APPENDIX F:

MATERIALS TESTING AND CRACK MAPPING REPORT

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SUBJECT REPORT: **FIELD INVESTIGATION OF FIRE PLACE AND WATER LEAKAGE OF HOLLYHOCK HOUSE PROJECT**

PREPARED FOR: **LSA ASSOCIATES, INC.**
20 EXECUTIVE PARK, SUITE 200
IRVINE, CA 92614-5981

Date: **May 4, 2009**

Project No.: **38554-1**

Report No.: **L-09-920**

SMITH-EMERY LABORATORIES
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Project No.: 38554-1
Lab. No.: L-09-920

TABLE OF CONTENTS

LIST OF APPENDICES:

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REPORT OF INVESTIGATION AND TESTING

1.0 Investigation and Testing Objectives

The objective of our investigation and testing were to identify the cracks and paths of water intrusion at the ceilings, walls, and roofs and to determine the contents of the subsurface behind the stone faced fireplace located in the living room of the Hollyhock House located on 4800 Hollywood Blvd., Los Angeles, California.

2.0 Test Methods

There are no recognized or published test methods, standards or guidelines for crack and water leakage investigation other than by making measurements using a crack comparator and visual inspection for traces of efflorescence and water stains in the subject areas.

The non-destructive testing method used at the fireplace was the surface ground penetrating radar in general accordance with ASTM D6432, *Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation.*

3.0 Cracks and Water Leakage Investigation and Findings

The following are our observation and findings at the dining room, gallery room and porch area. Photographs are included in Appendix A, and the referenced subject locations as stated below are noted in the submitted project plan drawing in Appendix B.

3.1 Dining Room Interior Ceiling and Walls, and Roof Exterior Parapet Walls

3.1.1 The dining interior ceiling ridge at Line F.5/5 to 6 (refer to submitted project plan drawing) consisted of an approximate 14 feet long crack running east to west, with widths ranging from approximately 0.010 to 0.030 inch. Refer to Photos 1 and 2 in Appendix A of this report.

3.1.2 There was ceiling ponding or sagging at the wood trim at Line G/6.2, and apparent sign of water damage as result of a crack of approximately 4 inches long and widths ranging from approximately 0.500 10 0.750 inch. Refer to Photo 3 of Appendix A.

3.1.3 The ceiling north-east corner at Line H/5 consisted of a crack of approximately 23 inches long and width of approximately 0.020 inch. Refer to Photo 4 of Appendix A.

3.1.4 The diner room south wall near wood steps at Line F/6.1 consisted of a vertical crack at the wood trim of approximately 13 inches long and widths ranging from approximately 0.010 to 0.030 inch. Refer to Photo 5 in Appendix A.

3.1.5 The dining room north wall near wood steps at Line H/6 consisted of a vertical crack measuring approximately 12 inches long and 0.016 inch wide. See Photo 6 in Appendix A.

3.1.6 The dining room west wall between small windows at Line 6.2/G.5 contained a crack running at an angle and measuring approximately 7 inches long and widths ranging from 0.016 to 0.020 inch. Refer to Photo 7 in Appendix A.

3.1.7 The dining roof north parapet Line G/4 to 6 consisted of numerous vertical cracks located at every 4 to 5 feet, and with lengths of approximately 36 to 48 inches, and widths of approximately 0.010 to 0.016 inch. Refer to Photo 8 in Appendix A.

3.1.8 The dining roof south parapet at Line F/4 to 6 contained vertical cracks along the wall at every 4 to 5 feet, lengths of approximately 36 to 48 inches, and widths of approximately 0.010 to 0.016 inch. Refer to Photo 9 in Appendix A.

3.2 Gallery Room Interior Ceiling and Walls, Exterior Walls and Ceilings, and Gallery Roof

3.2.1 Interior ceiling ridge at Line B to C/4 to 6 consisted of eight cracks running perpendicular to the ridge with lengths of approximately 36 to 48 inches long and width of approximately 0.010 inch. See Photo 10 in Appendix A.

3.2.2 The gallery room interior walls were covered with wood panels, and hence observation for cracks was not possible. See Photo 11 in Appendix A.

3.2.3 The gallery room exterior north wall (west of door opening) at Line C/5.2 above a window consisted of a horizontal and vertical crack measuring approximately 10 to 24 inches long and widths of 0.010 to 0.016 inch. Refer to Photo 12 in Appendix A.

3.2.4 The north exterior wall above concrete steps at Line C/6 consisted of a horizontal crack of approximately 28 inches long and widths ranging from 0.010 to 0.040 inch. There was also apparent sign of water intrusion through the crack from traces of efflorescence and water stain. Refer to Photo 13 in Appendix A.

3.2.5 The north exterior wall east of door opening at Line C/4.7 between two windows consisted of a vertical and horizontal crack measuring approximately 20 to 38 inches long and widths of 0.100 to 0.750 inch. There were also apparent signs of water intrusion through the cracks from traces of efflorescence and water stain. See Photo 14 in Appendix A.

3.2.6 The north exterior wall west of door at Line C/4 contained a vertical crack measuring approximately 6 to 7 feet in length and width of 0.010 to 0.025 inch. See Photo 15 in Appendix A.

3.2.7 The gallery exterior ceiling above the southwest window at Line B/5.5 consisted of a horizontal crack of approximately 36 to 40 inches long and width of 0.250 to 0.750 inch. There was sign of water intrusion through the cracks from the water stain and traces of efflorescence. Refer to Photo 16 in Appendix A.

3.2.8 The gallery exterior ceiling above the south door entrance at Line B/4.8 consisted of a horizontal crack of approximately 4 to 5 feet long and widths of 0.250 to 0.750 inch. There was also sign of water intrusion. See Photo 17 in Appendix A.

3.2.9 The gallery north and south roof parapet wall at line B to C/4 to 6 below the galvanized sheeting contained a vertical crack of approximately 20 inches long and width of 0.009 inch. Refer to Photo 18 in Appendix A.

3.3 Porch Ceiling and Roof Deck

3.3.1 The porch ceiling north entrance at Line E/7 contained a horizontal crack, approximately 8 to 8.5 feet long and 0.250 to 0.500 inch wide, running along the concrete joint. See Photo 19 in Appendix A.

3.3.2 The southeast corner ceiling at Line D.2/6.2 contained cracks running east to west and north to south, measuring approximately 20 to 36 inches long widths of 0.010 to 0.020 inch. There were obvious signs of water intrusion from the cracks as shown by the water stains. See Photo 20.

3.3.3 The ceiling lighting area at line D.4/6.3 consisted of cracks from each corner of the lighting fixture bezel, and measured 10 to 12 inches long and width of 0.009 inch. The water stains and efflorescence were apparent at the cracks and around the light bezel. Refer to Photo 21.

3.3.4 The south ceiling entrance at line D/6.5 to 7 had a 5- to 6- foot long and 0.025- to 0.250-inch wide crack running in the east-west direction. Traces of water stains and efflorescence were also observed. See Photo 22.

3.3.5 The porch concrete column at line D/6 contained adjacent horizontal cracks at one corner, and a vertical crack continuing down in an angle from one of the horizontal crack. The cracks measured approximately 36 to 40 inches long and widths of 0.016 to 0.030 inch. Refer to Photo 23.

3.3.6 The concrete column and ceiling intersection at Line E/6 contained a vertical crack along the column running up to the ceiling with some spalling at several spots and showed signs of water intrusion. The crack measured approximately 24 to 32 inches long and widths of 0.010 to 0.050 inch. See Photo 24.

3.3.7 The ceiling above the east door entrance at Line 6/D.5 consisted of a crack running in the east and west direction, and measured approximately 10 to 12 inches long and widths of 0.020 to 0.030 inch. Refer to Photo 25.

3.3.8 The porch roof deck at Line 6 to 7/D to E contained numerous cracks running in all directions, ranging from approximately 2 to 5 feet long and widths of 0.030 to 0.100 inch. See Photo 26.

4.0 Non-Destructive Testing and Findings

The front face of the fireplace located in the living room was tested using a penetrating radar scan device to determine the contents of the subsurface that served as the anchorage medium for the stone façade. Results indicated a metal grid pattern of 4 inches x 4 inches at approximately 6.75 inches down from the stone surface, but it was not clear if the grid was formed from small reinforcing bars or made of large diameter mesh.

5.0 Conclusion and Closure

Based on the information given prior to this investigation and testing, and results presented in this report, and unless otherwise noted, we make no statement of compliance or noncompliance of the products tested to any standard or specification.

Any findings noted in this report were prepared in accordance with generally accepted material engineering and testing principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for **LSA Associates** to be used for design and/or investigation purposes only. The use of this report for any other purpose shall be at the users' own discretion, based on their own interpretation of the results contained within.