

## RAM USA Roof, Paving & Property Assessments

### Aerial Infrared Roof Moisture Scan & Analysis

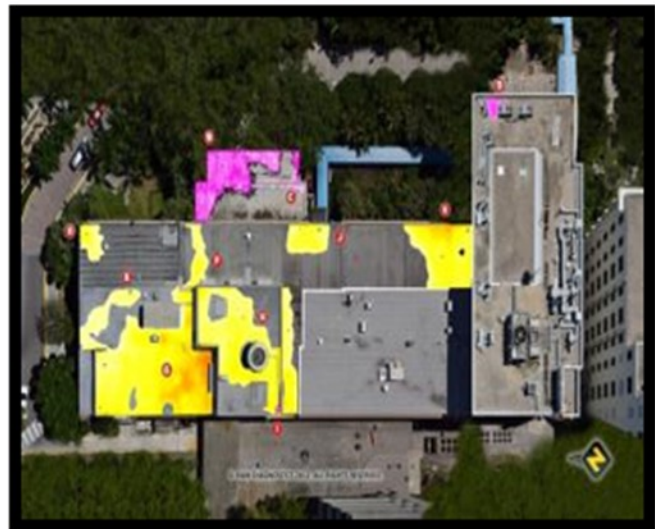
An aerial infrared roof moisture scan and analysis of the data is conducted on the low-slope roofs. The aerial process will involve two flight operations.

Flight #1 will be conducted the day of the infrared scan to collect high resolution images of the roofs for our report. Daytime visual imaging is performed utilizing ultrahigh resolution professional digital cameras.

Flight #2 will be conducted after sunset to collect the thermal images of the subject roofs. The following is a general description of the work that will be performed:

**Thermographic Camera** RAM USA will use a lab quality, FLIR System's Series A7601sc Infrared Imaging Camera System (thermal sensitivity of 18mK; > 1,000,000 pixels; and up to 6,000 frames per second). The images depict warmer areas as shades of white and colder areas as shades of black. The images are recorded digitally to high-speed data drives. Daytime visual imaging is performed utilizing ultrahigh resolution professional digital cameras.

**Aerial Fly Over** RAM USA will utilize a fixed-wing aircraft to conduct the aerial scan at approximately 1800 to 2500 feet above ground level. We will file the flight plan with the FAA and acquire the necessary clearances. Because of the sophistication of our infrared imaging system, we can utilize fixed-wing aircraft to reduce operating expenses and cover more area per flight.



**Analysis** RAM USA analysis team will process, blend, and colorize all infrared data and high-resolution daytime imagery. The process will identify the measurable areas of suspected substrate moisture in the existing roof systems.

**Technical Reporting (Aerial Services)** RAM USA will perform our 5-step analysis process of the aerial images. The results of our analysis will be presented in our technical report which will include:

- ✓ Results of the aerial infrared scan
- ✓ High resolution daytime digital image
- ✓ Nighttime thermal image
- ✓ Colorized (blended) digital image showing areas of suspected substrate moisture and areas requiring additional investigation
- ✓ Approximate area (square feet) of suspected wet substrate
- ✓ Additional recommendations as noted from scan

The final report can be used to drive future decisions and funding support for the roof/building envelope needs. The report will contain the findings from the visual roof survey and the aerial infrared scan.

## Paving Analysis -Phase I:

Our initial consulting /evaluation services will include the following items:  
 Obtain available historical information from the client.  
 Plan aerial data collection for optimal time and cost efficiency based on; site utilization, weather, and location.  
 Compile, backup and organize field data for lab analysis.  
 Identify pavement distresses to include; Coating Coverage, Longitudinal Cracks, Crack Size, Cracks Fill, Block Cracking, Raveling, and Alligating.  
 Quantify paving surfaces based on the RAM LOC assessment system and the client's priorities. The RAM LOC system is based on the nationally recognized Paser Scoring system developed by the Federal government and University of Wisconsin.  
 Provide tables of names, locations, score, and ranks along with supporting imagery.



## Paving Analysis -Phase II

Linear footage of cracks broken down by measurements.  
 Pot -hole measurements.  
 Sepal area measurements.



## Exterior Lighting Analysis - Phase I

Our initial consulting / evaluation services will include the following items:  
 Obtain available historical information from the client  
 Plan aerial data collection for optimal time and cost efficiency based on; site utilization, weather, and location.  
 Compile, backup and organize field data for lab analysis  
 Identify all lighting devices, including wall surface, ground or pole mounted.  
 Identify operational status of each device at the time of the scan.  
 Score the sites based on percent of devices operational  
 Provide tables of sites names, locations and scores along with supporting imagery.



## Exterior Light Analysis - Phase II

Asses the functionality of the exterior lighting systems.  
 Provide tables of sites names, locations and quantities along with supporting imagery.



**RAM USA is a national roof, pavement and building envelope consulting/engineering service firm focused on cost effective asset life extension solutions.** Similar to Roofing, Parking Lots are large assets that often appear to be good until they are bad. Also similar to roofing, RAM has developed a method and procedure to quickly, accurately and relatively cheaply assess a single site, a college campus or even a national chain with properties in all 50 states, Canada, Mexico and the Caribbean. Deploying an Aerial Infrared Imaging system, RAM quickly flies to dozens of sites every night and gathers the length, depth and width of every flaw at your site.

### Property Imagery – Vertical (straight down)

These images include the entire property.  
Current Images taken at Very High Definition  
(greater than 6-inch resolution)



### Property Imagery – Oblique (30 to 50-degree angle)

These images include the entire property.  
Current Images taken at Very High Definition  
(greater than 6-inch resolution)  
Taken from the four primary sides of the building.



### Roof Equipment Information

RAM USA proposes to provide the quantity of the following points of interest;

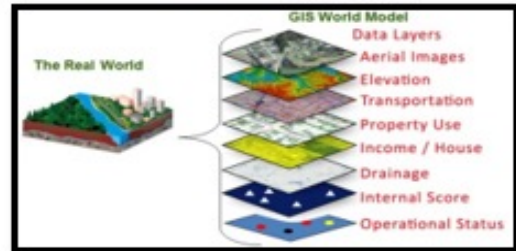
- Roof penetrations
- RTUs
- Skylights
- Exhaust fans
- Miscellaneous Items (i.e. hoses, ladders...)
- Satellite Dishes

| Equipment | Quantity |
|-----------|----------|
| RTU       | 45       |
| Skylights | 47       |
| Exhaust   | 7        |
| Dish      | 1        |

Provide tables of sites names, locations and quantities along with supporting imagery.

### Property Geographic Information System (GIS) Mapping

These images will be provided in a format that will allow them to be utilized in leading CAD, BIM and other GIS systems.  
These images will be scaled for accurate measurements.  
These images will be Georeferenced for accurate location on earth.

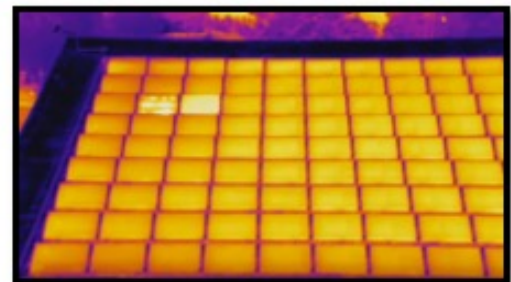


### Utility Line Measurement

Measurement of Gas and Electrical Line on the roofs in linear feet. Provide tables of sites names, locations and quantities along with supporting imagery.

### Solar Array Assessment - Phase I

Thermal Imagery will reveal flaws in the efficiency of the panels due to poor construction, damage during installation or environmental damage and aging.  
Provide tables of sites names, locations and quantities along with supporting imagery.



### Solar Array Assessment - Phase II

Handheld infrared analysis on site.