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December 17, 2010

Tara Woods Property Owners Association
C/o Jack Perrigo
191 Burruss Mill Road
Bumpass, Virginia 23024

ATTENTION: Mr. Jack Perrigo

SUBJECT: Report of Replacement Reserve Study
Tara Woods Property Owners Association.
Lake Anna, Virginia
ETC Project M0-1700

Dear Mr. Perrigo:

Engineering and Technical Consultants, Inc., (ETC) respectfully submits this report of our reserve study at the above referenced project. This work was performed in accordance with our proposal (PM0-3606), dated October 15, 2010. Written authorization to proceed with the work was received (by email) in our office on October 18, 2010.

Our inspection services were intended to assist you in:

- Evaluating existing conditions;
- Determining immediate or short-term repair needs; and
- Generating a practical repair/replacement reserve schedule.

Our work was confined to the following elements:

1. Pier and boat ramp;
2. Pavement;
3. Access control system;
4. Pavilion systems (framing, roofing and electrical); and
5. Site fencing.

This report includes a brief summary of background information and, for each of the components inspected, discussions of our findings, comments and recommendations. Presented in Appendix A are a tabular summary of future capital reserve requirements and a twenty-year cash-flow chart. Provided in Appendix B is some supplementary technical information.

BACKGROUND INFORMATION

The subject property consists of various facilities and amenities that serve the collective owners of seventy-seven (77) lots at Lake Anna, Virginia. We understand that the facilities are approximately twenty-five (25) years old.

Our findings are based on physical inspections of the property conducted on November 4, 2010. Our services did not include any intrusive inspection or analysis and no construction plans were provided for our review. Consequently, some evaluations/opinions expressed in this report are based upon assumptions regarding such matters as concealed construction details, construction profile, condition of internal components, etc.

PIER

A wooden pier with boat slips extends from the shoreline into the boundary of Lake Anna. The pier rests on pilings embedded in the lakebed. The pier appeared to be constructed of preservative (pressure) treated, dimensional lumber and timber pilings.

Observations

The accessible portions of the pier appeared overall to be in good condition. The original lumber deck planks were recently replaced with composite deck planks formed of wood fibers and polyvinyl chloride (PVC). The decking appeared overall to be in good condition; however, physical damage (presumably from boat impact) was evident in areas. The planks are hollow with internal, lengthwise bracing. That configuration renders the unprotected ends of the planks vulnerable to damage. Protective trim was installed over some decking and we understand the remaining sections are to be similarly protected in the near future.

Conclusions

There are a number of factors that must be considered in determining probable life cycle performance of docks, piers, etc. Of paramount importance are durability of the materials used (particularly decay resistance) and the strength of the anchorage (piling embedment/support). Depending upon the quality of treatment, preservative treated lumber could perform for as long as thirty to forty years. Some repairs/sectional replacements should be anticipated in the interim.

The manufacturer of the composite decking (Millennium Decking, Inc.) provides a twenty (20) year warranty for the product; however, that warranty does not in any way guarantee the product will perform for that long. The material is fairly new in the trade and has no long term history of performance. Accordingly projecting a life-cycle is difficult. For budgeting purposes, a fifteen to twenty year life-cycle should be considered.

Recommendations

Protective trim should be installed where missing. Severely damaged planks should be removed and replaced.

Some consideration should be given to installation of freeze protection provisions. One type of system commonly used for this purpose employs thermostatically-controlled aeration (bubbler) devices that create sufficient turbulence to help control ice formation.

PAVEMENT AND BOAT RAMP

Vehicular access and parking at the subject facilities are provided by an asphalt-paved roadway and parking lot. There is a short, concrete boat ramp at the lake side of the parking lot.

Observations

The asphalt pavement appeared overall to be in fair condition. Simple (unconnected) cracking was evident in some areas, most of appeared to have been sealed. A seal coat was recently applied, which could have concealed some unsealed cracks or other damage. Ponded water was noted at the lakeside boundary of the lot. The turf at that location was above the pavement level, resulting in an obstruction. The boat ramp exhibited cracked and broken concrete.

Conclusions

Provided that the asphalt pavement is properly repaired and maintained, it could remain serviceable for another three to five years, at which time it could probably be overlain. The cost to place a properly executed overlay depends upon the condition of the existing pavement. Distressed areas must be repaired prior to placement and the cost of proper repairs to broken/alligatored pavement can be as much as two to three times higher (per square yard) than the cost to place the overlay. Therefore, the more repairs that are necessary, the more the overall cost for the overlay. Accordingly, it is normally advantageous to rehabilitate pavement while it is in reasonably good condition.

The concrete boat ramp is near the end of its serviceable life. Replacement could be necessary within the next three to five years.

Recommendations

Ponding at the lakeside edge of the parking lot should be corrected. The landscaped/turfed area should be re-graded and a drainage system (open swale, yard drain, etc.) should be installed.

In order for the pavement to achieve maximum life-cycle performance, it must be properly maintained and periodically seal coated. Presented in Appendix B are some general maintenance guidelines.

ACCESS CONTROL SYSTEM

Vehicular access to the facility is controlled by an electrically driven gate with a card-reader activator. According to information provided to us, the cards are individually programmed so that specific cards can be deactivated in the event of loss or misuse.

Observations

The access control system appeared to be in fair condition. No current problems were noted; however, we understand the system manufacturer (Ark Automatic Gate Systems, Inc.) is no longer in business and some replacement parts are difficult to locate.

Conclusions

Barring damage from vehicular impact, vandalism, etc., the access control system could remain serviceable for up to another three to five years. The lack of replacement parts could render the system obsolete/irreparable sooner.

PAVILION

The pavilion is a timber-framed structure with a sloped, shingle-covered roof. Electricity is provided by sixty-amp service through a five-circuit load center.

Observations

The pavilion appeared overall to be in good condition. The shingle roof covering was installed within the past year and exhibited no noticeable defects. The structure was also recently fitted with "hurricane clips" to help protect against wind damage during extreme weather events.

Conclusions

Barring damage from unforeseeable circumstances (extreme weather, vandalism, etc.), the pavilion structure could remain serviceable for up to another fifty to sixty years, or longer. The roof covering could have a remaining serviceable life of another twenty to twenty-five years. The major elements of the electrical system could provide reasonable service for another fifteen to twenty years. Occasional repairs to all systems should be anticipated in the interim.

Recommendations

In order for roof coverings to achieve maximum life-cycle performance, they must be properly maintained. Presented in Appendix B are some general maintenance guidelines.

SITE FENCING

Split-rail fencing is installed along some boundaries of the private lots. The material appears to be preservative (pressure) treated wood.

Observations

The site fencing varied in condition from poor to good. Sectional replacements and repairs are performed as needed, on an ongoing basis.

Conclusions

Barring damage from vehicular impact, vandalism, etc., fencing of the type installed at this community can have a serviceable life of up to forty years; however, a number of factors (quality of the materials, soil conditions, installation procedures, etc.) could reduce serviceable life considerably. We understand the Association generally treats fencing as an operating expense, rather that replacement reserve item. Consequently, fencing does appear on the reserve schedule or cash-flow chart.

FINAL COMMENTS

The attached repair/replacement reserve schedule (Appendix A) should help to delineate more clearly the conditions found and our recommendations for this project. The supplementary technical information (in Appendix B) is provided to assist the Association with future repairs and maintenance.

We strongly recommend that a comprehensive preventive maintenance program be designed and implemented as soon as possible. Without question, preventive maintenance affords substantial financial benefits. Qualified specialty consultants should be retained for this project to:

- Identify and inventory all maintenance worthy elements;
- Specify explicit procedures (tasks);
- Specify materials;
- Specify task frequency; and
- Develop a periodic schedule.

To be effective, any program must be routinely monitored by management. This can be accomplished either directly or through specialty services.

In addition, timely corrective maintenance is generally less costly in the long term than deferred repairs. Moreover, if repairs are made as needed, before they are allowed to accumulate, the expenses should be incremental and easier to absorb.

For all major repair or replacement work, a qualified engineer should be retained to provide technical assistance in the following areas.

- Where feasible (such as for pavement), samples should be obtained to better determine in-place conditions.

- Specifications, plans, details, etc. should be developed for repair and/or replacement work.

- Bids should be solicited from contractors that are qualified and have performed similar work in the past.

- The work should be inspected to help assure that it complies with contract documents and applicable industry standards.

Due to the nature of our work, no responsibility can be assumed for latent defects that may appear in the future, for items that were not examined, or for differing opinions of others. Our services do not constitute a certification, guarantee, or warranty of the property (or any of its components) or compliance with applicable codes, standards, safety requirements, building plans, offering statements, etc.

We appreciate this opportunity to be of service. Please contact us if any questions arise or if we can be of further assistance.

Very truly yours,

ENGINEERING AND TECHNICAL
CONSULTANTS, INC.

Patrick E. Gray, RS
Senior Project Manager

APPENDICES: A - Repair/Replacement Reserve Schedule and Cash-Flow Chart
B - Supplementary Technical Information

APPENDIX A

REPAIR/REPLACEMENT RESERVE SCHEDULE AND CASH-FLOW CHART

REPAIR/REPLACEMENT RESERVE SCHEDULE AND CASH-FLOW CHART

The recommended reserve requirements outlined in the attached schedule are based on our opinions of current conditions and costs for materials, equipment, labor, etc. These opinions are based upon:

- Methods and materials that generally comply with accepted industry standards;
- Perceived existing conditions as noted during our limited visual inspections;
- Information provided to us; and
- Our experience with similar circumstances.

It must be noted that no laboratory tests or analyses were performed on any elements and our conclusions are based solely on visual examinations. Unless otherwise noted, our life cycle projections are based on the assumptions that construction materials (such as asphalt, concrete, etc.) generally comply with accepted industry standards and that the listed elements will be properly maintained.

Repair/replacement costs and suggested annual contributions have been calculated using several basic assumptions. They are suggested budget figures, not guaranteed costs. These amounts are estimated in current (2010) U.S. dollars. Accordingly, some accommodation should be made for normal cost increases, by either factoring in annual increases at some reasonable rate (such as three percent per year) or allowing interest on deposited funds to accumulate and remain in reserves.

Typical labor and material costs were used to estimate dollar amounts for repairs and replacements. Incidental costs (such as necessary modifications, rigging, etc.) are factored in as very rough approximations. The amounts shown on the reserve schedule and cash-flow chart reflect no inflationary factors.

According to information provided to us, a total of $78,527.32 was available in reserves as of December 8, 2010. That amount was distributed as available funds among the elements on the reserve schedule. The attached cash flow table delineates anticipated contributions and disbursements relative to replacement reserves between 2011 and 2030. Reserves are currently funded at the rate of $7,120.00 per year. Balances do not include any interest income for funds held in interest bearing instruments.

The proposed reserve analysis should be reevaluated on a regular basis. Real property is dynamic by nature and economic conditions are often subject to vast fluctuations. Therefore, we strongly recommend that a comprehensive study be conducted every three to five years to assess changes in the physical condition of the various systems and related components. Financial requirements should be revised annually if pertinent economic changes are to be accurately reflected as well. Without these regular assessments, long-range planning may not be effective and critical needs may not be properly met.

Finally, it should be noted that the reserve schedule and cash-flow chart are not intended to be autonomous documents. They are key elements of our investigative report and represent a partial summation of our conclusions. Taken out of context, the information contained solely within the reserve schedule and cash-flow chart must be considered incomplete.

APPENDIX C
REPAIR/REPLACEMENT RESERVE TABLE
TARA WOODS PROPERTY OWNERS ASSOCIATION
BUMPASS, VIRGINIA
ETC PROJECT M0-1700

Items	Comments/ Notes	Model/Type	Unit	Estimated Quantity	General Condition	Typical Design Life (years)	Estimated Remaining Useful Life (years)	Estimated Replacement		Available Funds	Annual Contribution
								Unit Cost	Total Cost		
I. Pavement											
- Roadway and Parking Lot	A	Asphalt	sy	1,050	Fair	20	5	$ 35	$ 36,750	$ 18,752	$ 3,600
- Boat Ramp		Concrete	sf	200	Poor	25	5	$ 30	$ 6,000	$ 5,743	$ 51
II. Access Control System		Card reader	ea	1	Fair	25	2	$ 6,500	$ 6,500	$ 2,119	$ 2,191
III. Pier											
- Structure		Wood	sf	2,400	Good	40	19	$ 50	$ 120,000	$ 35,398	$ 4,453
- Decking		Composite		2,400	Good	20	19	$ 5	$ 12,000	$ 8,183	$ 201
IV. Pavillion											
- Structure		Wood	ea	1	Good	50	30	$ 15,000	$ 15,000	$ 3,661	$ 378
- Roofing		Shingle	sf	1,100	Good	25	25	$ 3	$ 3,300	$ 2,970	$ 13
- Electrical System		60 Amp	ea	1	Unknown	30	10	$ 2,500	$ 2,500	$ 1,701	$ 80
TOTAL									$ 202,050	$ 78,527	$ 10,966

Notes:

A. Estimated cost to place two (2) inch-thick (compacted) asphalt overlay.

TARA WOODS
CASH-FLOW ANALYSIS
2011-2030

YEAR	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PAVEMENT																				
Parking Lot					36,750															
Boat Ramp					5,000															
ACCESS CONTROL			6,500																	
PIER																				
Decking																				
Structure																			12,000	
PAVILLION																			120,000	
Structure																				
Roofing																				
Electrical																				
MISCELLANEOUS	800	824	849	874	900	927	955	984	1,013	1,044	1,075	1,107	1,141	1,175	1,210	1,246	1,284	1,322	1,362	1,403
STARTING BALANCE	78,527																			
EXPENDITURES	0,800	824	7,349	874	5,900	927	955	984	1,013	1,044	1,075	1,107	1,141	1,175	1,210	1,246	1,284	1,322	133,362	1,403
CONTRIBUTIONS	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120	7,120
YEAR END BALANCE	84,847	91,143	90,914	97,160	98,380	104,572	110,737	116,873	122,980	129,056	135,101	141,113	147,093	153,038	158,948	164,821	170,658	176,455	50,214	55,931

APPENDIX B

SUPPLEMENTARY TECHNICAL INFORMATION

APPENDIX B
SUPPLEMENTARY TECHNICAL INFORMATION

PAGE(S)	SUBJECT	REFERENCES
1	Pavement	Various sources, including the Virginia Asphalt Association Association and The Asphalt Institute.
2-3	Sloped Roof Maintenance	Joseph D. Shuffleton, P.E.

PAVEMENT

Broken Pavement Repairs - Network (interconnected) cracking, potholes and other forms of seriously distressed pavement should be repaired in accordance with the full-depth patching methods presented below.

- The patch outline should be saw-cut to a regular (squared) shape that extends at least one (1) foot beyond the distressed area. The shape should align with traffic patterns and the faces should be straight and vertical.

- All broken and unstable material should be excavated to a depth necessary to establish a firm base. The bed should be compacted in order to enhance support.

- A tack coat of emulsified or liquid-asphalt should be applied to the vertical surfaces to enhance adhesion between the patching and existing materials.

- Hot-mix asphaltic concrete should be placed into the excavation starting at the perimeter (rather than center-filling and raking to the edges). The composition of the patching material and depth of the excavation will dictate compaction procedures; however, most patches (for this project) could be accompanied in a single lift (operation) followed by compaction.

- The completed patch should be at the same level as the surrounding pavement (with full compaction). If hand tamping or light compaction techniques are used, the patch should be slightly higher that the surrounding pavement to allow for further compression by traffic.

Resurfacing - When the existing pavement nears the end of its serviceable life, the system should be overlain with a new asphaltic concrete wearing surface. Properly executed, resurfacing could extend the serviceable life of the system an additional ten (10) to fifteen (15) years. proper application should include the following preparation and execution methods.

- Prior to repaving, the substrate (existing pavement) must be stabilized by complete removal and replacement (patching) of broken and severely cracked sections.

- Minor cracks should be sealed against water intrusion, prior to repaving.

- Existing pavement should be milled to a depth of two (2) inches along the gutter joints, tapering to zero (0) inches five (5) feet in toward the center. This method helps assure a uniform two (2) inch surface and a smooth transition at the gutter joint.

- The surfacing should be reasonably clean and free of debris and contaminants.

- Installation of a paving fabric over the existing surface would help to stabilize the structure and inhibit the transmission of faults (cracks) to the new surface.

The new surface should be seal coated with a coal-tar emulsion as soon as possible after the asphalt has cured (60 to 90 days). The seal coat will help to protect against both water intrusion and attack by automotive fluids.

ROOF MAINTENANCE

Competent inspection and repair can dramatically extend the serviceable life of a roof system. With proper guidance, minimal efforts and expense can yield big dividends in terms of greatly reduced long-term costs and roof-related problems.

Routine inspections should be performed at least once a year by properly qualified personnel. Independent contractors or consultants can be used. However, management or maintenance staff can also readily be trained to do the inspections. To supplement these routine surveys, a special detailed inspection of the roof should be performed at least every three years by an independent qualified contractor or consultant.

Some of the basic items that should be inspected are listed below. It is important to remember that a special listing of items should be developed for each individual roof.

SHINGLE OR SHAKE ROOFS - SLOPED

Surface

- Debris - No trash, leaves, branches or other debris should be allowed to remain on the roof.

Systems

- Drainage - Gutters, downspouts, etc., should be clean and operable.
- Wall Flashings - All should be tight and fully sealed.
- Shingles and Shakes - All should be securely fastened, and any damaged, loose or missing units should be replaced.

Miscellaneous

- Roof Penetrations - Pipes, vents, etc., should be tightly sealed.
- Hips and Ridges - All should be tightly fastened and sealed.
- Decks - These should be reasonably firm and free of deformity.

This partial list of items requiring periodic inspection should be a helpful starting point. It would be impossible to list all the items requiring inspection for all of the roofs and systems that exist. If assistance is needed in compiling a complete list for a particular roof, a qualified engineer/consultant or roofing contractor should be asked to inspect the roof and prepare a detailed checklist for specific needs and conditions.

Roof maintenance/repair costs typically average up to $0.10 per square foot per year. A qualified contractor or consultant can provide more precise information for annual budgeting at a particular property; however, if more than $0.10 per square foot per year is being spent, replacement of the roof systems should be seriously considered.

Finally, good roofing files should be kept. This will assist contractors and consultants in providing their best possible advice regarding future maintenance and replacement needs. Roofing files should include the following items.

- Copies of design plans and specifications for roof.
- A list of all materials used in the construction of the roof system. This should include all accessory items such as metal edging, gutters, roof vents, etc., and manufacturer's information such as specifications and brochures on all materials.
- Copies of construction inspection reports and construction records.
- A list of roof maintenance work including:
    - Results of all inspections;
    - Location of all repair work;
    - Materials used for repair work;
    - Repair costs; and
    - A history of all problems and complaints involving the roof system.
- Copies of all warranties, guarantees and/or bonds that were issued for the roof.