

3/1/2018 4:57:31 PM



Campus_Reference.jpg

 Second constraint
 N 29° 39' 4.63", W 98° 27' 16.48"

 http://maps.google.com?z=17&t=k&q=29.6513,-98.4546

Thermal Imaging Date: Thursday March 1st 2018 Time of Thermal Imaging: Approx. 7:15 P.M CST. Sky Conditions: Clear at scan - Daytime Partly Cloudy. Daytime Temperature High: 73 Degrees Fahrenheit Temperature at time of Infrared Imaging: 61 Degrees Fahrenheit Wind Speed: 13mph NNE Humidity:67%

Imaging Performed by: Todd A. Hillhouse (Level III Thermographer) Roofing Surface: Modified Bitumen Surface Condition: Dry at surface. Roof had been swept and dried prior to scan. Infrared Camera Type: Zenmuse XT-R Powered by FLIR 30hz 640x512 13mm Imaging Altitude: 100 ft AGL - 300 ft AGL

Visible and Infrared Images were taken 3/1/18 of Buildings A, B and C. During the infrared imaging some wind gust did occur but did not appear to affect the IR imaging. Analysis of IR images will be further detailed on the following pages specific to each building.

MOISTURE VERIFICATION: Infrared Thermography is a powerful tool for Nondestructive Testing and Analysis of flat roofing systems. However, to insure complete accuracy of the survey results, it is necessary to physically verify the presence of moisture within the roofing system. All indicated anomalies marked with red arrows or a red zebra pattern on the report images should be phycically examined.

PHYSICAL TESTING: A core sample should be taken at the locations of concern marked with arrows to verify moisture presence and water penetration. Physical testing and analysis can also be accomplished through the use of a moisture meter and electronically charged pins.



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Building_A_TD.jpg

Geolocation

Location N 29° 39' 10.99", W 98° 27' 22.49" http://maps.google.com?z=17&t=k&q=29.6531,-98.4562

Pictured here is Building A. Some noticable stains along with loose granules can be seen. Areas of concern that should be investigated will be marked on the following pages that include IR images of this roof.



°F

3/1/2018 7:38:05 PM



Building_A_WH.jpg

Measurements

Sp1	73.7 °F
Sp2	67.8 °F
Parameters	
Emissivity	0.9
Refl. temp.	71.6 °F
Note	
Building_A	

Recommend doing a core at the location of red arrow. Spot 1 is several degrees higher than spot 2. The white areas indicate a higher temperature than the darker areas. The white areas extend out past the visible image stains, indicating not just a difference in material but a temperature anomaly that needs to be investigated. These areas will be marked with red zebra pattern on the following page.



3/1/2018 7:38:05 PM



°F 3/1/2018 7:38:05 PM 80.0



60.0 Building_A_IR.jpg

Building_A_Ironbow... 3/1/2018 7:38:05 PM



Building_A_Visible.jpg



Parameters		3/1/20
Emissivity	0.9	
Refl. temp.	71.6 °F	

Note **Building A Lower Roof**

QUALITATIVE INFRARED REPORT Building: Corporate Data Center w/ Low Slope Roof Roof Surface: Modified Bitumen City/State: San Antonio, TX

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on
N 29° 39' 9.91", W 98° 27' 22.36"
com?z=17&t=k&q=29.6528,-98.4562

Note Building A Lower Roof Building A WH Lower.jpg 3/1/2018 4:53:47 PM



Building A Lower Roof T...

Pictured here is the lower roof connected to Building A. This roof due to its small size and condition should be physically examined in its entirety. The clearest anomaly here is marked with a red arrow and should be physically examined for moisture. In other areas the increase in temperature could be contributed to heat transfer from the building, although the visible image displays surface stains and possible indication of surface dampness from rain or pressure cleaning or a possible previoius repair. (Due to difference in material color.)



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Building_B_TD.jpg

Geolocation	
Location	N 29° 39' 8.87", W 98° 27' 19.87"
http://maps.google.com?z=17&t=k	&q=29.6525,-98.4555

Pictured here is Building B. Many noticable dark stains along with loose granules can be seen. Areas of concern that should be investigated will be marked on the following pages that include IR images of this roof. The Infrared images will show anomalies that extend out far past the stains.



°F

3/1/2018 7:33:52 PM



Building_B_WH.jpg

Measurements	
Sp1	58.3 °F
Sp2	50.5 °F
Parameters	
Emissivity	0.9
Refl. temp.	71.6 °F
Note	
Building B	

Text annotations

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BUILDING	
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Recommend doing a core at the location of red arrow. Spot 1 is several degrees higher than spot 2. The white areas indicate a higher temperature than the darker areas. The white areas extend out past the visible image stains, indicating not just a difference in material but a temperature anomaly that needs to be investigated. These areas of concern will be marked with red zebra pattern on the following page.





Building_B_Ironbow... 3/1/2018 7:33:52 PM

°F 3/1/2018 7:33:52 PM



48.0 Building_B_IR.jpg



Building_B_Visible.jpg



Parameters	
Emissivity	0.9
Refl. temp.	71.6 °F
Note	

Lower	Roof	А	В	

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Geolocatior	า
Location	N 29° 39' 9.93", W 98° 27' 21.01"
http://mono.googlo.con	27-178t-k8a-20.6528.08.45

Building_A_B_Lower_WH.jpg

3/1/2018 4:56:09 PM



Building_A_B_Lower_Roo...

Pictured here is the lower roof and walkway between Buildings A and B. Many noticable dark stains can be seen. Areas of concern that should be investigated will be marked on the following pages. Recommend doing a core at the location of red arrows. Areas of concern are marked on the following page with red zebra pattern.



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3/1/2018 7:37:04 PM

Building_A_B_Lower_IR.jpg



Building_A_B_Lower_Visible.jpg



3/1/2018 4:32:44 PM



Building_C_TD.jpg

Geolocation

Location	N 29° 39' 6.93", W 98° 27' 17.34"	
http://maps.google.com?z=17&t=k&q=29.6519,-98.4548		

Pictured here is Building C. A few noticable surface stains along with loose granules can be seen. There was some material and equipment staged on this roof that will show up in IR images. Areas of concern that should be investigated will be marked on the following pages that include IR images of this roof. Overall this building showed very few anomalies appearing in the Infrared Imaging.



°F

3/1/2018 6:57:41 PM



Building_C_WH.jpg

Measurements

Sp1	54.5 °F
Sp2	59.2 °F
Sp3	51.0 °F
Parameters	
Emissivity	0.9
Refl. temp.	69 °F
Note	
Building_C	

Recommend doing a core at the location of red arrows.

The white areas indicate difference in material or a higher temperature than the darker areas. The areas of concern will be marked with red zebra pattern on the following page.

Overall very few anomalies that would indicate moisture penetration were found on this roof.



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Building_C_Ironbow.... 3/1/2018 6:57:41 PM

°F 3/1/2018 6:57:41 PM



Building_C_IR.jpg



Building_C_Visible.jpg



0.9
71.6 °F



Geolocation	
Location	N 29° 39' 8.01", W 98° 27' 18.11"
http://maps.google.com	n?z=17&t=k&q=29.6522,-98.4550

Building_C_WH_Lower.jpg

3/1/2018 4:37:08 PM



Building_C_Lower_Roof_T...

Pictured here is the lower roof connected to Building C. Surface stains can be seen on the visible image. No areas of concern were found with the infrared imaging of this lower roof.