



March 28, 2010

Mrs. Carolyn Lehr, City Manager  
**City of Rancho Palos Verdes**  
30940 Hawthorne Boulevard  
Rancho Palos Verdes, CA90275

**Re: Infrared Inspections for Planning Department and  
Ladera Linda Community Center Buildings J&K**

Dear Mrs. Lehr,

We are pleased to present the completed report for the above referenced project. Enclosed you will find a comprehensive series of thermographic images, photographs and conditions depicting the anomalies and concerns we discovered during our inspection of the building envelopes, roofs and infrastructure. In addition, we've enclosed a CD copy of the entire report in the back of the binder for future reproduction if needed.

The report is divided in to five sections, which are defined in the Index. You will also find a page of key word definitions to help others who made read this report independent of our presence. I am confident that you will find our report to be complete and comprehensive. However, should you, your staff or any of your colleagues wish to discuss any portion of this report in more detail please feel free to contact me directly at (424) 263-4937.

It's been a pleasure working together with you and your staff on this project and I hope this is just the beginning of a burgeoning relationship with the City of Rancho Palos Verdes.

All the best,

Aryn Sieber

**The L. A. Sieber CSI Company dba**  
Construction Services & Inspections  
**CaliforniaIR and**  
**PremierIR**





Certified Thermography Report  
for



**Subject Properties**

**Planning Department Building**  
30940 Hawthorne Blvd.

and

**Ladera Linda Community Center**  
Recreation Room Building J & K  
32201 Forrestal Drive

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## DEFINITIONS

**Anomalies** - a·nom·a·ly; something that deviates from the norm or from expectations

**Baton** - Typically a 1"x wood member used to fir our trim or cover a wall corner or joint to panel or insulate a block wall, exposed uneven gaps or lid lines, respectively

**Blower Door** – A modular structure that is assembled in a doorway with a high powered fan electronic calibration tool pressurize a structure to enhance and detect unwanted air-infiltration

**Building Envelope** – The perimeter (walls or other structural surfaces i.e. roof) of a building or structure where only one side of the surface is directly exposed to the exterior elements

**CIT #** - Certified Infrared Thermographer (Certificate Number)

**CMU Block** – A concrete block composed of two open cells typically used for building retaining walls. The cells allow steel rebar to be inserted and filled with grout/concrete to re-enforce the structural strength of the overall wall

**Grouted Cell** - to grout or fill gaps, or to finish a ceiling or solidify concrete block wall

**Infrared** - in·fra·red, the portion of the invisible electromagnetic spectrum consisting of radiation with wavelengths in the range 750 nm to 1 mm, between light and radio waves

**Lid Line** - The point at which the interior wall and the finished ceiling joists meet

**Moisture Meter** – A special electronic non-destructive test meter typically used to confirm suspected moisture anomalies in walls and roofs.

**Phantom Electricity** – Electricity that is typically used to power an illuminated On/Off LED indicator. Use of this type of energy in multiple components can add up to substantial power consumption

**Pascal (Pa)** - Pas·cal; A unit of pressure or stress equal to one Newton per square meter.

**Remediation** - re·me·di·a·tion; the use of remedial methods to improve skills or reverse environmental damage

**Structural** - Relating to the way parts are put together or how they work together

**Thermal Imaging** - ther·mal imaging; digitally images capturing physics relating to, affected by, or producing heat

**Thermal Pattern** – An outline between two surfaces or materials of a significant delta in temperatures allowing detection of such differences using highly sensitive infrared detection equipment



## General Information

The building envelopes (block walls) roofs and electrical systems of the above subject sites were surveyed and inspected by certified Thermographers licensed and specialized in building science and (IR) infrared technology. The dates and site conditions are specified within this report. Thermographs and supporting photographs were taken of the anomalies detected as we performed the survey. A summary of our findings follows this section along with supporting notes captioned within the graphics pages of the report.

### This report includes:

- (2) bound hard copies of this report in booklet format and
- A CD-ROM containing all files used in the report

**CaliforniaIR** performed this inspection for the City of Rancho Palos Verdes. The infrared inspection included a survey of the roofs to identify areas of possible latent moisture, the building envelope for insulation, structural soundness and air infiltration and the electrical outlets switches and panels for overloaded circuits. Our inspections comply with ASTM and OSHA standards. When anomalies were detected a secondary means of non-destructive testing was performed to confirm the anomaly i.e. moisture, proper wall grouting, air infiltration or electrical anomalies including phantom electricity usage. Included herein is a scaled drawing of each building marked with corresponding numbers of the related thermographs and random photographs documenting and cross referencing the suspected areas of concern.

There may be specific areas and items that were inaccessible during our survey. We can make no representations regarding conditions that may be present but were concealed or inaccessible during the survey. Inspection of the inaccessible areas will be performed under separate arrangement. Also, our report is based on information obtained at the site at the given date and time. Over time, conditions change and the information contained in this report may no longer be accurate.

## Understanding IR Imagery

Infrared imagery is often a picture whose scales (or shades/colors) represent the differences in temperature and emissivity of objects in the image. As a general rule, objects in the image that are lighter in color are warmer, and darker objects are cooler. No object in the images is detected via visible light wavelengths (400-700 nanometers) rather, only from infrared wavelengths in the 3000-5000 nanometers or 8000-14000 micrometers range. Lights and other relatively hot objects are very evident, but as a result of their heat...not light emissions. When an image is taken with our infrared camera, it is digitally saved to an on-board media card. In the case of the printouts enclosed with this package, the building images were digitized, colorized, and then adjusted for color, contrast and brightness before being scaled and placed in this report.



A CSI COMPANY

# CaliforniaIR

Thermal Imaging Experts

- General Safety Meeting
- Communication
- Scope of Work
- Project Manager(s)
- Building Exit
- Fire Extinguisher(s) and Alarms
- Accessible Water (Pressurized)
- Safety Zone
- First Aid (Lead)
- Maintaining Clear Accessible Pathways
- Ladders (Spotting)
- Electrical Cords
- Gas (Fictures and Furnaces)
- Portable Heater
- Blower Door (Pressurization)
- Envelope Preparation
- Facility Preparation
- Facility Restoration

Project: City of Rancho Palos Verdes

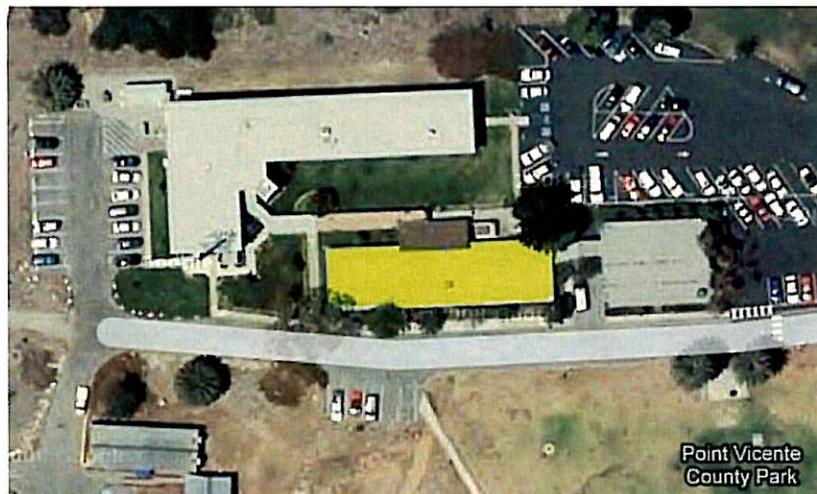
Attendee	Representing	Signature
Aryn Sieber	CaliforniaIR	<i>[Signature]</i>
Peter Michetti <i>[Signature]</i>	CaliforniaIR	
Art Fardocho	CaliforniaIR	<i>[Signature]</i>
Felix Ma	CaliforniaIR	<i>[Signature]</i>
Leo Garcia <i>[Signature]</i>	CaliforniaIR	
Ernesto Romo	CaliforniaIR	<i>[Signature]</i>
Cecilia Sieber <i>[Signature]</i>	CaliforniaIR	<i>[Signature]</i>
Gustavo Revilla <i>[Signature]</i>	CaliforniaIR	<i>[Signature]</i>
Robert Espinoza	CaliforniaIR	<i>[Signature]</i>
Javier Arcevedo <i>[Signature]</i>	CaliforniaIR	<i>[Signature]</i>
Francisco <i>[Signature]</i>	RPV	<i>[Signature]</i>
Paul Christian <i>[Signature]</i>	RPV	<i>[Signature]</i>
David	RPV	

*Melissa Murphy*  
*Sam Osborn*

RPV  
RPV

*Malissa*  
*Sam Osborn*

**Planning Department Building**  
Subject building highlighted in yellow



**Thermography Report**

**Client's representative present at inspection:** Paul Christman, CBO

**Building location:** 30940 Hawthorne Blvd. Rancho Palos Verdes, CA

**Certified Infrared Thermographer, CIT#:** Aryn Sieber #7983

**Survey date:** March 12<sup>th</sup> and 13<sup>th</sup>, 2010

**Survey start time:** 7:00PM and 8:30AM

**High ambient temperature of the day:** 56F and 68F

**Weather conditions:** Clear and Sunny

**Last recordable rainfall:** March 7, 2010

**Weather conditions at survey start time:** Clear and Sunny w/light winds

**Wind speed/direction at survey start time:** 3 miles per hour/NNW

**Ambient temperature at the survey start time:** 68F and 74F

**Imager used:** FLIR Systems T-300

**Roof Deck:** Plywood with Pyramic coating

**Insulation:** N/A

**Membrane:** SBS

**NOTES** No moisture problems detected on roof see summary for additional comments and findings.



## Summary Analysis and Recommendations

### Exterior:

Inspections at this site began at approximately 7:00pm with a prior briefing of the site and building safety conditions and exit strategies. During preparation and set up of the portable heater we took non-commissioned images of the neighboring two-story, City Hall building. The surface temperatures of those structures were less than desirable at that time though several images were taken over a period of several hours until optimum conditions were realized. Lag times like this are not unusual given the CMU construction of the buildings.

Both buildings (Planning and City Hall) are constructed from CMU block with singular grouted cells approximately 2' O.C. Considering the seismic zone and activity in this region we strongly suggest encourage further investigation and testing be conducted in conjunction with a state licensed engineer to certify the structural integrity of these buildings based on current building standards.

Other voids appear randomly around the building and specifically where original door openings have been converted to windows. On the east elevation (center) of the Planning building there are two cells grouted side-by-side possibly related to a spacing oversight or the cells may have been grouted together for structural reasons. The later may not be logical as this is the only location around the building with such grout spacing.

Roof scans were performed of the Planning building, which appears to be in good condition. However, the transom windows located above the roof line, appear to be in rough condition and fail to operate or seal properly. See interior images for confirmation.

### Recommendations:

Due to the labor, material and other cost factors such as relocating staffers during remediation and bringing the buildings up to acceptable energy standards we recommend that a (CBA) cost benefit analysis be conducted. A CBA should only be considered if demolition of the buildings is an option and new GREEN facilities will be constructed in their place.

Not with-standing the current energy, financial and employment crises across the country it is reasonable to assume partial funding may be available through state and federal agencies in support of such projects. In addition, a project of this magnitude would have certain benefits the local community and economy. The long term benefits to the city of Rancho Palos Verdes for having a state-of-the-art GRREN facility would be SAFETY, increased revenue potential, improved health and productivity of employees and patrons.



Interior:

Random images of the interior lid-line were taken on the evening of the 12<sup>th</sup>. The east wing of the building was heated to an ambient temperature of 72 °C to achieve the required thermal delta needed to help image the exterior walls. NOTE: Noticeable air-infiltration was discovered and documented along the lid-line throughout the offices without the use of the blower door.

On Saturday the 13<sup>th</sup> the blower door was set up to reach standard depressurization of 50Pa, which is the equivalent to a 20 mph wind bearing on the exterior envelope. As anticipated, we discovered significant air-infiltration throughout the entire lid-line of the building. In addition, some offices displayed air-infiltration problems in the center of the room and there were significant air leaks in and around almost all doors and many of the windows.

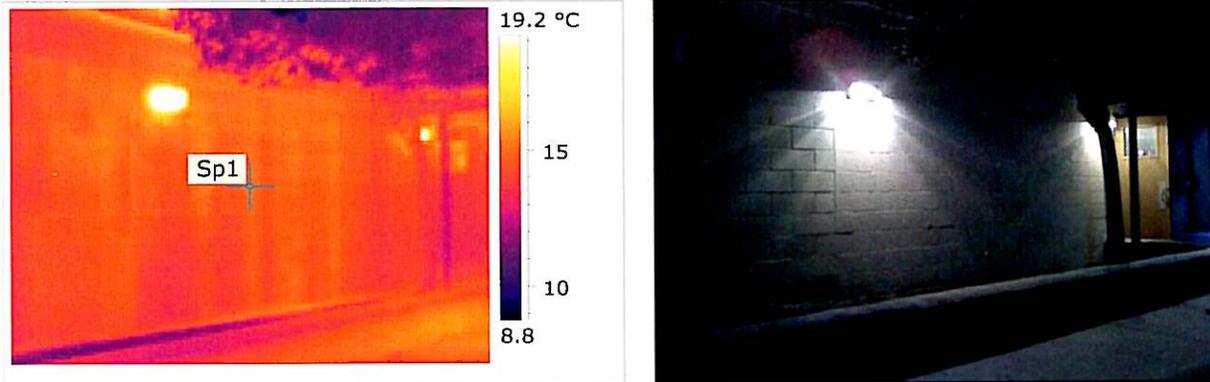
Energy Star's acceptable rate of air-exchanges is 3-5 times per hour. The subject building has an air-exchange rate of 11.4 per hour, which means the building excessively higher than the Energy Star acceptable rating. Electrical outlets and switches appear to be functioning properly under normal loads however the first outlet on the right hand side of the west wing hallway should be examined by a licensed electrician for loose connections.

Recommendations:

Remediation of the lid-line air leaks will require removing the ceiling tile along the perimeter of the building to properly caulk and seal the air leak penetrations along the 1x4 wood baton edges. Air leaks around the windows should be caulked and sealed from the exterior and the exterior. These remedies will make a difference, however the greatest energy savings and efficiencies will be realized by properly insulating the roof and the envelope. Again, given the construction of the buildings the costs for this remediation should be weighed against the long-term (20-25 year) use of the site in its current configuration.

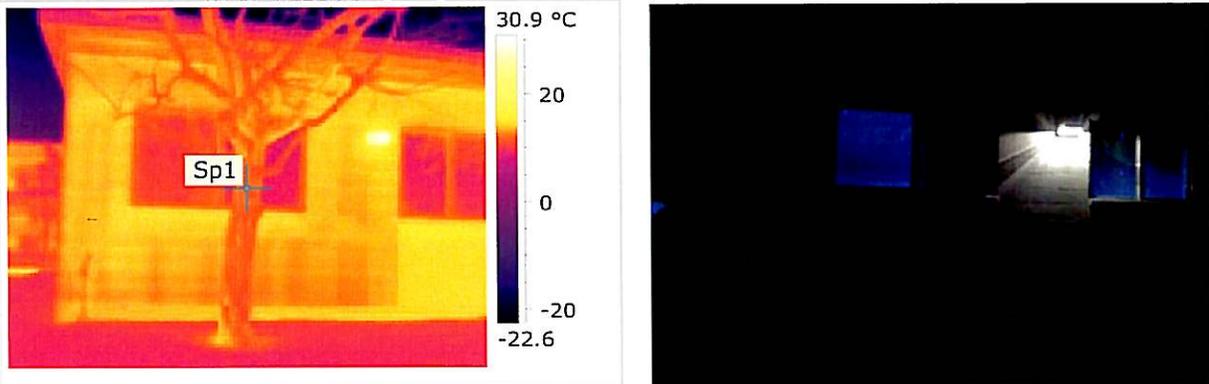
This space left blank intentionally

**Picture 1. Captured at: (Planning Department  
 Date & Time: 3/12/2010 7:13:32 PM**



<b>Comment:</b> Thermal differential inadequate for IR imaging.
<b>Recommendation:</b> Re-image later

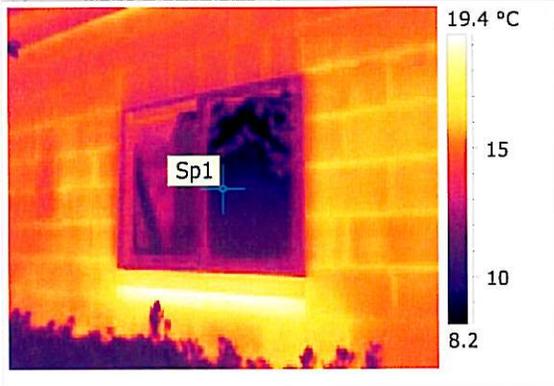
**Picture 2. Captured at: (South Elevation SW Quadrant)  
 Date & Time: 3/13/2010 7:03:45 PM**



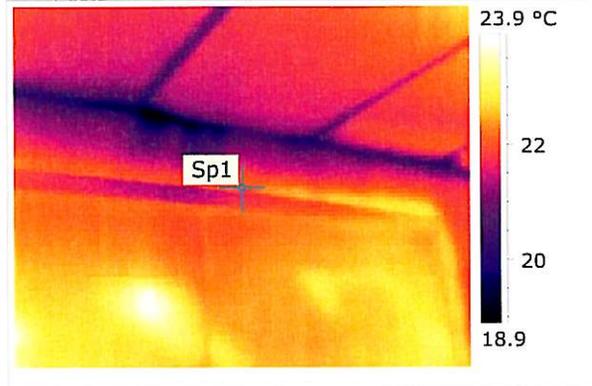
<b>Comment:</b> Note solid bright section below window on right. Graphic and block joint alignment indicate door opening existed when originally constructed.
<b>Recommendation:</b> None

**Picture 3. Captured at: (South Elevation SE Quadrant)**

**Outside**



**Inside**



**Comment:** Bright spot under window could be a combination of metal flashing and energy loss. Difficult to know without further investigation and testing

**Recommendation:** Make small penetration to establish substrate material or presence of metal flashing.

**Picture 4. Captured at: (Bathroom window above roof line)**

**Date & Time: 3/13/2010 7:35:20 AM**

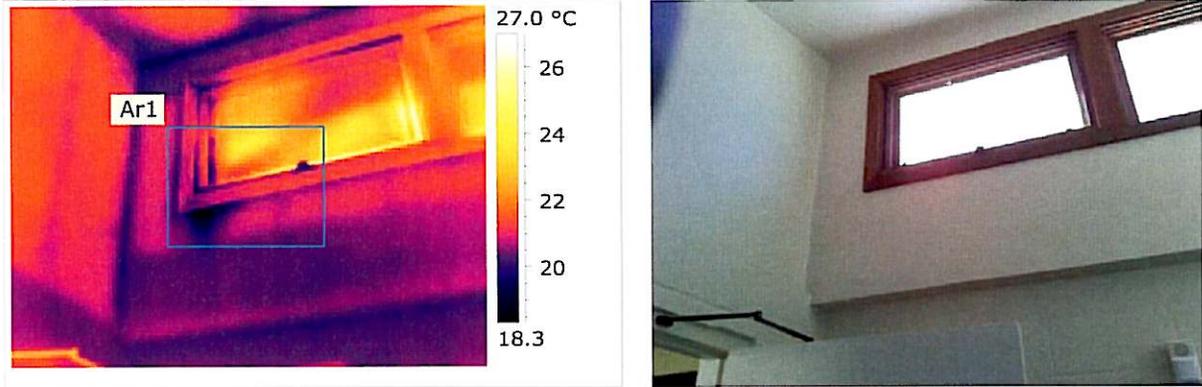


**Comment:** Significant air-infiltration in and around bathroom window above roof line

**Recommendation:** Caulk and seal from interior and exterior window may need to be removed, replaced or reinstalled. Further investigation required

**Picture 5. Captured at: (Bathroom window above roof line)**

**Date & Time: 3/13/2010 7:37:16 AM**

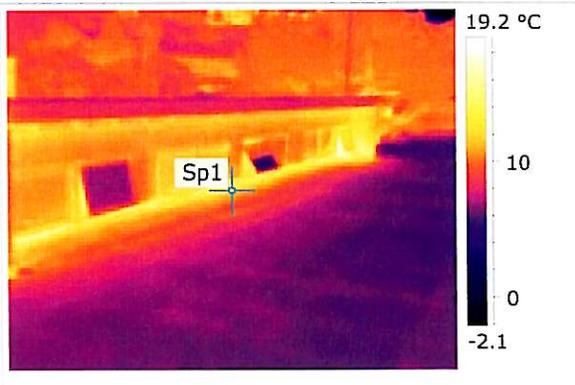


**Comment:** Lid-line and window air-infiltration

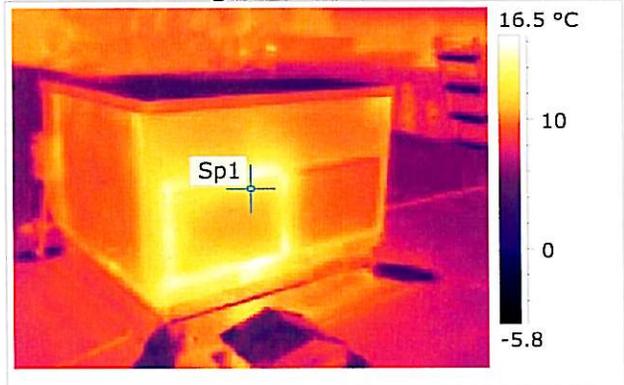
**Recommendation:** Caulk and seal from interior and exterior, Note: window may need to be replaced and/or removed and re-installed further investigation required

**Picture 6. Captured at: (Planning Roof 3/13 7:45:21 PM)**

**Windows vaulted above roof line**



**Air conditioning unit for data center.**

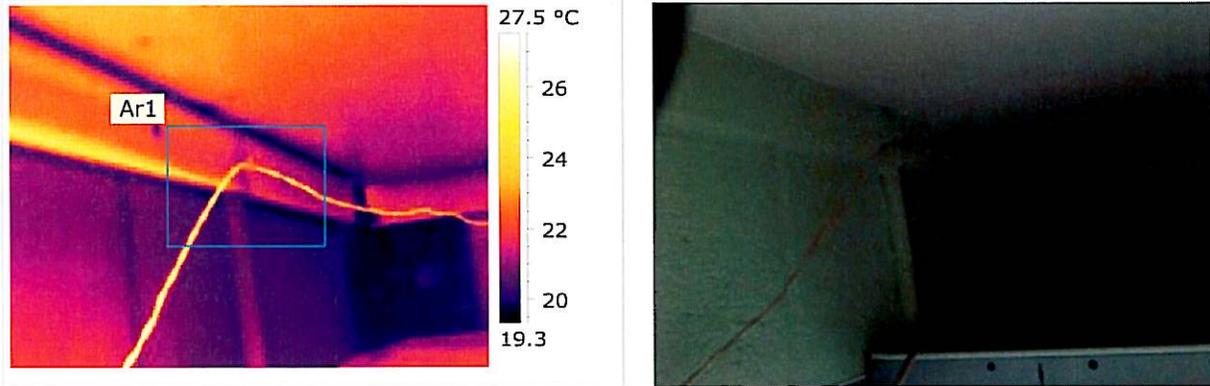


**Comment:** Hot spot below windows is more than likely flashing. However the hot spots around the windows are points of interest regarding energy loss.

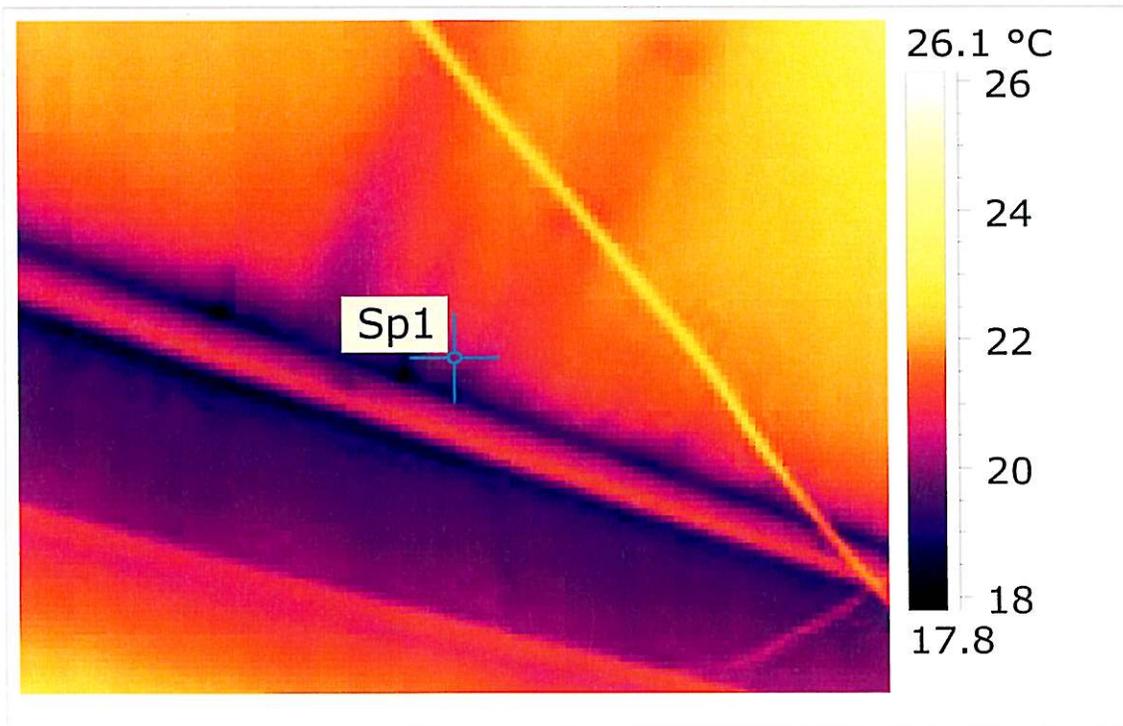
**Recommendation:** See interior images above for reasonable confirmation.

**Picture 7. Captured at: (Inside Ceiling SW Corner office)**

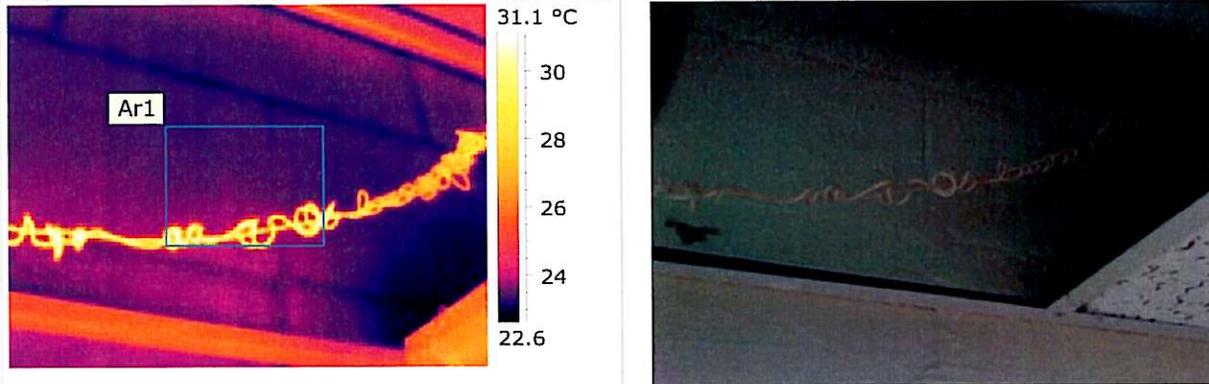
**Date & Time: 3/13/2010 7:25:38 PM**



**Comment:** Black line above and below wood baton indicates colder air-infiltration. Note: This infiltration is present without the use of blower door.  
**Recommendation:** See same image below using blower door. Cable indicates potential phantom electrical issue.



**Picture 8. (Inside Ceiling adjacent (west) to SW Corner office)**

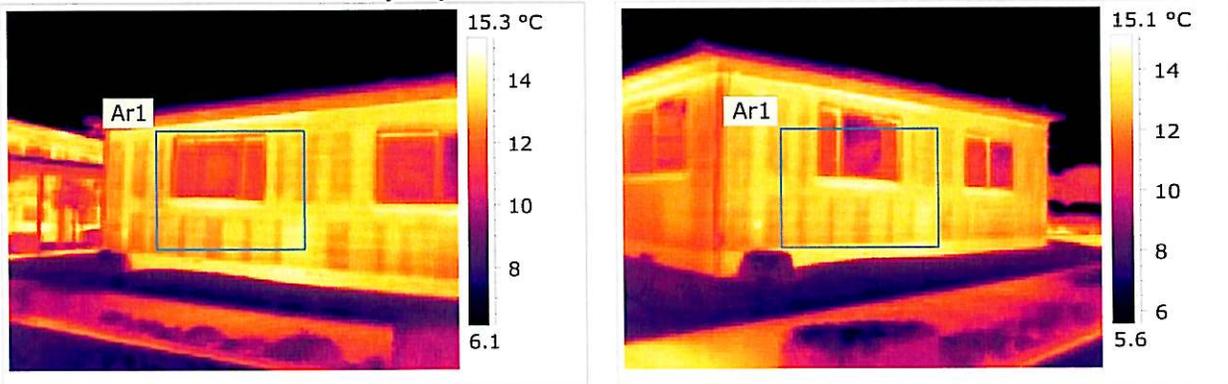


**Comment:** Black line above and below wood baton indicates colder air-infiltration. Note: This infiltration is present without the use of blower door.

**Recommendation:** See same image below using blower door. Cable indicates potential phantom electrical issue.

**Picture 9. Captured at: (West Elevation)**

**Date & Time: 3/13/2010 7:42:20 PM**

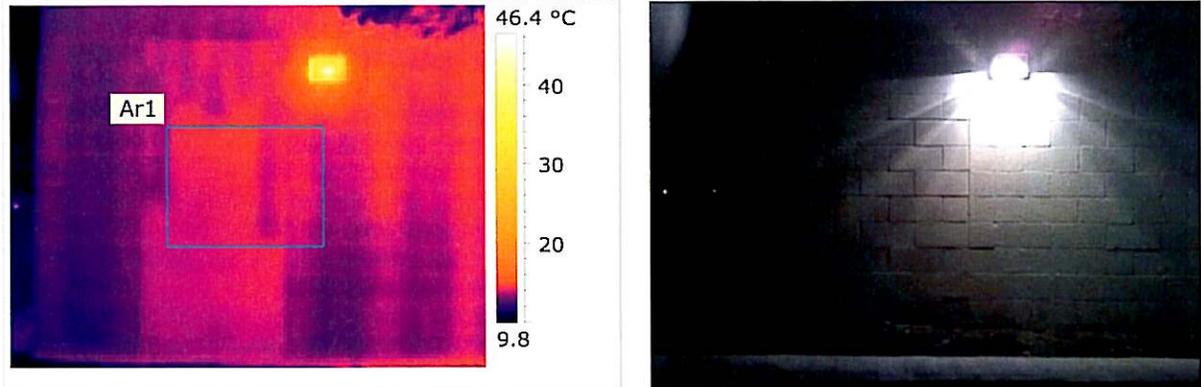


**Comment:** Thermal signature almost achieved

**Recommendation:** Further investigation and testing recommended

**Picture 10. Captured at: (East Elevation)**

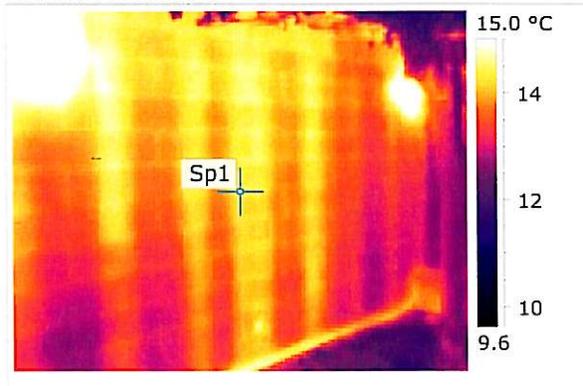
**Date & Time: 3/13/2010 6:52:35 PM**



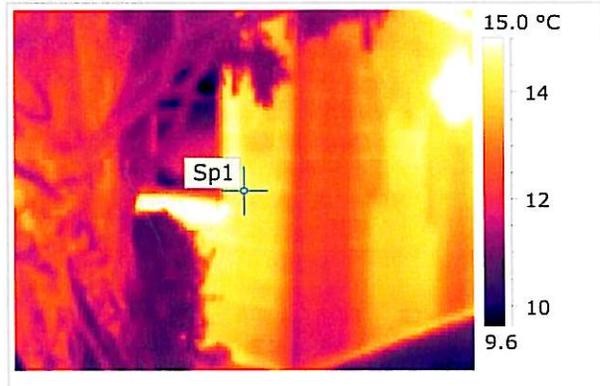
**Comment:** Wall still acclimating to addressable thermal signature

**Recommendation:** See image below

**Picture 11. Captured at: (East and SE Corner Elevation)**  
**South Elevation**



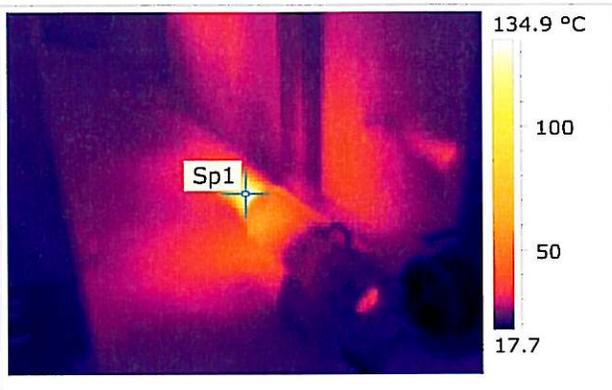
**SE Corner**



**Comment:** Note picture on left with double grouted cells in center. Picture on right indicates prior doorway during original construction.

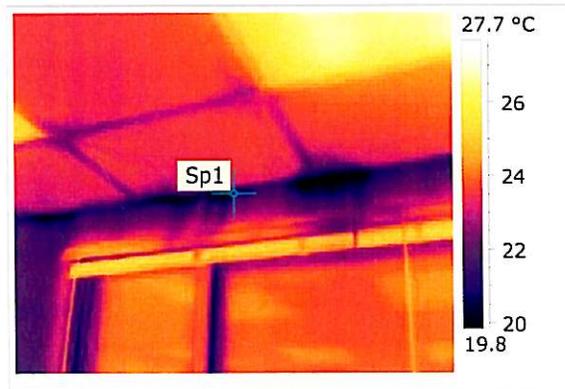
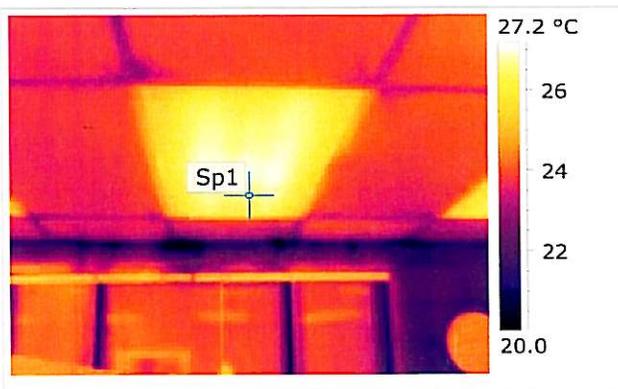
**Recommendation:** Further investigation and testing recommended

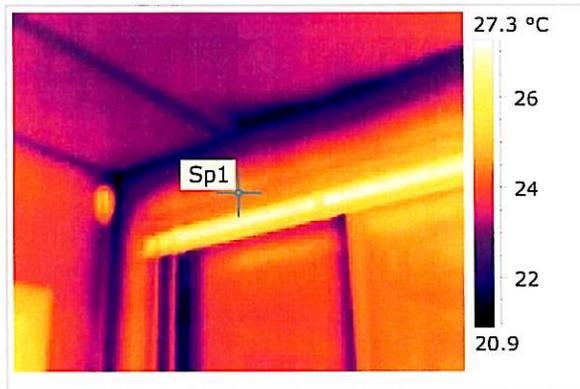
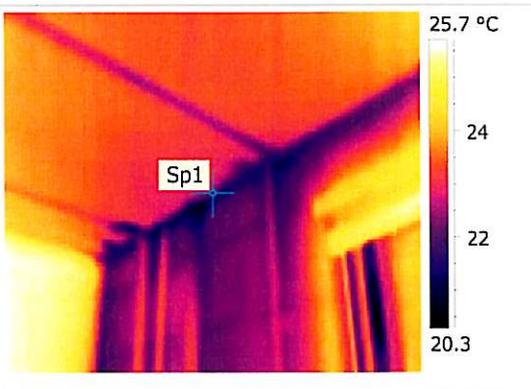
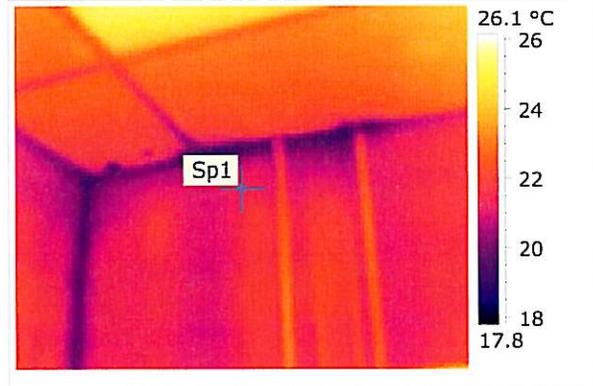
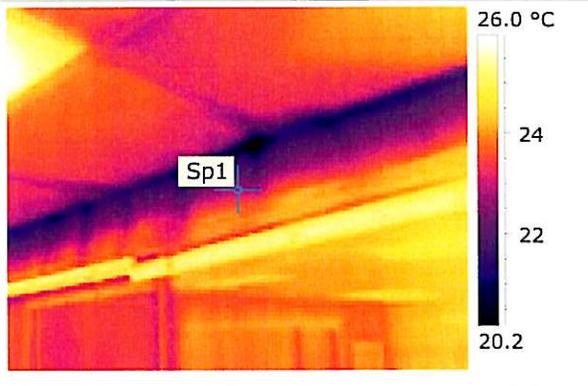
**Portable Propane 150,000 BTU Heater**



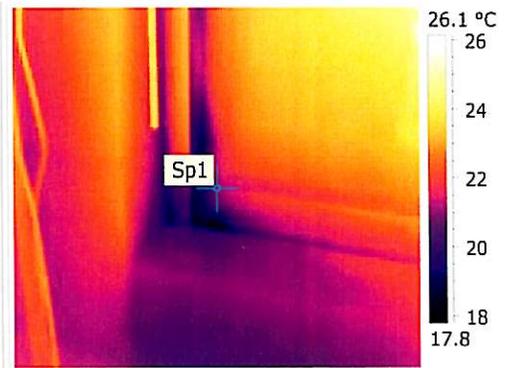
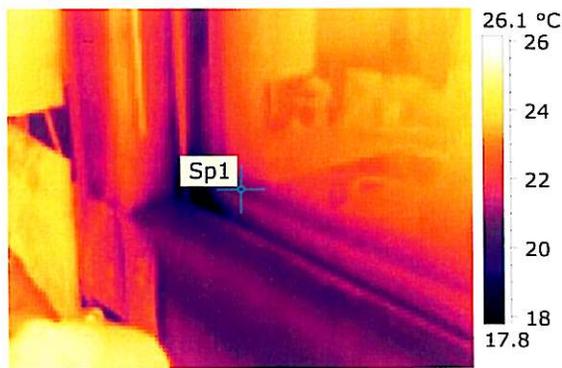
**Comment:** Used to achieve Delta T to optimize thermal imaging

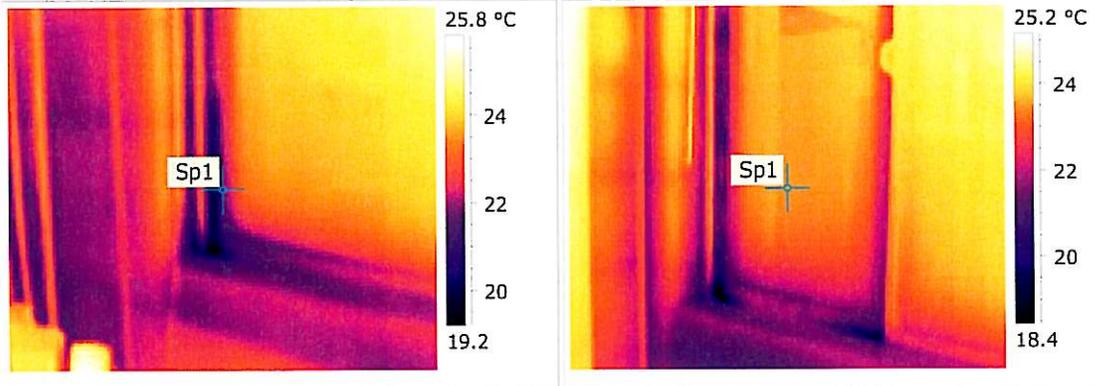
**Captured at: (Typical Air-Infiltration Envelop Perimeter)**





**Typical Air-Infiltration Windows**



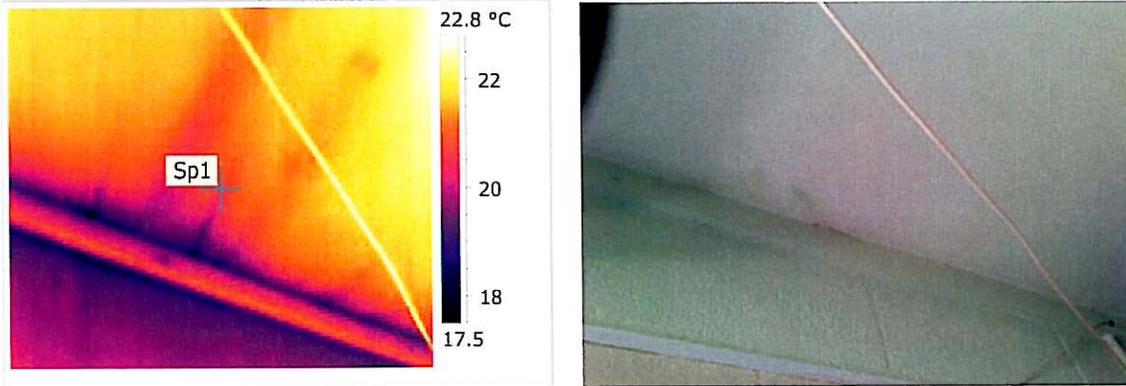


**Recommendation:** Remove perimeter tile caulk and seal wood baton exposed edges. Caulk and seal windows interior and exterior as needed. Further investigation required.

### Combo IR Images and Photos

**Picture 12. Captured at: (SW Office)**

**Date & Time: 3/13/2010 7:20:26 AM**

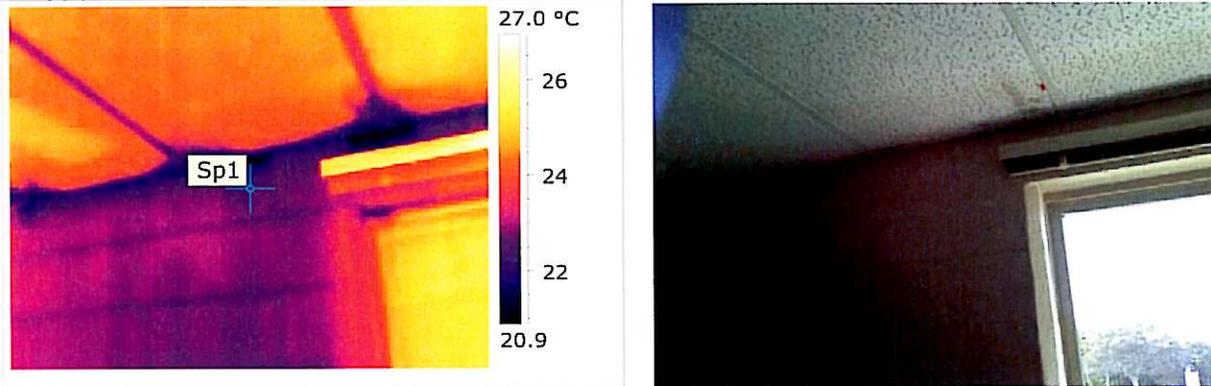


**Comment:** Lid line air-infiltration using blower door

**Recommendation:** Perimeter tile removed. Baton exposed along with underside of finished roof joints. Caulk and seal wood baton all sides. Further investigation required

**Picture 13. Captured at: (Office adjacent to SW Office)**

Date & Time: 3/13/2010 7:22:11 AM

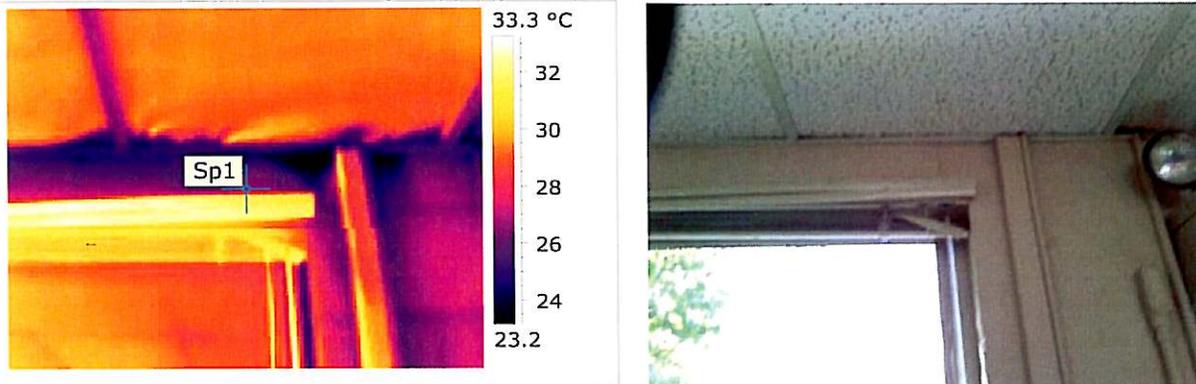


**Comment:** View of lid line air leaks with tile in place

**Recommendation:** Remove perimeter tile caulk and seal wood baton all sides. Further investigation required

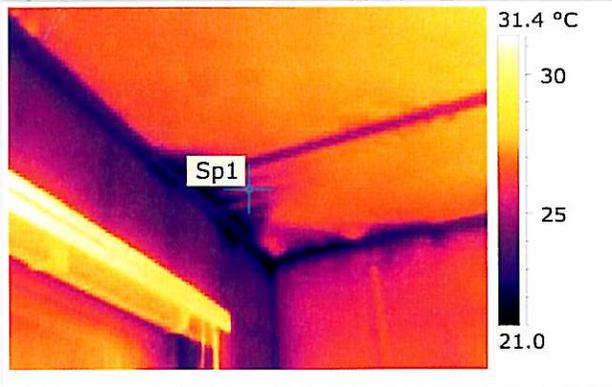
Picture 14. Captured at: (Various offices)

Date & Time: 3/13/2010 7:23:06 AM



Picture 15. Captured at: (South Elevation Office)

Date & Time: 3/13/2010 7:23:38 AM

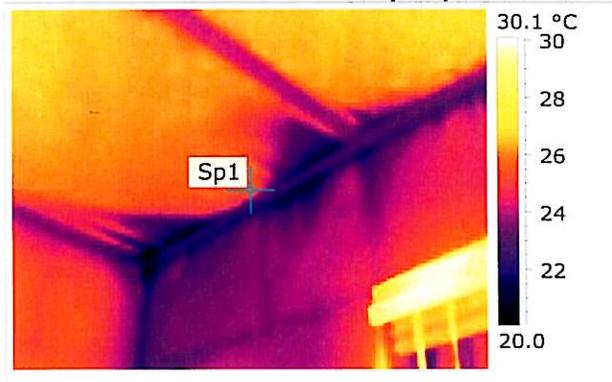


**Comment:** Lid line air-infiltration

**Recommendation:** Remove perimeter tile caulk and seal wood baton all sides. Further investigation required.

**Picture 16. Captured at: (South Elevation Office)**

**Date & Time: 3/13/2010 7:23:52 AM**

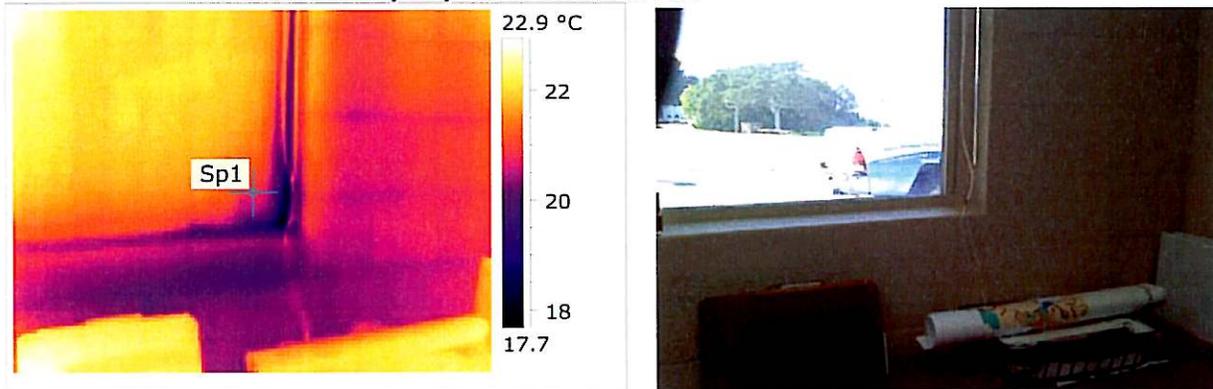


**Comment:** Lid line air-infiltration

**Recommendation:** Remove perimeter tile caulk and seal wood baton all sides. Further investigation required

**Picture 17. Captured at: (South Elevation Office)**

**Date & Time: 3/13/2010 7:25:56 AM**



**Comment:** Lower right corner air-infiltration

**Recommendation:** Caulk and seal as needed from interior and exterior Further investigation needed.

**Picture 18. Captured at: (Exit doors Conference room)**

**Date & Time: 3/13/2010 7:28:05 AM**

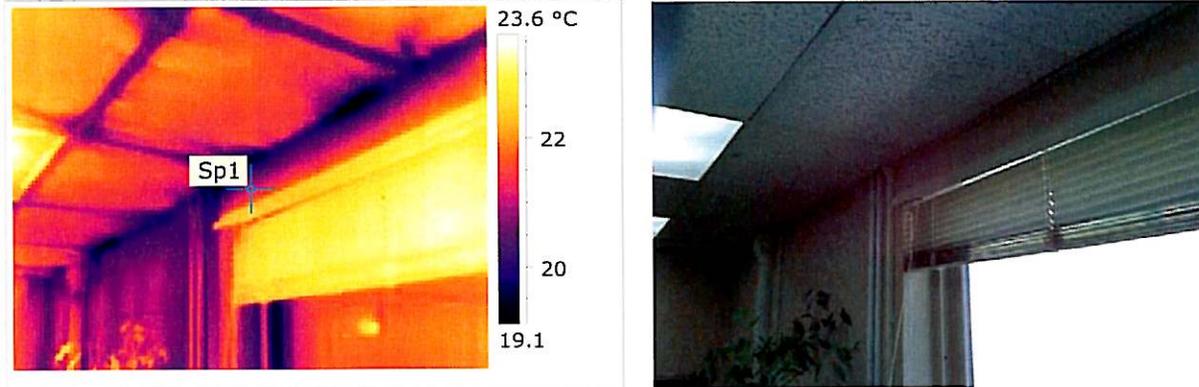


**Comment:** Ceiling tile and door air-infiltration

**Recommendation:** Caulk and seal as needed. Removal of door moldings may be required. Further investigation needed.

**Picture 19. Captured at: (South Elevation Office)**

**Date & Time: 3/13/2010 7:29:38 AM**

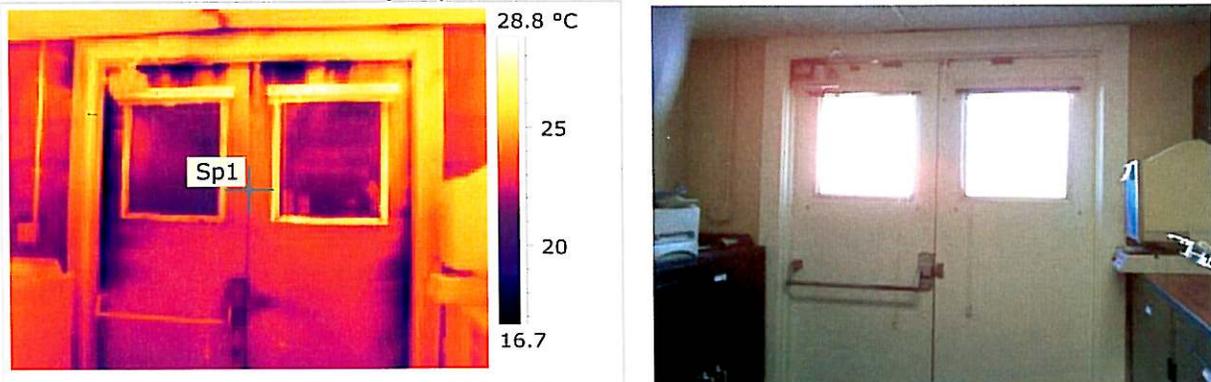


**Comment:** Severe lid line and ceiling tile air-infiltration

**Recommendation:** Caulk and seal as needed. Removal of ceiling tile will be required for further investigation of infiltration source.

**Picture 20. Captured at: (Exit Door 2)**

**Date & Time: 3/13/2010 7:30:16 AM**

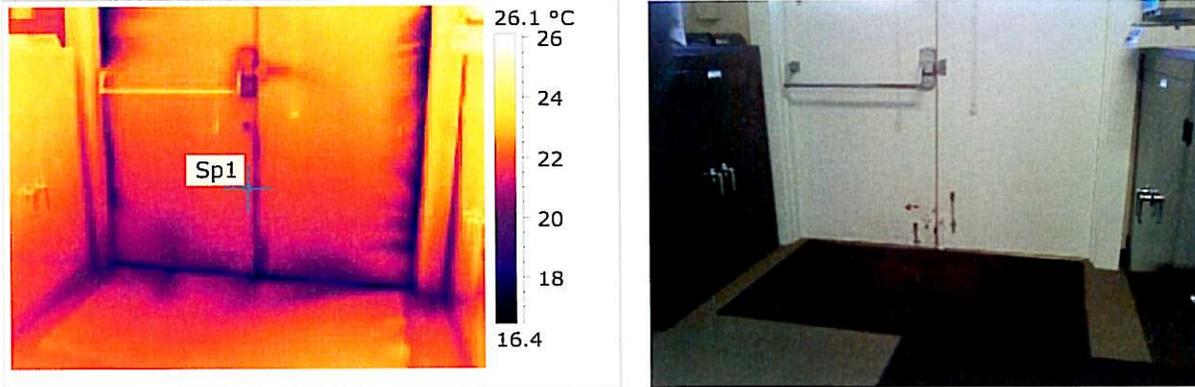


**Comment:** Air-infiltration around door, jamb and ceiling tile

**Recommendation:** Caulk and seal as needed. Removal of door moldings may be required. Further investigation needed.

**Picture 21. Captured at: (Exit Door 2)**

**Date & Time: 3/13/2010 7:30:35 AM**

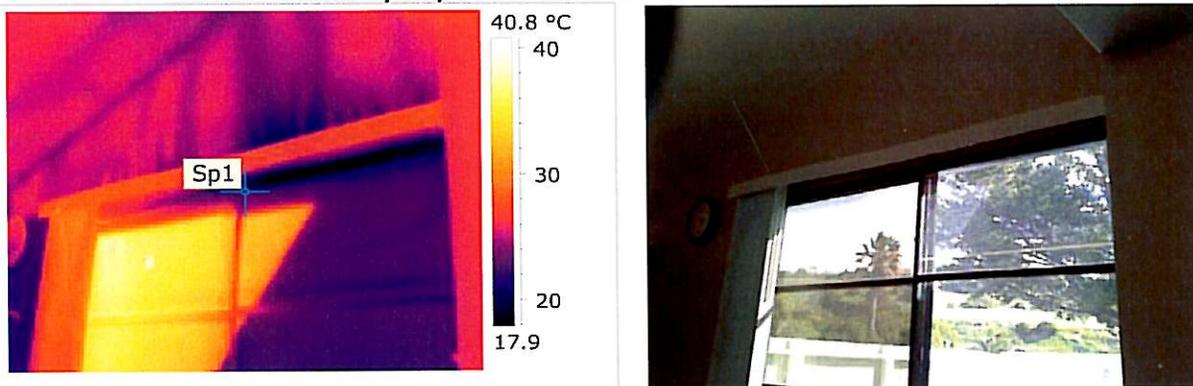


**Comment:** Air-infiltration door and jamb

**Recommendation:** Caulk and seal as needed. Removal of door moldings may be required. Further investigation needed

**Picture 22. Captured at: (North Elevation)**

**Date & Time: 3/13/2010 7:32:29 AM**

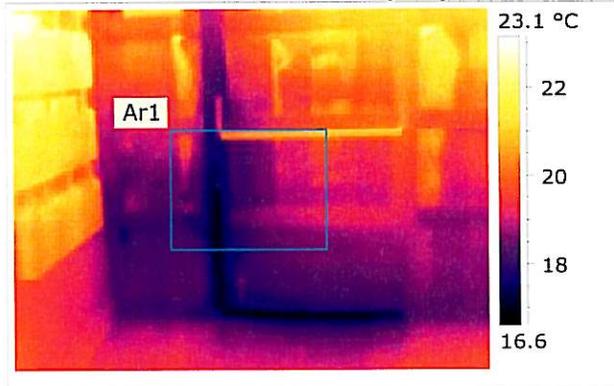


**Comment:** Air-infiltration from window frame at courtyard location

**Recommendation:** Caulk and seal as needed from interior and exterior. Remove, replace and or reinstall properly as needed

**Picture 23. Captured at: (Entry)**

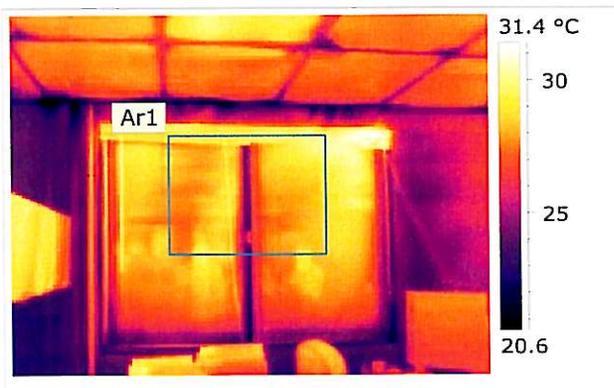
**Date & Time: 3/13/2010 7:35:58 AM**



**Comment:** Lower entrance door air-infiltration

**Recommendation:** Add weather stripping where applicable

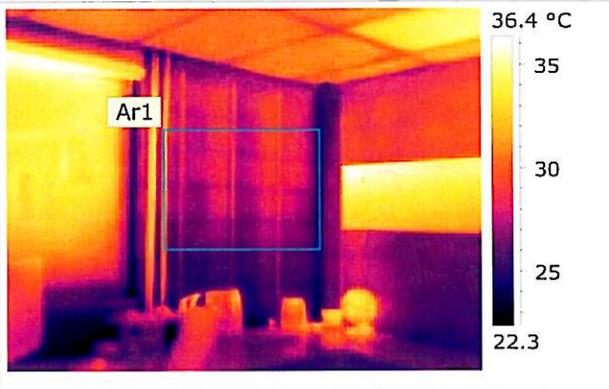
**Picture 24. Captured at: (North West office adjacent to NW corner office)**



**Comment:** Dark spots along ceiling tile line, center and bottom corners of window indicate air-infiltration. Note additional air-infiltration at corners of ceiling tile.

**Recommendation:** Air-infiltration at the center of the room and light warrants further investigation and testing. Removal of field tile required to be able to properly examine infiltration

**South Elevation Office**



**Comment:** Dark spots around pipes, corners of walls, around window and along ceiling tile line indicate air-infiltration

**Recommendation:** Walls need to be fixed and insulated properly to meet energy standards



A CSI COMPANY

# CaliforniaIR

Thermal Imaging Experts

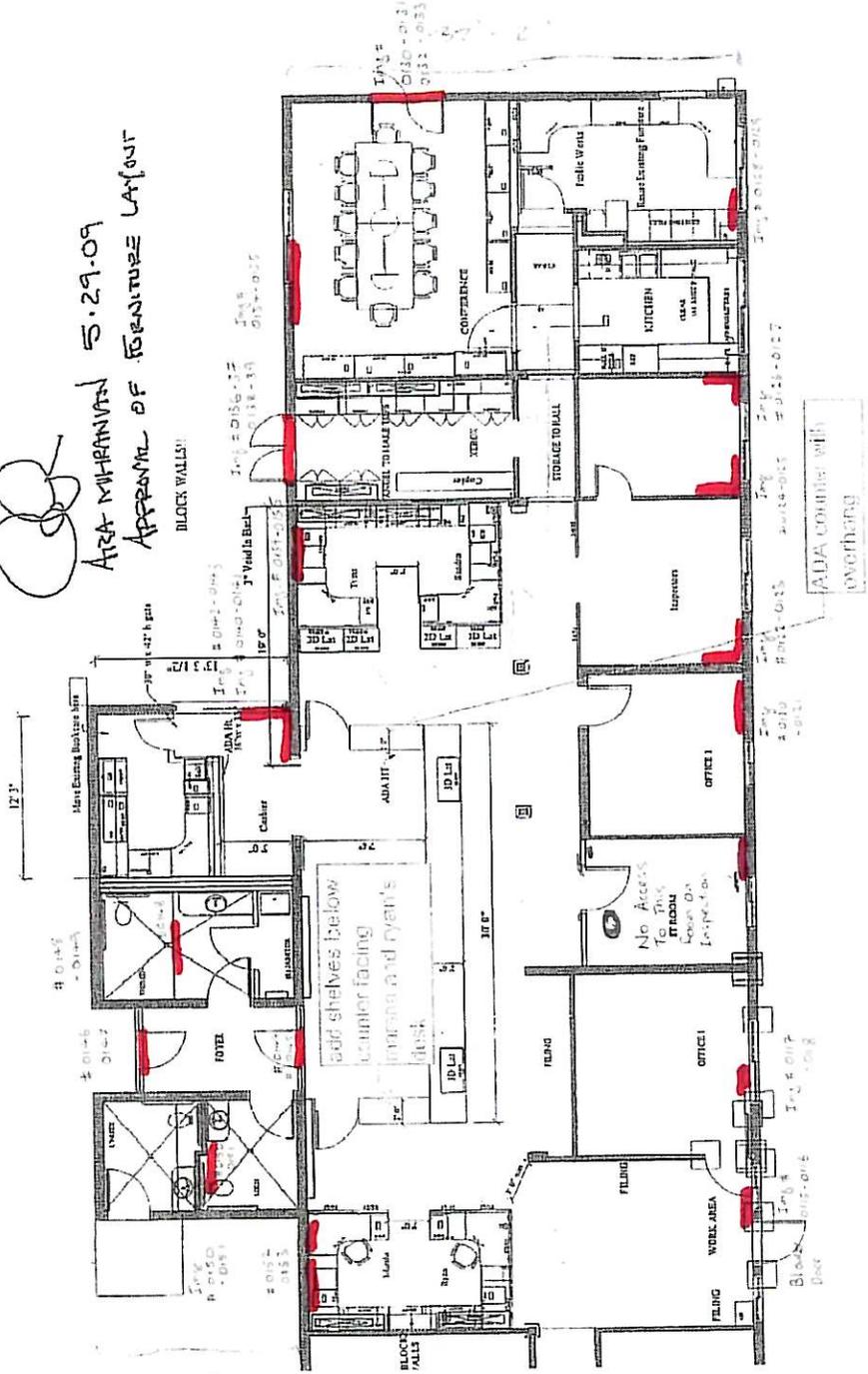
REVISED 2010

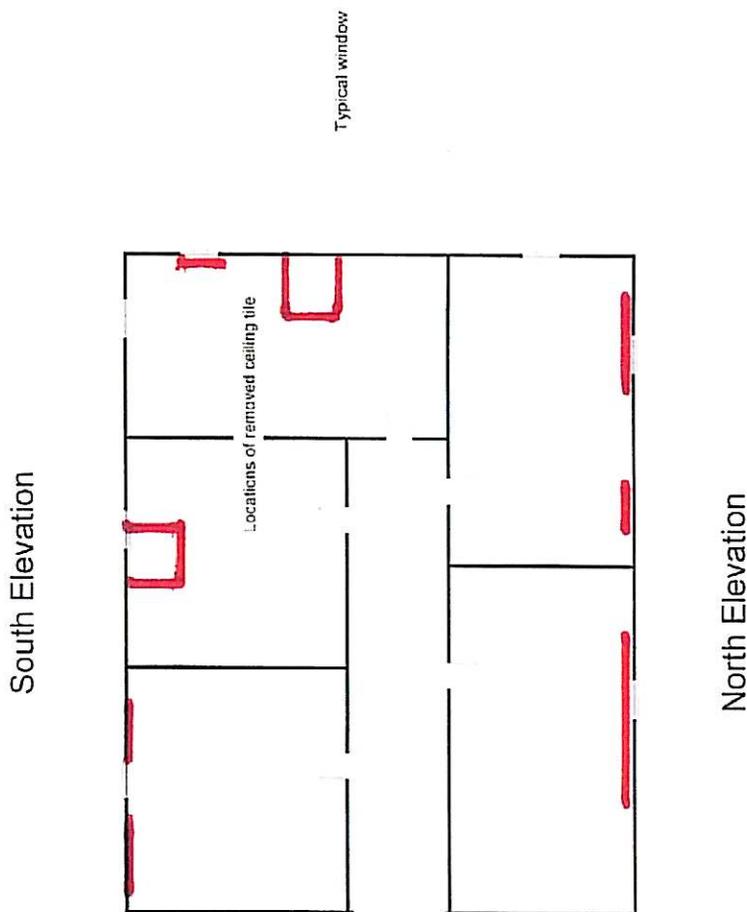
**\* DIMENSIONS TO BE VERIFIED BY CONTRACTOR / DESIGNER**

*AR*

ARA MURPHY 5.29.09  
APPROVAL OF FURNITURE LAYOUT

BLOCK WALLS!





To (E) Planning Building

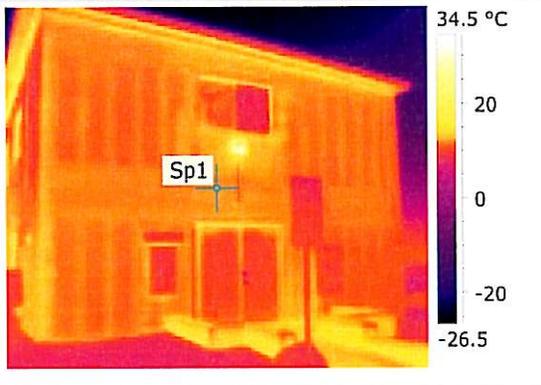
L. A. Sieber CSI Company  
 dba CaliforniaIR and PremierIR  
 2537-D Pacific Coast Hwy #234  
 Torrance, CA 90505

Planning Building Extension  
 City of Rancho Palos Verdes, CA

**RPV City Hall (Exterior)**

Picture taken 3/12/10 at 7:10PM

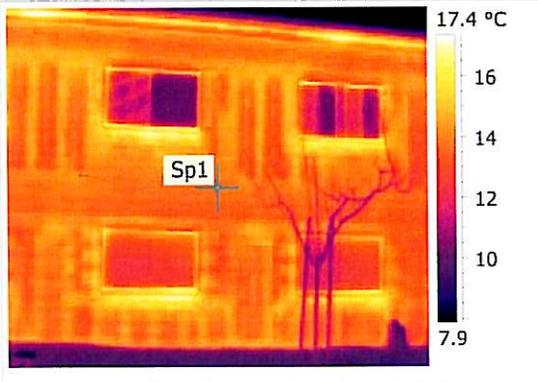
**East Elevation**



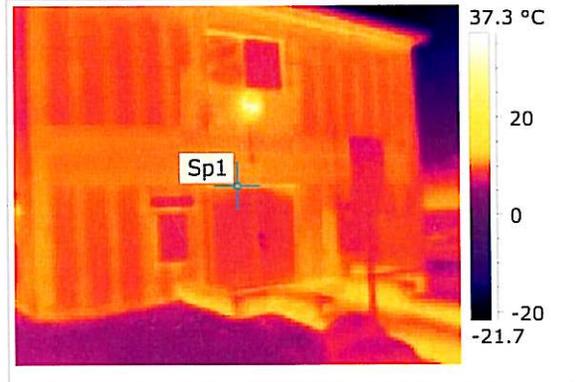
**Comment:** Thermal signature still acclimating across East Elevation surface. Note potential energy loss around window and door.

**Recommendation:** None

**South Elevation**



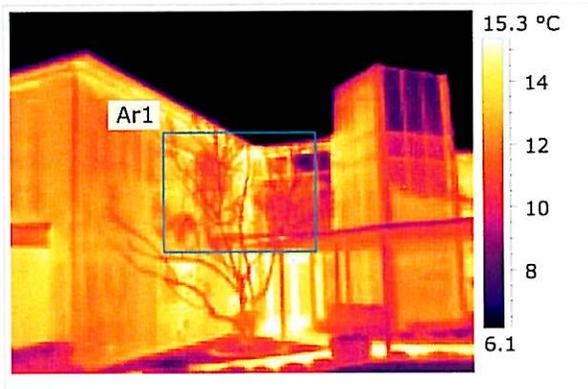
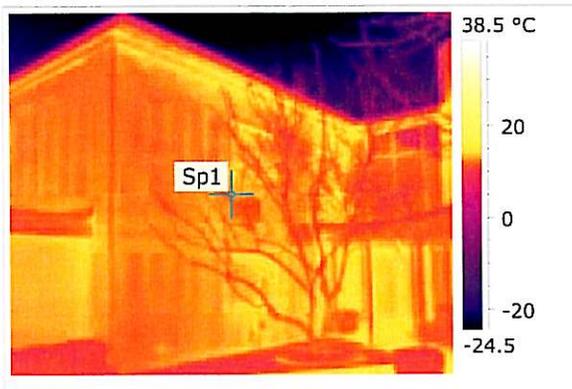
**East Elevation**



**Comment:** Thermal signature still settling across South Elevation surface, window frames appear to be emitting energy at tops and sides. Thermal signature of East elevation ideal for imaging.

**Recommendation:** Aluminum windows should be replaced with energy efficient windows and installed properly. Engineer should review and evaluate structure for integrity based on current codes.

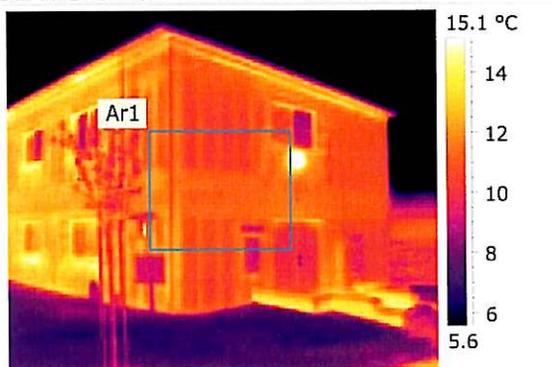
### City Hall Entrance



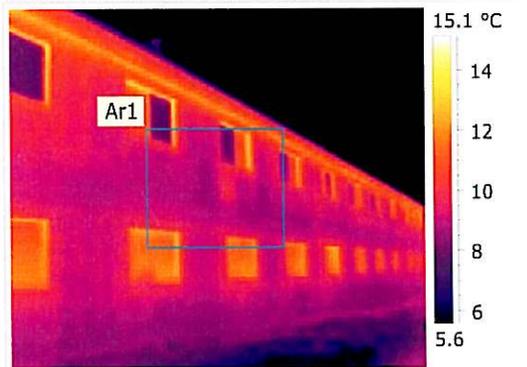
**Comment:** Glass entrance indicates possible source of energy loss

**Recommendation:** Check glass panels for proper sealing and/or replace with properly sealed double pane insulated glass panels. Further investigation recommended.

### SE Elevation Time: 9:47:59 PM



### Rear or North Elevation



**Comment:** Dark spaces are empty cells, light color indicates grouted cells 2' O.C. Picture on right light color around windows indicates heat emitting through window frames

**Recommendation:** Engineer should review and evaluate structural concerns, replace aluminum frame windows. Proper Sealing when Installed Required.

**Ladera Linda Community Center, Building J &K**  
Recreation Room Highlighted in Yellow



**Client's representative present at inspection:** Paul Christman, CBO  
**Building location:** . 32201 Forrestal Drive Rancho Palos Verdes, CA  
**Certified Infrared Thermographer, CIT#:** Aryn Sieber #7983  
**Survey date:** March 12<sup>th</sup> and 13<sup>th</sup>, 2010  
**Survey start time:** 8:30PM and 10:00AM  
**High ambient temperature of the day:** 56F and 72F  
**Weather conditions:** Clear and Sunny with light WNW winds at 3knots  
**Last recordable rainfall:** March 7, 2010  
**Weather conditions at survey start time:** Clear and Sunny w/light winds  
**Wind speed/direction at survey start time:** 3 miles per hour/NNW  
**Ambient temperature at the survey start time:** 68F and 74F  
**Imager used:** FLIR Systems T-300  
**Roof Deck:** Plywood with Pyramic coating Per clients roofing spec  
**Insulation:** N/A  
**Membrane:** SBS per client's roofing spec

**NOTES** No moisture problems detected on roof see summary for additional comments and findings.



## Summary Analysis and Recommendations

### Interior/Exterior:

First inspections at this site began on 3/12/10 at approximately 8:30pm. The roof at this location is in good condition though the (3) 8" furnace vents penetrating the roof are a major source of air infiltration. The 6" vent pipe extends up into the original 8" vent pipe without any visible mechanical connection or seal. This is of heightened concern as the furnace venting should be properly sealed and exhausted to the outside. Inadequate gas furnace ventilation is a health hazard.

Due to the natural reflective inherencies of the metal and glass surfaces of the building envelope it is nearly impossible to accurately detect thermal anomalies across the envelope surfaces. However, where the metal panels are joined/seamed energy in-efficiencies were detected and documented. The majority of heat loss and gain is being conducted and radiated through the metal seams and spaces between the panels and the single pane windows. Other air-infiltration issues include, partition walls, extremely oversized holes cut in exterior walls to accommodate mechanical penetrations and non-insulated roofs.

### Recommendations:

Given the seismic conditions in this region and current building standards we strongly suggest a licensed engineer investigate the structural integrity of the buildings. Due to the cost factors of retrofitting the structures and the cost of retrofitting the buildings to current energy standards we recommend a cost benefit analysis be conducted.

Not with-standing the current energy and financial crises across the country it is reasonable to assume partial funding may be available through state and federal agencies in support of such projects. The long term benefits to the city of Rancho Palos Verdes for having a state-of-the-art GRREN facility would be SAFETY, increased revenue, improved health and productivity of employees and patrons.

In addition, we recommend the building ceiling tile be tested for asbestos, unless you are certain they were not manufactured during the asbestos era.

### Interior:

Random images of the interior were taken. The center room was heated using our portable heater to an ambient temperature of 72 °C however the electrical blower caused the electrical circuit to trip. This should not have happened and therefore suggest a licensed electrician conduct further investigation of this problem. See electrical panel under load in the coming pages.

Standard depressurization of 50Pa (20 mph wind load on the exterior envelope) was unachievable due to the extensive air-infiltration throughout the entire building even though



there are fixed partitions separating each room. The highest reading we could attain was 12.4 Pa. To obtain and maintain the standard of 50Pa the fan system would need to produce an equivalent of gale force winds, which would likely rip the ceiling tile out of place and destroy anything that was not literally nailed down.

Example:

The Planning Department was 4300sf of open space. When depressurized to 50Pa we were able to document air-exchanges of 11.5 times per hour. Note: To be within the Energy Star guidelines air exchanges should range somewhere between 3 and 5 times per hour.

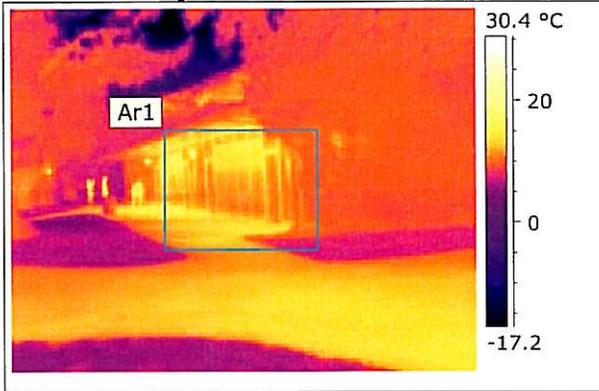
The Ladera Linda Community Center building is approximately 2400sf in total, with (3) fixed (floor to ceiling and wall to wall) partitions of approximately 800sf each. When pressurized unit J could only achieve 10.4Pa, when we closed the door to Unit K the pressure increased to 12.4Pa.

Recommendations:

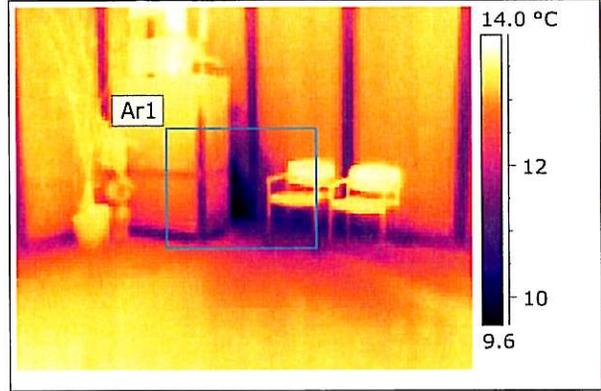
In our professional opinion, there is no reasonable and cost effective means of bringing this facility up to basic energy standards, unless however the intended use of this facility "as is" will be adequate for the next 20-25 years. This conclusion while concerning to some is pragmatic. This facility in effect is an energy hog. Based on our experience the ROI for remediating this facility is unreasonable for the overall ROV Return on Value.

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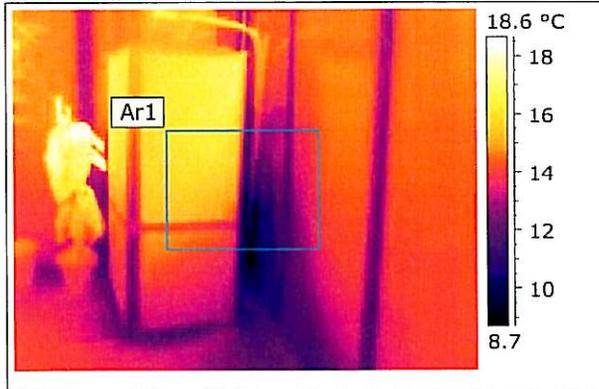
**Entrance Façade**



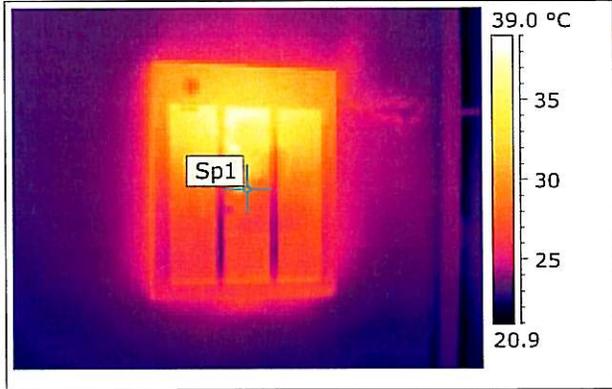
**Air-leak (14"x14") behind furnace**



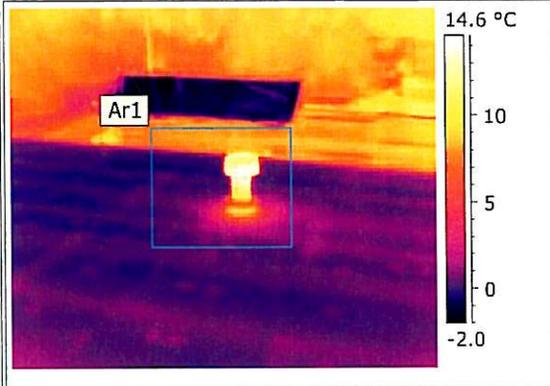
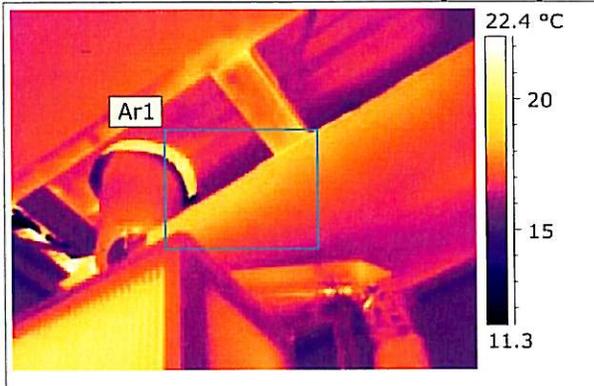
**View of furnace from side**



**Wall Heater**

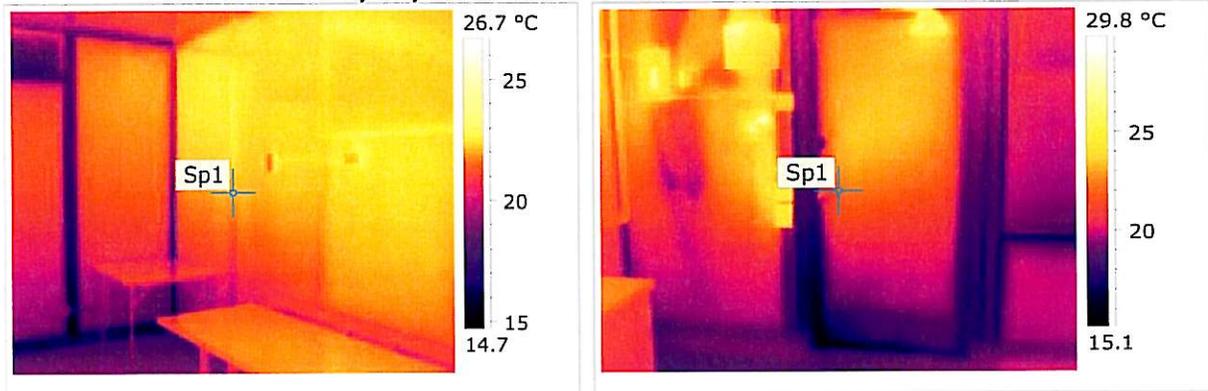


**View of 6" furnace vent inside primary 8" vent and 8" vent and cap on roof**



**Picture 25. Captured at: (Center Room)**

**Date & Time: 3/13/2010 9:35:46 AM**

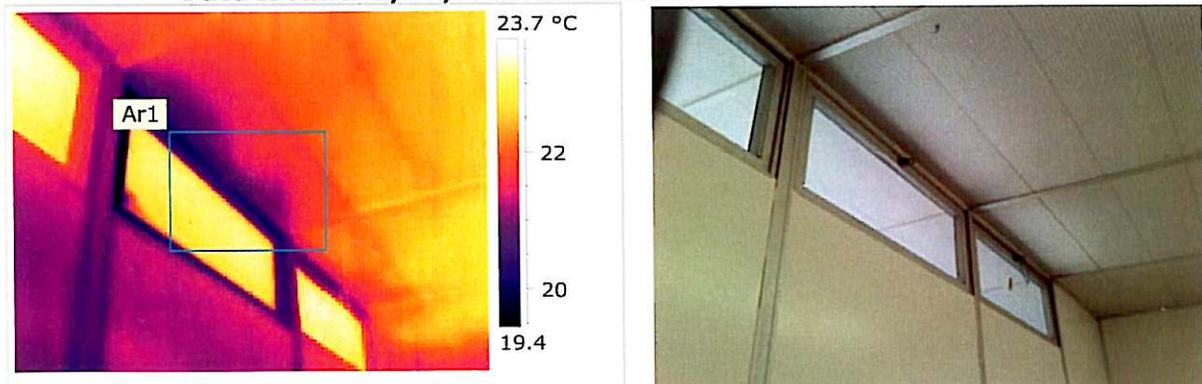


**Comment:** Dark wall mullions absorbing cooler air from outside and window and door air-infiltration

**Recommendation:** Further testing of materials required to determine best practice remediation for mullions, windows and door requiring weather stripping

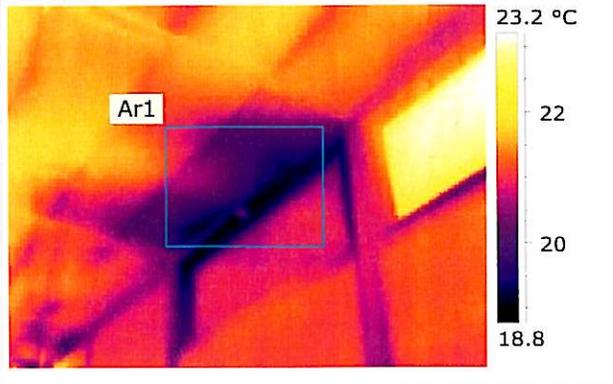
**Picture 26. Captured at: (Game Room)**

**Date & Time: 3/13/2010 9:29:43 AM**



**Picture 27. Captured at: (Game Room)**

**Date & Time: 3/13/2010 8:30:38 PM**

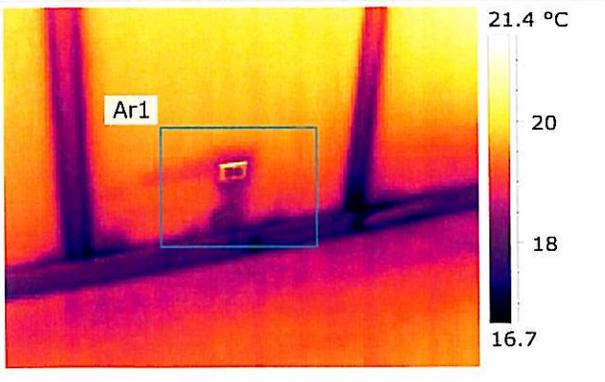


**Comment:** Severe window air-infiltration

**Recommendation:** Caulk and seal properly, may need replacement

**Picture 28. Captured at: (Where)**

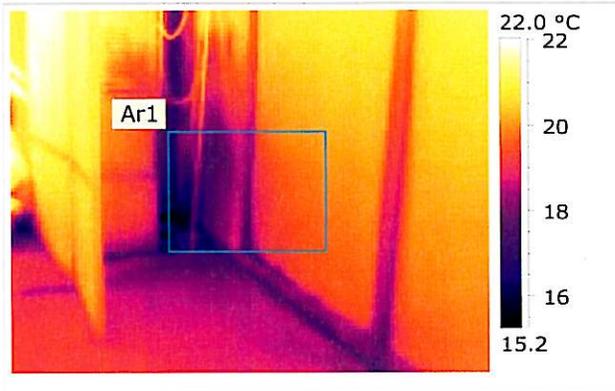
**Date & Time: 3/13/2010 9:31:39 AM**



**Comment:** Outlet air-infiltration, Panel and sill joint air-infiltration

**Recommendation:** Caulk and seal behind outlet plate, Panel joints and sill molding may need to be removed to seal properly. May require additional costs once unforeseen conditions are exposed.

**Picture 29. (Center Room)**

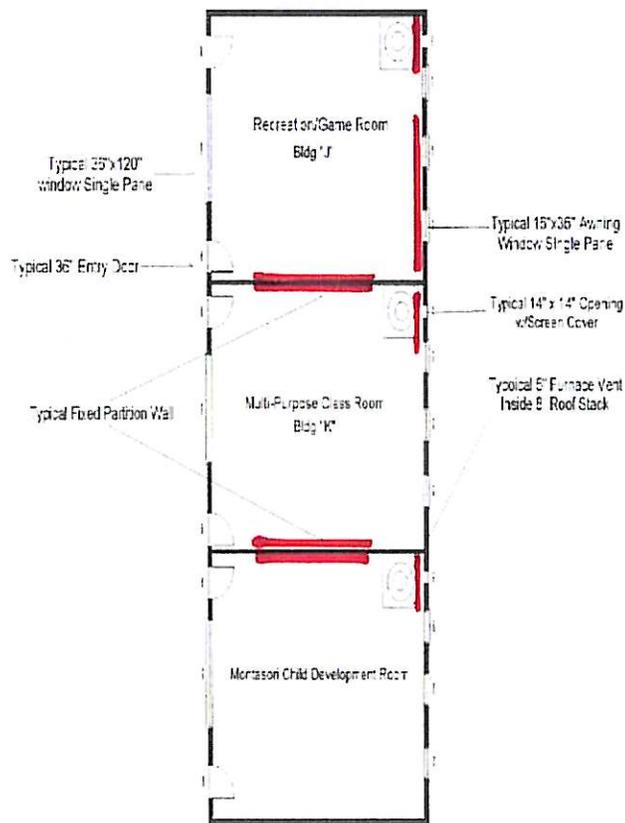


**Comment:** Typical 14" x 14" hole behind furnace in wall all rooms

**Recommendation:** Patch as needed and re-plumb as needed

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Ladera Linda Community Center  
 Building J & K



<b>Project</b>	<b>CaliforniaIR a CSI Company</b>
City of Rancho Palos Verdes Ladera Linda Community Center	2537-D Pacific Coast Hwy #234 Torrance CA 90505
Date March 28, 2010	(424) 263-4937 www.California-IR.com