Facilities Maintenance Plan

Truckee Tahoe Airport District

September 2013

Contributors

Acumen Engineering

Holdrege&Kull Geotechnical Engineers

Ward-Young Architects

Gabbart& Woods Structural Engineers

West Coast Coating Consultants

Prosser Building & Development

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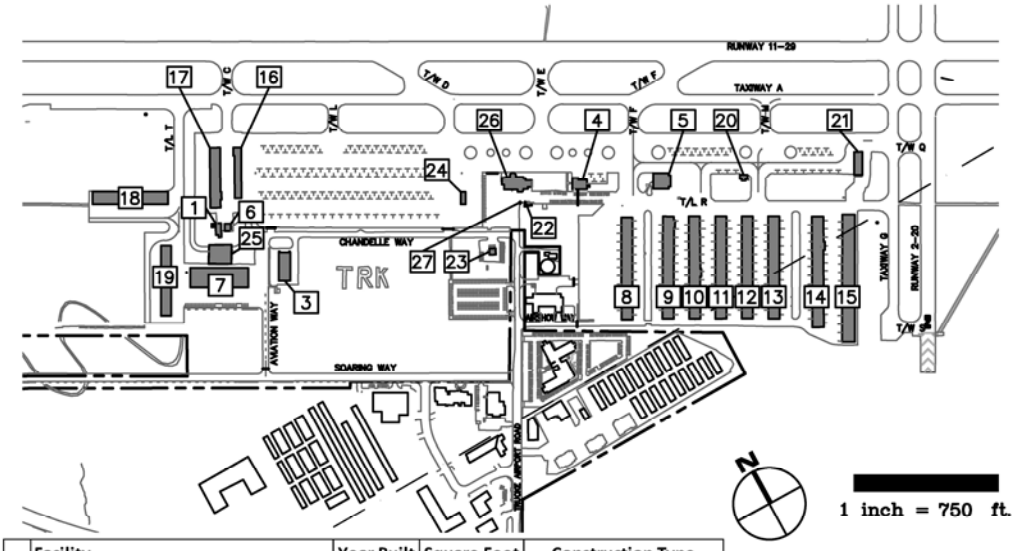
Executive Summary

At the request of the Truckee Tahoe Airport District, a review of 25 buildings and three beacon towers was completed during the summer and fall of 2013 to determine the condition of each building and develop a long-term maintenance plan for the structures. Inspections and analysis were performed by geotechnical, structural, mechanical and electrical engineers, a coating system specialist, a firm that specializes in the construction and maintenance of communications towers and an architect knowledgeable of Americans with Disabilities Act (ADA) compliance. The review found that many of the buildings' roofs have reached the end of their useful life and replacement or a significant rehabilitation is required within the next five years. Most of the buildings/structures require the application of a surface coating (paint) in the next ten years to protect the underlying structure from corrosion and degradation. Mechanical systems require on-going maintenance and replacement of most heating appliances will be required. Every facility had non-code compliant electrical installation(s) of varying degrees with the highest priority corrections being in high hazard areas such as around fuel tanks and recently constructed hangars. Four buildings do not meet ADA compliance requirements. Finally, the uses of the warehouse building require further occupancy analysis to determine if the existing lessees are in compliance with the terms of their lease.

The estimated cost of correcting the identified deficiencies and extending the life of the structures by another 30-40 years is slightly less than $3.0 million dollars. The Plan recommends expenditures of approximately $500,000 for each of the next six fiscal years.

Introduction

The Truckee Tahoe Airport has been in its current location in the early 1960's. Hangar 1 was constructed in 1963 with Hangar 2 following three years later. The warehouse, car rental building and Hangar Rows B, C and J were constructed in the 1970's. In the 1980's Hangar Rows A, D, E, F, G, K and the Phoenix (Civil Air Patrol) Hangar were erected. The maintenance and fueling facilities (tank farm and self-serve) were constructed the following decade while Hangar Rows L and M were built in mid-2000. The Administration Building was completed in 2012. The majority of the buildings are steel framed/sided with exceptions being the modular building occupied by CareFlight, the car rental structure, the EAA building and the Administration Facility. All told 25 different structures with a total floor area approaching 400,000 square feet are owned and maintained by the District. The Dry Lake and Alder Hill Beacon Towers were reportedly constructed in about 1929 while the Airport Beacon Tower was likely constructed in the 1960's. The age of the buildings, combined with exposure to harsh environmental conditions, has resulted in the need for a significant investment in heavy maintenance/repair in order to keep the buildings functional and structurally sound for another 30-40 years.



	Facility	Year Built	Square Feet	Construction Type
1	West Side Modular	1991 ±	1,728	Wood Frame
2	Accounting Modular (not reviewed)	2003	400	Wood Frame
3	Maintenance Building	1998	9,352	Metal
4	Hangar 2	1966 ±	3,126	Metal
5	Hangar 1	1963 ±	7,500	Metal
6	Garage	1991	1,140	Metal
7	Warehouse	1974	30,000	Metal
8	Hangar Row A	1984	29,680	Metal
9	Hangar Row B	1977	29,680	Metal
10	Hangar Row C	1976	29,680	Metal
11	Hangar Row D	1981	29,680	Metal
12	Hangar Row E	1981	29,680	Metal
13	Hangar Row F	1987	29,680	Metal
14	Hangar Row G	1988	32,200	Metal
15	Hangar Row H	1991	42,250	Metal
16	Hangar Row J	1970	8,840	Metal
17	Hangar Row K	1981	16,740	Metal
18	Hangar Row L	2005	24,304	Metal
19	Hangar Row M	2005	18,514	Metal
20	Phoenix Hangar	1985?	1,000	Metal
21	EAA	1963?	5,043	Metal & wood
22	Generator Building	1990	260	Metal
23	Auto Rental Building	1978?	570	Wood Frame
24	Self Serve Tank	1999		Steel tank
25	Fuel Farm	1996		Steel tanks & canopy
26	Admin Building	2012	11,556	Steel, wood, concrete
27	Airport Beacon	1960±		
28	Alder Hill Beacon Tower	1929		
29	Dry Lake Beacon Tower	1929		

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AIRPORT FACILITIES

17 JULY 2013

The District contracted with Acumen Engineering to prepare a Facilities Maintenances Plan to identify building deficiencies, develop maintenance strategies and quantify the required work both in terms of cost and timing. The areas of investigation and consultant performing the analysis included:

- Geotechnical/Soils/Foundations: *Holdrege & Kull Consulting Engineers*
- Warehouse Code Compliance and ADA information: *Ward-Young Architects*
- Structural Engineering and metal building conditions: *Gabbart & Woods Structural Engineers*
- Paint and coatings: *West Coast Coating Consultants*
- Mechanical systems: *Prosser Building and Development*
- Electrical systems: *S.A. Engineering*
- Tower Inspections: *Day Wireless*

In the spring of 2013 the team met with District Staff to review the list of facilities, discuss the scope of the investigation and identify any known maintenance or operational issues for each building. Each of the investigators subsequently examined the interior and exterior of each structure, reviewed existing reports/plans, further interviewed staff and prepared a written draft report. Those draft reports were reviewed with staff and comments/questions/corrections from that initial review were incorporated into the consultants' reports provided in the following sections of the Facilities Maintenance Plan.

Summary of Findings by Discipline

Holdrege and Kull conducted a review of available literature and 11 previous site investigations done at the airport over the years. In most instances the investigations were for or adjacent to one of the 25 buildings under study. The previous studies all had similar findings with respect to the underlying soil materials and suitability for foundation support. Holdrege & Kull's opinion is that remedial foundation repairs are not necessary but careful attention should be paid to drainage in and around the buildings to reduce the occurrence of frost heaving and the resulting differential elevations between the building floor/slab and surrounding asphalt.

Ward-Young Architects was tasked with reviewing the Warehouse building for conformance with Building Code requirements for the types of uses (occupancy) by the lessees. The classification of the uses of the building is difficult because of the types of use, methods of product storage and materials used by the various businesses. The architect's initial analysis is that the building is classified as "Storage" and thus the existing exiting and other building features marginally meet Code requirements for egress distance. However, Ward-Young recommends the District retain a specialist in commodity classification (fire protection consultant) to analyze the "hazard risk"; a changed classification to "Hazard" occupancy would

necessitate the need for the installation of fire protection systems (sprinklers, alarms, increased access and similar components). At the minimum, a review of the tenant leases with respect to compliance with Building Codes should be completed to determine if the potential hazards can be mitigated through a change in the business' operation(s).

Ward-Young also reviewed the Warehouse with respect to conformance to Americans with Disabilities Act (ADA) requirements; as expected the building does not meet ADA standards and the architect identified the necessary modifications to bring the building into compliance. While not investigated by Ward-Young, three other buildings (Hangar 1, Hangar 2 and Automobile Rental) also don't meet the ADA. The section of the Act that applies to Title II Buildings (owned and operated by state and local governments) has been in place since 1992. At the time, the District was required to develop a "transition plan" *to ensure that each service, program or activity must be operated so that, when viewed in its entirety, it is readily available to and usable by individuals with disabilities unless it would result in a fundamental alteration in the nature of a service, program or activity.* Structural changes to existing buildings to meet the program accessibility requirement were required by January 26, 1995. Title II does allow for alternatives in lieu of making changes to buildings; Ward-Young suggested the District retain the services of a CASp (Certified Access Specialist program) consultant to review the warehouse, and by inference the other three structures, and discuss best practices for government entities, transition plans and other options for intermediate and long-term compliance with ADA.

Gabbart &Woods found that the buildings' structural elements (columns, beams, purlins) did not indicate failure or the need for remedial repairs with the exception of relatively modest (¼ to -1-inch) bending of 46 columns supporting the bi-fold doors in ten of the older hangars. They did observe wide-spread and significant issues with the metal roofs of many of the buildings; complete reattachment is necessary at four of the hangars, seven require the application of a coating over the entire roof and four hangars need new roofs within the next five years. The majority of the buildings have roof leaks due to pipe penetrations or poor flashing installations, some have significant damage from ice or snow plow activity and in some cases previously completed repairs were done incorrectly and require attention.

West Coating Consultants reviewed the condition of the different surfaces (metal, wood, concrete) for chalking, visible rust, coating adhesion and thickness at each building. The result is a number of facilities that require recoating in the near (1-2 years) and mid-term (2-5years) due to loss of the existing surface protection. Wood structures generally faired more poorly than metal with regard to coating condition but the Consultant identified a number of the older hangars that require recoating of the metal siding in the next two to five years. He also found

that the fuel farm as a whole (structures, piping, tanks, ladders, etc.) requires significant attention within the next five years with the roof and supporting members being the highest priority.

Prosser Building and Development reviewed/tested 84 mechanical units located throughout the 25 buildings. Many are proposed for replacement over the next 10 years due to age, operational inefficiency, and lack of repair parts or reliability. The consultant also found a large number of units that were not seismically braced and represent a potential hazard to users of the facilities.

S.A. Engineering's review of the electrical components/installation in each of the buildings identified National Electric Code deficiencies in every location. There are many common issues such as lack of labeling, incorrect breakers in panels, unsupported conduits (raceways), improper grounding, openings in panels that allow water intrusion and insufficient clearances in front of panels. The most significant discrepancies are related to the fuel farm, the self-serve fuel island and Hangars L and M. In these areas, the presence of jet fuel and aviation gasoline necessitate the use of explosion proof fixtures, conduit terminations and similar specialized equipment/techniques, much of which is either missing or improperly installed.

Day Wireless found that all three towers had missing or damaged structural members or connectors. The electrical systems at the Dry Lake and Airport Towers required relatively minor upgrades/corrections; however the inspector declined to climb the Alder Hill Tower because of concern regarding the condition of the electrical and communications equipment on the structure. All towers require the installation of new or upgraded climbing safety equipment and proper signage. The coating condition of the Airport Tower is excellent but the two remote structures (Alder Hill and Dry Lake) require coating in the relatively near term as confirmed by West Coast Coating Consultants.

Suggested Timing and Budget Implications

With the exception of S.A. Engineering, each of the consultants provided input on maintenance priorities, recommended timing and unit prices for the various repairs assuming all work is done by Contractor(s) paid at prevailing wage rates. The magnitude of the electrical corrections and uniqueness of each facility's required repairs precluded that type of approach to cost estimating, instead values were assigned to each building based on S.A. Engineering's 35+ years of experience in commercial electrical design and construction. In most locations the priority electrical repairs would occur in year one followed by the correction of less hazardous items in the following year. A spreadsheet was prepared for each building and the sum of the suggested maintenance by year is shown on the following page. The schedule as currently developed

proposes expenditures averaging $425,000 per year through Fiscal Year 2019 with a gradual tapering of costs through Fiscal Year 2023.