

Grafton County Courthouse – Facility Concerns

(* Denotes 54-year-old original equipment dating back to 1971 when the building was initially opened

Fire Safety

Sprinkler System: * The building does not have a sprinkler system as attested in the picture below. 1970 building code did not require it at the time of construction, but today's code does require it based on occupancy levels.



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Fire alarm system: The original system was a bare-bones zoned system that gave general coverage but lacked specificity as to a fire's exact location. Although we upgraded the system to address this issue, the improved system is marginal when compared to a new building's fire alarm coverage and abilities



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Egress Routes: * Due to poor engineering, the two main emergency exit areas are below grade and interior stairwells are prone to flooding in the springtime, hindering egress from the building. In early spring one year the North exit door froze in place and was unusable. To free the door up we had to remove the threshold.



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Asbestos: * Most of the ceilings in the building are coated with an asbestos material and virtually all pipe fittings are wrapped in asbestos as well.



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Building security

Exterior Barriers: * The facility lacks exterior barriers in key locations (lobby, jury panel room, parking below judicial chambers, generator, etc.) to prevent vehicles from impacting the building.



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Segregation of Inmates & staff: * The building lacks segregation of inmates and staff. Inmates must be escorted from the DOC and through judicial staff areas for court appearing's because there is no other route to avoid crossing paths.



Inmate Holding Cells: The building lacks inmate holding cells. All inmates having court appearances must be escorted from the adjacent Dept. of Corrections (DOC) by bailiffs. Periodically court proceedings are held up due to bailiffs & inmates being caught up in DOC lock-downs.

Panic Alarms: The systems in place are obsolete.

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Mechanicals and Plumbing Virtually all of the following equipment is 55-years old and far beyond its life expectancy and in many instances, it's becoming increasingly difficult to maintain due to sourcing of obsolete parts

* Elevator: Certain parts are no longer available (i.e. leveling valve, relays, etc.)



Other elevator issues

- Lacks modern-day fire safety features (grandfathered by State of NH)
- Lacks true ADA compliance (buttons are too high...must use hanging wand to tap buttons)
- Electrical load exceeds generator's capacity so it is not connected

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Heating, Ventilation and Air Conditioning

* Boilers: It is difficult to find replacement parts (i.e. low water cut outs and fuel nozzles are a few examples)



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*Air handlers AC1 and AC2: Several studies show these units have had air balancing and control issues since installation, thus are extremely difficult to regulate the zoned areas they serve and keep everyone happy.

- Pneumatic controls (original) - obsolete parts and rubber parts degradation
- Ductwork insulation on interior (Concerns about doing duct cleanings and disintegration of insulating materials due to age)
- Numerous variable air volume heat boxes throughout. Many of the gate valve isolation valves for these units are seized open due to mineral deposits. Attempts to isolate them in the past has resulted in broken handles. Any further attempt to operate them now will likely result in disastrous results due to lack of larger loop isolation valves and restricted access due to a scarcity of adequately sized access doors in the asbestos ceilings.



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Air condition condensing units are 23-years old and at the end of their life expectancy. The R22 refrigerant they use is hard to get and extremely expensive. In the past few years a proliferation of repairs has cost the county a lot of money to keep them going.



Sewage system pumps

- No record if pumps have ever been pulled. They are likely seized in place by rust
- Both lead/lag pumps are wired to same circuit (capable of running lead/lag but not concurrently)
- Neither pump is on the generator (load exceeds limited generator capacity)
- DOC & courthouse have a common forced main and operate via a priority lead/lag communication system. When one is running the other can't run until the one running completes its cycle.

*Plumbing Much of the plumbing is encased in inaccessible concrete chases or above asbestos ceiling with little to no access. As leaks occur we have to cut access holes into the chases or completely abate asbestos ceilings to access and fix leaks. Ceiling access points are mostly small and limited, which inhibits reasonable access to much of the mechanicals, electrical and plumbing.



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Electrical * The buildings electrical system is a Federal Pacific system. Federal Pacific was caught falsifying its UL records and subsequently went bankrupt due to a class-action lawsuit. The issue was, their circuit breakers often didn't trip when loads exceeded ratings and was cause for fires. See attached weblinks for details.

<https://www.reference.com/world-view/history-federal-pacific-electric-company-e1de763adb8f0d68>



Other issues:

- * Mixing of 110v and 220v combination outlets (no longer meets code)
- * Using conduit as means of ground (no longer meets code)
- * Shared common neutrals (no longer meets code)
- Generator covers absolute basics (Dispatch, egress lighting, fire panel, boilers and hydronic pumps). All other occupants can't work in the building during an extended outage.
- Utility and generator circuits run in some shared raceways and shared rooms in various locations

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Extremely Energy Inefficient

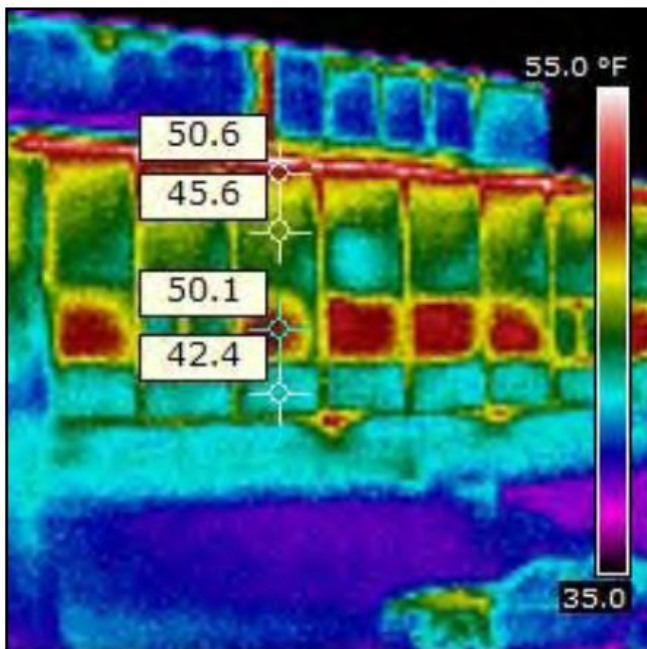
Insulation * - Other than the roof, which has 4-inches of foam insulation panels, the rest of the building's foundation, exterior brick walls, Kalwall translucent panels (fiberglass panels) and single-pane glass curtain walls are essentially uninsulated. Thermal gain in the summer is intensive.

Window R-Value Summary

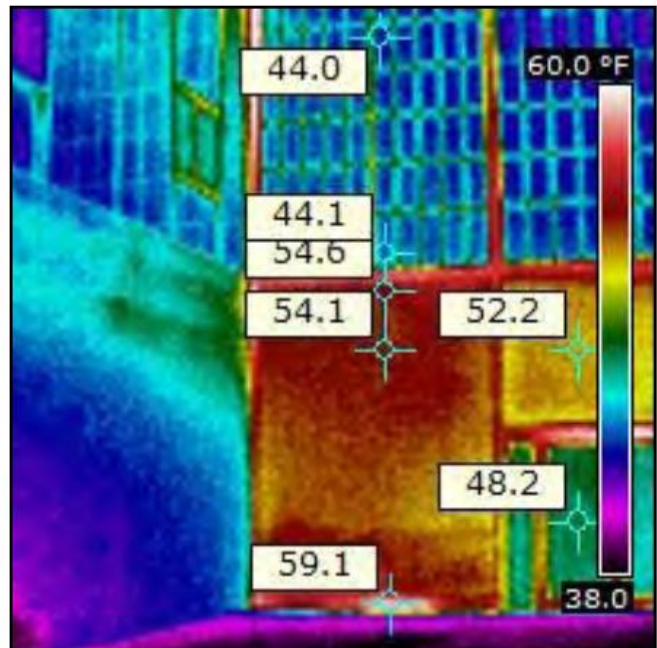
Window R-values	R-value
	hr·ft ² ·°F/Btu
Single Pane	1.0
Single Pane w/Insulating Panel	1.5
Translucent Panel	2.0

Using an infrared camera on a 30° Fahrenheit day, thermal scans from a 2009 energy audit revealed massive heat losses and assumes the same for cooling losses in the summertime. Below are a few images

South façade of Courthouse



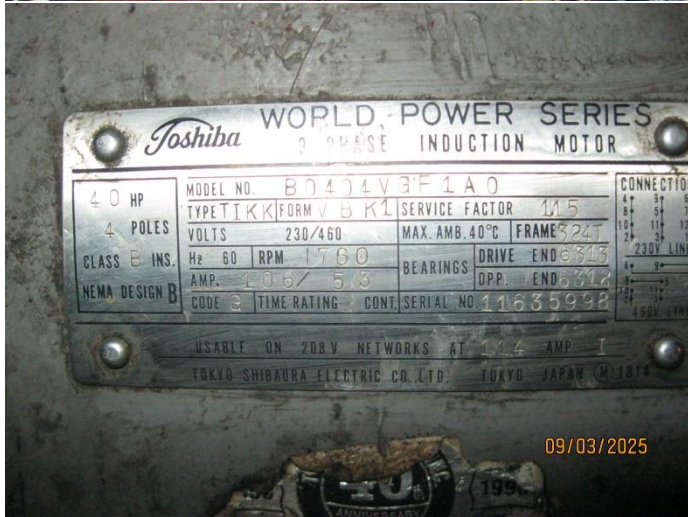
Courthouse Entrance on North Façade



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Mechanicals - Virtually all of the mechanical equipment (boilers, pumps, air handlers, etc.) are 55-year old equipment and well beyond their life expectancy. Although still operational, they are hugely inefficient when compared to modern day replacements.



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FY25 Utility costs comparison

Building	Alternative Sentencing	Administration Building	Courthouse	Nursing Home	Dept. of Corrections
Sqft	2,672	39,522	44,662	78753	98,000
Electric \$ Sqft	\$1.67	\$1.07	\$3.27	\$2.73	\$3.47
Fuel \$ Sqft & fuel types	\$1.04 Propane	\$0.71 Biomass & oil	\$0.78 Biomass, propane & oil	\$0.87 Biomass, propane & oil	\$0.27 Biomass & Propane
Combined \$ Sqft	\$2.71	\$1.88	\$4.05	\$3.60	\$3.74
Remarks	Poorly insulated windows / minimal mechanicals (moderate age & possess minimal efficiency devices)	Moderately insulated / moderate quantity of mechanicals (moderate age & possess efficiency devices). Occupied 12/7 – use night/weekend setbacks	Poorly insulated / moderate quantity of mechanicals (excessively old & lacks VFD technology. Occupied 12/7 – use night/weekend setbacks)	Moderately insulated / large quantity of mechanicals (moderate age & possess efficiency devices). Occupied 24/7 – no night/weekend setbacks. Operate for resident max comfort.	Well insulated / massive quantity of mechanicals & electronics (moderate age & possess efficiency devices) Occupied 24/7 – no night/weekend setbacks

Note – The Admin. building is the best building to compare the courthouse to in terms of similar Sqft, similar quantity of mechanicals that consume electricity and similar hours of operation based on building automation system nightly & weekend setbacks.

Typical Summertime Monthly Electric Bill for the Courthouse

READING PERIOD		PREVIOUS READING	PRESENT READING	USAGE	DAYS	AVG DAILY USAGE	BILL. FREQUENCY
06/16/2025	07/15/2025	32998	33253	76500	29	2637.	12
06/16/2025	07/15/2025	0	739	221700			

DETAIL	SUMMARY
BALANCE FORWARD	0.00
CURRENT FINANCE CHARGE	0.00
ELECTRIC CHARGE	11159.44
IND COPA CHARGE	3618.45
DEMAND CHARGE	2443.13
AMOUNT DUE	17221.02

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Glazing Degradation *

Glass curtain walls – The steel frame interiors are rusting and the pressure from the expanding rust leads to cracking of these massive windows. The windows then break into large jagged shards, unlike today’s safety glass designed to break into small pieces to mitigate injury. Replacement glass must be safety glass and thus it can be problematic procuring the large sizes we need due to tempering oven size limitations. Lastly, replacement glass is quite expensive. For example, in April 2019 it cost \$21,570 to replace one pane of glass at the main entrance.



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Kalwall Translucent panels (fiberglass) – The front entrance curtain wall and atrium roofing over the lobby are made up of Kalwall translucent panels. UV rays have degraded the panels to where they are thin and brittle. They are well beyond their life expectancy and sometimes leak during a driving rain.



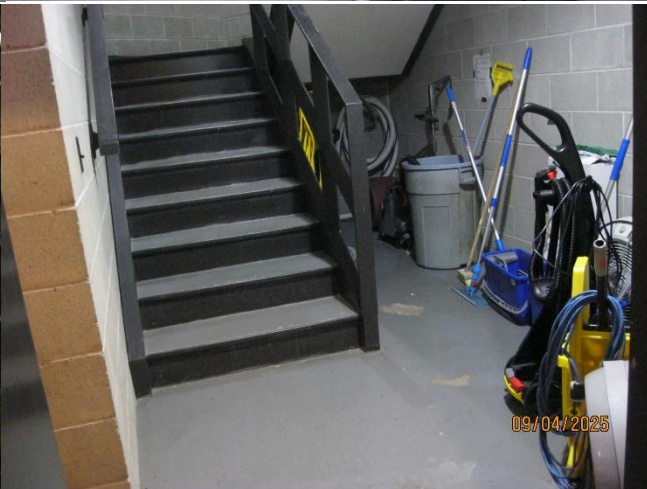
IT closets – The building was never constructed to support IT equipment. Over the years the county and state IT departments set up their equipment wherever they could. Most are jammed into cramped electrical rooms that are not air conditioned.



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Office Space & Storage – Virtually all departments and agencies have grown exponentially since the building opened in 1970. Today, many staff areas are cramped and lack of adequate storage space has caused storage to encroach into staff areas and stairwells. Shared storage is jam-packed and overflow often jams office space. Dispatch's Mobile Command Center trailer and tow vehicle sit out in the weather and should be garage to promote longevity.



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Parking Lot – The pavement is degraded to the point where the base material has failed, which requires complete removal and replacement.

