



Rob Martin, Deputy Chief
Saco Fire Department
300 Main St.
Saco, ME 04072

May 2, 2016

RE: Revised / Partitioned Estimate for Ladder-1 Refurbishment

Dear Chief,

Regarding your request to reconsider the refurbishment of your Ladder-1 over a period of up to three years, we offer the following comments and recommendations (Ref: NEA estimate for the single-event refurbishment of Ladder-1, dated 1/27/16).

First, although we are familiar with this type of request and have partitioned large jobs as the result of budget restrictions in the past, please be aware that economies of scale and efficiency are lost when projects like this are broken into multiple events. Out of service time for the affected unit will increase, operating costs will continue to escalate as repair frequency of the aging unit increases, and unit reliability will decrease disproportionately as compared to that of a refurbished truck.

The partitioning of cab and body refinishing projects can result in labor redundancies of over 20%. The external refinishing and corrosion repair is a major time-consuming task (typically costing approximately \$60,000 for large ladder trucks like yours) which is not easily partitioned since, once the process is started, all doors are removed, lettering and striping is removed, all accessories are removed, etc. Prior to starting the painting process, corrosion treatment and metal repairs are completed. Bare metals are etch-primed before the application of base primer and the 2-stage color coat/clear coat finish systems are applied. Once the finish has been restored, a department would not want to reattach corroded light fixtures or accessories, or return the truck to service without the required lettering and striping.

If the overall refurbishment project must be partitioned, we suggest that the first portion of work be applied to important mechanical aspects of refurbishment that are not readily visible. Related

NORTHEAST EMERGENCY APPARATUS, LLC
440 Washington Street N, Auburn, ME 04210
Ph: (207) 753-0080, T/F: (866) 281-0911, Fax: (207) 753-0090
www.NortheastEmergencyApparatus.com

tasks include replacement of the aerial swivel (a wear item with a finite service life); chassis and underbody accessory corrosion treatment, hydraulic line and fitting replacement; replacement of corroded wheels; etc. Depending on the scope of this work, this phase can likely be handled for \$40,000 or less.

Given your request, you might want to consider a prioritized rescheduling of the original list provided in January as follows:

Year 1 (rough estimate of \$40,000; 2-3 week repair time):

- Aggressively descale and treat accessible chassis and torque box surfaces; apply durable coatings and wicking anti-corrosive compounds.
- Access and replace aerial hydraulic swivel. Replace any suspect hydraulic lines and waterway plumbing. Repair any suspect electrical wiring, connectors or terminals feeding the swivel.
- Inspect all aerial hydraulic lines, extension/retraction and elevation cylinders for condition and leaks. Replace hoses/lines as needed. Overhaul, reseal and test any leaking cylinders.*
- Replace any suspect aerial hydraulic lines on underside of truck (determined by degree of fitting corrosion and/or condition of hose exterior).
- Replace existing corroded steel rims with aluminum wheels. (Does not include new tires. If tires are needed, Saco will purchase at discounted government bid rates and supply them to NEA for installation).
- Perform full aerial and pump services.*
- Perform overall inspection of the pump and valves. Rebuild leaking valves. Replace pump packing, install sacrificial anodes, replace pump transmission lower seals and bearings. Test the pump per NFPA 1911 and provide related documentation.*
- Assist with and oversee a 3rd Party NFPA 1911 Aerial Test and related documentation*

Year 2 (rough estimate of \$20,000 - \$30,000; 1-3 week repair time):

- Perform full aerial and pump services.
- Clean and perform spot paint/corrosion repairs on aerial ladder sections as needed. Prep, prime, and paint affected areas. Replace badly worn section guides. Re-time and adjust cables. Add LED lighting at tip lights.
- Fabricate and install stainless steel battery boxes with covers.
- Inspect and re-treat chassis and torque box surfaces for corrosion; apply durable coatings and wicking anti-corrosive compounds.
- Inspect all aerial hydraulic lines, extension/retraction and elevation cylinders for condition and leaks. Replace hoses/lines as needed. Overhaul, reseal and test any leaking cylinders.
- Perform overall inspection of the pump and valves. Rebuild leaking valves.*
- Perform full aerial and pump services
- Test the pump per NFPA 1911 and provide related documentation.
- Assist with and oversee a 3rd Party NFPA 1911 Aerial Test and related documentation

Year 3 (rough estimate of \$70,000; 8-12 week repair time)

- Remove all exterior cab and body hardware, accessories, trim, lettering and striping. Repair all cab and body corrosion and body deformities. Prep, prime, paint and buff the cab and body using quality materials and processes consistent with those of the OEM and fire service market.
- Re-stripe and letter the truck per current design or in similar size and quantity as modified by the Saco Fire Department using premium materials.
- In an effort to reduce the load on the truck's electrical system and reduce the frequency of subsequent lighting issues, upgrade all warning lights to Whelen Super LED lamp heads using new gaskets & trim (except for the light bars or lamps that were replaced within the prior 18 months). Convert as practical DOT and perimeter lighting to LED heads (including ground lights).
- Inspect and re-treat chassis and torque box surfaces for corrosion; apply durable coatings and wicking anti-corrosive compounds. *
- Inspect all aerial hydraulic lines, extension/retraction and elevation cylinders for condition and leaks. Replace hoses/lines as needed. Overhaul, reseal and test any leaking cylinders *
- Perform overall inspection of the pump and valves. Rebuild leaking valves *
- Perform full aerial and pump services*
- Test the pump per NFPA 1911 and provide related documentation *
- Assist with and oversee a 3rd Party NFPA 1911 Aerial Test and related documentation*

* Please note that part of the refurbishment project includes some tests and maintenance tasks that overlap what are normally considered to be routine annual maintenance covered by operating budgets. In this case, for the sake of consistency and since some of these services were listed as part of the original refurbishment proposal, recurring annual preventive maintenance work is included in each of the three phases shown above (thereby increasing the phase 2 & 3 costs by about \$5,000 to \$6,000 each with amounts typically carried by operating budgets). These include the following:

- Inspect and re-treat chassis and torque box surfaces for corrosion; apply durable coatings and wicking anti-corrosive compounds. *
- Inspect all aerial hydraulic lines, extension/retraction and elevation cylinders for condition and leaks. Replace hoses/lines as needed. Overhaul, reseal and test any leaking cylinders *
- Perform overall inspection of the pump and valves. Rebuild leaking valves *
- Perform full aerial and pump services*
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Given the scope of each project phase, NEA requests a 33% deposit of the estimated costs of phases 1 and 3 upon release of those phases, 33% upon satisfactory mid-phase inspection, and the balance upon completion of each phase.

If you have questions or would like to review other angles for handling this work, please contact me.

Respectfully,

A handwritten signature in blue ink, appearing to read "Scott E. Lake".

Scott E. Lake, President & Partner