

## Thermal images of new Highway Dep building, Jan 16, 2019

External images were taken between 7:15 AM and 7:30 AM before any sunlight was falling on the building (*note: file creation times are 1 hour later due to camera still being set on Daylight Savings time*). Outside temperature was around 15°F, no wind.

Internal images were taken between 7:30 to 8:15 AM. Inside temperature around 60°F.

Unless otherwise noted, all thermal images are displayed using "linear temperature" color scaling. External images use a fixed scale of 0°F to 25°F; internal images use a fixed scale of 40°F to 70°F.

### East side showing join with old building.

The rows of yellow dots are caused by the fasteners which secure the sheathing panels through the insulation to the horizontal girts.

Panels are generally around 13°F while the fastener related hot spots range between 20°F at the lower row to 24°F higher up.

Foundation sidewall ranges from 22°F to 26°F. Not unusual as an 8" concrete wall only provides around R-1 of insulation.

Note the high temperature (white) in the upper part of the joint between the new building and the old one. ***Temperatures here are as high as 34°F, which suggests poor insulation or failed air sealing.***

1/16/19 8:17:00 AM



### Door on the Southern end of the East wall:

the temperature of the door frame's upper part is around 32°F. Subsequent *inspection from inside showed that the door was not aligning properly in its frame and allows significant air leakage.*



**South wall:**

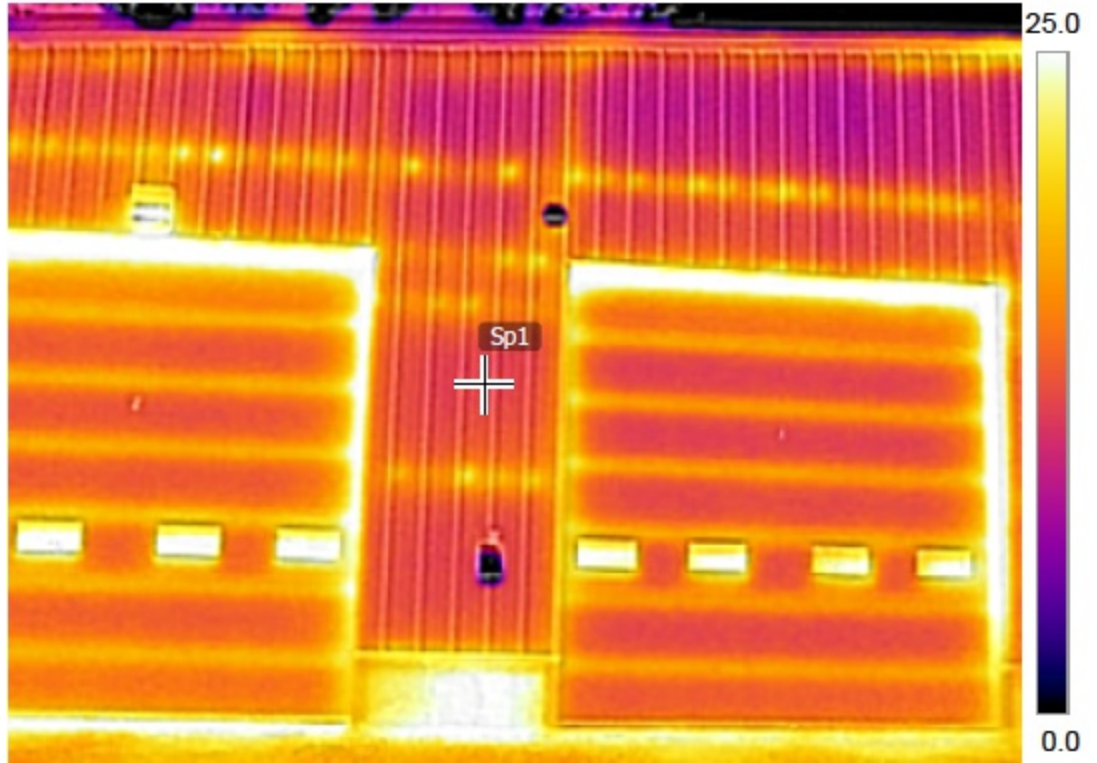
Temperatures of door panels between their horizontal hinges is 12°F, similar to the wall panels. The horizontal hinges are around 17°F.

The door frames at the top are around 37°F.

Foundation wall between the two doors is at 26°F.

The dark object low down between the doors is my calibration target, ignore it.

1/16/19 8:18:32 AM



**West wall:**

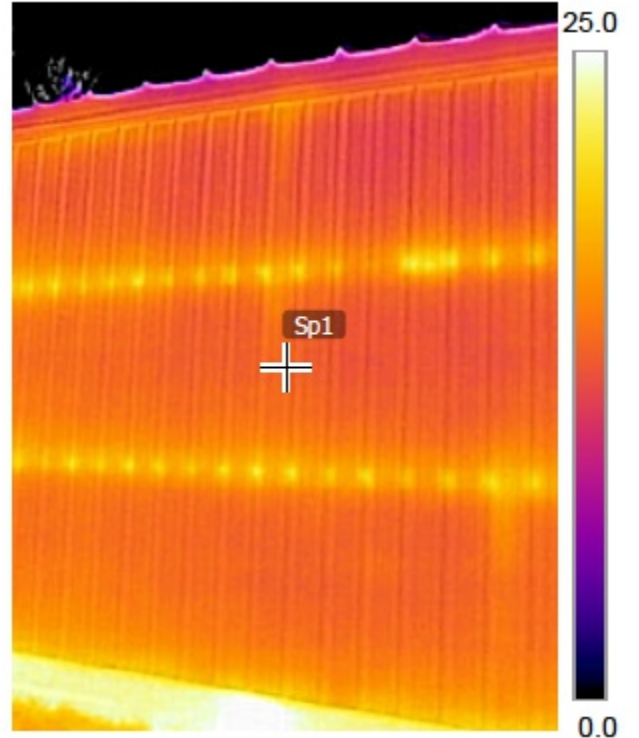
Panels at 14°F, fastener hot spots at 24°F

Foundation wall at 20 to 25°F, averaging 22.

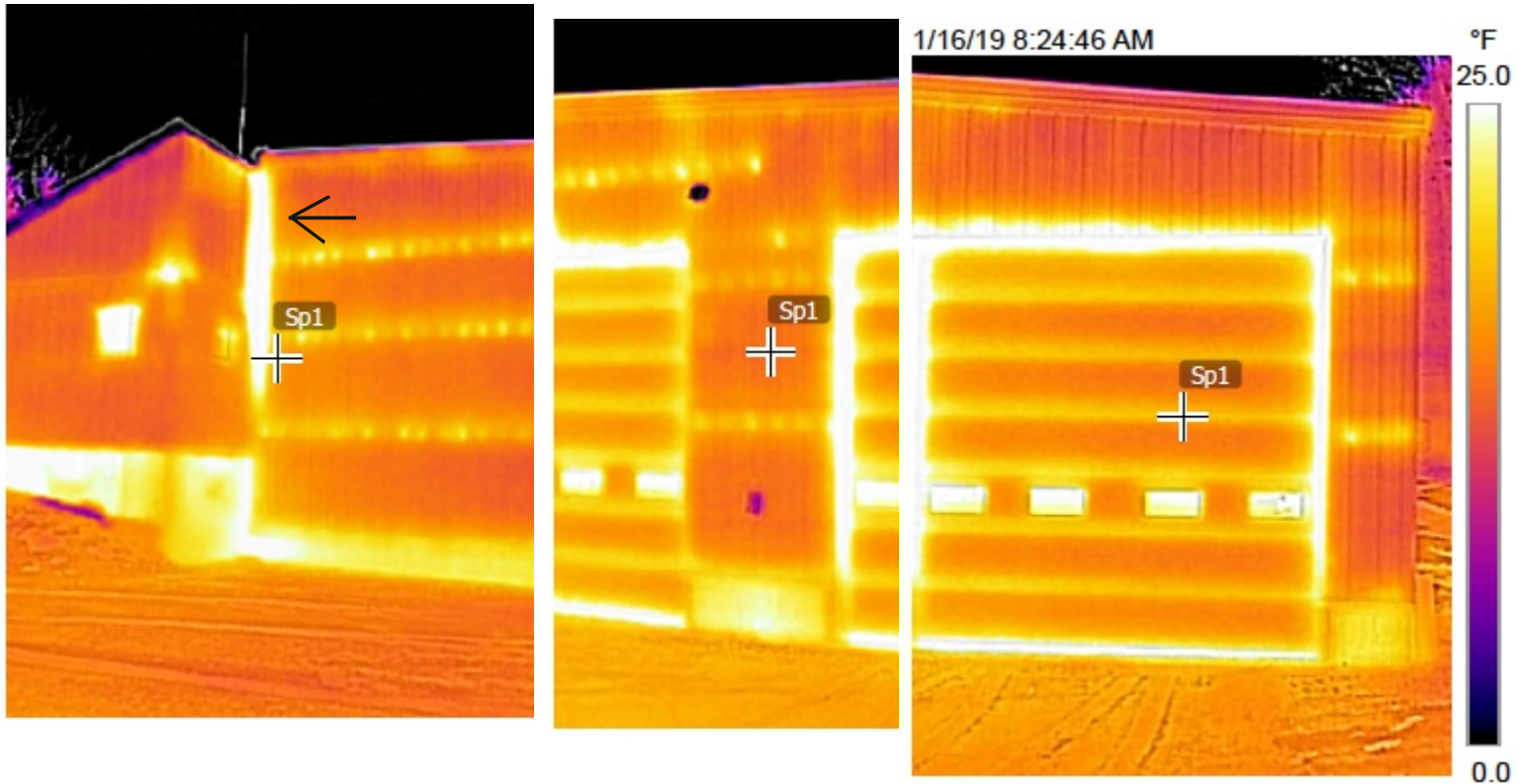
Door center 16°F, door frame 32°F, door aligns properly with its frame.



1/16/19 8:21:10 AM



North wall:



**Note high temperature area (36°F) where new building joins the old, indicating either insufficient insulation and/or poor air seal. Inspection from inside revealed that cold air was entering in the lower part of the join.**

Otherwise little of note - temperatures of wall panels, fastener hotspots, door panel, door hinges and door frames and foundation walls as seen on other walls. (dark spot between doors is my calibration target)

Old building's wall insulation is comparable to new building's. Its foundation wall is at 26°F.

## Inside images:

South wall, roll-up doors

Door panels 60°F, door horizontal hinges 56°F, bottom edge 43°F.

Cold spot in right hand image just to the right of the lower right door corner is at 32°F. Suggests poor seal allowing cold air in.

Also note color (dark blue) strip in left hand image along frame. This was seen in all roll up doors.

1/16/19 8:47:30 AM



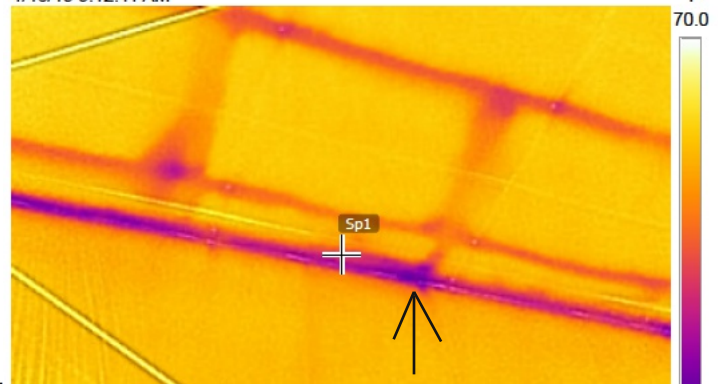
1/16/19 8:47:21 AM



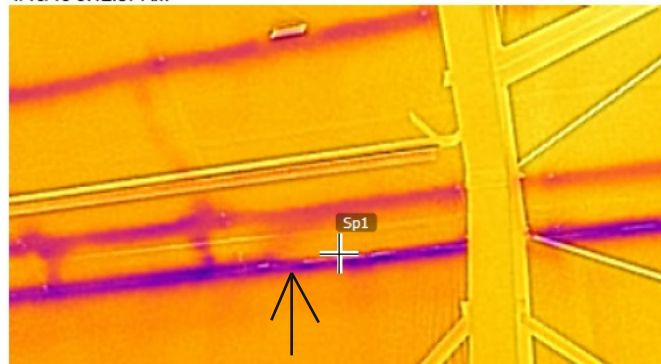
Joint between West wall and roof:

Note cold line (blue) which runs along joint between the West wall and the roof. *Visually it appears that the insulation backings may not have been taped securely and that cold air may be flowing in through the seam.* The same might be true along the East wall but because it is higher the flow there would be of heated air outwards.

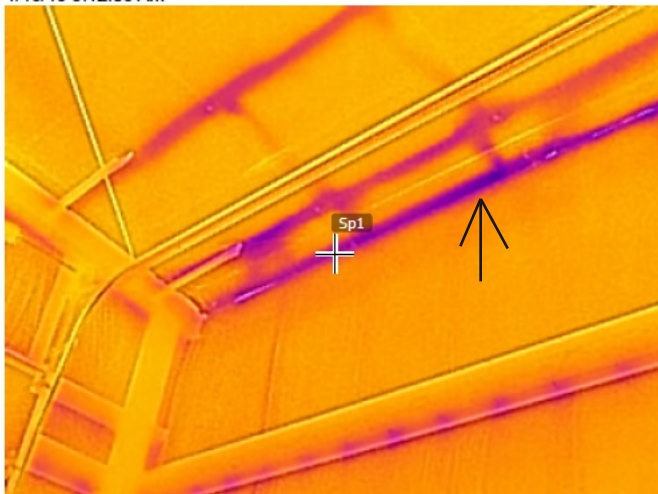
1/16/19 9:12:11 AM



1/16/19 9:12:07 AM



1/16/19 9:12:03 AM



**Suggestions:**

- 1) Door at Southern end of East wall does not align properly with its frame - daylight can be seen where the door meets the frame. It may be warped.
- 2a) The joint between the old building and the new one appears to need more insulation or more effective air sealing. This is a problem where the North wall meets the old building and where the old building meets the East wall.
- 2b) There is definite cold air intrusion near the bottom of the seam between the North wall and old building, which may be matched by heated air loss along the upper part of the same seam.
- 3) The West wall's seam between the wall insulation and the roof insulation should be checked as it appears there may be cold air leakage all along that seam.
- 4) The tops of the roll up doors may be leaking warm air, as indicated by the higher external temperatures that were seen.
- 5) The sides of the roll up door frames could use some insulation.

I hope the above is helpful,

Garth Fletcher