The Infrared Flat Roof Moisture Survey will be performed for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at their facility(s) at the following location(s):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The purpose of the survey is to locate and identify areas of latent moisture in the roofing system. 100% of the scan able roof surface will be inspected during the survey. Invasive verification will be performed on all moisture-damaged areas.

**Or**

The purpose of the survey is a quality assurance survey at the completion of the roof installation, looking to identify any areas of latent moisture in the roofing system. 100% of the scan able roof surface will be inspected during the survey. The survey is to be performed no sooner than three months after the roof membrane has been installed, unless approved by the site representative.

A detailed description of the roof to be surveyed is attached as Appendix A.

**Equipment to be Used**

Thermal imaging radiometer with a minimum of the following specifications:

* + Temperature range: -20°C to 650°C
	+ Sensitivity: <0.05°C at 30°C
	+ Pixels: 320 x 240
* Level and gain controls must be able to be adjusted independently by the operator to specific temperature values. Imagers which feature only automatic gain control, commonly referred to as “Auto Image”, are not sufficient
	+ All roofs with a thermally reflective membrane, including but not limited to single-ply, modified-bitumen, and aluma-coated, are to be surveyed with a short wave infrared imager
	+ Imager, including any optical lens used in this project, to be in calibration

**Personnel Shall Meet the Following**

* Infraspection Institute Certified Level III Infrared Thermographer®
* OSHA 10 training – proof to be provided
* Government issued background check, such as TWIC or SWAC
* Current drug screening to include 10 panel test or DISA

**Company Shall Meet the Following**

* Primary business is commercial and industrial Infrared Thermography
* In business performing this work for over 10 years
* Written safety manual available for review upon request
* Company is to have at least one (1) Infraspection Institute Master Thermographer® on staff
* Provide references for similar projects
* Provide evidence of acceptable commercial insurance (Certificate of Insurance)

**Standards to Follow**

ASNT - SNT-TC-1A – Personnel Qualification and Certification in Nondestructive Testing

ASTM E 1213 – Standard Test Method for Minimum Resolvable Temperature Difference of Thermal Imaging Systems

ASTM E 1311 – Standard Test Method for Minimum Detectable Temperature Difference of Thermal Imaging Systems

ASTM E 1316 – Terminology for Nondestructive Examinations

ASTM E 1543 – Standard Test Method for Noise Equivalent Temperature Difference of Thermal Imaging Systems

ASTM C 1153 – Standard Practice for the Location of Wet Insulation in Roofing Systems Using Infrared Imaging

Infraspection Institute - Standard for Infrared Inspection of Insulated Roofs

Infraspection Institute - Standard for Measuring and Compensating for Emittance Using Infrared Imaging Radiometers

Occupational Safety and Health Standards for General Industry Part 1910

Occupational Safety and Health Standards for Construction Part 1926

**Required Site Conditions at the Time of the Survey**

* **Dry Roof Membrane:** The roof membrane must be free of any standing water (ice, snow or water) at Sunrise.
* **Solar Loading:** The day of the Survey should be a mostly sunny day, allowing adequate solar loading.
* **Minimum Daytime Temperature:** Daytime high temperatures should be at least 40°F.
* **Winds of less than 15 mph:** During daytime hours and at the time of the Survey, winds should be less than 15 mph.
* **No precipitation on the day of the Survey:** The roof membrane must remain dry during the daytime hours and at the time of the Survey.

**Deliverable Report Format**

Report will be provided in a written, as well as electronic, format and will include the following information:

* Introduction will cover the basic procedures followed and provide information to assist understanding the report.
* Thermographers Comments will detail the site conditions, finding and prognosis for the roof.
* Roof Section Data Sheets will provide specific details of each section of the roof surveyed.
* Each problem area will be documented with its infrared image, control photograph and detailed description including the approximate size.
* The roof drawing will show the location and relative size of each problem area as well as the location and results of any invasive testing conducted.

**Proposal Format**

Proposal documents are to include the following:

* Quotation based on a lump sum
* Proof of thermographer training for Infrared and OSHA
* List of equipment with current calibration statements
* Safety Manual Table of Contents
* Company profile
* Certificate of Insurance
* List of three references
* Sample report

The proposal is due by (time of day) on (date). Please send the proposal to the following:

 Name, Title

 Telephone

 Company

 Street Address

 City, St Zip

Should you have any questions, require further information, or want to arrange a site visit, please contact the following:

 Name, Title

 Telephone

 Email

**Appendix A – Description of Roof**

|  |  |
| --- | --- |
| Square Footage (nearest 1,000 sf) |  |
| Number of Discrete Areas |  |

 **Roof Membrane Details**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Built - Up |  |  | Gravel |
|  | Single Ply – EPDM, TPO, PVC |  |  | Aluma Coated |
|  | Modified Bitumen |  |  | Smooth |
|  | Spray Applied Foam |  |  | Aggregate |

 **Flood Coat**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Asphalt |  | Tar |  | None |

 **Vapor Retarder**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Yes |  | No |  | Unknown |

 **Roof Insulation Details**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Polyisocyanurate |  |  | Urethane |
|  | Polyisocyanurate over perlite |  |  | Perlite |
|  | Polyisocyanurate over wood fiber |  |  | Wood fiber |
|  | Perlite over polyisocyanurate |  |  | Glass fiber |
|  | Wood fiber over polyisocyanurate |  |  | Cellular glass |
|  | DensDeck |  |  | Lightweight Concrete |
|  | Spray Applied Polyurethane  |  |  | Other |

 **Roof Deck Details**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Corrugated Metal |  |  | Concrete |
|  | Wood |  |  | Tectum |
|  | Unknown |  |  | Other |

 **Roof Access**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Walk out penthouse |  |  | 40 ft extension ladder thermographer to provide |
|  | Fixed inside ladder |  |  | 24 ft extension ladder thermographer to provide |
|  | Fixed exterior ladder |  |  | Other |