



HOMESPEC

June 12, 2009

Mr. Home Owner
1600 Willow St.
Livermore, CA 95000

Location: Home Owner Property
100 Any Street
Livermore, CA 95000

Dear Mr. Owner,

Thank you for giving Homespec the opportunity to inspect the roof at the aforementioned location. The site inspection of the roof and related components was provided by Mr. John Quintal, on Thursday, June 11, 2009, in sunny and clear weather with no rainfall within the past 72 hours. The following conditions were observed in the course of our inspection:



1. A three-tab asphalt type composition shingle roof has been installed on the sloped sections of this one-story, single family home.

2. There is no visible damage to the roof resulting from the previous fire. Limited damage or displacement of the roof has occurred as a result of wind-related activities. Fastener placement in the seal tab assemblies, and the aged condition of the roof have allowed the roof to be susceptible to wind-related uplift and subsequent displacement.
3. Typical diminishing conditions of the shingles related to exposure to the elements including but not limited to;
 - **Cracking shingles at ridge and field locations.**
 - **Granule displacement or *wash off*.**
 - **Deteriorated sealant at roof penetrations and/or transitions.**
 - **Backing out fasteners.**
4. Improper installation techniques including but not limited to;
 - **Improper placement of fasteners in seal tab assemblies.**
 - **Lack of proper flashing installation at roof penetrations.**
 - **Lack of hand sealing of the shingles where the sloped sections transition into the modified bitumen roof.**
 - **Improper weaving of shingles in the valleys.**
5. The reported water incursion under the valley appears to be the result of age, deterioration, and improper installation methods used at the valley that has allowed the roof become overburdened with moisture during heavy rainfall.
6. Our visual observations estimate the roof to be over 20 years of age. The exact age of the composition shingle roof has not been confirmed, however, based on the existing conditions and our visual observation, the roof is at the end of a reasonable service. The typical service life of a three-tab asphalt composition shingle roof is approximately 20 years, if properly installed and maintained.
7. Installed in the middle-flat section of the roof is a modified bitumen roof that has been hot mopped in place.
8. There was no visible damage to the mineral surface as a result of storm-related activities or from the previous fire.

9. The interior water incursion appears to be from age related deficiencies and improper installation techniques that have become overburdened with moisture during saturating conditions.
10. Typical diminishing conditions of the roof and associated components related to exposure to the elements including but not limited to:
 - **Excessive buckling of the roof.**
 - **Cracking of the roof.**
11. Improper installation techniques including but not limited to:
 - **Lack of a base sheet.**
 - **Improper or lack of bonding of the roof to the substrate.**
 - **Improper transitioning into the sloped sections of the roof.**
12. Our visual observations estimate the modified bitumen roof to be over 15 years of age. The reasonable expected service life for a properly installed and maintained modified bitumen in this region is approximately 15 years.

PHOTO 1 : An overview of the southern facing roof slope displays the aged and deteriorated condition of the shingles with displacement that has been influenced



by wind-related activities. Displacement of shingles that has been affected by wind-related activities and a result of the installation methods used that promotes seal tab defeat, allows the shingles to be susceptible to uplift in certain wind conditions. Age-related drying of the seal tab assemblies is also contributing to the cause of uplift. As the roof ages the seal tabs begin to dry and lose the intended

bonding capability and is an indication that the roof is near or at the end of a practical service life.

On the south-exposed roof area the shingles are significantly weathered and aged. The granules have been displaced or washed off for a reasonable amount of time revealing the underlying components of the shingles. Exposure of the shingle components that are not intended to be revealed to the elements will accelerate their deterioration and can allow sources of moisture migration beneath the roof during periods of inclement weather when saturating conditions develop. This is an indication that the roof is no longer providing adequate service and requires removal and replacement.

The starter course of shingles have been improperly installed which has promoted displacement above the eaves. There is no provision of a sheet metal rake flashing and the shingles do not adequately overhang the edge of the roof to compensate. A sheet metal flashing component has been installed over the shingles at the attic vent penetration. The remaining flashings at roof penetrations have been installed in accordance with accepted roofing practices with the exception of the chimney. The recommended step flashings have not been provided at the sides of the chimney penetration.

PHOTO 2 : At the attic vent penetration, the sheet metal flashing is installed above the roof rather than being properly transitioned to the shingle courses. The penetration has also been provided mastic seals that are aged and deteriorated. This installation method can allow moisture migration below the roof at these penetrations during



periods of inclement weather when saturating conditions develop, which can subsequently appear as interior water incursion. The preferred installation method is to conceal the upper and side portions of the sheet metal flashing components with the lower portion left exposed to allow an exit path for any moisture that inadvertently migrates into the upper location of the penetration. At the time of roof replacement it is recommended that proper sheet metal flashing components be provided and installed to accepted trade standards. An abandoned shingle panel is lying upon the roof that can hinder drainage. Unwanted debris should not be allowed to accumulate on the roof surface to help prevent impeding the flow of water down the roof slope.

Also visible in this close up are displaced shingles that are the result of age related deterioration of the seal tab assemblies which bond shingles together and the improper placement of fasteners in the seal tab assemblies. The proper placement for fasteners is directly below the seal tab, one inch from the edge, and should incorporate four, evenly spaced fasteners per panel. These shingles have been displaced for an extended period of time indicated by the rusted nature of the exposed fasteners.

PHOTO 3: The starter course of shingles have been improperly installed inverted, or



upside down. The seal tab assemblies are too high into the field area of the roof and have not allowed the first course of shingles to bond to the roof. Displacement has therefore resulted due to easily lifted shingles above the eaves.

PHOTO 4: The perimeter sheet metal flashing components at rake locations have

not been provided as recommended. This can allow moisture influence below the roof during periods of heavy continuous rain and wind. A close-up of shingle panel adjacent to displacement locations reveals the fasteners installed through the seal tab assemblies, as indicated by the arrow. While this is a commonly used practice, it is not in accordance with manufacturer recommendations and accepted



trade standards. This installation method will promote defeat of the seal tab assemblies and subsequent uplift and/or displacement. The proper placement for fasteners is directly below the seal tab, one inch from the edge, and should incorporate four, evenly spaced fasteners per panel.

The aged and deteriorated condition of the exposed substrate and underlayment indicates that moisture influence to this location has been occurring for an extended period of time rather than being a recent occurrence. While typical remedial repairs of displaced shingle panels would incorporate 'flat-bar', replacement, and hand sealing methods, they will not assist the roof in achieving long-term service due to the extent of seal tab defeat at various roof locations and as it is reasonable to expect that these conditions will continue to develop.

PHOTO 5 : At the roof-to- chimney transition the proper sheet metal step flashing

components were not provided and interwoven with each individual course of shingles as is recommended at the sides of the chimney. This transition has not been provided with sealant to help compensate for the lack of proper flashings. This can allow saturation of the transition with moisture during



periods of heavy continuous rain, accompanied by wind and a source of moisture influence into the interior and/or wall components. At the time of roof replacement it is recommended that proper sheet metal step flashing components be provided and installed to accepted trade standards. The accumulation of debris behind the chimney can restrict the intended run-off of moisture around the chimney during periods of heavy continuous rain. This can subsequently allow overburdening of the transition where water can migrate up and under the shingles and/or *wick* into the side-wall components of the chimney when saturation develops. Regular roof maintenance should include cleaning of transition locations as necessary. Also visible is another displaced shingle from age related deterioration and improper fastener placement.

PHOTO 6 : An overview of the main, eastern facing roof slope at the rear of the structure. There is no damage or displacement at this location from storm related activity or as a result of the previous fire. The shingles are experiencing minor to moderate granule loss or *wash off*. There are fasteners backing out of the roof and through the overlying shingles in limited locations.



The shingles can be easily lifted in various locations from seal tab defeat and are susceptible to possible displacement. Roof penetrations have been installed in accordance with accepted roofing practices.

PHOTO 7 : Fasteners are protruding through the surface of the overlying shingle



panel as illustrated here. This condition suggests isolated fastener back out has occurred which is occasionally promoted by normal building motion and settlement. The fastener has been exposed over an extended period of time due to the development of rust, indicating lack of adequate roof maintenance that has been provided. These protruding fasteners have compromised the

waterproofing abilities of the overlying shingle and can allow moisture to *wick* under the roof at the point of fastener penetration during periods of inclement weather when saturating conditions develop and allow sources of moisture migration beneath the roof through the point of fastener penetration. At minimum, removal and replacement of this shingle should be provided in conjunction with normal roof maintenance. The extent of backing out fastener are

an indication that the roof is not providing service as intended and should be considered for removal and replacement.

PHOTO 8: The shingles could be lifted with passive hand pressure indicating seal tab defeat and improper fastener placement through the seal tab assemblies, as indicated by the arrow, and age related drying of the seal tabs. The proper placement for fasteners is directly below the seal tab, one inch from the edge, and should incorporate four, evenly spaced fasteners per panel. Seal tabs are intended to bond the shingles to one another to prevent wind uplift. As the seal tabs become defeated it is an



indication that the roof is nearing or has reached the end of its reasonable service life. The presence of rusty fasteners and the accumulations of dirt and debris below the shingles is an indication that seal tab defeat and uplift of the shingles has been occurring for an extended period of time, rather than being a recent event.

PHOTO 9: An overview of the northern and western facing roof slopes. There are a limited number of displaced shingles as a result of drying of the seal tab assemblies and improper fastener placement. Similar conditions above the eaves are present where the starter course of shingles have been improperly installed and are easily lifted from lack of bonding to the roof. The shingles have been improperly weaved in the valley where water entry may occur.



PHOTO 10 : The arrow indicates where the shingles are inappropriately placed in a valley location. The laps of the roof will not adequately shed water run-off and can become overburdened with moisture during periods of inclement weather when saturating conditions develop. Continued moisture influence or repeated water migration under the roof will be detrimental to the intended service life of the roof and related components and will eventually allow sources of interior water incursion below.



PHOTO 11 : An overview of the modified bitumen roof in the middle-flat section and the northern, southern, and western facing roof slopes that transition into the lower flat section. Displacement of the shingles can be attributed to lack of bonding at the seal tab assemblies and improper fastener placement which has allowed shingles to be easily lifted and vulnerable to displacement. The ridge shingles are ripping and/or tearing as indicated by the arrow. This is promoted by uplift of the shingles during periods of windy weather and is an indication that some sections of seal tab assemblies have functioned properly and continued uplifting conditions have stressed the shingles.



Some flashings at roof penetrations have not been properly transitioned into the adjacent shingles. A sheet metal flashing component at the plumbing vent pipe

penetration has been completely concealed by the composition shingles. This penetration has also been provided mastic seals that are aged and deteriorated. The flashing for the attic vent penetration has been installed completely over the roof. These methods can trap moisture below the roof at these penetrations and allow sources of moisture migration through any splits or voids in the seals during periods of inclement weather when saturating conditions develop.

The preferred installation is to conceal the upper and side portions of the sheet metal flashing components while leaving the lower portion exposed to allow an exit path for any moisture that should inadvertently migrate into the upper location of the penetration. At the time of roof replacement it is recommended that proper flashing components be provided and installed to accepted trade standards.

Similar conditions are present on the sloped sections of the roof, such as nails protruding through the overlying shingles and improper weaving in the valleys which has resulting in interior water incursion reported below.

The modified bitumen roof has been hot mopped in place and has extensive buckles developing. The roof is deteriorated and cracked, which may be allowing water entry under the roof. The modified bitumen roof does not extend underneath the shingles three courses or 18 inches as required by accepted trade standards.

Tarp assemblies have been removed by others from various locations prior to our inspection. These tarps appear to have been applied with battens and/or wood planks that were secured to the roof. These nail type fasteners likely have punctured the roof and underlayment. Where the fasteners have violated the roof, remedial repairs are now necessary.

PHOTO 12: Mastic remedial repairs have been provided directly over shingles and at a limited number of laps in the modified bitumen roof, which are not necessarily



recommended as they can trap moisture below the roof. Mastic application(s) such as these should not be necessary on a sufficiently installed roof. In addition, mastic will not necessarily provide long-term weatherproof service and would be considered temporary at best. These mastic remedial repairs are further evidence that the roof is not providing service as intended and should be considered for removal and replacement.

PHOTO 13: At the transition of the low-sloped roof area to the shingle application, the arrow indicates where the modified bitumen roof does not adequately extend

underneath the shingles three courses or 18 inches as required by accepted trade standards. The shingles have not been hand sealed at this transition and can be easily lifted. This transition can become overburdened with moisture during periods of inclement weather when saturating conditions develop and a source of moisture influence into the interior. At the time of roof replacement it is recommended that the proper transitioning be provided to these areas.



The proper base sheet does not appear to have been installed under the roof. The modified bitumen roof is not bonded or mechanically attached to the roof and can be easily lifted and allow water penetration, contributing to interior moisture influence below.

PHOTO 14: A continuing close-up of the modified bitumen roof displays raised areas which are often referred to as buckles. This condition can result from substandard



mechanical attachment of the roof to the substrate. These buckles can rupture and become overburdened with moisture during periods of inclement weather when saturating conditions develop as well as a potential source of water incursion inside the structure. The development of buckles in a modified bitumen roof typically indicates that the roof is nearing or has reached the end of its

intended service life. The surface of the roof is aged, deteriorated, and has cracked over time. Removal and replacement of this roof should likely be addressed at this time.

SUMMARY: There is isolated damage and/or displacement of the three-tab asphalt composition shingle roof that has been affected by wind-related activities, although the roof has been compromised by its aged and deteriorated condition, and the installation methods used that promotes seal tab defeat, which is allowing it to be more susceptible to wind-related uplift. There was no visible damage to the roof as a result of the previous fire.

The approximate cost to provide remedial repairs to observed wind-related displacement, which would typically incorporate flat-bar, replacement material and hand sealing methods, when done by a competent, reputable, and licensed C-39 Roofing Contractor, should not exceed \$1,075.00.

Based on our visual inspection, we have determined that the source(s) of interior water incursion and/or moisture influence reported under the valley and flat roof section of the structure is due to the following deficiencies that become overburdened with moisture during periods of inclement weather;

1. Age related deterioration.
2. Displaced shingle panels.
3. Seal tab defeat.
4. Backing out fasteners.
5. Improperly installed roof and flashing components.

The approximate cost to have a licensed Roofing Contractor perform all repairs and maintenance needed at this time, consisting of replacement of all damaged or missing shingles, hand sealing all easily lifted shingles, repair of fasteners backing out of the roof, and addressing improperly installed penetration flashings, should not exceed approximately 1,575.00, and would probably be accompanied by a 'workmanship' type warranty only.

The conditions observed on the site visit are consistent with the methods of installation and exposure to the elements. While a modest amount of remedial work could be addressed to the limited areas of damage or displacement of the roof, identifying a licensed C-39 Roofing Contractor to perform restoration to the roof would be difficult.

Competent Tradesperson(s) would be reluctant to repair the roof as there are several conditions disassociated with the reported displacement that if provided restoration would only obtain limited service at best. After restoration attempts of the roof are completed there may be the perception of inherited liability when the roof eventually fails, further preventing Competent Tradesperson(s) from offering service for remedial repairs. Any and all repairs would carry a 'workmanship' warranty based on state regulations pertaining to repairs or restoration of a roof no longer under warranty, if any. From a Roofer's perspective the roof requires removal and replacement as a result of the conditions existing prior to the recent reported displacement as result of storm-related activities.

The approximate cost to remove and replace the roof, depending on the materials selected and methods of installation, if done by a competent, reputable, and licensed C-39 Roofing Contractor, should likely not exceed \$14,725.00

These cost estimates do not necessarily include any structural repairs and/or upgrades or the encountering of any hazardous material or conditions that may be revealed in the course of remedial work. Any remedial repair work to be attempted would likely carry a 'workmanship' type warranty only. All work is recommended to be completed by a licensed C-39 Roofing Contractor in accordance with accepted roofing practices.

The requesting party generating this inspection is the Owner of the report. Questions, concerns or disputes by third parties other than the Owner will be addressed by Homespec through the expressed written or oral authorization of the Owner or their representative.

This report is intended for informational use only. No liability is implied or accepted upon issuing this report. This report is based on passive visual observations and information provided by the parties involved. No test cuts, samples, water or destructive testing were performed. The presence of asbestos containing material, organic contaminants or other forms of potentially hazardous substances were not confirmed and are beyond the intent of our inspection. Should additional information become available

that directly affects our conclusions, we reserve the right to adjust or amend our findings based on the developing data.

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Thank you again for the opportunity to be of service.

John M. Quintal,
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