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BOA
Building Operators Association of Canada

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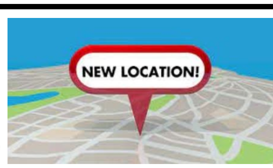
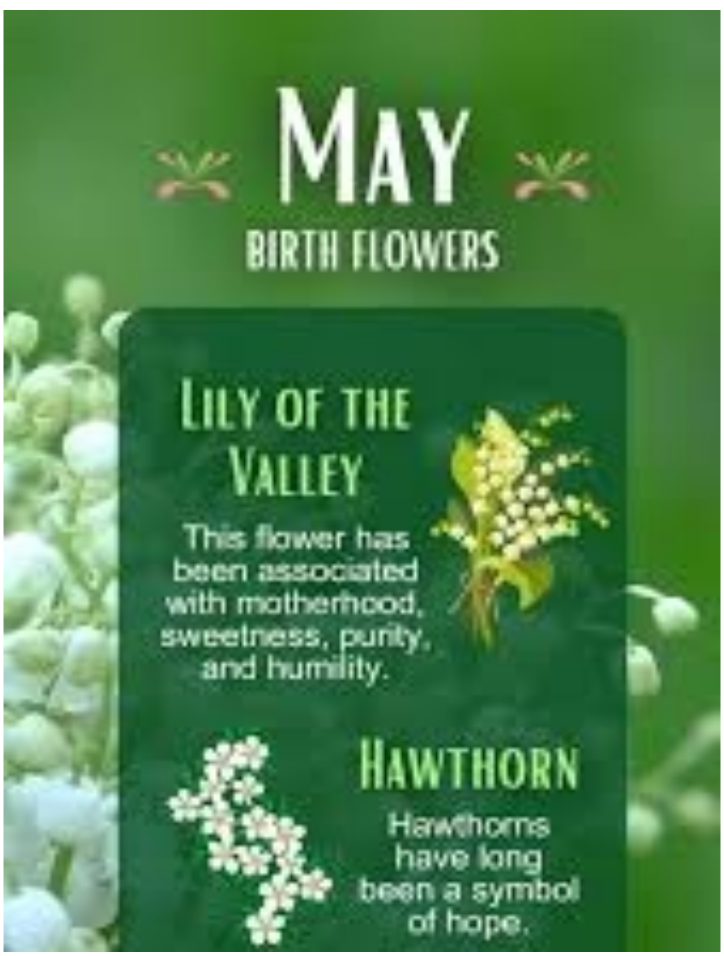
June 2026



Thorncliffe Greenview Community Association

5600 Centre Street N at 5pm


MAY
BIRTH FLOWERS
LILY OF THE VALLEY
This flower has been associated with motherhood, sweetness, purity, and humility.
HAWTHORN
Hawthorns have long been a symbol of hope.

What's Inside?

Important Phone Numbers

Emergency	911
Alberta Boiler Safety Association	403 291 7070
Alberta Labour (Emergency)	403 297 2222
Buried Utility Locations	1 800 242 3447
City Of Calgary (All Departments)	311
Dangerous Goods Incidents	1 800 272 9600
Environmental Emergency	1 800 222 6514
Poison Centre	403 670 1414
Weather Information (24hr)	403 299 7878

Executive & Committees

President Les Anderson	president@boacalgary.com C: 403 921 0648
Vice President Viktor Grant	chairman@boacalgary.com (c) 403-478-7553
Associate VP Vacant	associate.vice.president@boacalgary.com
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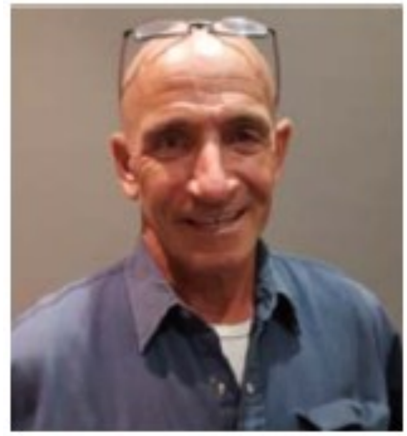
Secretary Monika Bhandari	secretary@boacalgary.com (c) 403-470-4169
Education Committee Vacant	education@boacalgary.com
Membership Committee Vacant	membership@boacalgary.com
Promotions Committee Vacant	promotions@boacalgary.com
Activities Committee Vacant	
Technical Concerns Kyle D'Agostino	chairman@boacalgary.com
Webmaster Les Anderson	webmaster@boacalgary.com

President's Message

I hope this message finds you & yours well and in good health



BOMA Calgary is now preparing to assemble a fall class for the Building Operator, 5th class power engineering. The Fifth class books have been made available through the NAIT website. The issue of the material is version 3.5. I understand the existing learning material will not be updated any time soon. It is, however, available and complete through NAIT, SAIT and BCIT. It most likely will be the material BOMA Calgary will be using as the learning material this fall. So that BOMA can schedule the dates to Please contact BOMA Calgary 403-237-0559 for updates if you are planning to take the course.

June is the end of our season. The executive will continue to work over the next two months to assemble the trade show we hope to have in October. Please keep in touch for the date and the details.

I hope you found an introduction to the newest member of the BOA Executive, Viktor Grant last month. Viktor has many years experience in the operations field. He has worked as a contractor, a consultant, a blogger, a manager and most importantly a Building Operator. Viktor will add a new flavor to the association. Welcome Viktor!

It is confirmed the BOMA 5th class Building Operator Course will begin September 1st 2026. Contact BOMA Calgary at 403 237-0559 for the details and to sign up for the course. Also sign up can be done on BOMA website boma.ca. It has been a struggle to get this again off the ground but we have it in hand and are ready to train Building Operators.

This month are the elections for the Association and if you would like to participate in the association, please join us and become a part of a group whose only interest is helping Building Operators.

June 9th is our last meeting for the season. We reconvene again in September 8th at the Thorncliffe Community Centre.

I hope to see you at the next meeting June 9th!

Respectfully,

Smiles))

Les Anderson
BOA Calgary President

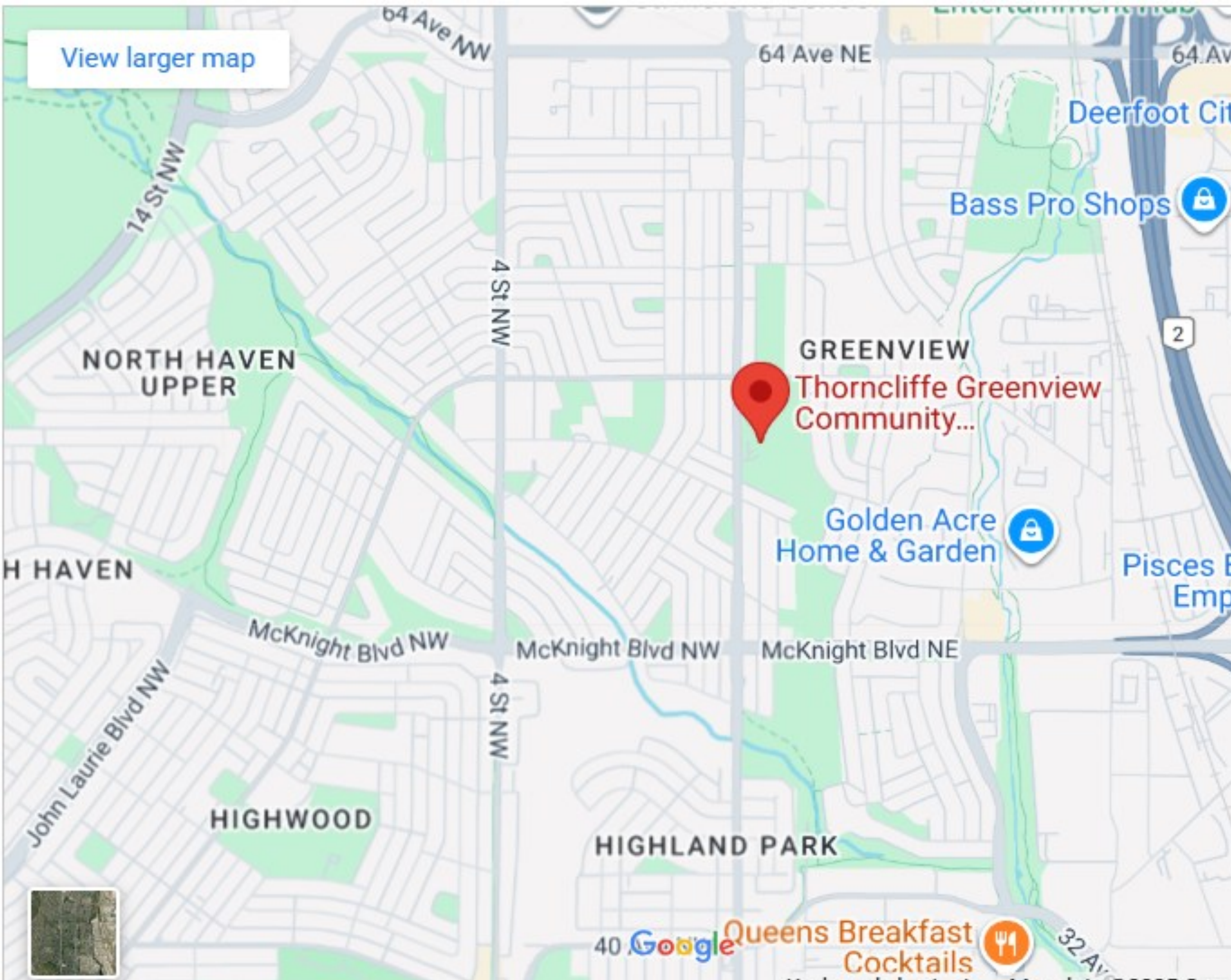
Join us at our Monthly Meeting on

Tuesday June 9th, 2026

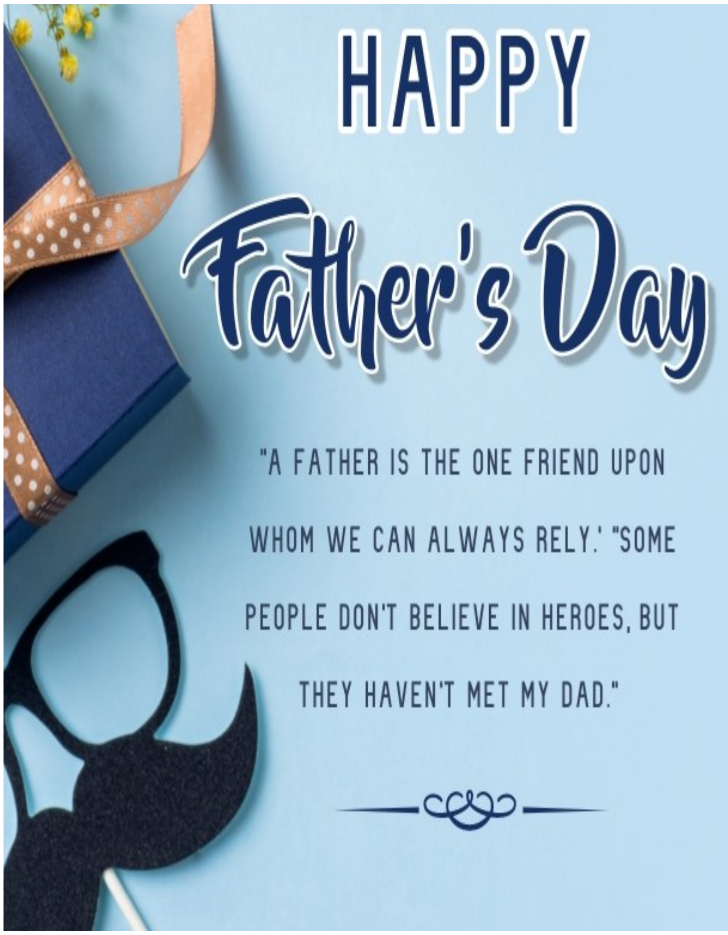
at our new location:

Thorncliffe Greenview Community

5600 Centre St N, Calgary, AB T2K 0T3



Meeting starts at 5pm to 7pm
Free Parking


HAPPY
Father's Day
"A FATHER IS THE ONE FRIEND UPON WHOM WE CAN ALWAYS RELY.' "SOME PEOPLE DON'T BELIEVE IN HEROES, BUT THEY HAVEN'T MET MY DAD."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TEST YOUR OPERATOR IQ!

Are you equally adept at troubleshooting problems in the boardroom and the boiler room? As the resident facility guru, there's a lot riding on whether or not you know the difference between sounds control and a sound investment.

Try our monthly Operator IQ challenge...*answers on page 26*

1) The most common system installed in most residences where the furnace is located in the basement and provides conditioned air via ducts to each room is called a:

a. forced air system
b. single zone, constant air volume system
c. low velocity terminal reheat system
d. multi-zone system
e. unit ventilator

2) The unitary air conditioning system which uses a direct expansion refrigeration system to provide cooling and dehumidification in a local area without duct-work is called a:

a. unit ventilator
b. rooftop unit
c. window air conditioner
d. high velocity terminal reheat system
e. multi-zone system

3) To offset the heat gain through the building's exterior shell from solar radiation, the atmosphere surrounding the building, and from internal sources of heat, then one of the following is required:

a. a humidifier
b. a heat source
c. ventilation
d. a cooling source
e. a dehumidifier

4) The four properties of an interior environment that most affect thermal comfort are:

a. air temperature, dew point, relative humidity, solar radiation
b. air temperature, relative humidity, metabolism, clothing
c. air temperature, relative humidity, air speed, mean radiant temperature (MRT)
d. surface temperature, surface texture, air temperature, air cleanliness

5) Preferred conditions for thermal comfort are usually presented in the form of a comfort "zone":

a. because there is no single ideal comfort point for any group of people
b. as a means of including a safety factor to ensure good health
c. because no one in comfort research really knows what they are doing
d. so that designers can do whatever they want, while convincing clients they know what they are doing

The Silent Interest Rate: Paying the Price for Deferred Maintenance in 2026

Juan Carlos LaGuardia Merchán

I remember the board meetings of 2021 and 2022 vividly. The atmosphere was thick with uncertainty. **"Hold the line," they said. "Defer what isn't critical."** As Facility Managers, we did what we do best: we adapted. We stretched service intervals, we prioritized only the most glaring faults, and we "sweated the assets" to keep the ship upright. It felt like a win at the time, a triumph of OPEX over circumstance.

But buildings don't care about fiscal quarters. They are governed by the relentless laws of thermodynamics and wear. Today, in 2026, we are discovering that those saved pennies have turned into very expensive pounds. We are no longer just managing facilities; we are servicing a massive mountain of **Technical Debt.**

The 3x Reality Check

The math is getting uncomfortable. Data from across the industry suggests that reactive, emergency repairs are now costing us up to **three times** what a planned preventive maintenance (PPM) programme would have.

Why the massive jump? It's a perfect storm. Supply chains for critical HVAC components and specialized electrical switchgear remain sluggish. When a pump fails because we skipped its three-year overhaul, we aren't just paying for the part; we are paying for the "express" shipping, the premium for emergency labor, and the catastrophic collateral damage to the rest of the system.

It’s the difference between changing the oil in your car and replacing the entire engine because it seized on the motorway. One is a minor inconvenience; the other is a logistical and financial nightmare.

The True Cost of "Dark" Buildings

Money is one thing, but **downtime** is the silent killer of corporate reputation. In our modern, high-tech workplaces, an afternoon without climate control or a morning of flickering power isn't just a nuisance, it’s a total cessation of business.

I’ve seen it happen. A single neglected chiller circuit goes down during a heatwave. Suddenly, a floor of 500 traders or software engineers is sent home.

The lost productivity in those four hours often exceeds the entire annual maintenance budget for that building. We are seeing record-breaking figures for downtime costs in 2026, yet many organizations still struggle to see the FM team as anything other than a "cost centre." It’s time we changed that narrative.

The Human Element: Firefighting Fatigue

We also need to talk about our teams. Managing a building through a period of high technical debt is exhausting. My technicians are tired of being "firefighters." There is a deep, psychological drain that comes from starting every Monday morning knowing you are waiting for something to break rather than working to keep it running.

When we constantly defer maintenance, we aren't just risking the equipment; we are risking our talent. The best engineers want to work on sophisticated, well-maintained systems. They don't want to spend their careers patching up leaks that should have been fixed three years ago. If we don’t address the maintenance backlog, we’ll soon find ourselves with failing assets *and* no one left with the institutional knowledge to fix them.

"Technical debt is like a high-interest credit card. You can ignore the balance for a while, but eventually, the interest consumes your entire budget, leaving nothing for innovation."

Bridging the Gap: How We Pivot

So, how do we climb out of this hole? It starts with a shift in language. We need to stop asking for "budget for repairs" and start talking about **"Risk Mitigation and Asset Resilience."**

- **The Data-Driven Audit:** We cannot manage what we cannot measure. Use BIM and IoT sensors to prove the degradation. Show the board the correlation between the 2022 budget cuts and the 2025 breakdown frequency.

- **Lifecycle Transparency:** We must be brutally honest about the remaining useful life (RUL) of our MEP systems. If a boiler is on life support, tell them.

- **Total Cost of Ownership (TCO):** Shift the conversation from the initial "sticker price" of a repair to the TCO. Show the "3x" multiplier in action.

The post-pandemic era was about survival. But survival-mode is not a long-term strategy. As we navigate 2026, the role of the Facility Manager is to be the voice of reason, the person who reminds the organization that a building is a living breathing entity.

We can either pay for the maintenance now, on our own terms and schedule, or we can pay for the failure later, at a time and price of the building's choosing. I know which one I'd prefer.

Are you seeing the same "3x" multiplier in your operations? How are you convincing your stakeholders to reinvest in CAPEX after years of austerity? Let's share some battle stories and strategies in the comments below.

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Sensible Heat vs. Latent Heat

Many HVAC systems can reduce temperature effectively — but still fail to deliver real thermal comfort.

Why?

Because air conditioning is not only about sensible cooling. It is also about latent heat removal and humidity control.

In HVAC design, total heat consists of:

- Sensible Heat (SH)

Heat that changes air temperature.

- Latent Heat (LH)

Heat associated with moisture removal from air.

A cooling coil does both simultaneously:

✓ Lowers dry bulb temperature

✓ Condenses moisture from humid air

✓ Reduces indoor RH levels

✓ Improves occupant comfort and IAQ

This becomes especially critical in hot and humid regions, where latent loads can significantly impact:

- Occupant comfort
- Condensation risk
- Mold growth
- Indoor air quality
- Energy performance
- Coil and equipment selection

This infographic explains:

✓ Sensible vs latent heat behavior

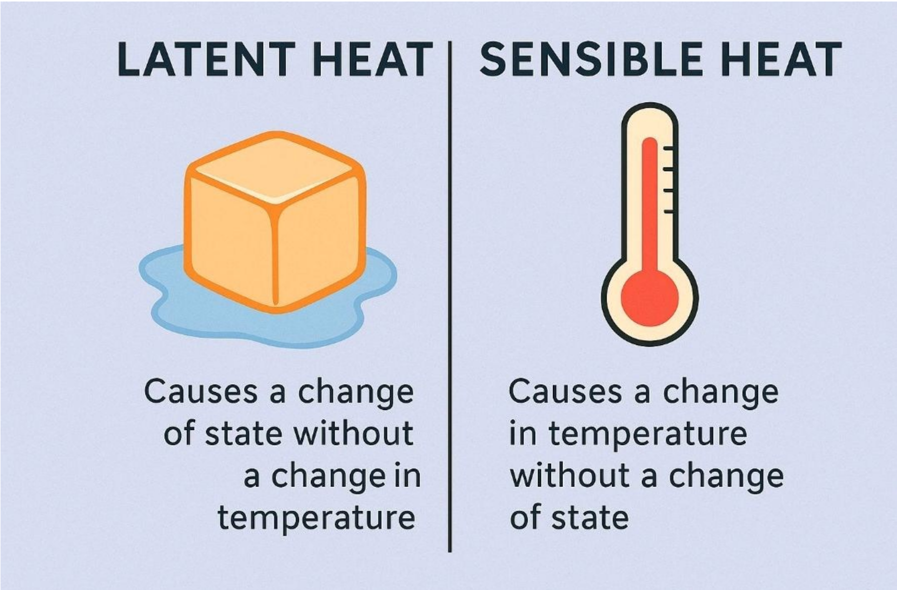
✓ Psychrometric cooling process

✓ Cooling coil dehumidification

✓ Sensible Heat Ratio (SHR)

✓ Qatar climate considerations

✓ Common HVAC design mistakes



A space can feel cold and still feel uncomfortable if humidity is not properly controlled.

Good HVAC design balances:

Temperature + Humidity + Air Distribution + Ventilation

SENSIBLE HEAT vs LATENT HEAT

IN AIR CONDITIONING

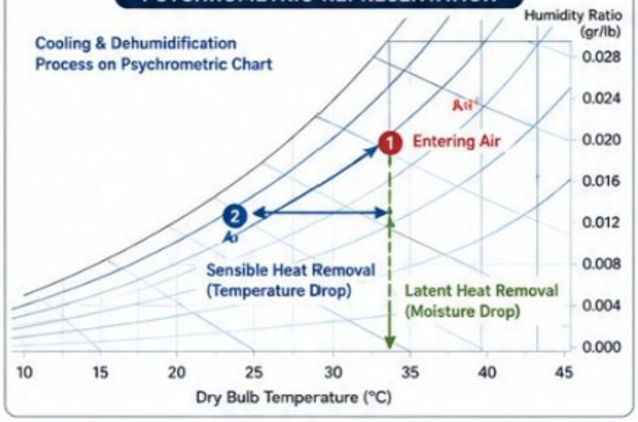
In AC systems, total heat removed from air has two parts — Sensible Heat (temperature change) and Latent Heat (moisture removal). Both are required for comfort.

1. SENSIBLE HEAT (SH)

Heat that changes the temperature of air without changing its moisture content.

- Affects dry bulb temperature
- No change in humidity ratio
- Creates a feeling of hot or cold

PSYCHROMETRIC REPRESENTATION



2. LATENT HEAT (LH)

Heat that changes the moisture content of air without changing its temperature.

- Affects humidity (moisture removal)
- Reduces humidity ratio
- Creates a feeling of dryness

3. WHAT HAPPENS ON THE COOLING COIL?

WARM, HUMID AIR
High Temperature
High Moisture

COOL, DRY AIR
Lower Temperature
Lower Moisture

1. Air is cooled below its dew point.
2. Moisture condenses on the coil surface.
3. Moisture is drained away.
4. Air leaves cooler and drier.

4. TOTAL HEAT REMOVED

$$TH = SH + LH$$

TH = Total Heat Removed (BTU/hr)
SH = Sensible Heat (BTU/hr)
LH = Latent Heat (BTU/hr)

SENSIBLE HEAT RATIO (SHR)

$$SHR = \frac{SH}{TH}$$

Indicates the portion of total heat that is sensible.

Typical SHR Range:
0.65 – 0.85 (Comfort Systems)

5. COMFORT IMPLICATIONS

High Sensible, Low Latent Removal	Air feels cool but still humid.
High Latent, Low Sensible Removal	Air feels dry but may be warm.
Balanced Sensible & Latent Removal	Air feels cool and comfortable.

Comfort = Right Temperature + Right Humidity

6. QATAR CLIMATE APPLICATION

Hot & Humid Climate (High DB & High WB)

- High outdoor latent load (moisture content).
- Cooling coils must remove significant latent heat.
- Proper dehumidification is critical for IAQ and comfort.
- Low SHR coils are preferred in most Qatari buildings.

Design for both cooling AND dehumidification.

7. COMMON DESIGN MISTAKES

- Designing only for sensible heat.
- Ignoring latent load and humidity.
- Selecting coils with high SHR in humid climates.
- Incorrect airflow leading to poor dehumidification.
- Using dry bulb temperature only for load calculation.

8. QUICK REFERENCE SUMMARY

Parameter	Affects	Changes	Measurement	Removal on Coil	Impact
Sensible Heat	Temperature	Dry Bulb Temp	°C / °F	Cools air	Thermal Comfort
Latent Heat	Moisture	Humidity Ratio / RH	gr/lb / %RH	Dehumidifies air	Humidity Comfort & IAQ
Total Heat	Both	DBT + Humidity	BTU/hr	Cooling + Dehumidification	Overall Comfort

SCAN TO VIEW PSYCHROMETRIC CHART GUIDE

KEY TAKEAWAY

Good AC design is not just about lowering temperature, it's about removing the right amount of moisture.

Understand the psychrometrics. Deliver comfort. Save energy.

HVAC AIR BALANCING GUIDE

Balanced Air. Better Comfort. Higher Efficiency.

Air balancing is the process of adjusting the airflow in an HVAC system to the design requirements. Properly balanced systems improve comfort, indoor air quality, energy efficiency, and equipment life.

BENEFITS OF AIR BALANCING

- Improved Comfort
- Better Indoor Air Quality
- Lower Energy Consumption
- Reduced Equipment Wear & Tear
- Reduced Noise Levels
- Compliance with Standards

WHEN TO BALANCE?

- After installation of a new system
- After major renovation or modification
- When comfort complaints occur
- When adding or removing equipment
- For periodic maintenance (recommended at least once a year)

KEY POINTS

- Follow the design airflow (CFM/LPS) at every terminal.
- Keep supply and return total airflow balanced.
- Ensure minimum outdoor air as per ASHRAE 62.1.
- Adjust one branch at a time.
- Do not change equipment speed to balance the system.
- All dampers should be accessible and properly labeled.

AIR BALANCING PROCESS

1. **Review Design Documents** – Study drawings, airflow schedules and specifications.
2. **Pre-Inspection** – Inspect system, check dampers, filters, and equipment operation.
3. **Field Measurements** – Measure and record airflow at devices using calibrated instruments.
4. **Adjustments** – Adjust dampers and controls to achieve design airflow.
5. **Verification** – Re-measure and verify all readings are within tolerance.
6. **Documentation** – Record final readings, adjustments and submit balancing report.

ESSENTIAL TOOLS

TYPICAL AIR DEVICES TO BALANCE

AIRFLOW MEASUREMENT METHODS

1. ANEMOMETER (VELOCITY x AREA)

$Q = V \times A \times 60$

Where:
Q = Airflow (CFM)
V = Velocity (FPM)
A = Area (sq.ft.)

2. PITOT TUBE (AVERAGE VELOCITY)

$Q = V_{avg} \times A \times 60$

Where:
Q = Airflow (CFM)
V_{avg} = Average Velocity (FPM)
A = Area (sq.ft.)

ACCEPTABLE TOLERANCE

Airflow Range (CFM)	Acceptable Tolerance (% of Design Airflow)
0 – 100	± 10%
101 – 500	± 10%
501 – 1,000	± 8%
1,001 – 5,000	± 6%
5,001 and above	± 5%

BALANCING CHECKLIST

- Review drawings and airflow schedule
- Verify equipment and system operation
- Check and clean filters
- Measure and record all air devices
- Adjust dampers to design airflow
- Re-verify and ensure tolerance
- Label dampers with final position
- Prepare and submit balancing report

AIRFLOW BALANCE OVERVIEW

- Total Supply Air ≈ Total Return Air
- Balanced Airflow = Efficient System

IMPORTANT STANDARDS & REFERENCES

- ASHRAE 111 – Practices for Measurement, Testing, Adjusting and Balancing of Building HVAC Systems
- ASHRAE 62.1 – Ventilation for Acceptable Indoor Air Quality
- SMACNA HVAC Duct Construction Standards – Air Duct Leakage Test Manual
- Local Codes and Project Specifications

BALANCE AIR for Comfort | **SAVE ENERGY** for Efficiency | **EXTEND EQUIPMENT LIFE** for Reliability | **CARE TODAY** for a Better Tomorrow

IMPORT UPDATE:
LOCKBOX PROGRAM

Honeywell has discontinued the TRACcess (Supra) lockbox product line along with all support and services. Because this change comes directly from the manufacturer, any Supra lockbox lids currently installed on business premises will need to be replaced or retro‑fitted to remain compliant with the National Fire Code.

To maintain secure emergency access and code compliance, all existing Supra lockbox lids must be retro‑fitted with the approved Knox Lift-Off Retro Lid before **December 31, 2026**. Orders should be placed through the Knox website before **October 30, 2026**, and installations must be completed by CFD. Non-compliance fees will apply after the deadline.

We've also implemented several cost-saving measures for businesses, including removing third-party lockbox inspection requirements, waiving key-add fees during retrofit, and eliminating the need for locksmith/provider contracts.

If you're able to distribute the notice below to your members, it would be extremely helpful in ensuring building operators are aware of these requirements and timelines.

If anyone has questions or needs clarification, they can visit calgary.ca/lockboxes or contact lockbox@calgary.ca.

Best regards,
Michael Garner
Fire Inspections Coordinator
Calgary Fire Department

The Invisible Shield: Why Your Building’s Lungs Matter More This Spring

Juan Carlos LaGuardia Merchán

There is a specific kind of dread that settles in the pit of a Facility Manager’s stomach when the first dusting of yellow birch pollen appears on the windowsills of a Grade A office block. To the outside world, it’s just spring a time for park lunches and longer evenings. But for us? It’s the start of "Sneeze Season," a high-stakes period where the quality of our mechanical ventilation determines whether our tenants view the office as a sanctuary or a source of irritation.

Let’s be honest: in the hierarchy of FM tasks, air quality has historically been the "quiet child." It doesn't leak like a pipe, and it doesn't leave a visible mess like a missed bin collection. But if you've ever watched a high-performing team lose its edge because half the staff are rubbing watery eyes and struggling to focus through a haze of antihistamines, you know that **IAQ (Indoor Air Quality)** is perhaps the most critical KPI we manage. It is the invisible thread that ties building performance to human wellbeing.

The Filter Fallacy: Moving Beyond "Standard"

I’ve sat in enough budget meetings to know the temptation of sticking to the status quo. "The filters were changed in January," someone might say. "Why do we need high-efficiency upgrades now?"

Here is the reality: standard G4 or M5 filters are like trying to stop sand with a garden fence. They catch the "big stuff" the fluff, the

dust bunnies, the grit that keeps the coils from clogging, but they are virtually transparent to the microscopic allergens that trigger hay fever. When the European pollen count spikes, especially with the aggressive nature of grass and plane tree pollen, we need to talk about ePM1 ratings under ISO 16890, or better yet, HEPA filtration where the infrastructure allows.

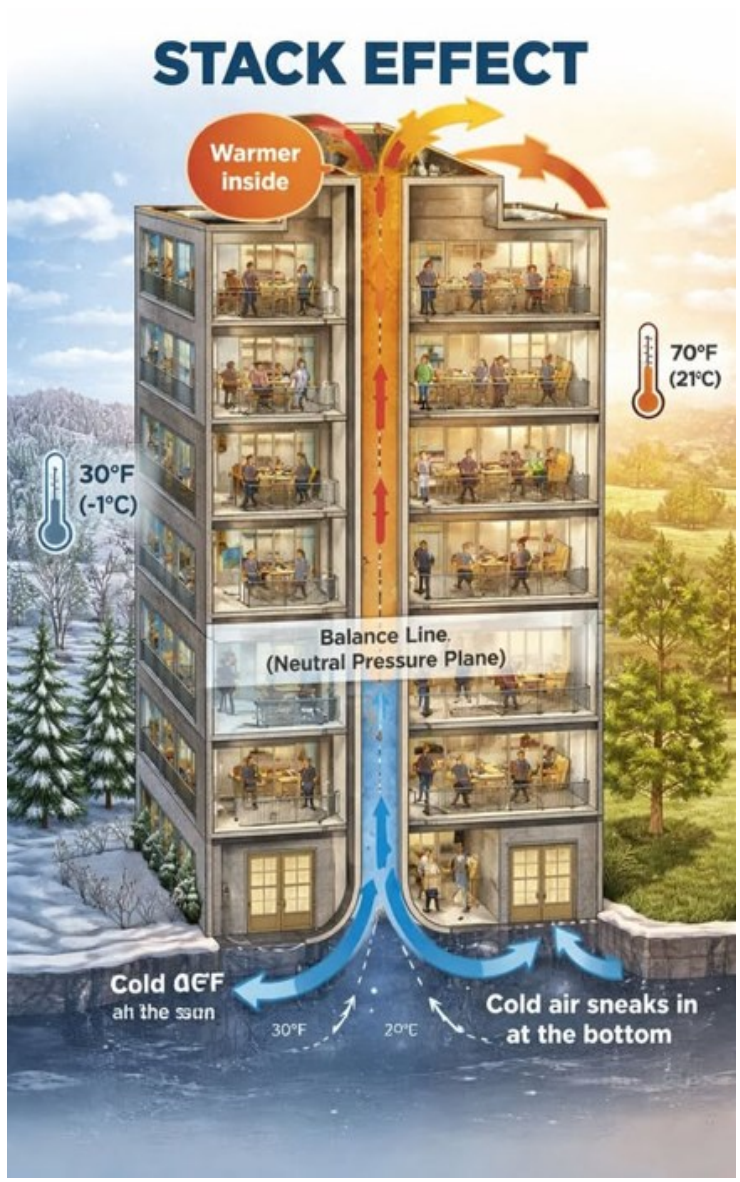
Upgrading to high-efficiency filtration isn't just a technical swap; it’s an insurance policy. Yes, there is a trade-off. Higher efficiency usually means a higher pressure drop across the filter bank. Your fans might have to work a bit harder, and your energy consumption might tick up slightly. But compare that minor utility increase to the cost of a building full of lethargic, symptomatic tenants. It’s a no-brainer. Think of the filter as the building's N95 mask. You wouldn't send someone into a dusty site with a lace handkerchief; why would you protect your building with anything less than the best?

The "Sneeze Trap" and the Art of Pressure

We’ve all walked into *that* building. You know the one. The air feels heavy, slightly stale, and within ten minutes, your nose starts to prickle. This is the classic "sneeze trap." It usually happens when a Facility Manager, perhaps over-eager to hit sustainability targets, dials back the fresh air intake too far or fails to balance the building’s pressure.

If your building is running under negative pressure meaning you’re exhausting more air than you’re bringing in the structure will find air wherever it can. It will suck it through the cracks in the cladding, around the door seals of the loading bay, and through every micro-gap in the envelope. This air is unfiltered. It’s raw, pollen-laden, outdoor air bypassing your expensive filtration systems entirely.

As FMs, we need to be conductors of an orchestra. We should be slightly over-pressurising our buildings. By maintaining a positive pressure, we ensure that air only leaves through the cracks, rather than entering through them. This forces all incoming air to pass through our "invisible shield" of high-efficiency filters. It’s a subtle adjustment in the BMS (Building Management System), but the impact on occupant comfort is profound.



More Than Just Machines: Leading the Team

Managing IAQ isn't a solo sport. It requires a multidisciplinary dance between your HVAC technicians, your cleaning contractors, and your front-of-house team.

Last spring, I remember walking through a site where the engineers were doing a stellar job with the AHUs (Air Handling Units), but the cleaning team was still using dry dusting methods that just kicked settled pollen back into the breathing zone. We had to pivot. We shifted to HEPA-filter vacuums and damp-wiping surfaces. It’s a reminder that as FMs, our greatest asset is our ability to break down silos. You can have the best filters in the world, but if your cleaning regime isn’t aligned, you’re fighting a losing battle.

I also encourage my teams to be "human sensors." While I love a good CO2 and PM2.5 data dashboard, nothing beats a conversation with the receptionist or a floor captain. "Is anyone complaining of a stuffy nose?" "Does the air feel 'flat' in the afternoon?" This qualitative data is just as important as the numbers on my screen. It’s about empathy. We are in the business of hospitality as much as we are in the business of engineering.

The Communication Gap

One of the biggest mistakes we make in Facility Management is being too good at our jobs. When things work perfectly, nobody notices we exist. However, when it comes to IAQ and allergies, we should be shouting about our efforts.

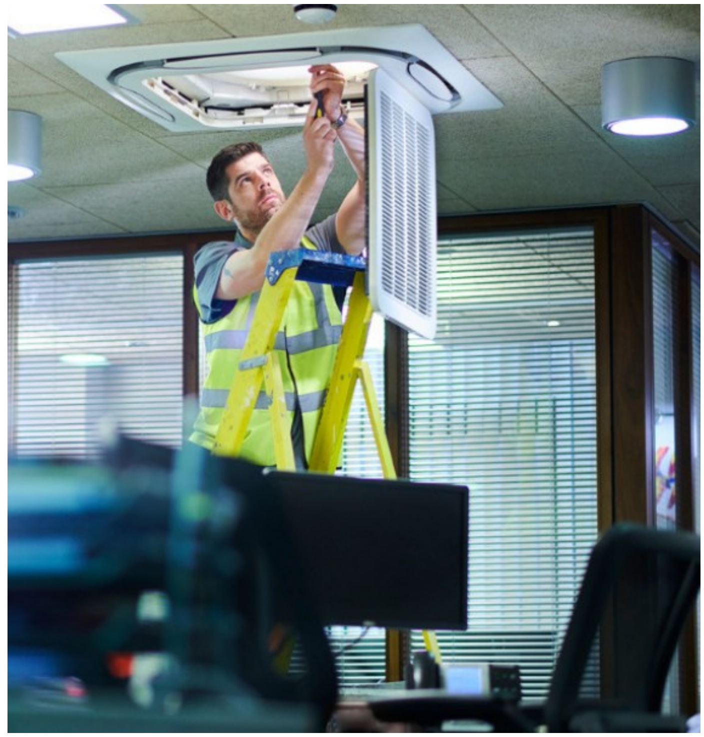
If you’ve invested in ePM1 filters and recalibrated your ventilation for the spring, tell your tenants. Send out a simple, jargon-

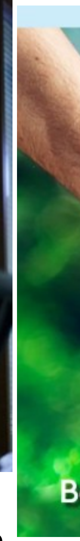
free update. "We’ve upgraded our air filtration to catch 90% of seasonal allergens to ensure you stay comfortable this spring." This transparency builds immense trust. It transforms the FM department from a mysterious "cost centre" into a partner in their health. When a tenant knows you’re looking out for them, they’re much more likely to forgive the occasional lift outage or a slightly chilly meeting room.

Looking Forward: The Future of the Healthy Office

As we look toward the future of building operations, the "Spring Pollen Crisis" is really just a microcosm of the larger IAQ conversation. With the rise of hybrid work, the office has to earn its commute. It has to be a place that is objectively better for your health than your home office.

We are moving into an era of demand-controlled ventilation and real-time IAQ transparency. Soon, tenants won't just ask about the rent; they'll ask for the average PM2.5 levels over the last thirty days. Investing in these systems now and perfecting the "spring reset" of your filters and fans isn't just good maintenance; it’s future-proofing your asset.





So, as the trees begin to bloom across London, Paris, and Berlin, take a moment to walk your plant rooms. Check the seals on those filter frames. Look at your pressure setpoints. Our buildings are living, breathing organisms. Let’s make sure they’re breathing clean.

Every building has its own quirks and "trouble spots" when the seasons change. Have you found a specific filtration strategy that works wonders for your tenants? Or perhaps you've faced the challenge of balancing energy efficiency with high-volume fresh air intake?

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Cavitation the Silent Killer of Centrifugal Pumps

Many pump failures do not start with a major mechanical breakdown.

Sometimes, the real problem begins silently inside the pump — through cavitation. Cavitation is one of the most destructive conditions affecting centrifugal pumps in industrial operations. If ignored, it can severely damage impellers, reduce efficiency, increase vibration, and shorten equipment lifespan.

What is Cavitation?

Cavitation occurs when the pressure inside the pump drops below the liquid's vapor pressure. This causes vapor bubbles to form within the fluid. As these bubbles move into higher-pressure regions, they collapse violently, creating shock waves inside the pump. Over time, this damages internal components.

Common Causes of Cavitation

1. Low suction pressure
2. Blocked suction lines
3. High fluid temperature
4. Incorrect pump sizing
5. Excessive pump speed
6. Poor piping design
7. Insufficient Net Positive Suction Head (NPSH)

Warning Signs

- ⚠ Loud rattling or "gravel" noise
- ⚠ Excessive vibration
- ⚠ Reduced flow rate
- ⚠ Pressure fluctuations
- ⚠ Impeller damage
- ⚠ Decreased pump efficiency

Effects of Cavitation

- Pitting on impeller surfaces
- Seal and bearing damage
- Increased maintenance costs
- Energy losses
- Unexpected downtime
- Reduced pump reliability

How to Prevent Cavitation

- ✔ Ensure proper suction conditions
- ✔ Use correct pump sizing
- ✔ Reduce fluid temperature where possible
- ✔ Minimize suction line restrictions
- ✔ Maintain adequate NPSH
- ✔ Inspect and clean suction filters regularly
- ✔ Monitor vibration and performance Trends

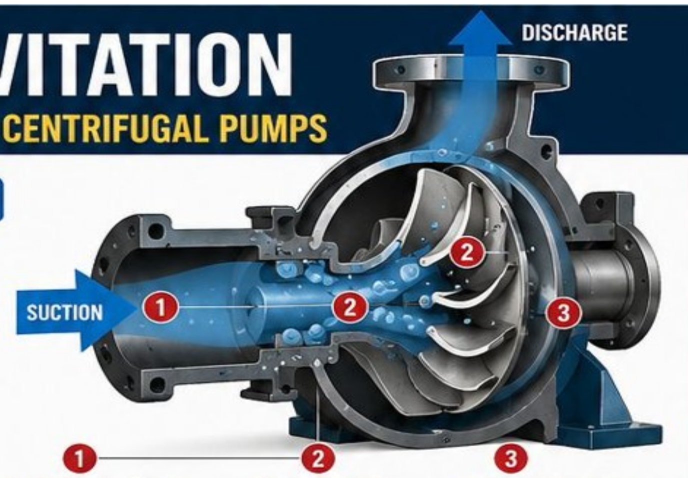
In reliability engineering, early detection is everything. A small cavitation issue today can become a major equipment failure tomorrow.

PUMP CAVITATION

THE SILENT KILLER OF CENTRIFUGAL PUMPS

WHAT IS CAVITATION?

Cavitation occurs when the pressure of the liquid in the pump drops below its vapor pressure, causing vapor bubbles to form. These bubbles collapse violently in higher-pressure areas, creating shock waves that damage pump components.



1. **LOW PRESSURE ZONE** – Pressure drops below vapor pressure, bubbles form.
2. **BUBBLES MOVE** – Bubbles are carried to higher pressure areas.
3. **VIOLENT COLLAPSE** – Bubbles collapse, causing pitting and damage.

ENGINEERING STANDARDS

- **ISO 5199:2019** – Centrifugal pumps – Technical requirements (Section 7.9 Cavitation)
- **API 610 (11th Ed.)** – Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries
- **ASME B73.1** – Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries

COMMON CAUSES

- Low suction pressure / low NPSH
- Blocked or restricted suction lines
- High fluid temperature
- Incorrect pump sizing
- Excessive pump speed
- Poor piping design
- Insufficient Net Positive Suction Head (NPSH)

NPSH EXPLAINED

NPSHa (Available)
The actual NPSH at the pump suction.

NPSHr (Required)
The minimum NPSH required by the pump (from pump curve).

$$NPSHa = H_s + (P_{atm} - P_v)/(\rho g) - H_f - H_{sv}$$

Where:

- H_s = Static suction head (m)
- P_{atm} = Atmospheric pressure (Pa)
- P_v = Vapor pressure of liquid (Pa)
- ρ = Density of liquid (kg/m³)
- g = Acceleration due to gravity (9.81 m/s²)
- H_f = Friction losses in suction line (m)
- H_{sv} = Velocity head at suction (m)

CRITICAL RULE

NPSHa must always be GREATER than NPSHr

SAFETY MARGIN

As per API 610:
NPSHa ≥ NPSHr + 0.5 m
(Recommended minimum)

WARNING SIGNS

- Loud rattling or "gravel" noise
- Excessive vibration
- Reduced flow rate
- Pressure fluctuations
- Impeller pitting damage
- Decreased pump efficiency

EFFECTS OF CAVITATION

- Pitting and erosion of impeller and internal components
- Seal and bearing damage
- Increased maintenance costs
- Energy losses
- Unexpected downtime
- Reduced pump reliability and life

Cavitation Pitting on Impeller

Severe Cavitation Damage

HOW TO PREVENT CAVITATION

- Ensure adequate NPSHa under all operating conditions
- Use correct pump sizing for the application
- Minimize suction line restrictions and losses
- Keep suction filters/strainers clean
- Reduce fluid temperature where possible
- Avoid excessive pump speed
- Follow proper piping design (short, straight, large radius bends, minimum fittings)
- Monitor vibration and performance regularly

BEST PRACTICES (AS PER API 610 & ISO 5199)

- Maintain adequate NPSH with safety margin
- Operate within pump curve (BEP region)
- Keep suction system clean and tight
- Use proper piping layout and minimal restrictions
- Avoid running at excessive speed
- Implement condition monitoring (vibration, pressure, flow)
- Follow preventive maintenance schedule

QUICK REFERENCE

Typical NPSH Margin (API 610)	≥ 0.5 m
Max. Continuous Temperature (API 610, OH2 Example)	450 °C
Max. Working Pressure (API 610 Example)	Up to 50 bar (Class 300)

KEY TAKEAWAY

Cavitation may start small, but the damage is big. Ensure proper NPSH, correct operation, and regular monitoring to keep your pumps reliable, efficient, and safe.

REMEMBER

Good design + Proper operation
+ Preventive monitoring
= Cavitation free operation
and longer pump life.

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The start of Summer is marked by Summer Solstice each year.
Summer Olympics happen every four years
Meteorological Start Date
June 1st
Meteorological End Date
August 31st
The largest ice cream scoop weighed 3010 pounds
facts about
SUMMER
There are 300 different varieties of watermelon
America's Independence Day happens every July 4th
June July August
More thunderstorms happen during the Summer months than at any other time of year.
The largest bonfire ever was the height of a 15 story building
The Eiffel Tower grows taller in the Summer
On 1st day of Summer in Alaska they play a baseball game that starts at 10:30pm and they do not use artificial light
Astronomical Start Date
June 20th
Astronomical End Date
September 22nd
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National Indigenous Peoples Day
JUNE 21
On June 21, celebrate the heritage, diverse cultures, and outstanding achievements of First Nations, Inuit, and Métis!

KenKen Puzzle

How to solve the Kenken puzzle:

(Answers on page 26)

- Fill in the numbers from 1 –6
- Do not repeat the number in any row or column
- The numbers in each heavily outlined set of squares, called cages, must combine (in any order) to produce the target number in the top corner using the mathematical operation indicated
- Cages with just one square should be filled in with the target number in the top corner
- A number can be repeated within a cage as long as it in the same or column

2				3	6			
	1		8				6	7
8	6			4		5		1
			6	9				
	7	4	5		8	2	9	
	3	5	2			6	1	
		1	3		2	8		4
7	2				9			
	4			8		9	5	

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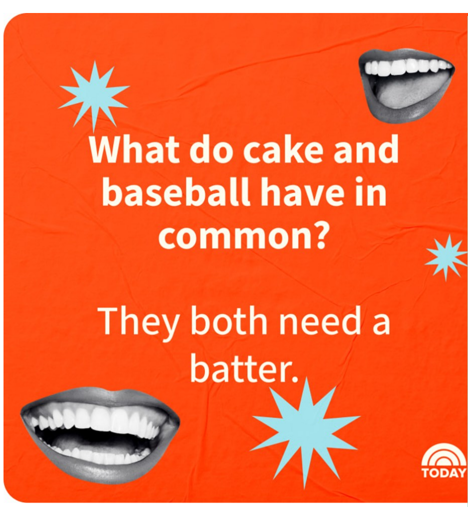
Kenken Puzzle Answer

2	5	7	1	3	6	4	8	9
4	1	9	8	2	5	3	6	7
8	6	3	9	4	7	5	2	1
1	8	2	6	9	3	7	4	5
6	7	4	5	1	8	2	9	3
9	3	5	2	7	4	6	1	8
5	9	1	3	6	2	8	7	4
7	2	8	4	5	9	1	3	6
3	4	6	7	8	1	9	5	2

TEST YOUR OPERATOR IQ ANSWERS

Answers: 1) a 2)c 3)d 4)e 5) c 6)a

Just for laughs!



JOIN US:

TUESDAY JUNE 9, 2026 AT 5PM FOR OUR MONTHLY MEETING

TITLE: **Behind the Walls: How the Building Envelope Impacts Building Performance**

PRESENTER: **Ryan Page, P.Eng.,**
Read Jones Christoffersen Ltd (RJC)

LOCATION:

Thorncliffe Greenview Community Association & Recreation Centre Boardroom

5600 Centre St N, Calgary, AB T2K 0T3

PRESENTATION EXTRACT:

When most people hear "building envelope," they think of walls, but the envelope is much more than that. It includes every element that separates the interior environment from the exterior: roofs, foundations, below-grade structures, windows, doors, and everything in between. Together, these systems form a building's first and most important line of defense against heat loss, air leakage, moisture intrusion, and long-term deterioration.

This presentation will provide a practical, non-technical introduction to the building envelope as a complete system: what it includes, how it functions, and why it matters to the people responsible for keeping buildings running. Topics will include how heat, air, and moisture interact with building assemblies, common envelope issues across all elements of the enclosure, and what to look for before small problems become costly repairs. The session will also touch on the engineering tools and resources available to support building operators in maintaining envelope performance over the long term.

Whether you manage a single property or oversee a portfolio, this session is designed to give you a stronger foundation for understanding your building's most important, and most overlooked, system.

BIO:

Ryan Page, BSc, P.Eng. Project Engineer | Building Science and Restoration

Ryan is a Project Engineer with Read Jones Christoffersen Ltd. (RJC) in Calgary, Alberta, with eight years of experience in building science, structural engineering, and restoration. He holds a Bachelor of Science degree from the University of Calgary with a background in structural engineering.

Ryan is a personable and detail-oriented member of RJC's Building Science and Restoration team. His project experience includes building envelope reviews, Building Exterior Visual Assessments (BEVAs), building condition assessments, curtain wall and cladding investigations, and restoration design for building envelope and structural repair projects. He manages projects from investigation through to repair design and construction, working closely with property managers, building owners and operators, and contractors to deliver practical, well-coordinated solutions.

Ryan is certified in WUFI hygrothermal modeling and is a certified IRATA Level 1 Rope Access Technician, enabling him to perform close-up exterior reviews of building envelopes.

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Canada

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Come join us at the Thorncliffe Greenview Community Association & Recreation Centre for the BOA Calgary Monthly Meeting

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