Fire Station 51, 300 North Lake Boulevard, Tahoe City Summary:

ARCHITECTURAL AND ADAPTABILITY:

300 North Lake Blvd. building is a two story structure, until recently used as a fire station. Exterior walls are concrete masonry units (CMU) and are in good condition. The original building; a single story, two bay section 24' wide by 32' deep, dates to early 1950's(?). In 1961 a 36' by 49' deep section was added west of original structure and a second story over both. A new concrete stairwell was added to the north west entry, and a second wood framed exit stair and a wood framed hose drying tower to the south east side of the building.

The new work was also in concrete block and poured in place concrete headers and columns. The second floor window walls facing north and south as well as interior partitions are wood framed. The second floor and ceiling/roof structure is wood framed. The total gross square footage of the resulting building is approximately 5,045. At 2,588 square feet (sf) on ground level, and 2,457sf at second floor.

The roof is flat, with low parapets (4"-28") and sheet drains at edges to the south. The roofing material is TPO, which appears to be newly installed. The condition of the roof and roofing is good, with minor roofing penetrations for vents and piping. Some mechanical vents are missing sheet caps.

The building has a single interior concrete stairwell. The stairs are closed 6 1/2"- 7" riser and minimal 11 1/2" run. The handrails and guardrails do not meet current codes because of height, spaces between rails and extension. Recommend replacement of guards and handrails and installation of nosing warning strips per code requirements.

A second exterior stair is located on the diagonal opposite of the building. The stair location meets the code separation requirements. The exterior wood framed stairs are old, weather worn, and do not meet current codes for a variety of reason; rise and run, open rise, missing handrail at wall, height, and spacing at outside handrail/guard and inconsistent width of the stair. The stair does not provide path of travel to public right of way, nor an accessible landing at the base, but rather terminate on steep grade. Numerous wall mounted panels and conduit also encroach on the path of travel. Recommend demolition and replacement of stairs. This can be easily accomplished as there is enough space to accommodate a code complaint second exit, in particular if installation of an elevator is considered.

Per CBC Table 1015.1 A-Assembly and B-Business use require second exit from a second floor if occupant load is above 49. Considering that the floor area is 2,457sf the only use for with a single exit allowed would be Business/Office use 2457/100=25 occupants). The lack of access to the second floor by persons with disability further complicates use of space. One option worth considering is replacing the hose drying tower with a accessible, gurney sized elevator. The elevator may serve as a second means of egress from the second floor. A small, hydraulic elevator like the Kone EcoSpace requires 7'4" x 5'9" shaft space and a 5' deep pit. The tower would need to be widened on one side to accommodate the elevator shaft. The existing pit size will need to be coordinated with the elevator pit requirements.

An assembly use of the second floor, depending on the type, can mean an increase from 100sf/occupant, to as little as 7sf/occupant - CBC Table 1004.1.1 -Assembly without fixed seats; chairs only 7sf, tables and chairs 15sf, and standing room only 5sf. The worst case scenario may require two exit stairs and an elevator. This option will be more costly but will allow the greatest flexibility of use. The interior of the second floor can be easily- 'opened up' by removal of all non-bearing walls. The existing bathrooms are functioning but non -complaint. Depending on the final use of the building; recommend either replacement of existing restrooms with a single occupancy individual restrooms on each floor or combining to a single restrooms on the ground floor.

The exterior walls are in good condition and the existing windows are also fine. Verify that the large pane windows on the second floor, south elevation are tempered. The exterior doors should be replaced and new hardware installed. The door frames can be repaired. Patch and paint exterior trim, fascia and wood infill walls at south and north elevations including the sun shading devices.

The building is fire sprinklered. The type and condition/operation of which should be further investigated. The spacing of sprinkler heads may be inadequate -as it appears in the interior stairwell with head mounted only at upper landing.

Ground floor, depending on desired use may be 'cleaned up' of now superfluous equipment, ventilation, pipe and conduit and patched and repaired. The existing roll up garage doors may be replaced with storefront or folding commercial doors like Lanai or Nana doors. Alternately, the doors may remain in place allowing opening up of the space to the street and creating a sense of indoor-outdoor restaurant or retail space. The existing - in concrete driveway, ice melting system is an asset, allowing further extension of space to include the outdoor drive as a patio/display area.

STRUCTURAL:

To evaluate the existing Fire Station we prepared an ASCE/SEI 31-03 Seismic Evaluations of Existing Buildings that identifies potential deficiencies that may require additional evaluation and or rehabilitation to mitigate Identified deficiencies. This assessment is only a condition assessment and shall not be considered a complete review of both the vertical and lateral load resisting system.

Soil reports were not provided for our review. Lionakis Structural could not determine if this facility has a potential for earthquake-induced geological hazards, and would recommend a geotechnical and geological hazards report prepared by a geotechnical engineer prior to any future work that can determine potential seismic induced site hazards. For this assessment we have assumed soil class D, Stiff Soil, that has a design short-period spectral response acceleration SDS = 0.84g and a design spectral response acceleration parameter at a one-second period SD1 = 0.48g. For the parameters given, the level of seismicity shall be classified as high per ASCE/SEI 31-03.

This is a two story building with reinforced fully grouted concrete masonry unit (CMU) bearing walls. Interior walls, where present, consist of reinforced fully grouted CMU, wood structural bearing walls, and nonstructural partition walls. Roof and floor diaphragms are constructed using plywood structural panel sheathing supported on conventional wood joist that are supported on post and beams and/or exterior and interior bearing walls. The diaphragms are flexible relative to the rigid CMU walls. Ties between the diaphragm and the CMU walls consist of bolted angles attached to J-bolts that are embedded into the CMU walls spaced @ 4’-0” oc. Foundations consist of reinforced concrete continuous retaining walls and footings.

This structural damage assessment is limited to exposed and observed elements. Hidden and unforeseen conditions are excluded from this assessment. Based upon our visual observation of this building, we have concluded that the buildings are generally in good condition. The cracking observed does not appear to be caused by previous seismic events and/or caused by soil settlement issues. Exterior exposed wood decay observed is limited to fascias and exterior stair.

CMU out-of-plane wall ties may not meet the demands required by current code. Strengthening these out-of-plane wall connections would improve the seismic performance of this building. Collector and continuity members have been provided but may not meet the current force levels required under the

current code. Strengthening of these collectors and continuity members would improve the seismic performance of this building. CMU wall rebar laps do not appear to meet the current ductile requirements of special CMU shear wall buildings. This ductile detailing may only be critical on taller narrow walls on East-West direction. Since most of the walls that run in the East-West direction do not have door and window openings, this ductile detail may not be necessary.

The roof structure doesn't appear to have adequate capacity to support current snow loads required by the Placer County Building Department. Placer County requires a minimum 212psf ground snow load and that is equivalent to approximately 10'-0" of snow depth. This ground snow load is then reduced to a roof snow load equal to 148 psf. We have determined that the existing roof joist have a design capacity of approximately 40psf snow load. Mitigating options may include adding mid span beam and column supports that will reduce the overall joist spans. Other options could include adding snow depth indicators and fall protection to the roof so that the roof can be cleared of snow if the snow depth exceeds 2'-0".

Adapting this building for reuse my include alterations to the existing structural CMU shear walls. Future tenants may request that the South facing CMU wall, facing Lake Tahoe, may need the existing window openings increased in size and/or additional openings added. Modifications made to the existing lateral force resisting system would likely trigger the review of the current lateral force resisting system. New lateral force resisting elements may need to be added to accommodate this type of alteration to this building. Braced frames and/or new shear walls may need to be added to offset any opening added to and/or modifications made along this South wall line.

This building appears to be relatively good condition and meets the minimum life safe requirements and is considered to be a good building for adaptive reuse. An occupancy change lower than its current use as a fire station, Occupancy Category IV, should not require upgrading this building to meets the current code. We would recommend that if future alterations result in modifications to the existing lateral force resisting system, that this alteration also will include a seismic rehabilitation of the original seismic resisting elements.

MECHANICAL:

Building is heated with natural gas unit heaters and forced air units. There is no mechanical air conditioning or ventilation. The vehicle garage has an exhaust system with tail pipe drops. The drive way into the vehicle bays has a hydronic snow melt system.

PLUMBING:

Toilets are gravity tank and lavatory sinks are wall hung. There is a full kitchen with electric appliances. There are two showers. Water piping is copper. Waste and vent pipes are assumed to be cast iron. There is one large gas fired water heater.

ELECTRICAL:

Overall the electrical system for the fire station 51 is outdated and needs to be upgraded. The overall service size should be upgraded to 400 amps and the existing 120/240 single phase panels need to be removed. The lighting is adequate for the current space. However, it will probably need to be upgraded based on the new tenant. If changes to the occupancy occur the current lighting in this facility will not work and will require a complete upgrade depending on the type of occupancy. The general receptacles are adequate and meet the minimum standard at this time for the current occupancy. Any changes to the occupancy will require additional power depending on the type of occupancy. There is a hydronic slab heating system in place which works properly. A future hydraulic elevator may be required or needed in the near future. This will require additional power and fire alarm tie-inn. The overall fire alarm and sprinkler system is adequate and does not need any upgrades. There is an outside concrete pad in back of building, facing the lake –used for the back up generator, now removed. The original generator room is located under the building in a basement space - accessible from the same side of building.