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## Observation Report

September 17, 2019

Matt Debus  
Vail Management Company

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

On September 10, 2019, at Matt Debus' request, I visited the property referenced above to observe the general condition of the exterior decks along the east 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 east side of the condominium for building H, 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 H consists of 6 units (H1-H6), built on a moderate flat lot. Also according to some of the older documents from the town it appears that the exterior decks for building H have been modified from the plans dated 01-02-1981. The exterior decks for the units in concern are located on the east side of building H. There were no construction documents for the modified decks at the time of my visit.

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#### OBSERVATIONS:

Building H consists of six units and staggers two units at a time from the northeast towards the southwest approximately 12 feet starting with units H1 and H2. The exterior decks are located on the east side of the building and are approximately 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 east side of each individual unit. The exterior decks appear to be framed with 2x wood decking on a combination of 2x8 and 2x12 dimensional lumber joists, timber or glulam beams and posts. (See Image A, B, C and attached layouts)



(Image A, Unit 1 & 2)

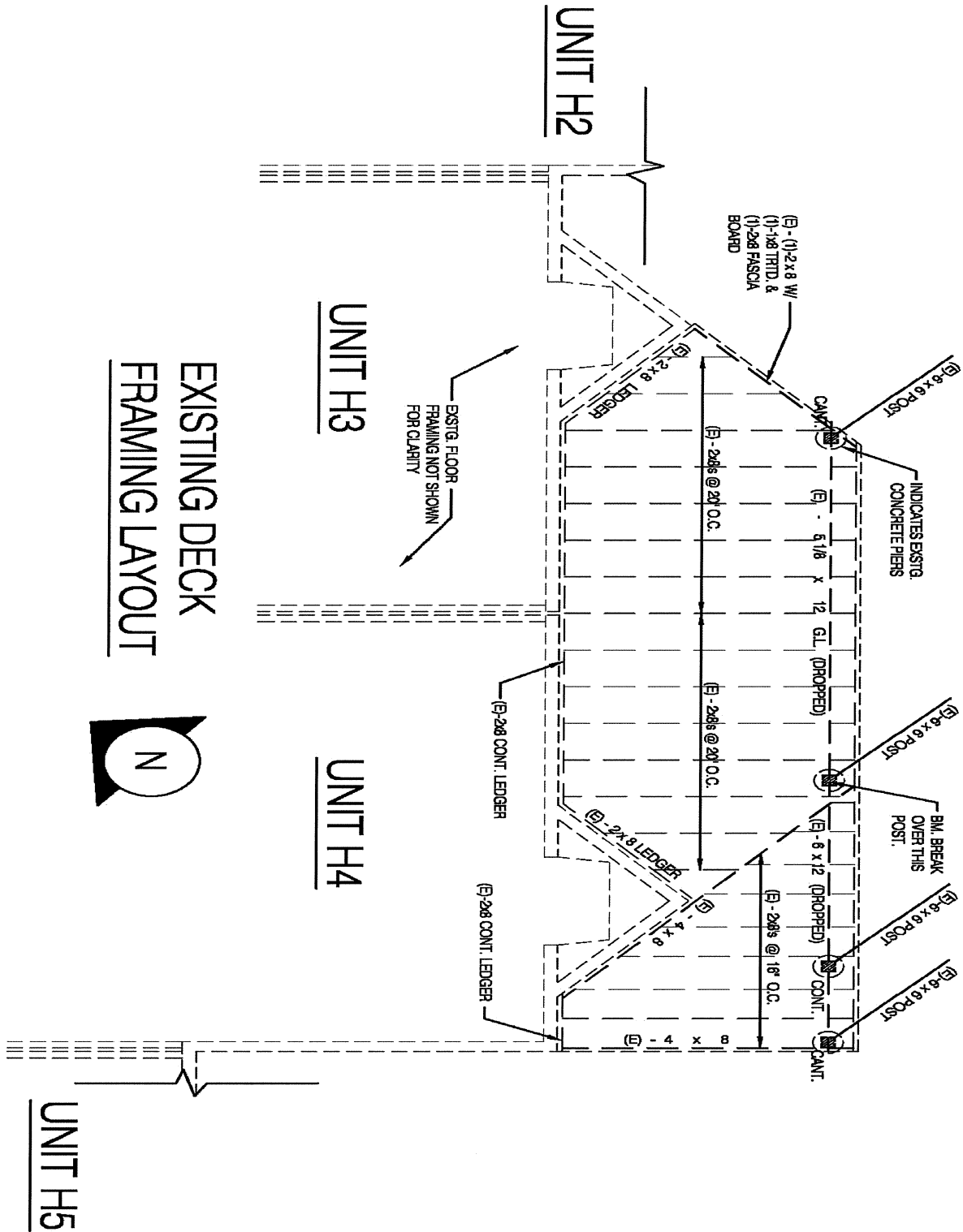


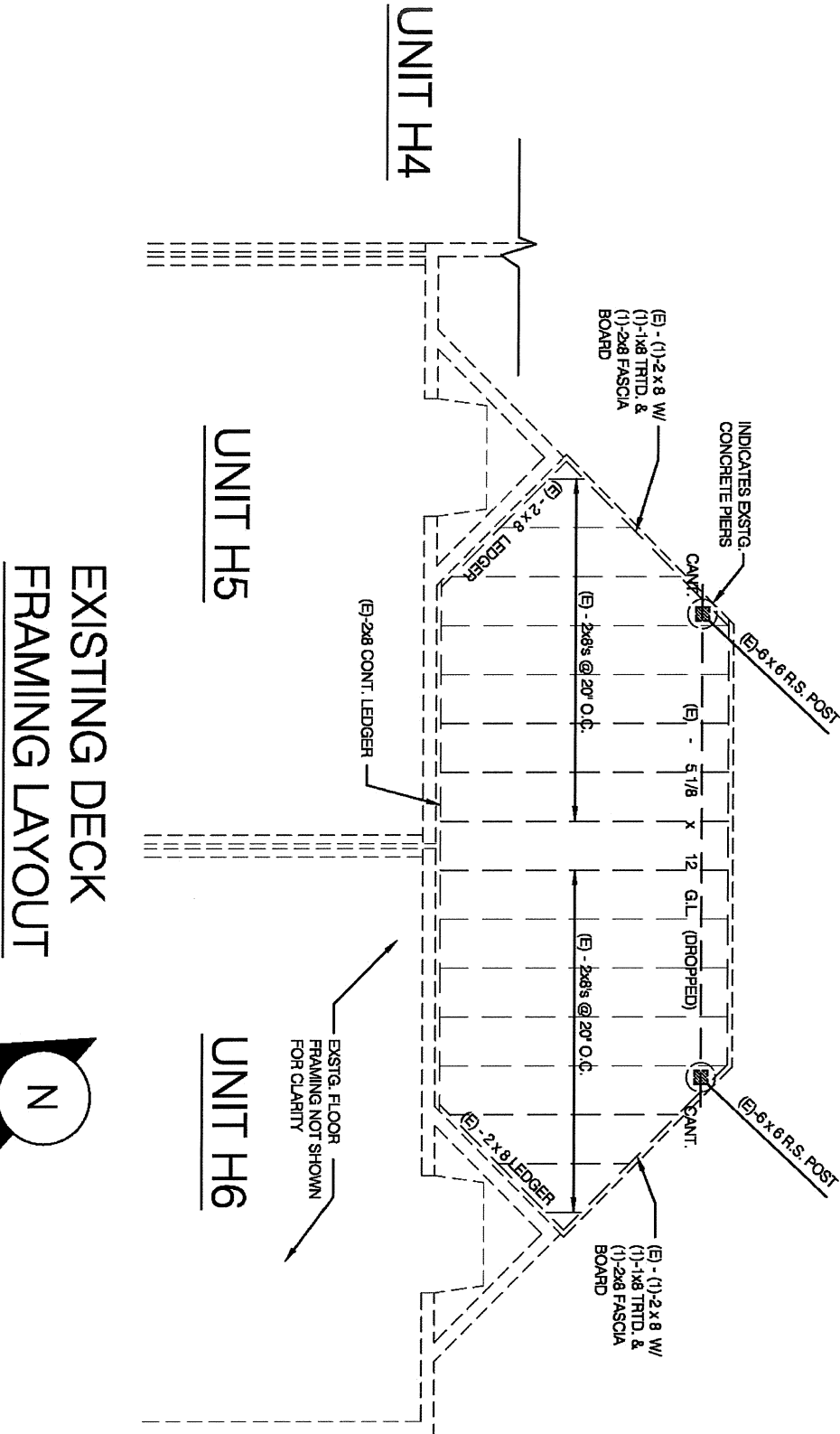
(Image B, Unit 3 & 4)



(Image C, Unit 5 & 6)







Unit H1: A section of this deck appears to have been remodeled at some point in time. The deck is connected to unit H2 and is separated in the middle by a framed partition wall. A section of this deck located to the north of the cantilevered floor above appears newer than the remainder of the deck. The newer section appears to be framed with treated 2x12 deck joists spaced at 12" on center with 2x6 decking. Most of the joists bear on mechanical steel hangers on the west end and cantilever approximately 12" on the east. The west end hangers are nailed to (4)-2x12's that is on an approximate 45 degree angle to the deck joists and appears to be nailed to a rim board. (See Attached Layout) The cantilevered ends of the joists bear on a dropped 5 1/8" x 12" glulam beam. The glulam beam spans continuously over two separate posts that are spaced out approximately 9'-8" and cantilevers to the north approximately 2'-6". The post to the north is a 6x8 and the post to the south is a 6x6. At the top of the 6x8 posts there does not appear to be a steel mechanical cap. At the top of the 6x6 post there appears to be a custom steel T-shaped cap. (See Image D) This post also supports a 5 1/8" x 12" glulam beam that also supports some of the deck for unit H2. Both of the 6x posts bear on concrete circular piers and do not appear to have a mechanical steel base plate. The remainder of the deck for unit H1 appears to be framed with 2x8 deck joists spaced at 20" on center with 2x6 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 12" 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 a dropped 5 1/8 x 12 glulam beam that supports some of the deck for unit H2. 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. (See Image E) The 5 1/8 x 12 glulam beam spans continuously over two separate 6x6 posts that are spaced apart approximately 16'-1". The paint that was applied to the glulam beam looks weathered and is peeling away. There also appears to be some separation between the laminates of glulam beam. The 6x6 post to the north supports both the glulam beams described above. The 6x6 post to the south supports both the glulam beam and 6x12 beam that is described in unit H2 and does not have a mechanical steel cap nor does it appear to have a base plate connection where it bears on a circular pier. This deck also has a hot tub on it that is approximately 6'-0" diameter in size. (See Image J and attached layout)



(Image D)



(Image E)



Unit H2: A section of this deck appears to have been remodeled at some point in time. The deck is connected to unit H1 and is separated in the middle by a framed partition wall. The deck is framed with 2x8 deck joists spaced at 20" on center with 2x6 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 12" 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 a dropped 5 1/8 x 12 glulam beam as described above in unit H1 and also supports some of the deck for that unit. 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. (See Image F) The remainder of the deck is to the south of the cantilevered floor from above and appears to have been remodeled at some point in time. This section of deck appears to be framed with treated 2x8 deck joists spaced at 16" on center with 2x6 decking. (See Attached Layout) Most of the joists bear on mechanical steel hangers on the west end and cantilever approximately 12" 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 4x8 that is on an approximate 45 degree angle to the deck joists. The ledgers appear to be lagged at the end that is closes to the exterior wall of the building. The cantilevered ends of the joists bear on a dropped 6x12 beam that is supported on three 6x6 posts that are spaced approximately 8'-1" and 3'-6" apart. At the top of the 6x6 post to the north, there does not appear to be a steel mechanical cap where both the 5 1/8" x 12" glulam and the 6x12 beams bear. At the top of the other two 6x6 posts, there appear to be a mechanical steel cap on one side. All of the 6x6 posts bear on concrete circular piers and only the two to the south appear to have a mechanical steel base plate. (See Image F & G)



(Image F)



(Image G)

Unit H3: This deck appears to be the original deck. The deck is connected to unit H4 and is separated in the middle by a framed partition wall. The deck is framed with 2x8 deck joists spaced at 20" on center with 2x6 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 12" 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 a dropped 5 1/8 x 12 glulam beam that supports some of the deck for unit H4. 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. (See Image H) The 5 1/8 x 12 glulam beam spans continuously over two separate 6x6 posts that are spaced apart approximately 15'-7". The paint that was applied to the glulam beam looks weathered and is peeling away. There also appears to be some separation between the laminates of glulam beam. Where the glulam beam bears on the 6x6 post to the north, there appears to be mechanical steel caps on both sides. The 6x6 post bears on concrete circular piers and does not appear to have a mechanical steel base plate. (See Image I)



(Image H)



(Image I)

Unit H4: A section of this deck appears to have been remodeled at some point in time. The deck is connected to unit H3 and is separated in the middle by a framed partition wall. The deck is framed with 2x8 deck joists spaced at 20" on center with 2x6 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 12" 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 a dropped 5 1/8 x 12 glulam beam as described above in unit H3 and also supports some of the deck for that unit. 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. (See Image J) The remainder of the deck is to the south of the cantilevered floor from above and appears to have been remodeled at some point in time. This section of deck appears to be framed with treated 2x8 deck joists spaced at 16" on center with 2x6 decking. (See Attached Layout) Most of the joists bear on mechanical steel hangers on the west end and cantilever approximately 12" 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 4x8 that is on an approximate 45 degree angle to the deck joists. The ledgers appear to be lagged at the end

that is closest to the exterior wall of the building. The cantilevered ends of the joists bear on a dropped 6x12 beam that is supported on three 6x6 posts that are spaced approximately 8'-6" and 3'-6" apart. At the top of the 6x6 post to the north, there appears to be a steel mechanical cap on both sides where both the 5 1/8" x 12" glulam and the 6x12 beams bear. At the top of the other two 6x6 posts, there appears to be a mechanical steel cap on one side. All of the 6x6 posts bear on concrete circular piers and only the two to the south appear to have a mechanical steel base plate. (See Image K & L)



(Image J)



(Image K)



(Image L)

Unit H5 & H6: These decks appear to be of the original design. The decks are connected to each other and are separated in the middle by a framed partition wall. The decks are framed with 2x8 deck joists spaced at 20" on center with 2x6 decking. Most of the joists bear on mechanical steel hangers or are toe-nailed on the west end and cantilever approximately 12" 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 a 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 that are spaced apart approximately 15'-10". The paint that was applied to the glulam beam looks weathered and is peeling away. There also appears to be some separation between the laminates of glulam beam. Where the glulam beam bears on the 6x6 posts, there appears to be mechanical steel caps on one side. The 6x6 posts bear on concrete circular piers and do not appear to have a mechanical steel base plate. (See Image M and N)



(Image M)



(Image N)

## CONCLUSIONS:

At this time, I do not believe that the exterior decks on the east side of Building H 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 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. The glulam beams for all the units are showing signs of being weathered and should be monitored for any signs of rot that may eventually compromise the beam of their structural integrity.

Other concerns that I feel will shorten the workability of the decks, are the supporting posts 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. Provide Simpson ABU66Z base plates and Simpson PC6Z cap plates to all 6x6 posts.
2. 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.
3. Replace all deck joists that are showing sign of rot along the top with new ones.

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

