

Northern Region (Fairbanks) Office Building Roof Replacement

FY2005 Request: \$374,000
Reference No: 38873

AP/AL: Appropriation **Project Type:** Deferred Maintenance
Category: General Government
Location: Fairbanks Areawide **Contact:** Nico Bus
House District: Fairbanks Areawide (HD 7-11) **Contact Phone:** (907)465-2406
Estimated Project Dates: 07/01/2004 - 06/30/2005

Brief Summary and Statement of Need:

This project funds roof replacement for the Northern Region Office of DNR which houses five Divisions, will protect structural and equipment assets, repair damage caused by an old and deficient roof, and extend the life of the DNR Fairbanks Office, a DNR-owned building. This project also enhances energy efficiency and brings the building into closer compliance with building codes. Currently, roof leaks require stopgap measures of buckets on floors, and garbage bags tied to ceiling joists in areas including conference rooms, files, electrical equipment and public offices. This project will allow all departmental offices to meet the mission of providing services to the public in a warm, safe, dry environment.

Funding:	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	Total
AHFC Bonds	\$374,000						\$374,000
Total:	\$374,000	\$0	\$0	\$0	\$0	\$0	\$374,000

<input type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input checked="" type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

Operating & Maintenance Costs:

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
<u>One-Time Startup:</u>	0	
Totals:	0	0

Additional Information / Prior Funding History:

SLA01/CH61-\$200.0 for estimates for the replacement of only a water-impermeable membrane plus some other associated needs in the building. \$25.0 has been spent for a consulting engineer to inspect and produce a report with a range of recommendations to address the situation. From the report, DNR building management who occupy the building and DOT&PF engineers have determined that a roof replacement is the most cost effective action to take that will provide the State with a warranted roof system.

Project Description/Justification:

Prior Funding History and Status:

From 2001 SLA, Chapter 61, \$200.0 was received. The amount was based on preliminary estimates for the replacement of only the water-impermeable roof membrane and other unassociated needs in the building. Since that time, \$25.0 has been spent for a consulting engineer to inspect and produce a report with a range of recommendations to address the situation. From the report, DNR Managers who occupy the building have concurred with DOT&PF engineers who have determined that a roof replacement is the most cost effective action to take that will provide the State with a warranted roof system. Now that DNR has a valid assessment of the roof replacement cost, based on an architect's design and energy efficiency review, DNR is ready to proceed with this capital project request that (when paired with the 2001 SLA appropriation balance) will replace the DNR Office building roof and repair damage to public areas. Repair and roof replacement have been on hold for more than two years pending the outcome of the architect's analysis and pending

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adequate funding to solve the problem. In addition, some of the other projects intended to be addressed with the original CIP have also been on hold. The building was built and occupied in 1988. After 15 years, the building requires structural and mechanical attention, which is the intent of this capital project. If this CIP is granted, we can finally address both the roof and other structural/mechanical issues also needing attention.

Detailed Project Justification:

The major objective is to replace the roof of the building and to extend the structure's useful life. This project will address safety and health issues. Water around sensitive phone switching equipment, GIS plotters, critical computer systems, computer servers and routers could cause serious damage. In addition, leaking water contacting electrical equipment can cause shorts which could result in fatalities. Moreover, soaked building materials such as carpet, sheetrock, and ceiling tiles could harbor mold and fungal spores which have proven to be harmful to humans to the point of condemning affected buildings. These situations, repeated in several places around the building, present a significant potential liability to the state.

The nature of the present roof damage results in leaks that are not traceable, therefore it is difficult to predict where a leak will appear or what below it might be damaged. Roof membrane penetrations put at risk all property, equipment, and files in the Northern Region Office building. While there are some areas of predictable leaks such as in vents, other new drips appear randomly through ceiling tiles, the sources of which are not locatable. Sensitive electronic equipment is at risk of becoming inoperable or permanently damaged, potentially requiring significant outlays in funds to replace it.

A fully adhered waterproof membrane system with an additional 2 inches of insulation will increase the R-value of the building, thus resulting in heating and cooling savings. In addition, a light-colored membrane will decrease both the cooling load as well as heat transfer to the building in summer. Light-colored waterproof membranes have been shown to decrease the roof temperature upwards of 50 degrees. This advantage over the darker membrane should help maintain the integrity of the materials involved in the roof replacement, thus lengthening their useful life. Long hours of daylight and extremely warm days approaching the mid-80's are common in Fairbanks. If the cooling load is decreased, energy cost will be significantly decreased as well in the spring, summer, and early fall. For these reasons we want to install the light-colored membrane.

The costs for the project were determined by a structural engineer, and an architect hired specifically to design a structurally sensible and economically practical roof system to replace the current defective one.

Three alternatives were proposed by the consultant to address the roof situation. Option A was a repair of the current roof utilizing the same design standards and materials we now have, which are a loose-laid waterproof membrane covered by insulation and concrete pavers for ballast. This option replaces the membrane with a new one but calls for the re-using all the existing roof materials, including gypsum board and foam insulation, under the membrane. Because of suspected water damage over the years to the roof materials, there is no way to predict how much of the materials could be re-used, so final price of the options is also unpredictable. Additionally, the warranty would only apply to the new roof membrane itself, and would be limited in that no labor or material costs for the removal and replacement of other roof components if the membrane should fail would be covered. Warranty length for the membrane is normally ten years. Cost is estimated to be \$342.0.

Option B is also a repair of the current roof, but updating the design standard to a fully adhered waterproof membrane reusing undamaged existing roof materials. All other conditions of Option A would apply, including the limited warranty. Cost is estimated to be \$357.0.

Option C is a full replacement of the roofing system from the deck up, with updated standards and design based on actual performance of similar roofing systems at UAF. This option is a fully adhered waterproof membrane with additional insulation. This additional insulation will result in an annual savings of 505 gallons of heating oil over the current roof design, and will also lower summer cooling costs. While an actual estimate of summer cooling savings was not made, it is felt that the additional benefits of a light-colored membrane would greatly reduce costs as mentioned earlier. These two alterations to the roof system, in addition to the revised layout of the materials, should provide significant savings to the annual operating costs of the building which will vary mostly based on the price of heating oil. The new roof will meet the 2000 International Energy Conservation Code adopted by the State of Alaska in June 2001, and will comply with Alaska State Statute that addresses thermal and lighting energy standards (Section 44.42.020(a)(14)). The new roof will also meet updated (2000) Uniform Building Code (UBC) standards for live load and wind speed standards. The roof will have a full warranty, which will cover all parts and labor for two years after installation, and the membrane itself is

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warranted for ten years. Division managers in the building met with the DOT&PF project engineer after reviewing the report from the architectural consultant. All three options were discussed and evaluated for current "out of pocket" cost, likely future cost for maintenance or repair, warranty and operating budget savings. Options A and B would result in a repaired roof, but with the limited warranty and potential high future costs for maintenance due to the design standard and necessary re- use of potentially damaged or structurally compromised materials. Option C presents the best overall value to the State, updates the design standard, meets current energy standards and UBC codes, and has a low future cost for maintenance or repair. The architect's final report is available upon request.

Why is this Project Needed Now:

The potential liability of serious injury, forced replacement of very expensive and critical electrical equipment, and the potential loss of non-replaceable documents and files all indicate that the leaking roof should be resolved soon.

Specific Spending Detail:

The facility engineer at DOT will spend time monitoring contract and materials compliance. For this, \$10.0 is included for those services.

Line Item Expenditures:

Contractual Services - \$374.0. Contract with vendor through DOT for estimated \$364.0 to replace and install new roof system in addition to SLA 2001 balance, and \$10.0 for contract management to DOT&PF.

Project Support:

Local governments, businesses, non-profits, staff, and the public served by the DNR Northern Region Office.

Project Opposition:

None