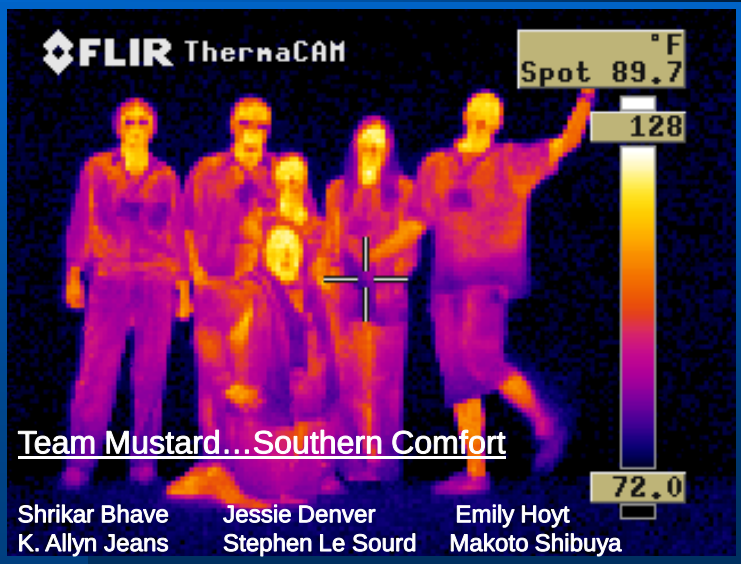
San Diego Tool Day

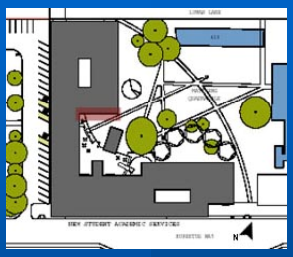


Hypothesis

- Thermal mass and full shading will cause the temperature in the meeting room to be moderated relative to the day lit perimeter offices on the south-eastern facades
- These offices may benefit from more shading and mass

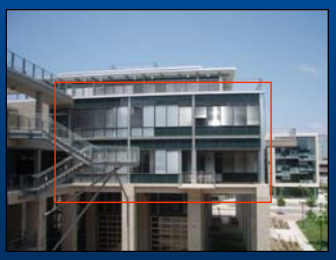
Student Academic Services Facility (SASF)
Designed by Rob Wellington Quigley, FAIA

South Façade of the North Bldg.

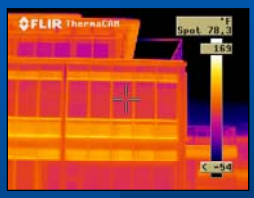


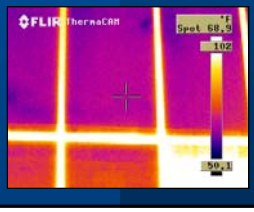
Shading on the fourth floor penthouse level is very effective on both the south and the east sides

But not on the second and third floor below, where blinds are drawn to ward off heat gain



South Façade of the North Bldg.

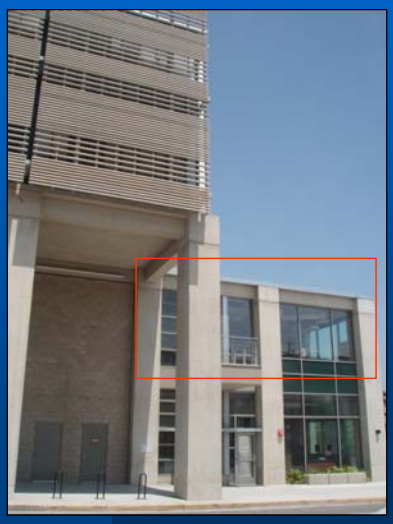




Using the Raytech:

- Upper windows of center bay:
  - Spandrel 66.5° F
  - Left lite (with blinds open) 62.5° F
  - Smaller window (with blinds closed) 70° F
- Lower windows of center bay:
  - East Spandrel 80° F
  - West Spandrel 74° F
  - Center lite (with blinds closed) 67° F
  - Center lite (with blinds open) 65° F
  - Spandrel 70° F

South Façade of the South Bldg.



Using the Raytech

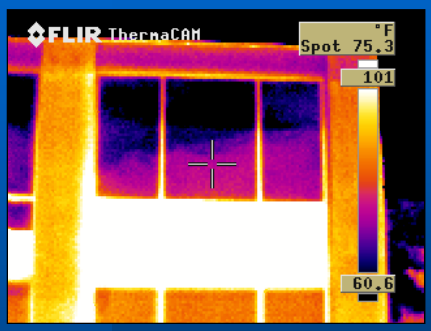
Office with door:

- Exterior surface measures 65° F
- Interior surface measures 84° F

Sunshades:

- Upper: 60° F
- Lower: 68° F

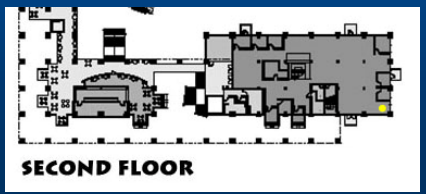
Open Office of the South Bldg.



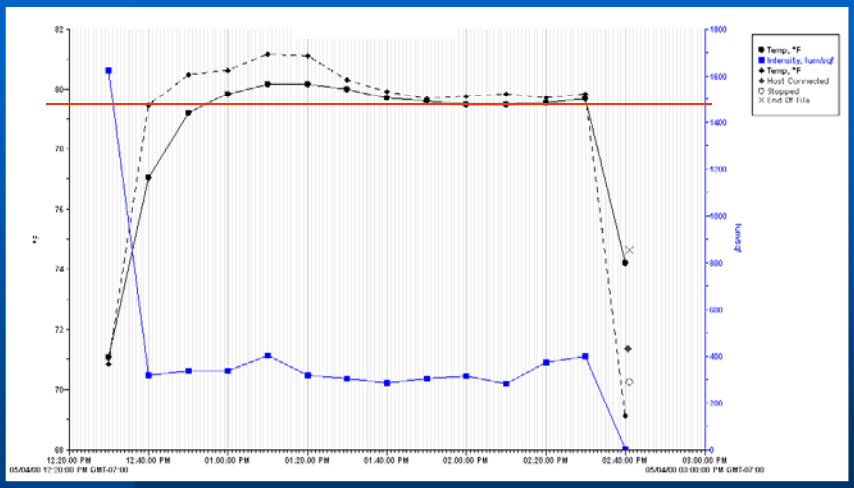
Using the Raytech

Corner Office:

- Exterior surface measures 60° F using the Raytech
- Interior surface measures 78° F using the Raytech

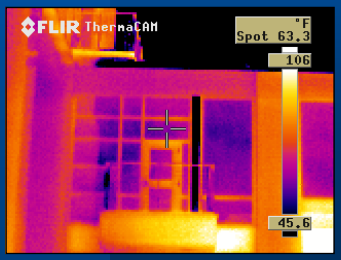


Open Office of the South Bldg.



Internal temperatures are at the high end of the comfort zone, even on a cool spring day

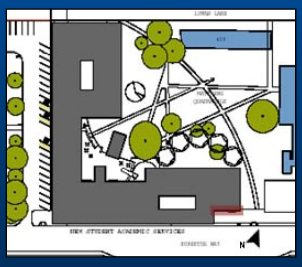
Closed Office of the South Bldg.



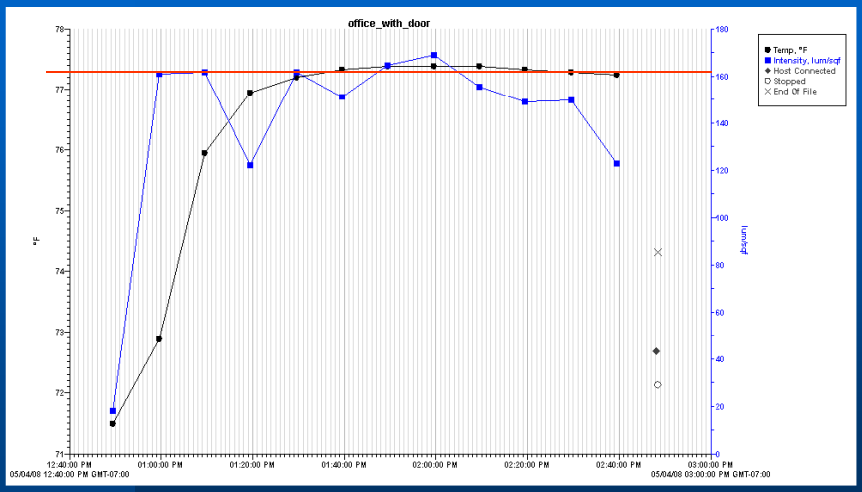
Using the Raytech

<u>Office with door:</u>

- Exterior surface measures 65° F
- Interior surface measures 84° F

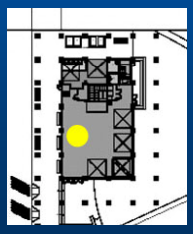


Closed Office of the South Bldg.

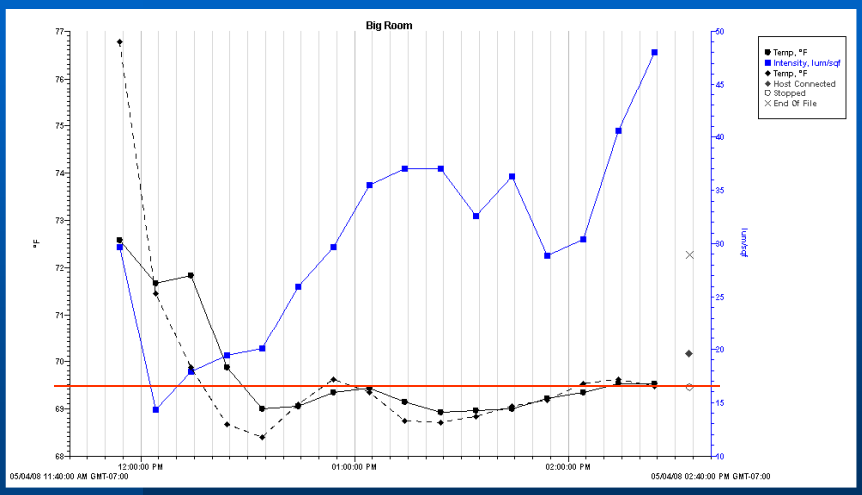


Internal temperatures are still at the high end of the comfort zone

Main Hall



Main Hall



Internal temperatures are at the low end of the comfort zone, but a cool spring day

Conclusions

1. The initial hypothesis is proven: thermal mass and full shading will cause the temperature in the meeting room to be moderated relative to the day lit perimeter offices, and they would benefit from more of both
2. The large un-shaded windows in the two offices on the south-eastern end of the South Building are causing over-heating
3. Due to their similar construction and orientation, the un-shaded windows on the south façade of the North Building may also be expected to over-heat the spaces behind them
4. Exterior surface temperatures are similar on the south facades of both the Northern and the Southern buildings…

   And interior surface temperatures and MRT were both at or above the comfort zone in the two South Building offices…

   Therefore interior temperatures are probably also outside the zone on the second and third floors along the south façade of the Northern Building as well