



(Image J)

Unit F5: The deck for this unit appears to have been remodeled and repaired at some point in time. This unit deck is connected to unit F6 and is separated in the middle by a framed partition wall. It appears that the deck joists are 2x8's spaced at 20" on center with 2x6 wood decking. The paint that was applied to the underside of this decking and joists has mostly peeled away. Most of the joists bear on mechanical steel hangers or are toe-nailed on the west end and cantilever approximately 8" on the east. The west end hangers are nailed to either a 2x8 ledger that is perpendicular with the deck joists or toe-nailed to a 2x8 ledger that is on an approximate 45 degree angle to the deck joists. The ledgers appear to be nailed to the side of the building. The cantilevered ends of the joists bear on either a dropped 3x12 rough sawn beam or a dropped 5 1/8 x 12 glulam beam that supports some of the deck for unit F6. Some of the nails appear to be weathered and show signs of rust. Some of the deck joists are cracking and appear to be rotting on the top in areas and they also appear to be taking on a blackish/gray weathered look. The dropped 3x12 rough sawn beam spans approximately 12'-0" and bears on a twisted 6x6 post to the south end and appears to bear in the exterior wall of unit F4 on the north end. The 6x6 post to the south does not appear to have a mechanical cap plate nor a base plate connection where it bears on a circular pier that is approximately five inches above the grade. On this unit there is also a set of stairs that lead down to the grade below. The stairs appear to be framed with three separated stair stringers with 2x6 decking for treads. The two stringers on the outsides of the stairs appear to be (3)-2x12 stringers, and one located in the middle appears to be (1)-

2x12. The middle 2x12 stringer appears to have no visible connection to the (3)-2x8 cantilevered deck joist at the top. The two outside stringers appear to be attached to the (3)-2x8 cantilevered deck joist with a mechanical steel strap at the top. (See Image K) The (3)-2x8 cantilevered deck joist appear to have some rot at the top where they bear on the 3x12 beam. The stair landing at the top is approximately 3'-0" x 3'-6" in size and appears to be sagging to the east 1" over the 3'-6" cantilevered end. (See Image L) The landing appears to be framed from the extended cantilevered ends of the 2x8 deck joists. All of the stringers appear to bear on a ground at the bottom. At the bottom of the two outside stair stringers there were 6x6 newel posts that are bolted or lagged to them. The stairs also move significantly upon putting any force on them. (See Image M)



(Image K)



(Image L)



(Image M)

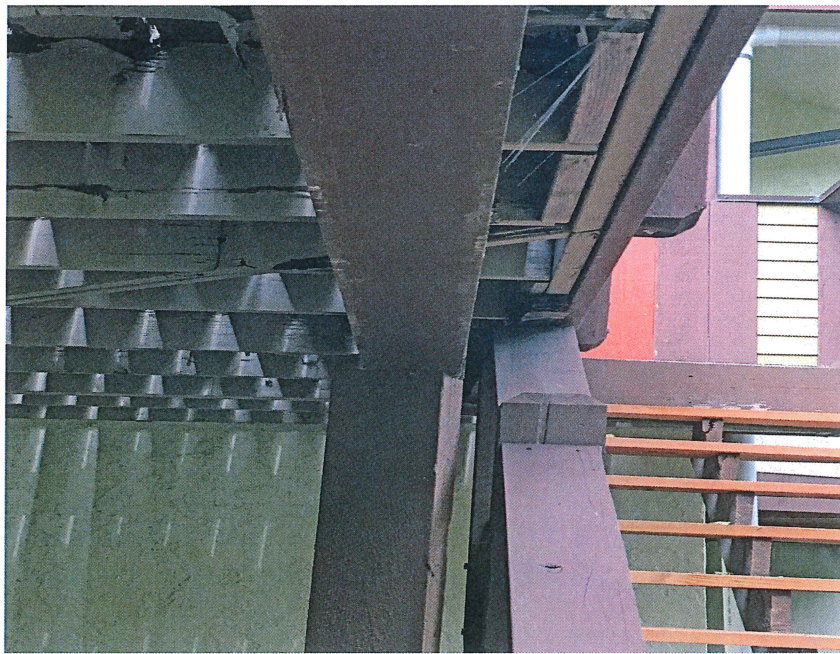
Unit F6: This deck appears to have been repaired at some point in time. The deck is connected to unit F5 and is separated in the middle by a framed partition wall. It appears that the deck joists are 2x8's spaced at 20" on center with 2x6 wood decking. The paint that was applied to the underside of this decking and joists has mostly peeled away. Most of the joists bear on mechanical steel hangers or are toe-nailed on the west end and cantilever approximately 8" on the east. The west end hangers are nailed to either a 2x8 ledger that is perpendicular with the deck joists or toe-nailed to a 2x8 ledger that is on an approximate 45 degree angle to the deck joists. The ledgers appear to be nailed to the side of the building. The cantilevered ends of the joists bear on dropped 5 1/8 x 12 glulam beam. Some of the nails appear to be weathered and show signs of rust. Some of the deck joists are cracking and appear to be rotting on the top in areas and they also appear to be taking on a blackish/gray weathered look. The 5 1/8 x 12 glulam beam spans continuously over two separate 6x6 posts and also supports some of the F5 unit deck. The top south end of the glulam beam appears to have rotted and to be getting crushed where some of the deck joists are bearing on it. The posts are spaced out approximately 16'-0" apart. The 6x6 post to the south has a mechanical steel cap on one side and it does not appear to have a base plate connection where it bears on a circular pier that is approximately three inches above the grade. The 6x6 post to the north is the twisted one that is described in unit F5. (See Image N, O, & P)



(Image N)



(Image O)



(Image P)

CONCLUSIONS:

At this time, I do not believe that the exterior decks on the east side of Building F will fail structurally but they should be attended to with some remedial work. Besides the deck being weathered and some signs of rot in areas, I do not believe they will fail in any catastrophic way in the near future. Although I do not believe the decks will fail, I do feel that the existing decks are not constructed to today's building codes. I feel that the 2x8 deck joists at 20" on center spacing and some of the supporting beams are not adequate to support the current Town of Vail design load criteria. I feel that the cracked deck joists that show signs of rot on the top are losing their structural integrity to support their imposed loads. I feel that the nails that are showing signs of rust may eventually become too corroded to support their imposed loads.

I feel as the 6x6 post for unit F3 with the large vertical crack is being overstressed and will lose its structural integrity over time and it should be replaced. I feel that the 2x8 deck joists at 20" on center spacing and some of the supporting beams are not adequate to support the current Town of Vail design load criteria. I feel that the cantilevered (3)-2x8 deck joist that is supporting the top of the stair stringers are not structurally adequate and should have some remedial work completed on it per our recommendations. I feel that the 3x12 beam for unit F5 is well below the size it should be. The stairs for unit F5 do show signs of structural instability and should be attended to as soon as possible. I feel that the steel strap that supports the stair stringers is insufficient to support the imposed loading and should be attended to per the following recommendations. The glulam beam for unit F6 is showing significant signs of rot at the top and is being compromised of its structural integrity.

Other concerns that I feel will shorten the workability of the decks is the supporting posts, newel post, and all other non-treated wood members should bear on a concrete pier that is a minimum of 8" above the grade and a minimum 48" below grade. These wood members should also have the correct steel mechanical connections. All 2x8 ledgers should be connected to a solid rim-board with a fastener that can withstand withdraw loading and not just nailing.

RECOMMENDATIONS:

I do recommend the following items have immediate remedial work completed on them:

1. All load bearing 6x6 posts should bear on a concrete pier and footing. The bottom of the footing should be a minimum of 48" below grade for frost

protection. The size of the footing can be determined by our office and is based on the load it is supporting and upon the soil bearing conditions. By code, the bottom of a wood post should be a minimum of 8" from the finished grade or shall be of naturally durable or preservative-treated wood.

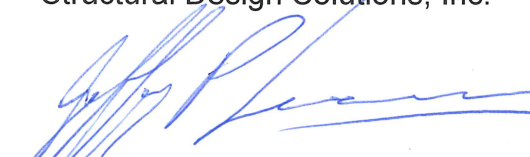
2. Provide Simpson ABU66Z base plates and Simpson PC6Z cap plates to all 6x6 posts.
3. Add (3)-4" x 3/16" diameter Timber-Lok screws at 16" on center to all existing 2x8 ledgers that are attached to the building rim-board.
4. Replace all deck joists that are showing sign of rot along the top with new ones.
5. For unit F3, replace the 6x6 post that has the vertical crack in it and provide a cap and base plate as described above.
6. For units F3 & F5, verify with the Town of Vail Building Department that the north ends of the supporting beams can penetrate the exterior wall of the neighboring unit.
7. For unit F5, replace the 6x6 post that is twisted and provide a cap and base plate as described above.
8. For unit F5, provide a Simpsons LSC to the middle stair stringer at the top and provide (2)-Simpson LSC to each side of the outside stringers. All of the stringers should bear on a treated plate that should be anchored to concrete foundation or piers. Provide a solid treated blocking between all stringers so that the newel post can be properly anchored. Verify that existing stairs meet current building code requirements.
9. For unit F5, add a new 6x6 post under the east cantilevered end of the existing (3)-2x8's and provide a new concrete pier and footing to support it. Also replace any of the (3)-2x8's that show signs of rot.
10. For unit E6, remove the top rotted section from the beam and contact our office to verify how much damage has occurred to this beam so that we can determine if it needs to be replaced or if remedial work can be done so that it can properly support the imposed loading.

The following items are recommended to help prolong the workability of the existing exterior decks:

1. Install Simpson LS70 or Simpson LUS26 hangers on all deck joists that are missing them.
2. Replace all dropped beams that are undersized to meet current building code load criteria. This can be determined by our office on unit to unit bases.
4. Add one more 2x8 deck joist to the existing 2x8 deck joist to meet current building code load criteria or replace all deck joists with 2x10's spaced at 16" on center.
5. Maintain decks by regularly monitoring them, clearing them of snow and ice, and by resealing them with the proper stain/sealer and or paint.

If you would like to discuss this report, or if we can be of further service to you, please do not hesitate to contact us.

Sincerely,
Structural Design Solutions, Inc.


Jeffrey P. Leonardo, P.E.
President

