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**P.W./MAJOR PROJECTS DIVISION**  
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**MEMO**

**To:** Fire Chief: Fred Swen  
**From:** W. L. Robson, Major Projects Division  
**Date:** May 15, 2007  
**Subject:** **STRUCTURAL REVIEW OF WATER DAMAGE AT NIKISKI FIRE STATION #2, HOSE TOWER**

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On May 8, 2007, Kyle Kornelis and Rob Robson, of KPBM-MPD reviewed the hose tower structure at Nikiski Fire Service Area, Sta. #2. This report is to state those observations.

**HISTORY:**

The all wood structure, built in the early 1980's, is approximately 12' X 12' and ~ 28' tall. (See Pic. #1, & #2). Schematic drawings from Carmen Gintoli Arch., were the only versions found demonstrating this structure as proposed in 1979. No formal detailed design drawings were located and it is understood to be volunteer built. It is understood that the structure is leased from a separate party.



Pic #1 South-west View



Pic #2 South-east View

**SITE INSPECTION:**

The insulated, non-ventilated structure appears to be constructed with 2"X 6" studding at 2' C-C's, with rough-cut plywood and 1"X 2" exterior batting. One (1) elevated training door, to the outside wall, (threshold at approx. 20' height). The roof structure has an assortment of antennae and a satellite dish (roof-surface affixed) with metal railing around the periphery. The roof surface of built-up bitumen sheets, is in poor condition, exhibits extensive cracking, separation of through-roof metal supports as well as sagging. The latter is due to suspected joist and sheeting failure, on the south side in the roof structure. Minimal weight carrying capacity exists in the roof structure. No obvious rain/snow-melt pour-off point is obvious. The metal, surround-railing has been supported on a horizontal 4"X 4" beam, which has suffered deterioration and allowed some of the leg attachment points to come loose. A structure light and an area light fixture are also on the roof but presently laying down and presumed inoperative.

## PW/Major Projects Div. Nikiski FSA Hose Tower Inspection (cont'd.)

The inside portion of the structure has a sliding, plywood, guillotine-type, rope-operated door, separating it from the apparatus room. A metal, caged ladder leads to a wood, 2"X work platform (catwalk) allowing access to pipe hose hangers. The east side of the inside tower walls demonstrate moderate to severe deterioration. This is due to a combination of parameters, e.g.: hose-water dripping, roof leakage and thermo-condensation. It should be noted that the design of attaching a tower to any lower-elevation, warm space will inheritably attract moist air which condenses in the (cooling) tower walls. Some portions of the 2"X horizontal wood pipe-rack carrier member, has degraded to full deterioration in the center portion.



Pic #3 View up tower East Side



Pic #4 View up tower West side



Pic #5 Hose Hanger area rot/deterioration



Pic #6 SW Roof area (5' slump under light)

### RECOMMENDATIONS:

From review of this structure it is imperative that the structure not be used or accessed in its present state. Further due to the poor condition of the roof structure the following is recommended:

- Stop use of the tower;
- Secure inside access to eliminate any, unauthorized access to the tower area. Access should be designated as "Hard Hat Area" only;
- Remove and relocate from the roof structure, those antennae and dish, (presumed salvageable) to eliminate further wind-transitional load to the failing roof;
- Have constructed and placed, a structural, (50#/SF) waterproof, temporary cap, that would bear on the outside walls, eliminating any further load on the present roof and thusly eliminating precipitation accumulation and/or leakage (if some form of the structure is to remain);
- Eliminate all power service to structure;
- Review lease agreement as to liability sustainability.

## PW/Major Projects Div. Nikiski FSA Hose Tower Inspection (cont'd.)

### SUMMARY:

Whether a hose tower facility is still desired, will depend on operational procedures and decisions to be made by the Nikiski FSA. The further intent to resurrect or move or eliminate the use of a hose tower needs to be addressed. A number of fire stations have gone to the use of hose dryers and/or floor operations, considering the new materials for hoses, in lieu of building and maintaining a (water-resistant) structure.

Depending on the final decision, the following costs for some of the options here-in described, are anticipated:

1. Removing/relocating antennae, (private contractor): \$ 4,500
2. Demo/Cap roof portion for preservation of the present structure: \$ 9,000  
(2"X6" framing, 5/8"ply-sheeting, bituthene waterproofed, strapped down, boomed in place)
3. Demolish upper 15' of structure, rebuild with inside fully waterproofed: \$ 50,000
4. Demolish entire structure, re-finish station west wall: \$ 30,000
5. If a new tower is justified in an alternate location, design & construct: \$125K - \$200K  
(Depends on site, soils, size and ancillary equipment.)

We trust this inspection report meets the immediate needs of the Nikiski Fire service Area. If any corrections and/or changes are required, please contact myself or Kyle Kornelis of this department.