	$65,405	$0	$0	$28,476	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$63,561**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$63,561	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

Table 48. Current and Forecasted Needs Summarized by System (Years 11 - 15): Town Hall/ Police Dept

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$855,778***	***$1,072,834***	***$1,132,190***	***$1,317,964***	***$1,690,644***
Needs by Year	***$4,675***	***$217,055***	***$59,356***	***$185,774***	***$372,680***
Exterior Enclosure	**$0**	**$21,955**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$21,955	$0	$0	$0
Roofing	**$0**	**$38,500**	**$0**	**$0**	**$0**
Roof Coverings	$0	$38,500	$0	$0	$0
Interior Construction	**$0**	**$156,601**	**$0**	**$0**	**$0**
Interior Doors	$0	$156,601	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$73,544**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$73,544	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$4,675**	**$0**	**$0**	**$0**	**$372,680**
Cooling Generation	$0	$0	$0	$0	$243,320
Distribution System	$0	$0	$0	$0	$0
Terminal & Package Units	$4,675	$0	$0	$0	$129,360
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$59,356**	**$112,230**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$104,554	$0
Service Distribution	$0	$0	$59,356	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$7,677	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

Table 49. Current and Forecasted Needs Summarized by System (Years 16-20): Town Hall/ Police Dept

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$1,690,644***	***$1,690,644***	***$1,690,644***	***$1,692,184***	***$1,814,117***
Needs by Year	***$0***	***$0***	***$0***	***$1,540***	***$121,934***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$121,934**
Exterior Walls (Finishes)	$0	$0	$0	$0	$121,934
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$1,540**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$1,540	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Pedestrian Pavements	$0	$0	$0	$0	$0
Vehicular Pavements	$0	$0	$0	$0	$0

Table 50. Expired Systems 2021: Town of Manchester-By-The-Sea – Town Hall/ Police Dept

Building	System Category	System	Priority	2021 Needs
Town Hall/ Police Dept	Electrical	Branch Wiring	High	$135,260
Town Hall/ Police Dept	Fire Protection	Fire Alarms	High	$53,736
Town Hall/ Police Dept	Fire Protection	Sprinklers & Standpipe	High	$130,654
Town Hall/ Police Dept	Plumbing	Domestic Water Distribution	Medium	$11,668
Town Hall/ Police Dept	Plumbing	Sanitary Waste	Medium	$49,744
			TOTAL	**$381,061**

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Site and Infrastructure Assessment Findings

Site General Condition

The following site conditions and/or deficiencies were observed during the assessment.

• The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

• The asphalt sidewalks were in poor condition and in need of resurfacing as longitudinal cracking, transverse cracking, and degradation were observed throughout the pavement.

Site Improvements

A site infrastructure condition assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

• Good condition

• Poor condition and in need of repair

• Poor condition and in need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth aerial photographs were used in lieu of site plans. The site assessment was performed, and the subsequent results grouped by location. Findings for each location were divided as follows:

• Pedestrian Pavements

• Vehicular Pavements

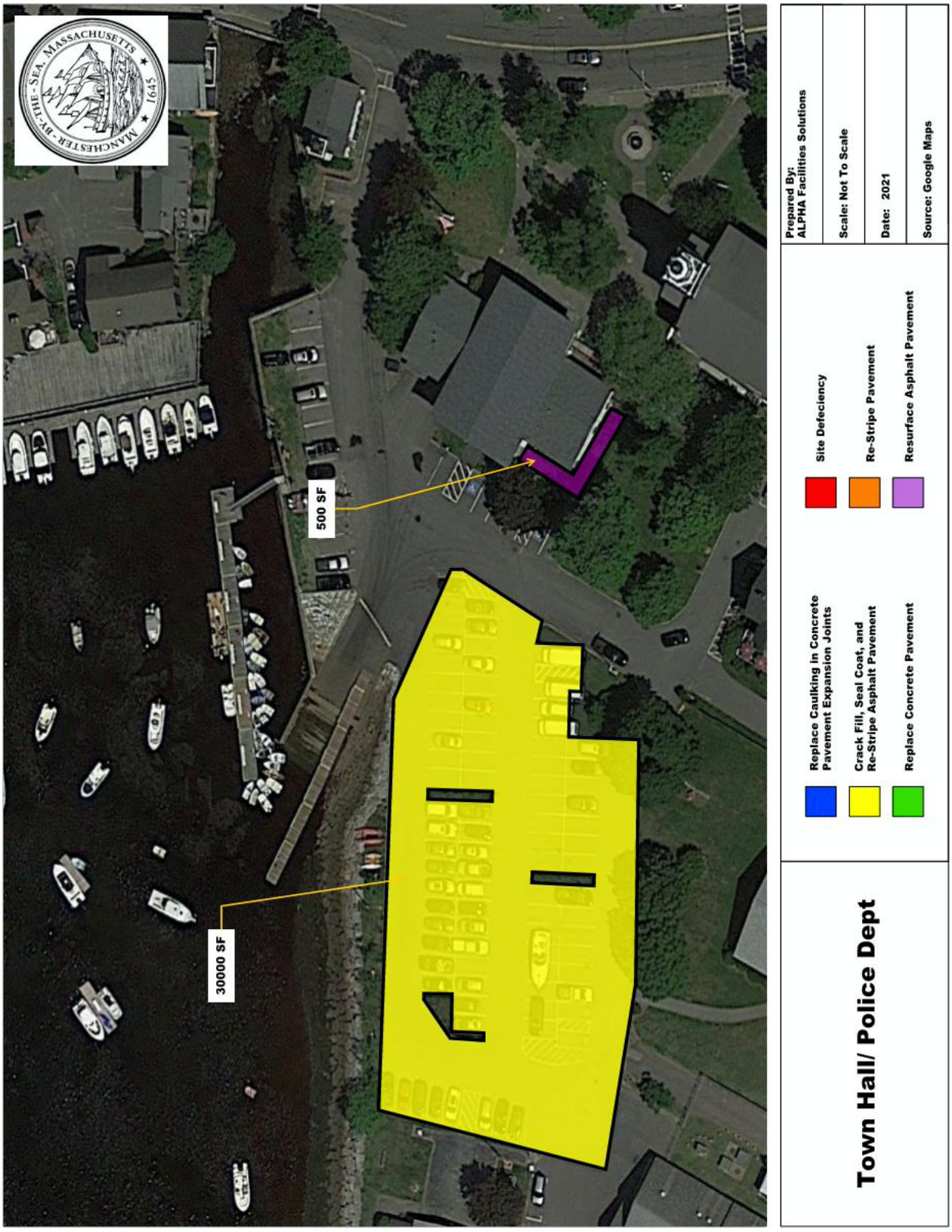
• Site Development

Please note that not all locations have all of the various infrastructure systems present. We determined unit pricing for the various deficiency requirements by referencing 2021 RS Means Building Construction Cost Data and Assembly Cost Data when available. Industry sources were used as a supplemental source for unit pricing when needed.

Table 51. Summary of 2021 Site and Infrastructure Deficiencies: Town Hall/ Police Dept

Asset Description	Corrective Action	Notes	Priority	Current Needs	Year
Pedestrian Pavements	Resurface Asphalt Pavements	500 SF @ $3.5 Per SF	Medium	$1,750	2021
Vehicular Pavements	Crack Fill, Seal Coat, and Restripe Asphalt Pavements	30000 SF @ $1.2 Per SF	Low	$36,000	2021
			Total 2021 Needs	**$37,750**	

Figure 9. Site and Infrastructure Deficiencies Markup: Town Hall/ Police Dept



Site Infrastructure

The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

Site Infrastructure

The asphalt sidewalks were in poor condition and in need of resurfacing as longitudinal cracking, transverse cracking, and degradation were observed throughout the pavement.

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WTP

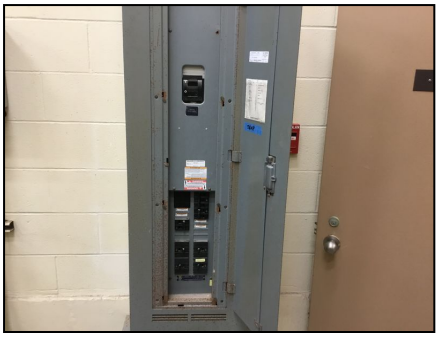
Table 52: Facility Description: Town of Manchester-By-The-Sea - WTP

Summary of Findings		
Construction Type	One-Story Structure	
Roof Type	Asphalt Shingle	
Ceiling Type	Suspended Acoustical Tile	
Lighting	LED and Fluorescent	
HVAC	Split-DX and Unit Heaters	
Elevator	No	
Fire Sprinkler	Yes	
Fire Alarm	Yes	

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
WTP	1996	13,172	$147,922	$1,657,038	9	$396,246	24
Site Information			$24,000			$24,000	
TOTAL			$171,922			$420,246	

General Observations:

- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- The asphalt shingle roof was replaced in 2016 due to snow damage.
- The fire sprinkler system was replaced in 2018, and the fire alarm panel was beyond its expected useful life.
- In 2016, the lighting was partially upgraded to LED and the suspended acoustical tile ceiling was replaced.



Electrical

The electrical branch wiring is within its recommended useful life. The system was observed to contain functioning GFCI plugs. The LED and fluorescent lighting was in good condition. The service and distribution system was in fair condition due to observed rusted enclosures. The emergency and exit lighting is beyond its recommended useful life.

Exterior Enclosure

The metal and glazed doors were in good condition. The double-pane windows were in good condition. The split-face stone veneer walls were in poor condition due to observed stained finishes.

Interiors

The vinyl tile floor finishes were in poor condition due to observed damage and stains. The painted wall finishes were in good condition. The suspended acoustical tile ceiling finishes were in good condition.

Plumbing

The manual and manual and automatic plumbing fixtures were in poor condition due to observed mineral build-up. The domestic water distribution system is within its recommended useful life. The sanitary waste system is within its recommended useful life.

Table 53. Current and Forecasted Needs Summarized by System (Current + 5 years): WTP

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$171,922***	***$277,027***	***$277,027***	***$277,027***	***$277,027***	***$420,246***
Needs by Year	***$171,922***	***$105,106***	***$0***	***$0***	***$0***	***$143,219***
Exterior Enclosure	**$0**	**$56,798**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$56,798	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$35,028**	**$0**	**$0**	**$0**	**$15,648**
Ceiling Finishes	$0	$0	$0	$0	$0	$0
Floor Finishes	$0	$35,028	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0	$15,648
Plumbing	**$0**	**$8,825**	**$0**	**$0**	**$0**	**$17,650**
Domestic Water Distribution	$0	$0	$0	$0	$0	$8,825
Plumbing Fixtures	$0	$8,825	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0	$8,825
HVAC	**$0**	**$4,455**	**$0**	**$0**	**$0**	**$65,926**
Cooling Generation	$0	$4,455	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0	$65,926
Heat Generation	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$38,067**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$38,067	$0	$0	$0	$0	$0
Electrical	**$109,854**	**$0**	**$0**	**$0**	**$0**	**$43,994**
Branch Wiring	$0	$0	$0	$0	$0	$43,994
Lighting	$0	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$109,854	$0	$0	$0	$0	$0
Site Infrastructure	**$24,000**	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$24,000	$0	$0	$0	$0	$0

Table 54. Current and Forecasted Needs Summarized by System (Years 6 - 10): WTP

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$420,246***	***$420,246***	***$420,246***	***$420,246***	***$520,562***
Needs by Year	***$0***	***$0***	***$0***	***$0***	***$100,316***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$67,320**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$62,645
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$4,675
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$32,996**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$32,996
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 55. Current and Forecasted Needs Summarized by System (Years 11 - 15): WTP

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$520,562***	***$520,562***	***$772,727***	***$772,727***	***$897,062***
Needs by Year	***$0***	***$0***	***$252,165***	***$0***	***$124,336***
Exterior Enclosure	**$0**	**$0**	**$22,024**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$22,024	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$92,400**
Roof Coverings	$0	$0	$0	$0	$92,400
Interior Construction	**$0**	**$0**	**$142,284**	**$0**	**$0**
Interior Doors	$0	$0	$33,035	$0	$0
Specialties	$0	$0	$109,249	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$20,937**
Ceiling Finishes	$0	$0	$0	$0	$20,937
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$87,857**	**$0**	**$10,999**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$10,999
Service Distribution	$0	$0	$87,857	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 56. Current and Forecasted Needs Summarized by System (Years 16-20): WTP

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$1,033,645***	***$1,033,645***	***$1,033,645***	***$1,033,645***	***$1,033,645***
Needs by Year	***$136,583***	***$0***	***$0***	***$0***	***$0***
Exterior Enclosure	**$16,518**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$16,518	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$120,065**	**$0**	**$0**	**$0**	**$0**
Cooling Generation	$0	$0	$0	$0	$0
Distribution System	$0	$0	$0	$0	$0
Heat Generation	$77,990	$0	$0	$0	$0
Terminal & Package Units	$42,075	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Service Distribution	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0
Site Infrastructure	**$0**	**$0**	**$0**	**$0**	**$0**
Vehicular Pavements	$0	$0	$0	$0	$0

Table 57. Expired Systems 2021: Town of Manchester-By-The-Sea – WTP

Building	System Category	System	Priority	2021 Needs
WTP	Electrical	Exit Signs and Emergency Lighting	High	$109,854
WTP	Fire Protection	Fire Alarms	High	$38,067
			TOTAL	**$147,922**

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Site and Infrastructure Assessment Findings

Site General Condition

The following site conditions and/or deficiencies were observed during the assessment.

• The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

Site Improvements

A site infrastructure condition assessment was included in the scope of work for this project. The site infrastructure assessment is a visual evaluation of the site systems. The teams walked each site to determine the general condition of the systems and categorized them as follows:

• Good condition

• Poor condition and in need of repair

• Poor condition and in need of replacement

Estimated quantities were calculated by digitizing marked-up Google Earth aerial photographs. Google Earth aerial photographs were used in lieu of site plans. The site assessment was performed, and the subsequent results grouped by location. Findings for each location were divided as follows:

• Pedestrian Pavements

• Vehicular Pavements

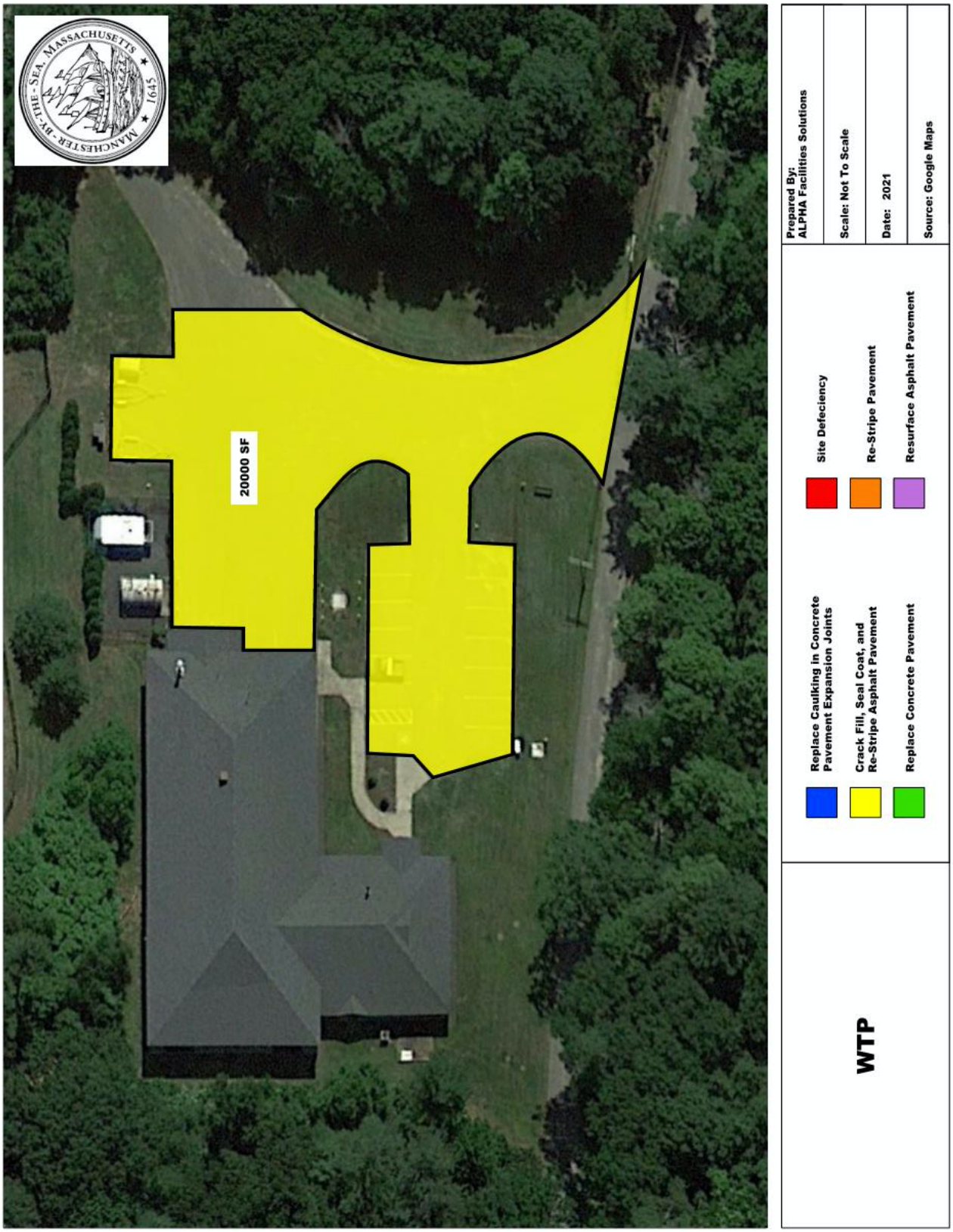
• Site Development

Please note that not all locations have all of the various infrastructure systems present. We determined unit pricing for the various deficiency requirements by referencing 2021 RS Means Building Construction Cost Data and Assembly Cost Data when available. Industry sources were used as a supplemental source for unit pricing when needed.

Table 58. Summary of 2021 Site and Infrastructure Deficiencies: WTP

Asset Description	Corrective Action	Notes	Priority	Current Needs	Year
Vehicular Pavements	Crack Fill, Seal Coat, and Restripe Asphalt Pavements	20000 SF @ $1.2 Per SF	Low	$24,000	2021
			Total 2021 Needs	**$24,000**	

Figure 10. Site and Infrastructure Deficiencies Markup: WTP



Site Infrastructure

The asphalt pavements were in poor condition and in need of resealing as longitudinal and transverse cracking were observed throughout the pavement.

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WWTP

Table 59: Facility Description: Town of Manchester-By-The-Sea - WWTP

Summary of Findings	
Construction Type	One-Story Structure with Basement
Roof Type	Asphalt Shingle and Single-ply Membrane
Ceiling Type	Suspended Acoustical Tile and Painted
Lighting	LED
HVAC	Air Handling Units With Hot Water Coils, and Unit Heaters
Elevator	No
Fire Sprinkler	Yes
Fire Alarm	Yes

Name	Year Built	Area (SF)	Total Needs 2021	Current Replacement Value	2021 FCI %	Total Needs 2026	2026 FCI %
WWTP	1972	14,766	$243,702	$1,857,563	13	$261,244	14
Site Information			$0			$0	
TOTAL			$243,702			$261,244	

General Observations:

- The facility is generally in fair condition. Many of the major building systems are nearing the end or just beyond their expected service life. Some expired systems were assessed to be performing in a satisfactory condition, and the remaining useful life was extended to allow for future capital planning. However, refurbishment or repairs could extend the BOMA recommended useful life.
- In 1998, a renovation occurred to all systems with the exception of the exterior windows, walls and doors. The lighting was upgraded to LED in 2018, and all unit heater were replaced in 2020.
- The fire alarm detection system is beyond its expected useful life.
- The asphalt shingle roof, and the EDPM roof above the headworks area need to be replaced due to a client-reported leaking issue.

Electrical

The electrical branch wiring is within its recommended useful life. The system was observed to contain functioning GFCI plugs. The LED lighting was in good condition. The service and distribution system was in good condition. The emergency and exit lighting is beyond its recommended useful life.

Exterior Enclosure

The metal and glazed doors were in good condition. The triple-pane windows were in good condition. The split-face stone veneer walls were in fair condition due to observed stained finishes.

Interiors

The vinyl tile floor finishes were in good condition. The painted wall finishes were in fair condition due to observed damage and stains. The suspended acoustical tile and painted ceiling finishes were in good condition. The cabinets in the lab room have rusted through the bottom.

Plumbing

The manual and porcelain plumbing fixtures were in good condition. The domestic water distribution system is within its recommended useful life. The sanitary waste system is within its recommended useful life.

Table 60. Current and Forecasted Needs Summarized by System (Current + 5 years): WWTP

System	2021	2022	2023	2024	2025	2026
Cumulative Needs by Year	***$243,702***	***$243,702***	***$243,702***	***$248,088***	***$248,088***	***$261,244***
Needs by Year	***$243,702***	***$0***	***$0***	***$4,386***	***$0***	***$13,156***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0	$0
Roofing	**$77,880**	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$77,880	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$4,386**	**$0**	**$13,156**
Ceiling Finishes	$0	$0	$0	$0	$0	$13,156
Floor Finishes	$0	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$4,386	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0	$0
HVAC	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Distribution System	$0	$0	$0	$0	$0	$0
Heat Generation	$0	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0	$0
Fire Protection	**$42,674**	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$42,674	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0	$0
Electrical	**$123,148**	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$123,148	$0	$0	$0	$0	$0

Table 61. Current and Forecasted Needs Summarized by System (Years 6 - 10): WWTP

System	2027	2028	2029	2030	2031
Cumulative Needs by Year	***$342,919***	***$485,928***	***$567,755***	***$567,755***	***$657,119***
Needs by Year	***$81,675***	***$143,009***	***$81,827***	***$0***	***$89,364***
Exterior Enclosure	**$0**	**$0**	**$42,556**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$42,556	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$39,272**	**$0**	**$23,474**
Ceiling Finishes	$0	$0	$0	$0	$23,474
Floor Finishes	$0	$0	$39,272	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$19,786**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$9,893	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$9,893	$0	$0	$0
HVAC	**$81,675**	**$73,904**	**$0**	**$0**	**$65,890**
Distribution System	$81,675	$73,904	$0	$0	$65,890
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$49,318**	**$0**	**$0**	**$0**
Branch Wiring	$0	$49,318	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0

Table 62. Current and Forecasted Needs Summarized by System (Years 11 - 15): WWTP

System	2032	2033	2034	2035	2036
Cumulative Needs by Year	***$672,684***	***$716,702***	***$780,295***	***$786,510***	***$792,033***
Needs by Year	***$15,565***	***$44,017***	***$63,594***	***$6,215***	***$5,522***
Exterior Enclosure	**$0**	**$44,017**	**$0**	**$0**	**$5,522**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$5,522
Exterior Doors	$0	$44,017	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$63,594**	**$0**	**$0**
Interior Doors	$0	$0	$32,972	$0	$0
Specialties	$0	$0	$30,621	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$0**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$0	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$15,565**	**$0**	**$0**	**$6,215**	**$0**
Distribution System	$6,215	$0	$0	$6,215	$0
Heat Generation	$0	$0	$0	$0	$0
Terminal & Package Units	$9,350	$0	$0	$0	$0
Fire Protection	**$0**	**$0**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$0	$0	$0	$0
Electrical	**$0**	**$0**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$0	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0

Table 63. Current and Forecasted Needs Summarized by System (Years 16-20): WWTP

System	2037	2038	2039	2040	2041
Cumulative Needs by Year	***$855,991***	***$1,064,635***	***$1,064,635***	***$1,064,635***	***$1,064,635***
Needs by Year	***$63,958***	***$208,644***	***$0***	***$0***	***$0***
Exterior Enclosure	**$0**	**$0**	**$0**	**$0**	**$0**
Exterior Walls (Finishes)	$0	$0	$0	$0	$0
Exterior Windows	$0	$0	$0	$0	$0
Exterior Doors	$0	$0	$0	$0	$0
Roofing	**$0**	**$0**	**$0**	**$0**	**$0**
Roof Coverings	$0	$0	$0	$0	$0
Interior Construction	**$0**	**$0**	**$0**	**$0**	**$0**
Interior Doors	$0	$0	$0	$0	$0
Specialties	$0	$0	$0	$0	$0
Interiors	**$0**	**$0**	**$0**	**$0**	**$0**
Ceiling Finishes	$0	$0	$0	$0	$0
Floor Finishes	$0	$0	$0	$0	$0
Wall Finishes	$0	$0	$0	$0	$0
Plumbing	**$9,893**	**$0**	**$0**	**$0**	**$0**
Domestic Water Distribution	$0	$0	$0	$0	$0
Plumbing Fixtures	$9,893	$0	$0	$0	$0
Sanitary Waste	$0	$0	$0	$0	$0
HVAC	**$54,065**	**$0**	**$0**	**$0**	**$0**
Distribution System	$0	$0	$0	$0	$0
Heat Generation	$54,065	$0	$0	$0	$0
Terminal & Package Units	$0	$0	$0	$0	$0
Fire Protection	**$0**	**$159,325**	**$0**	**$0**	**$0**
Fire Alarms	$0	$0	$0	$0	$0
Sprinklers & Standpipe	$0	$159,325	$0	$0	$0
Electrical	**$0**	**$49,318**	**$0**	**$0**	**$0**
Branch Wiring	$0	$0	$0	$0	$0
Lighting	$0	$49,318	$0	$0	$0
Exit Signs and Emergency Lighting	$0	$0	$0	$0	$0

Table 64. Expired Systems 2021: Town of Manchester-By-The-Sea – WWTP

Building	System Category	System	Priority	2021 Needs
WWTP	Electrical	Exit Signs and Emergency Lighting	High	$123,148
WWTP	Fire Protection	Fire Alarms	High	$42,674
WWTP	Roofing	Roof Coverings	High	$28,380
WWTP	Roofing	Roof Coverings	High	$49,500
			TOTAL	**$243,702**

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Equipment Inventory

Table 65. Equipment Inventory: Town of Manchester-By-The-Sea

Building	Equipment Type	Replacement Year	Replacement Cost
Cemetery Office	Fire Extinguishers	2022	1600.00
Cemetery Office	Overhead Door	2026	4400.00
Cemetery Office	Panel	2041	4950.00
Cemetery Office	Unit Heater, Gas	2036	5000.00
Cemetery Office	Unit Heater, Gas	2036	5000.00
Crowell Chappel	EXIT/COMBO Emergency Lighting	2035	950.00
Crowell Chappel	Fire Extinguishers	2022	1600.00
Crowell Chappel	Furnace	2030	3450.00
Crowell Chappel	Main Fire Alarm Panel	2029	5700.00
Crowell Chappel	Panel	2055	4950.00
Crowell Chappel	Sprinkler System	2055	8500.00
DPW	Automatic Transfer Switch	2046	5000.00
DPW	Emergency Generator	2036	22150.00
DPW	EXIT/COMBO Emergency Lighting	2037	950.00
DPW	Fire Extinguishers	2022	1600.00
DPW	Overhead Door	2031	4400.00
DPW	Overhead Door	2031	4400.00
DPW	Overhead Door	2031	4400.00
DPW	Overhead Door	2031	4400.00
DPW	Overhead Door	2031	4400.00
DPW	Overhead Door, Automatic	2031	1500.00
DPW	Overhead Door, Automatic	2031	4400.00
DPW	Overhead Door, Automatic	2031	1500.00
DPW	Overhead Door, Automatic	2031	4400.00
DPW	Overhead Door, Automatic	2031	4400.00
DPW	Overhead Door, Automatic	2031	1500.00
DPW	Panel	2023	7350.00
DPW	Tank, Storage	2037	56000.00
DPW	Tank, Storage	2037	56000.00
DPW	Unit Heater, Gas	2036	5000.00
DPW	Unit Heater, Gas	2037	5000.00
DPW	Unit Heater, Gas	2037	5000.00
DPW	Unit Heater, Gas	2037	5000.00
DPW	Unit Heater, Gas	2038	5000.00
DPW	Water Heater, Gas	2029	7300.00
Fire Dept	Automatic Transfer Switch	2030	5000.00
Fire Dept	Boiler	2030	23050.00
Fire Dept	Boiler	2030	23050.00
Fire Dept	Door, Automatic	2033	9500.00

Building	Equipment Type	Replacement Year	Replacement Cost
Fire Dept	Door, Automatic	2033	9500.00
Fire Dept	Emergency Generator	2022	25250.00
Fire Dept	EXIT/COMBO Emergency Lighting	2033	950.00
Fire Dept	Fan, Exhaust	2032	4000.00
Fire Dept	Fire Extinguishers	2022	1600.00
Fire Dept	Overhead Door, Automatic	2029	1500.00
Fire Dept	Overhead Door, Automatic	2029	1500.00
Fire Dept	Overhead Door, Automatic	2029	4400.00
Fire Dept	Overhead Door, Automatic	2029	4400.00
Fire Dept	Overhead Door, Automatic	2029	4400.00
Fire Dept	Overhead Door, Automatic	2029	1500.00
Fire Dept	Overhead Door, Automatic	2029	4400.00
Fire Dept	Overhead Door, Automatic	2029	1500.00
Fire Dept	Panel	2054	7350.00
Fire Dept	Tank, Storage	2047	12700.00
Fire Dept	Tank, Storage	2047	12700.00
Fire Dept	Tank, Storage	2047	12700.00
Fire Dept	Tank, Storage	2047	12700.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Unit Heater, Hydronic	2030	4250.00
Fire Dept	Washer	2033	2450.00
Fire Dept	Water Heater, Gas	2029	7300.00
Library	Air Handling Unit-FC	2021	3850.00
Library	Air Handling Unit-FC	2022	3850.00
Library	Boiler	2046	23050.00
Library	Boiler	2046	23050.00
Library	Condensing Unit	2022	4050.00
Library	Door, Automatic	2040	9500.00
Library	EXIT/COMBO Emergency Lighting	2036	950.00
Library	Fire Extinguishers	2022	1600.00
Library	Main Fire Alarm Panel	2031	5700.00
Library	Mini Split System	2022	4250.00
Library	Mini Split System	2022	4250.00
Library	Panel	2057	7350.00
Library	Pump, Sump	2036	900.00
Library	Water Heater, Gas	2031	9700.00
Seaside 1	Condensing Unit	2022	4050.00

Building	Equipment Type	Replacement Year	Replacement Cost
Seaside 1	Furnace with Evaporator	2022	1850.00
Seaside 1	Main Fire Alarm Panel	2029	5700.00
Seaside 1	Mini Split System	2038	4250.00
Seaside 1	Panel	2047	7350.00
Town Hall/ Police Dept	Automated External Defibrillator	2022	1500.00
Town Hall/ Police Dept	Automatic Transfer Switch	2044	5000.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Condensing Unit	2036	31600.00
Town Hall/ Police Dept	Door, Automatic	2034	9500.00
Town Hall/ Police Dept	Door, Automatic	2034	9500.00
Town Hall/ Police Dept	Elevator (Hydraulic)	2034	88925.00
Town Hall/ Police Dept	Emergency Generator	2027	31450.00
Town Hall/ Police Dept	EXIT/COMBO Emergency Lighting	2035	950.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	4000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3500.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	4300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00

Building	Equipment Type	Replacement Year	Replacement Cost
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3800.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3000.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan Coil Unit	2036	3300.00
Town Hall/ Police Dept	Fan, Exhaust	2040	700.00
Town Hall/ Police Dept	Fan, Exhaust	2040	700.00
Town Hall/ Police Dept	Fire Extinguishers	2022	1600.00
Town Hall/ Police Dept	Mini Split System	2032	4250.00
Town Hall/ Police Dept	Overhead Door, Automatic	2029	4400.00
Town Hall/ Police Dept	Overhead Door, Automatic	2029	1500.00
Town Hall/ Police Dept	Panel	2061	8850.00
Town Hall/ Police Dept	Switchgear	2037	24550.00
Town Hall/ Police Dept	Unit Heater, Electric	2043	1600.00
Town Hall/ Police Dept	Unit Heater, Electric	2043	1600.00
Town Hall/ Police Dept	Water Heater, Electric	2029	6000.00
WTP	Air Handling Unit	2031	25650.00
WTP	Air Handling Unit	2031	25650.00
WTP	Automatic Transfer Switch	2037	15600.00
WTP	Backflow Preventer	2038	4400.00
WTP	Boiler	2037	70900.00
WTP	Condensing Unit	2022	4050.00
WTP	Emergency Generator	2031	116650.00
WTP	Emergency Shower	2022	850.00
WTP	EXIT/COMBO Emergency Lighting	2031	950.00
WTP	Eye Wash / Safety Shower	2022	1700.00
WTP	Eye Wash / Safety Shower	2022	1700.00
WTP	Eye Wash / Safety Shower	2022	1700.00
WTP	Fire Extinguishers	2022	1600.00
WTP	Main Fire Alarm Panel	2022	5700.00
WTP	Motor Control Center	2037	57850.00
WTP	Motor Control Center	2037	57850.00
WTP	Overhead Door, Automatic	2026	4400.00
WTP	Overhead Door, Automatic	2026	1500.00
WTP	Overhead Door, Automatic	2026	4400.00
WTP	Overhead Door, Automatic	2026	1500.00

Building	Equipment Type	Replacement Year	Replacement Cost
WTP	Pump	2031	5650.00
WTP	Sprinkler System, Dry Pipe	2058	8500.00
WTP	Switchgear	2049	24550.00
WTP	Switchgear	2049	20050.00
WTP	Tank, Storage	2049	6200.00
WTP	Transformer	2049	3050.00
WTP	Unit Heater, Electric	2043	1600.00
WTP	Unit Heater, Electric	2043	1600.00
WTP	Unit Heater, Hydronic	2031	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Heater, Hydronic	2037	4250.00
WTP	Unit Ventilator	2049	4250.00
WTP	Unit Ventilator	2049	4250.00
WTP	Unit Ventilator	2049	4250.00
WTP	Water Heater, Electric	2026	6000.00
WTP	Water Heater, Gas	2029	9150.00
WWTP	Air Handling Unit	2027	25650.00
WWTP	Air Handling Unit	2027	48600.00
WWTP	Air Handling Unit	2031	48600.00
WWTP	Automatic Transfer Switch	2037	20300.00
WWTP	Backflow Preventer	2031	4400.00
WWTP	Boiler	2037	49150.00
WWTP	Emergency Generator	2031	116650.00
WWTP	EXIT/COMBO Emergency Lighting	2022	950.00
WWTP	Fire Extinguishers	2022	1600.00
WWTP	Main Fire Alarm Panel	2022	5700.00
WWTP	Mini Split System	2032	4250.00
WWTP	Mini Split System	2032	4250.00
WWTP	Motor Control Center	2037	57850.00
WWTP	Motor Control Center	2037	57850.00
WWTP	Overhead Door	2026	4400.00
WWTP	Panel	2043	7350.00
WWTP	Pump	2031	5650.00
WWTP	Pump	2031	5650.00
WWTP	Pump	2032	5650.00
WWTP	Pump	2035	5650.00

Building	Equipment Type	Replacement Year	Replacement Cost
WWTP	Sprinkler System, Dry Pipe	2043	8500.00
WWTP	Switchgear	2047	22100.00
WWTP	Switchgear	2047	22100.00
WWTP	Transformer	2047	4850.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Unit Heater, Hydronic	2050	4250.00
WWTP	Water Heater, Electric	2029	6000.00
WWTP	Water Heater, Gas	2029	7300.00

APPENDICES

APPENDICES

Appendix A -Typical System Lifecycles

System and component life cycles used in the cost models for this project were based on average service life as shown in the *Preventive Maintenance Guidebook: Best Practices to Maintain Efficient and Sustainable Buildings* published by Building Owners and Managers Association (BOMA) International. When life cycle information is not provided by BOMA, life cycles have been assigned using ALPHA's professional judgment.

Table 66. Typical Life Cycles

System	Lifecycle (Years)
Roofing	
Built-up	25
Composition Shingle	20
Metal Panels	25
Modified Bitumen	20
Standing Seam Metal	35
Building Exterior	
Exterior Doors	25
Exterior Walls (Finishes)	10-30
Exterior Windows	30
Interior Finishes	
Interior Doors	25
Ceiling (Acoustical Tile and Grids)	20
Ceiling (Painted)	10
Walls	10
Floors	15
Built-in Equip/Specialties	
Built-in Equip/Specialties	20
Conveying Systems	
Elevators	35
Chair Lifts	15
Plumbing	

System	Lifecycle (Years)
Plumbing Fixtures	30
Domestic Water Distribution	30
Sanitary Waste	30
Fire Protection	
Fire Sprinklers and Standpipe (Piping and Risers)	40
Fire Detection (Activation Devices)	10
Fire Detection (Notification Devices and	15
Fire Detection (Wiring)	30
HVAC	
Cooling Generating	25
Controls	20
Distribution	30
Heat Generating	30
Terminal and Package Units	15
Electrical	
Branch Wiring	30
Lighting	20
Service and Distribution	40
Generators	20
Equipment	
Institutional Equipment	25
Other Equipment	15-25

Capital Planning v. Budgeting

While traditional budgets may be perceived as reacting to short-term needs based on the historical performance of facilities and systems, a capital plan anticipates both short- and long-term degradation by employing a facility condition assessment and predictive cost modeling.

- **Budgeting:** Traditional, cost-based, budgeting practices describe a system by which a prior period's budget is adjusted to provide for the fluctuating cost of maintaining facilities. Traditional budgeting issues may include: 1) anticipated needs; 2) organizational growth; 3) the acquisition of new assets; 4) operations and maintenance; 5) deferred maintenance; and, 6) insurance.
- **Capital Planning:** Capital planning differs from budgeting in that it considers a broader range of financial considerations over an extended timeline so as to more effectively predict and manage the fiscal needs of a real estate portfolio. Financial considerations may include the cost of capital, depreciation, organizational risk and return on investment (ROI). Similar in concept to the accounting principle of anticipating the capital depreciation of plant value, a capital renewal plan anticipates and attempts to counteract the ongoing deterioration of facility systems and components in order to extend a facility's life and value.

Facility Condition Index

A Facility Condition Index is considered to be a key building performance metric. As part of the FCA process, a facility condition index (FCI) is calculated for each facility. The FCI is used to quantify a facility's physical condition at a specific point in time and is calculated using the expired system replacement costs (costs associated with systems that are beyond average service life) and the current replacement value (CRV) of the building. Expired system replacement costs consist of work that is necessary to restore the facility to a condition equivalent to its original (like new) state.

Example: Total expired system replacement costs (Requirements) = $3,000,000

Current Replacement Value (CRV) = $10,000,000

$$FCI = \frac{\$3{,}000{,}000}{\$10{,}000{,}000} = .30$$

Present Value and Nominal Value

In the calculation of FCI sums, monetary values can be discounted to incorporate the time value of money, or be expressed in constant terms, ignoring the effects of inflation and interest. Because the cost of capital can vary significantly according to time, portfolio types, and project programs, all monetary terms in this report are expressed as nominal values.

- **Nominal Value:** Expresses monetary values, without adjusting for inflation or interest (also known as face value or par value).
- **Present Value:** The current worth of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows can be discounted at a client specified discount rate to reflect the owner's internal cost of capital.

Hard and Soft Costs

Unless otherwise stated, the costs indicated in this report represent hard costs only. Because soft costs vary regionally and periodically, provisions for soft cost expenses should be considered in addition to the hard costs indicated. For the purpose of this report, Hard and Soft costs are defined as follows:

- **Hard costs:** Direct costs incurred in relation to a specific construction project. Hard cost may include labor, materials, equipment, etc.
- **Soft cost:** Indirect costs incurred in addition to the direct construction cost. Soft costs may include professional services, financing, taxes, etc.

Building Systems

A building system describes a mechanism, or group of mechanisms that perform a given role to maintain the functionality of a facility. Examples of building systems may include roofing, plumbing or heating, ventilation and air conditioning (HVAC) systems.

Per the Uniformat classification standard, building systems have been grouped as follows:

- Foundations
- Superstructure
- Exterior Enclosure
- Roofing
- Interior Construction
- Interior Finishes
- Conveying Systems
- Plumbing
- HVAC
- Fire Protection
- Electrical

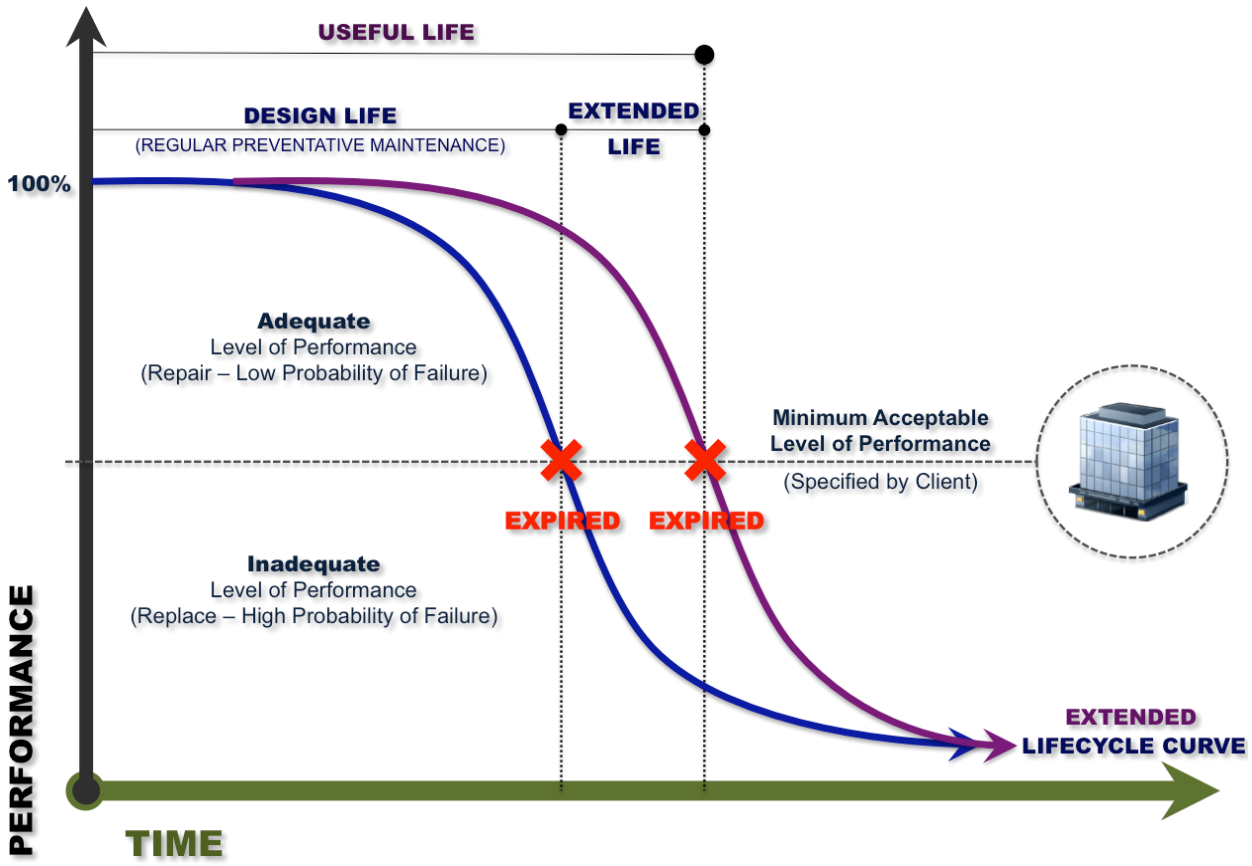
System States

The design life of a building system or component describes the duration for which a system is expected to perform within normal operational parameters. The design life may be shortened for a variety of reasons including, neglect or inadequate maintenance or extended as a result of robust preventative / predictive maintenance. This extended or shortened design life is defined as a system's useful life, and quantifies the duration for which a system, or component, operates within a minimally accepted level of performance.

As illustrated in the figure below, a facility condition analysis will make an appraisal of systems and components and recommend one of a series of actions necessary to ensure the continued functionality of a facility:

- **Missing:** A system or component may be deemed missing if the element absent, but is required for the operation of a facility (Example: ADA requirements for accessible ramps).
- **Extended:** The life cycle of a system or component may be extended beyond its anticipated design life, if the element is deemed to be performing adequately.
- **Expired:** A system or component may be recommended for replacement (at any time) if the element is deemed to be performing inadequately.

Figure 11. System or Component Life Cycle Curve



System Actions

A deficiency describes a condition in which there exists the need to repair an item that is damaged, missing, inadequate or insufficient for an intended purpose. Deficiencies are typically associated with underperforming systems or components, and describe activities that are required to extend their useful life.

- **Repair:** Describes a condition in which it is recommended that the building system or component be serviced to provide additional useful life. Repairs are curative in nature, while maintenance by contrast is preventative.
- **Replace:** Describes a condition in which it is recommended that the building system or component be removed and replaced with a new system or component. Replacement needs may vary according to building type, region, use, and maintenance management.

Multiple building systems are considered “non-renewable” because the replacement of those systems would typically be so costly as to require the replacement of the entire facility (Example: Foundations). Accordingly, there are no deficiencies or costs associated to non-renewable system.

Additionally, per client preferences, many aspects of the built environment may not be part of the scope of a facility condition analysis.

Cost Models

Cost estimation models are parametric equations used to predict the costs or the life cycle of a building system or component. The projections of the cost models are factored into capital plans, budgeting tools and other financial planning mechanisms. The rough order of magnitude cost estimates contained in this report are based on the cost models available within the client's database platform.

It is important to note that there are a variety of cost model equations employed in the building industry and it is not uncommon for prices derived from the client's database platform to vary from external references. If required, adjustments can typically be made to the facility condition data in order to facilitate comparison with external cost models, better reflect local conditions or perform sensitivity analyses.

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Appendix C - Glossary

ACBM: Asbestos-containing Building Material

ADA: Americans with Disabilities Act

AHERA: Asbestos Hazard Emergency Response Act

ALPHA: ALPHA Facilities Solutions, LLC

Alterations: Work performed to change the interior arrangements or other physical characteristics of an existing facility or fixed equipment so that it can be used more effectively for its current designated purpose or adapted to a new use.

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

ASTM: American Society for Testing and Materials

BOMA: Building Owners and Managers Association

Budgeting: A system by which a prior period's estimate of income and expenditure is adjusted to account for operational realities in order to provide for the cost of maintaining facilities. Traditional budgeting issues may include anticipated needs, organizational growth, the acquisition of new assets, operations and maintenance, deferred maintenance and insurance.

Building: An enclosed and roofed structure that can be traversed without exiting to the exterior.

Building Addition: An area, space or component of a building added to the existing structure, after the original building's year built date.

Capital Renewal: The planned replacement of building subsystems such as roofs, electrical systems, HVAC systems, and plumbing systems that have reached the end of their useful lives. Without significant reinvestment in building subsystems, older facilities will fall into a state of deteriorating condition and functionality, and the repair and maintenance costs will increase (International Facilities Management Association).

Calculated Next Renewal: The year a system or element would be expected to expire, based solely on the date it was installed and the expected service life of the system.

Condition: Condition refers to the state of physical fitness or readiness of a facility, system or systemic element for its intended use.

Cost Model: Parametric equations used to quantify the condition of building systems and estimate the cost necessary to sustain a facility over a given set of reporting periods. These estimated costs can be presented over a timeline to represent a capital renewal schedule.

Current Replacement Value (CRV): CRV is a standard industry cost estimate of materials, supplies and labor required to replace facility at existing size and functional capability. Please note that the terms Plant Replacement Value and Current Replacement Value have the same meaning in the context of determining Facility Condition Index.

Deficiency: A deficiency describes a condition in which there exists the need to repair a building system or component that is damaged, missing, inadequate or insufficient for an intended purpose.

Element: Elements are the major components that comprise building systems.

Facility: A facility refers to site(s), building(s), or building addition(s) or combinations thereof that provide a particular service or support of an educational purpose.

Facility Condition Assessment (FCA): The process of performing a physical evaluation of the condition of a facility and its systems. The findings of this analysis may be used in conjunction with cost models to estimate the current and future funding streams necessary to maintain a real estate portfolio.

Facility Condition Index (FCI): FCI is an industry-standard measurement of a facility's condition that is the ratio of the cost to correct a facility's deficiencies to the Current Replacement Value of the facilities – the higher the FCI, the poorer the condition of the facility. After an FCI is established for all buildings within a portfolio, a building's condition can be ranked relative to other buildings. The FCI may also represent the condition of a portfolio based on the cumulative FCIs of the portfolio's facilities.

Gross Square Feet (GSF): The size of the enclosed floor space of a building in square feet, measured to the outside face of the enclosing walls.

Hard Costs: Direct costs incurred in relation to a specific construction project. Hard costs may include labor, materials, equipment, etc.

Heating, Ventilation and Air Conditioning (HVAC): A term used to describe building systems responsible for maintaining the temperature, humidity and air quality control.

IFMA: International Facilities Management Association.

Indoor Air Quality (IAQ): A metric used to quantify the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.

Install Year: The year a building or system was built or the most recent major renovation date (where a minimum of 70% of the system's Current Replacement Value (CRV) was replaced).

Inflation: The trend of increasing prices from one year to the next, representing the rate at which the real value of an investment is eroded and the loss in spending power over time.

Interest: The charge for the privilege of borrowing money, typically expressed as an annual percentage rate and commonly calculated using simple or compound interest calculation.

Life Cycle: The period of time that a building, system or element can be expected to adequately serve its intended function.

Maintenance: Work necessary to realize the originally anticipated life of a fixed asset, including buildings, fixed equipment and infrastructure. Maintenance is preventative, whereas repairs are curative.

Mechanical, Electrical and Plumbing (MEP): A term used to describe building systems related to the provision of HVAC, electric and plumbing services to a facility.

Needs: In the context of this report, needs are the backlog of capital renewal requirements.

Next Renewal: The assessor adjusted expected useful life of a system or element as a result of on-site inspection.

Nominal Value: A value expressed in monetary terms for a specific year or years, without adjusting for inflation – also known as face value or par value.

Operations: Activities related to normal performance of the functions for which a building is used (e.g., utilities, janitorial services, waste treatment).

O&M: Operations and Maintenance

Parametric Cost Modeling: Parametric statistics is a branch of statistics that assumes that the data has come from a type of probability distribution and makes inferences about the parameters of the distribution.

Plant Replacement Value (PRV): PRV represents the cost to design and construct a notional facility to current standards to replace an existing facility at the same location. Please note that the terms Plant Replacement Value (PRV) and Current Replacement Value (CRV) have the same meaning in the context of determining Facility Condition Index (FCI).

Present Value (PV): The current worth of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows are discounted at a client specified discount rate.

Real Interest Rate: A net interest rate adjusted to remove the effects of inflation. It is the amount by which the nominal interest rate is higher than the inflation rate.

Repairs: Work to restore damaged or worn-out facilities to normal operating condition. Repairs are curative, whereas maintenance is preventative.

Replacements: An exchange of one fixed asset for another that has the same capacity to perform the same function. In contrast to repair, replacement generally involves a complete identifiable item of reinvestment (e.g., a major building component or subsystem).

Return on Investment (ROI): ROI is a financial indicator used to evaluate the performance of an investment and as a means to compare benefit.

Rough Order of Magnitude (ROM): ROM cost estimates are the most basic of cost estimate classifications.

RSMeans: An independent third-party provider of building industry construction cost data.

Site: A facility's grounds and its utilities, roadways, landscaping, fencing and other typical land improvements needed to support the facility.

Soft Costs: Indirect costs incurred in addition to the direct construction cost. Soft costs may include professional services, financing, taxes, etc.

System: System refers to building and related site work elements as described by ASTM Uniformat II, Classification for Building Elements (E1557-97), a format for classifying major facility elements common to most buildings. Elements usually perform a given function, regardless of the design specification, construction method or materials used. See also, "Uniformat II".

Uniformat II: Uniformat II (commonly referred to simply as Uniformat), is ASTM Uniformat II, Classification for Building Elements (E1557-97) – A methodology for classifying major facility components common to most buildings.

Year Built: The year that a building or addition was originally built, based on substantial completion or occupancy.

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