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Observation Report

August 29, 2019

Matt Debus
Vail Management Company

Re: Meadow Creek Condominiums, Vail, CO
(Building E)
Project No. 0307-19 E

On August 22, 2019, at Matt Debus' request, I visited the property referenced above to observe the general condition of the exterior decks along the northwest side of the condominium building and to provide you with my observations. The opinions expressed in this report are based only on visual observation of the condition of the structure on this date, without disturbing any integrity of the decks or the residence. These opinions do not represent overall property review, structural analysis, or compliance with applicable building code. The original construction documents dated 01-02-1981 for the building were present at the time of my visit.

PURPOSE AND SCOPE:

The purpose of this report is to evaluate the structural integrity of the existing decks along the northwest side of the condominium for building E, and to provide recommendations of the remedial work that should be done in areas where structural problems and or damage is observed.

BACKGROUND:

The condominium complex is a cluster of buildings that are spread out over the property and appear to have some similarities in a common repetitive layout. According to limited Town of Vail Planning documents the condominiums appear to be built in the late 1970s or early 1980s. Building E consists of 6 units (E1-E6), built on a moderate sloping lot from the northeast to the southwest. Also according to some of the older documents from the town it appears that the exterior decks for building E have been modified from the plans dated 01-02-1981. The exterior decks for the units in concern are located on the west side of building E. There were no construction documents for the modified decks at the time of my visit.

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OBSERVATIONS:

Building E consists of six units and staggers two units at a time from the northwest towards the southeast approximately 8 feet starting with units E6 and E5 on the northeast side. The exterior decks are located on the northwest side of the building and are approximately 9 to 10 feet above the finished grade. They extend approximately 10 feet from the building and the lengths of the decks vary from unit to unit. There is a framed partition wall that divides the decks in half. This partition wall appears to be located between the two units at the party wall. The decks are accessed by an exterior door located on the west side of each individual unit and an exterior set of stairs for Unit E2. The exterior decks appear to be framed with 2x wood decking on a combination of 2x8 or 2x10 dimensional lumber joists, timber beams and posts. (See Image A, B, C and attached layouts)

(Image A, Unit 1 & 2)

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(Image B, Unit 3 & 4)

(Image C, Unit 5 & 6)

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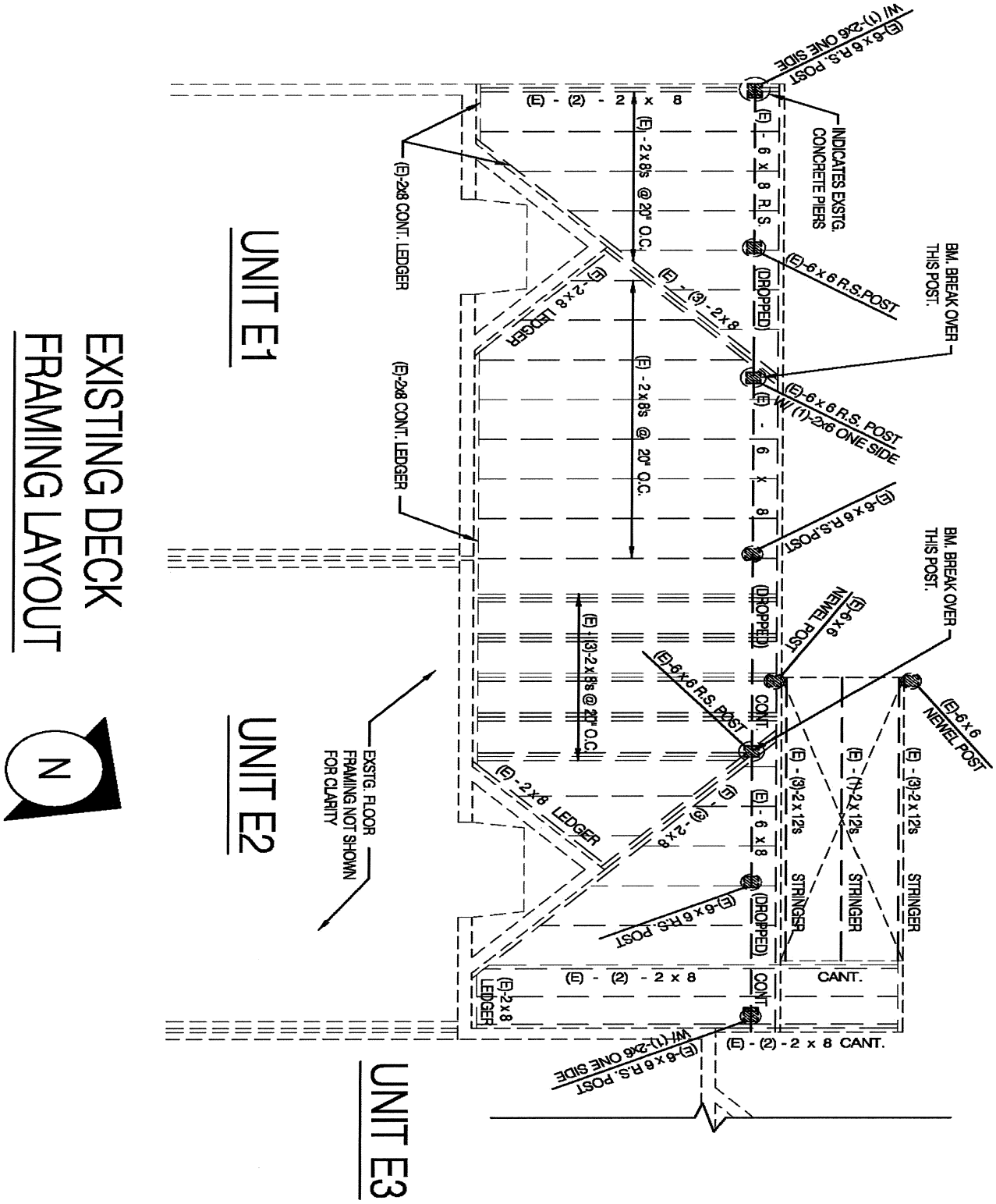

Meadow Creek Condominiums (Building E), Vail, CO **#0307-19 E**

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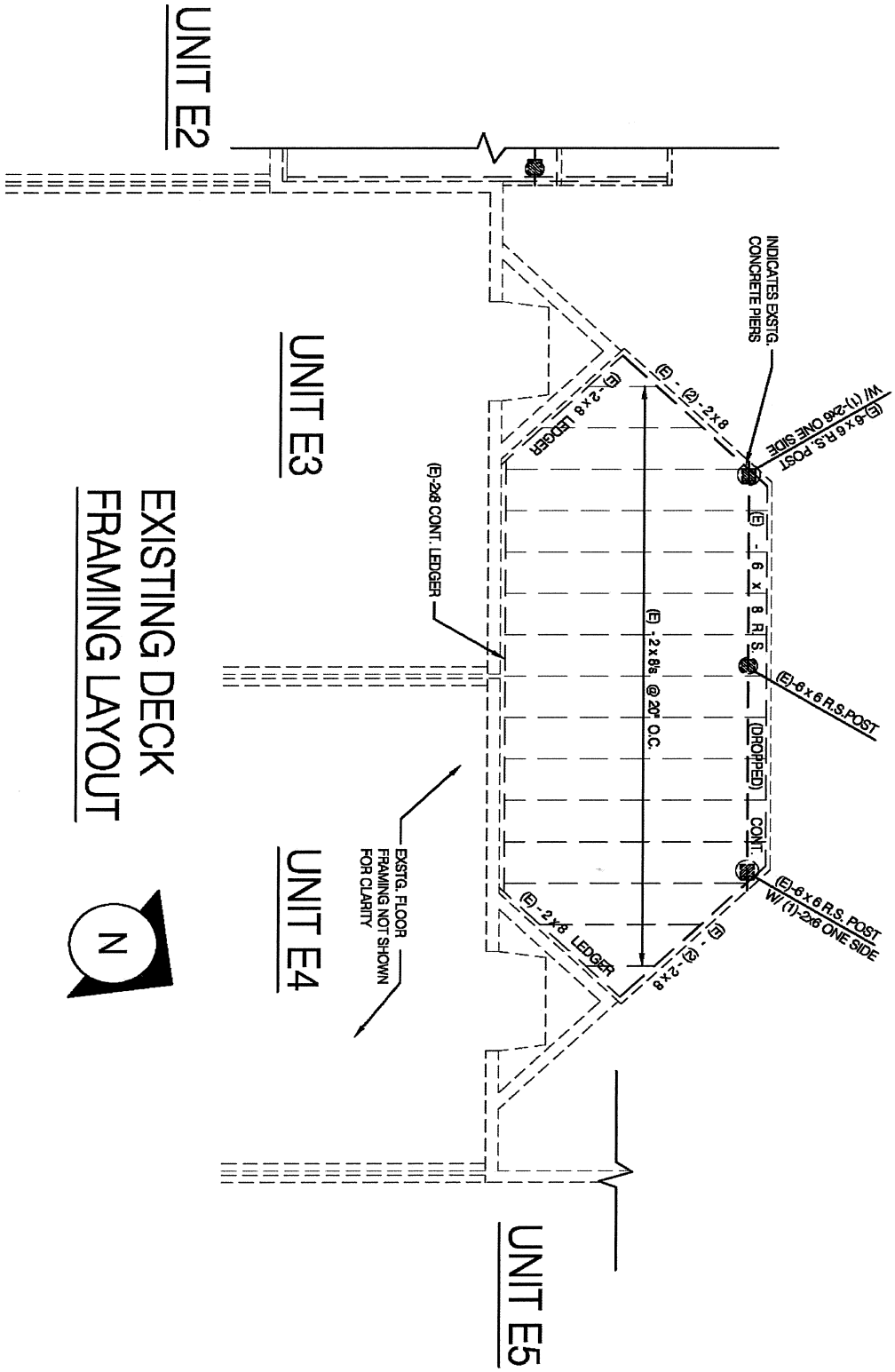

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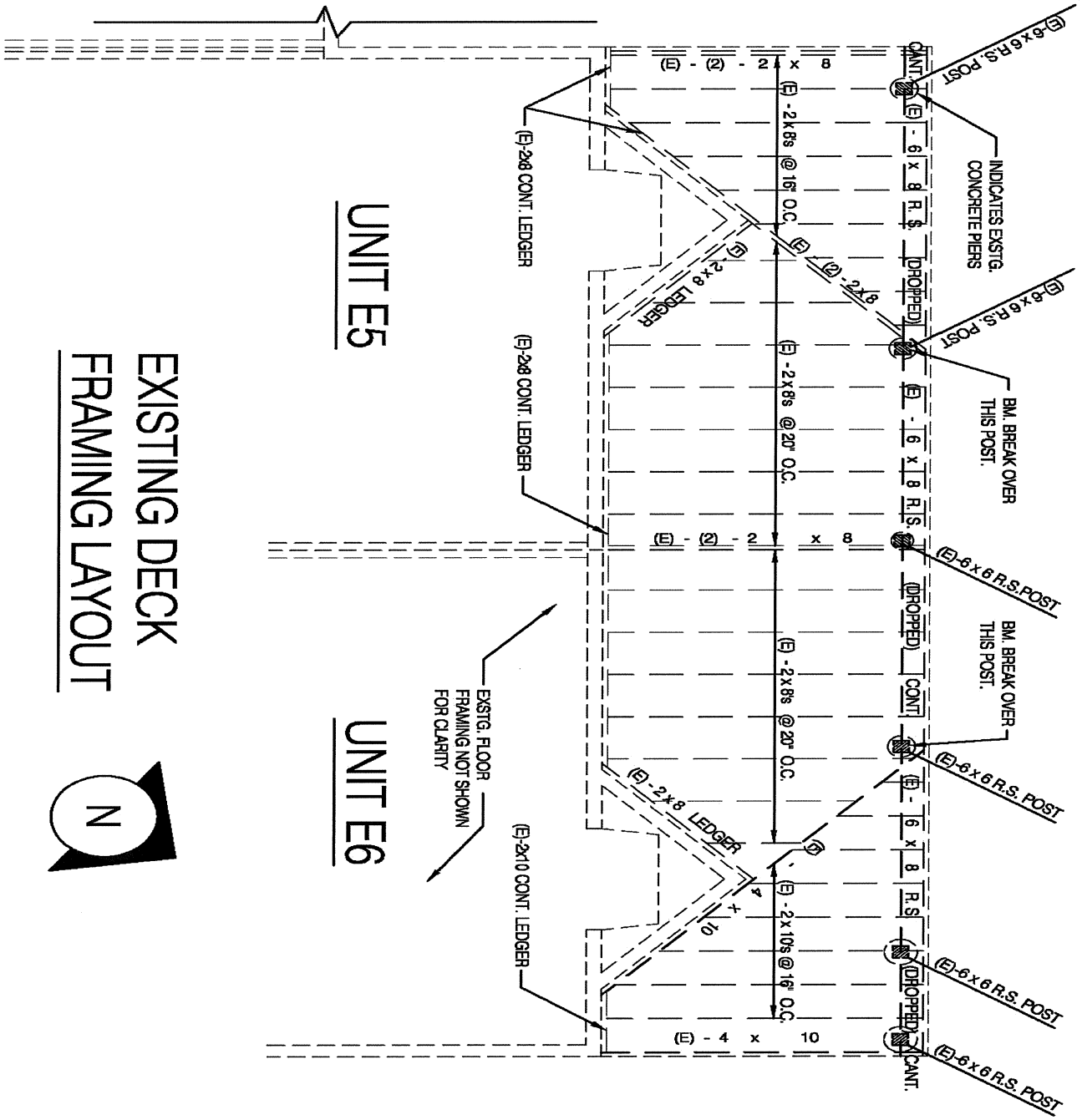

Meadow Creek Condominiums (Building E), Vail, CO **#0307-19 E**

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Unit E1: This deck appears to have been remodeled at some point in time. The deck is connected to unit E2 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 east end and cantilever approximately 8" on the west. The east end hangers are nailed to either a 2x8 ledger that is perpendicular with the deck joists or toe-nailed to a (3)-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 6x8 beams. Some of the nails appear to be weathered and show signs of rust. Some of the deck joists are cracking in areas and they appear to be taking on a blackish/gray weathered look. The 6x8 beam to the south spans continuously over three separate 6x6 posts. The 6x8 beam to the north also spans continuously over three separate 6x6 posts that also supports some of the E2 unit deck. Some of the posts have a treated 2x6 nailed to them. The posts are spaced out randomly with the largest spacing being approximately 7'-6" and smallest spacing being approximately 5'-6". It appears that where the 6x8 beams bear on a 6x6 post there are some mechanical steel caps. In one location where the beam bears on the post it appears as though two steel spikes were used to connect the beams together but the spikes were not fully installed. (See Image D). The 6x6 posts bear on concrete circular piers and do not appear to have a mechanical steel base plate. The piers are about 3 to 8 inches above the grade.

(Image D)

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Unit E2: The deck for this unit appears to have been remodeled at some point in time. This unit deck is connected to unit E1 and is separated in the middle by a framed partition wall. It appears as though there were 2x8's nailed on to each side of the existing 2x8 deck joists at 20" on center spacing located from the partition wall to where the floor from above cantilevers out from the building. (See attached layout). The east end of the built up joist bear on mechanical steel hangers. On the west end they cantilever over a 6x8 dropped beam. It appears as though the new added joists have been notched on the bottom where they bear on the 6x8 beam. (See Image E) The remainder of the deck joists appears to be 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 east end and cantilever approximately 8" on the west. The east end hangers are nailed to either a 2x8 ledger that is perpendicular with the deck joists or toe-nailed to a (3)-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 6x8 beams. Some of the nails appear to be weathered and show signs of rust. Some of the deck joists are cracking in areas and they appear to be taking on a blackish/gray weathered look. The 6x8 beam to the north spans continuously over three separate 6x6 posts. The 6x8 beam to the south spans continuously over three separate 6x6 posts that also supports some of the E1 unit deck. Some of the posts have a treated 2x6 nailed to them. The posts are spaced out randomly with the largest spacing being approximately 8'-4" and smallest spacing being approximately 5'-6". It appears that where the 6x8 beams bear on a 6x6 post there are some mechanical steel caps. The 6x6 posts bear on concrete circular piers and only some appear to have a mechanical steel base plate. One of the posts bears on a flat 2x that has been crushed between the post and the concrete pier. (See Image F) The top of the piers are about 2 to 5 inches above the grade. On this unit there is also a set of stairs that lead down the grade below. The stairs appear to be framed with three separated stair stringers. 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, with 2x decking treads. The middle 2x12 stringer appears to be attached to the (2)-2x8 cantilevered deck joist with a mechanical steel hanger at the top of the stairs. I was unable to see how the two outside stringers were attached to the (2)-2x8 cantilevered deck joist. The stringer located in the middle appeared to have a bow in it at the middle span of the stairs and was bearing on what looked like a mound of concrete at the bottom. (See Image G) The outside stringers appear to bear on a circular concrete pier at the bottom. Also at the bottom of the two outside stair stringers there were 6x6 newel posts that are bolted or lagged to them. These newel posts appear to be the support for the open steel railing on each side of the stairs. The stair landing at the top is approximately 3'-0" x 4'-0"

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in size. The landing appears to be framed from the extended cantilevered ends of the 2x8 deck joists mentioned above.

(Image E)

(Image F)

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(Image G)

Unit E3 & E4: These decks appear to be framed with 2x wood decking on 2x8 deck joists spaced at 20" on center that are separated in the middle by a framed partition wall. Most of the joists bear on mechanical steel hangers or are toe-nailed on the east end and cantilever approximately 8" on the west end. The east 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 2x8 ledger appears to be nailed to the side of the building or to the cantilevered floor from above. The paint that was applied to the underside of this decking and joists has mostly peeled away. Some nails appear to be weathered and show signs of rust. Some of the deck joists are cracking in areas and they appear to be taking on a blackish/gray weathered look. (See Image H) The cantilevered ends of the joists bear on a dropped 6x8 beam that spans continuously over three separate 6x6 posts. The posts that support the 6x8 beam are spaced out approximately 7'-8" and 8'-3". It appears that where the 6x8 beams bear on a 6x6 post there are some type of mechanical steel caps. The 6x6 post to the south and north appear to have a treated 2x6 stud nailed to one side of it and bears on a concrete circular pier that are about 3 to 6 inches above the grade with no apparent base connection. The 6x6 post in the middle appears

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to be offset to the south about 6" from the partition wall that separates the decks. This 6x6 post can be pushed away from the bottom where it bears on the circular concrete pier.

(Image H)

Unit E5: This deck appears to have been remodeled at some point in time. The deck is connected to unit E6 and is separated in the middle by a framed partition wall. The deck to the south of the cantilevered floor from above appears to be framed with 2x8 deck joists spaced at 16" on center and at 20" on center to the north of the cantilevered floor. The decking appears to be newer 2x6 wood decking. The paint that was applied to the joists has mostly peeled away. Most of the joists bear on mechanical steel hangers or are toe-nailed on the east end and cantilever approximately 10" on the west. The east end hangers are nailed to either a 2x8 ledger that is perpendicular with the deck joists or toe-nailed to a (3)-2x8 ledger that is on an approximate 45 degree angle to the deck joists. The ledgers to the south side of the cantilevered floor from above appear to be lagged into the side of the building or to the cantilevered floor from above at the top and nailed to the side of the building to the north of the cantilevered floor from above. The cantilevered ends of the joists bear on dropped 6x8 beams. Some of the nails appear to be weathered and show signs of rust. Some of the deck joists are cracking in areas and they appear to be taking on a blackish/gray weathered look. The 6x8 beam to the south spans continuously over two separate 6x6 posts

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and cantilevers over the post to the south approximately 1'-8". The 6x8 beam to the north also spans continuously over three separate 6x6 posts that also supports some of the E6 unit deck. The posts are spaced out randomly with the largest spacing being approximately 10'-3" and smallest spacing being approximately 7'-7". It appears that where the 6x8 beams bear on a 6x6 post there are some mechanical steel caps. The 6x6 posts bear on concrete circular piers and do not appear to have a mechanical steel base plate. The piers are about 2 to 4 inches above the grade. (See Image I)

(Image I)

Unit E6: This deck appears to have been remodeled at some point in time. The deck is connected to unit E5 and is separated in the middle by a framed partition wall. The deck to the south of the cantilevered floor from above appears to be framed with 2x8 deck joists spaced at 20" on center with older 2x6 decking. The deck to the north of the cantilevered floor from above appears to be framed with 2x10 deck joists spaced at 16" on center with newer 2x6 decking. The paint that was applied to the underside of this decking and joists has mostly peeled away. Some nails appear to be weathered and show signs of rust. Some of the deck joists are cracking in areas and they appear to be taking on a blackish/gray weathered look. Most of the joists bear on mechanical steel hangers or are toe-nailed on the east end and cantilever approximately 10" on the west. The east end hangers are nailed to either a 2x8 or a 2x10 ledger that is perpendicular with the deck joists or toe-nailed to a 4x10 ledger that is on an approximate 45 degree angle to the deck joists. The 4x10 ledger to the north side of the cantilevered

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floor from above appear to be lagged into the cantilevered floor from above at the top. The cantilevered ends of the deck joists bear on dropped 6x8 beams. It appears as though the 2x10 deck joists to the north of the cantilevered floor from above have been notched over the 6x8 dropped beam and some have been over cut in areas. (See Image J) The 6x8 beam to the south spans continuously over three separate 6x6 posts that also supports some of the E5 unit deck. Where the 6x8 beam bears on the 6x6 post there is a large diagonal crack. (See Image K) The 6x8 beam to the north spans continuously over two separate 6x6 posts and cantilevers over the post to the north approximately 8". The posts are spaced out randomly with the largest spacing being approximately 8'-2" and smallest spacing being approximately 3'-6". It appears that where the 6x8 beams bear on a 6x6 post there are some mechanical steel caps. The 6x6 posts bear on concrete circular piers and do not appear to have a mechanical steel base plate. The piers are about 3 to 8 inches above the grade.

(Image J)

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(Image K)

CONCLUSIONS:

At this time, I do not believe that exterior decks on the west side of Building E will fail structurally. Besides the deck being weathered in areas, there are no significant signs of rot or any indications of instability. 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 the 6x8 supporting beams are not adequate to support the current Town of Vail design load criteria. I feel that the cantilevered (2)-2x8 deck joists that is supporting the top of the stair stringers are not structurally adequate and should have some remedial work completed on it per or recommendations. I feel that the 2x10 joists for unit E6 have been over cut where they bear on the 6x8 dropped beam and this will affect the shear values of these joists. I feel that the deck joists that are cracked and appear to be taking on a blackish/gray weathered look will eventually start to rot and will lose 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. There is also quite a bit of poor construction in areas that is not standard practice.

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Other concerns that I feel will eventually shorten the workability of the decks is that all 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. This must be completed for the middle 6x6 post at units E3 and E4.

2. Provide Simpson ABU66Z base plates and Simpson PC6Z to all 6x6 posts.

3. Add (3)-4" x 3/16" diameter Timber-Lok screws at 16" on center to all existing 2x8 and 2x10 ledgers that are attached to the building rim-board.

4. For unit E2, the middle stair stringer should bear on a treated plate that should be anchored to the existing concrete piers. Provide a solid treated blocking between all stringers. Verify that existing stairs meet current building code requirements.

5. For unit E2, add a new 6x6 post under the east cantilevered end of the existing (2)-2x8's and provide a new concrete pier and footing to support it.

6. For unit E6, sister a 2x8 to the existing 2x10 deck joists with three rows of 8d nails at 16" where they have been over cut.

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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. Provide the mechanical steel cap plates on all existing 6x6 posts where they are missing.

3. Replace all 6x8 beams with 6x10 beams to meet current building code load criteria.

4. Add one more 2x8 deck joists 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.

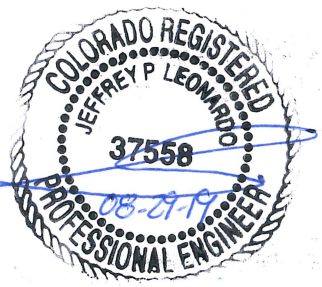
5. The area at the bottom of the stair landing should be re-graded so that there is proper clearance and drainage around the stair stinger and newel post. If this area continues to have moisture on it, it will begin to rot causing it to lose its structural integrity.

6. Install Simpson LS50 L-brackets to all sides of the stair stringers at the top landing of unit E2.

7. 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