Legend:

"Dropped" indicates that Committee decided to drop the item

"Number not used" indicates Working Document item number is not used.

Purple text: staff notes/advisories.

Yellow highlight: details that need attention/review

Aqua highlight: code text work needed or reviewed

Green highlight: proposal entered into cdpACCESS

Purple highlight: cdpACCESS input needs updated

TEMPLATE

Item n

Statement of the Issue (beginning of the Reason Statement):

Work Group needed?

Proposed code language

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023, the PMG CAC has held many virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/ Reference PMGCAC Working Document Item NN.

Cost impact: Will neither increase nor decrease the cost of construction.
Will increase the cost of construction.
Will decrease the cost of construction.

Substantiation: <WHY the above cost impact statement was chosen. Refer to Cost Impact Guide https://www.iccsafe.org/wp-content/uploads/IAC-cost-impact-guide.pdf >

Item 1 IMC Reorganization of plenums Section 602

Work Group:

M55-21 was AM. **Is any further action needed?**

The Committee Modification was:

Add new text as follows:

602.3.1 Ducts, connectors, duct coverings, linings, and tape. Rigid and flexible ducts and connectors shall conform to Section 603. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604.

602.3.2 Smoke detectors. Smoke detectors shall be listed and labeled.

Item 2 IFGC Hydrogen Blending Provisions

Work Group:

Item 3 IPC Water Reuse Provisions

Work Group:

Item 4 IMC exhaust and air intake termination access. See M17-21

M17 addressed air intake openings (not exhaust openings:

Revise as follows:

401.4 Intake opening location. Air intake openings shall comply with all of the following:

1. Intake openings shall be located not less than 10 feet (3048 mm) from lot lines or buildings on the same lot.

2. Mechanical and gravity outdoor air intake openings shall be located not less than 10 feet (3048 mm) horizontally from any hazardous or noxious contaminant source, such as vents, streets, alleys, parking lots and loading docks, except as specified in Item 3 or Section 501.3.1. Outdoor air intake openings shall be permitted to be located less than 10 feet (3048 mm) horizontally from streets, alleys, parking lots and loading docks provided that the openings are located not less than 25 feet (7620 mm) vertically above such locations. Where openings front on a street or public way, the distance shall be measured from the closest edge of the street or public way.

3. Intake openings shall be located not less than 3 feet (914 mm) below contaminant sources where such sources are located within 10 feet (3048 mm) of the opening. Separation is not required between intake air openings and living space exhaust air openings of an individual dwelling unit or sleeping unit where an approved factory-built intake/exhaust combination termination fitting is used to separate the air streams in accordance with the manufacturer's instructions.

4. Intake openings on structures in flood hazard areas shall be at or above the elevation required by Section 1612 of the International Building Code for utilities and attendant equipment.

<u>5. Dwelling unit outdoor air ventilation system intake openings that are installed on an exterior wall and have a louver, grille, or screen intake opening nominal size less than ½" shall be located to allow maintenance from an outdoor opening, an exterior egress or balcony, a deck, or without the use of a ladder, from the finished ground level.</u>

Reason Statement: During normal operation, ventilation air intakes can become clogged with debris and should be installed to permit easy maintenance by occupants or service providers. Presumably, ventilation air intake openings located on roofs will be serviced by technicians who have access to the roof, and so no special requirements are proposed for access in this case. Ventilation air intake openings that are located on an exterior wall should be serviceable from either indoors (thought an outdoor opening), or from an exterior horizontal surface. An exception is provided for intake openings with louvers, grilles, or screens with an opening dimension of less than ½". Larger opening dimensions (i.e., those complying with Table 401.5 with a nominal opening size of ½") are less likely to clog with debris and should not require service as frequently.

Item 5 IMC Plant processing and extraction facility ventilation. See M27-21

Add new text as follows:

SECTION 408 PROCESSING AND EXTRACTION FACILITIES.

408.1 General. Plant processing or extraction facilities shall comply with this section, the International Building Code and Chapter 39 of the International Fire Code. The extraction process includes the act of extraction of the oils and fats by use of a solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery. Post-extraction processing includes winterization, solvent recovery, distillation, decarboxylation, isolation, chromatography and similar processes. The use, storage, transfilling and handling of hazardous materials in these facilities shall comply with this code, the International Building Code and the International Fire Code.

408.2 Existing buildings or facilities. Existing buildings or facilities used for the processing of plants shall comply with this code, the International Building Code and the International Fire Code. Existing extraction processes where the medium of extraction or solvent is changed shall comply with this section.

408.3 Mechanical ventilation. Natural ventilation shall not be permitted. Mechanical ventilation shall be designed and installed in accordance with Section 403 in this code and Chapter 39 of the International Fire Code. The exhaust airflow rate shall be provided in accordance with the requirements of 408.3.1 through 408.3.4.

408.3.1 Extraction processes using flammable gases or flammable liquids. Continuous mechanical exhaust ventilation shall provide a minimum airflow rate of not less than 5 cfm/ft2 (0.0038 m3/(s*m2)) of floor area to prevent an accumulation of flammable vapors from exceeding 25 percent of the lower explosive limit (LEL). Recirculation of such air shall be prohibited.

> **Exception:** Where the registered design professional demonstrates that an engineered mechanical exhaust ventilation system design will prevent the maximum concentration of contaminants from exceeding 25% of the LEL, the minimum required rate of exhaust shall be reduced in accordance with such engineered system design.

408.3.2 Extraction processes using compressed asphyxiant or inert gases. Continuous mechanical exhaust ventilation shall be provided in accordance with Chapter 39 of the International Fire Code. Recirculation of such air shall be prohibited.

408.3.3 Post-extraction processes using flammable or combustible liquids or gases. Where flammable liquids, combustible liquids heated above their flashpoint, or flammable gases are used in post-extraction processing, the room or area shall be provided with continuous mechanical exhaust in accordance with Chapter 39 of the International Fire Code.

408.3.4 Interlocks. Electrical equipment and appliances used in processes that generate flammable vapors or gases shall be interlocked with ventilation fans so that the equipment cannot be operated unless the exhaust ventilation fans are in operation.

408.4 Exhaust fan discharge. Exhaust fans shall be positioned so that the discharge will not impinge on the roof, other equipment or appliances or parts of the structure. A vertical discharge fan shall be manufactured with an approved drain outlet at the lowest point of the housing to permit drainage of oils or byproducts to an approved location.

408.5 Exhaust fan mounting. Upblast fans serving plant processing or extraction facilities and installed in a vertical or horizontal position shall be hinged, supplied with a flexible weatherproof electrical cable to permit inspection and cleaning and shall be equipped with a means of restraint to limit the swing of the fan on its hinge. The ductwork shall extend not less than 18 inches (457 mm) above the roof surface.

408.6 Clearances. Exhaust equipment serving a plant processing or extraction facilities shall have a clearance to combustible construction of not less than 18 inches (457 mm).

> **Exception:** Factory-built exhaust equipment installed in accordance with Section 304.1 and listed for a lesser clearance.

408.7 Termination location. The outlet of exhaust equipment serving plant processing or extraction facilities shall be in accordance with Section 501.3 of this code.

> **Exception:** The minimum horizontal distance between vertical discharge fans and parapet-type building structures shall be 2 feet (610 mm), provided that such structures are not higher than the top of the fan discharge opening.

408.8 Ducts. Exhaust duct construction shall comply with Chapter 6.

408.9 Hazardous Exhaust Systems. When the exhaust system is determined to be a hazardous exhaust system by this code, the International Building Code or the International Fire Code, that system shall be installed in accordance with Section 510 of this code.

502.21 Processing and Extraction Facilities. Processing and extraction Facilities shall be provided with an exhaust system in accordance with of Section 408 of this code and Chapter 39 of the International Fire Code.

502.21.1 Operation. The exhaust system for processing and extraction Facilities shall have controls that operate the system continuously when the space is occupied.

502.21.2 Post-processing. Post-processing operations, including dispensing of flammable liquids between containers, shall be performed within a hazardous exhaust fume hood rated for exhausting flammable vapors and listed in accordance with UL 1805. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Exception: A

hazardous exhaust fume hood shall not be required where an approved exhaust system is installed in accordance with NFPA 91.

Add New Standard:

UL
1805-2002: Standard for Laboratory Hoods and Cabinets (Ed.1)

Reason Statement: These facilities are becoming common in numerous states and these requirements are based of best practices and ensure basic fire and life safety measures. The requirements in this section provide requirements for hazardous and non-hazardous facilities. The development of these requirements was done in collaboration with the PMGCAC and FCAC. Most of these requirements are existing in current code we are only creating sections that provide an understandable path for compliance.

Item 6 IPC Commercial pool plumbing fixture calculations.

From Table 403.1 MINIMUM PLUMBING FACILTIES:

Stadiums, amusement parks, bleachers and

grandstands for outdoor sporting events and

activities[f]

Notes:

f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the *International Swimming Pool and Spa Code*.

Item 7 IMC Table 403.3.1.1 – category description needs clarity

From Table 403.3.1.1 Minimum Ventilation Rates:

Private dwellings, single and multiple				
Garages, common for multiple units[b]	—	—	—	0.75

Notes:

b. Mechanical exhaust required and the recirculation of air from such spaces is prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Item 3).

Item 8 IPC Storm water flow discrepancy with IBC storm water flow

From IPC:

1108.3 Sizing of secondary drains. Secondary (emergency) roof drain systems shall be sized in accordance with Section 1106 based on the rainfall rate for which the primary system is sized. Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall have an opening dimension of not less than 4 inches (102 mm) in height and have an opening width equal to the circumference of the roof drain required for the area served. The flow through the primary system shall not be considered when sizing the secondary roof drain system.

The primary system is sized:

1106.1 General. The size of the vertical conductors and leaders, building *storm drains*, building storm *sewers* and any horizontal branches of such drains or *sewers* shall be based on the 100-year hourly rainfall rate indicated in Figures 1106.1(1) through 1106.1(5) or on other rainfall rates determined from *approved* local weather data.

From the IBC:

1611.1 Design rain loads. Each portion of a roof shall be designed to sustain the *load* of rainwater as per the requirements of Chapter 8 of ASCE 7. The design rainfall shall be based on the 100-year 15-minute duration event, or on other rainfall rates determined from approved local weather

data. Alternatively, a design rainfall of twice the 100-year hourly rainfall rate indicated in Figures 1611.1(1) through 1611.1(5) shall be permitted.

$$R = 5.2(d_s + d_h)$$

(Equation 16-19)

For SI: $R = 0.0098(d_s + d_h)$
where:

d_h = Additional depth of water on the undeflected roof above the inlet of secondary drainage system at its design flow (in other words, the hydraulic head), in inches (mm).
d_s = Depth of water on the undeflected roof up to the inlet of secondary drainage system when the primary drainage system is blocked (in other words, the static head), in inches (mm).
R = Rain load on the undeflected roof, in psf (kN/m^2). Where the phrase "undeflected roof" is used, deflections from *loads* (including *dead loads*) shall not be considered when determining the amount of rain on the roof.

Item 9 IPC Add standards to IPC for various plumbing fixture materials not currently covered.

1. Add CSA B45.8/IAPMO Z403 (Terrazzo, concrete, composite stone, and natural stone) for lavatories (419.1), showers (421.1), bathtubs (407.1), sinks (422.1).
2. Add CSA B45.12/IAPMO Z402 (aluminum and copper) for lavatories (419.1), showers (421.1), bathtubs (407.1), sinks (422.1).
3. Add CSA B45.11/IAPMO Z401 (Glass) for lavatories (419.1), and sinks (422.1)

Item 8 IPC Pipe labeling for nonpotable water systems-

From the IPC

608.9 Identification of nonpotable water systems. Where nonpotable water systems are installed, the piping conveying the nonpotable water shall be identified either by color marking, metal tags or tape in accordance with Sections 608.9.1 through 608.9.2.3.

Item 9 IMC Roof hatch size not defined for hatches that don't have stairways Ref IBC 1011.12.2

From the IMC

306.5 Equipment and appliances on roofs or elevated structures.
CDP
Where *equipment* requiring access or *appliances* are located on an elevated structure or the roof of a building such that personnel will have to climb higher than 16 feet (4877 mm) above grade to access such *equipment* or *appliances*, an interior or exterior means of access shall be provided. Such access

shall not require climbing over obstructions greater than 30 inches (762 mm) in height or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). Such access shall not require the use of portable ladders. Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).
2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center. The uppermost rung shall be not greater than 24 inches (610 mm) below the upper edge of the roof hatch, roof or parapet, as applicable.
3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.
4. There shall be not less than 18 inches (457 mm) between rails.
5. Rungs shall have a diameter not less than 0.75-inch (19.1 mm) and be capable of withstanding a 300-pound (136 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds per square foot (488 kg/m^2). Landing dimensions shall be not less than 18 inches (457 mm) and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Climbing clearance. The distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be not less than 30 inches (762 mm) measured perpendicular to the rungs. This distance shall be maintained from the point of ladder access to the bottom of the roof hatch. A minimum clear width of 15 inches (381 mm) shall be provided on both sides of the ladder measured from the midpoint of and parallel with the rungs except where cages or wells are installed.
8. .Landing required. The ladder shall be provided with a clear and unobstructed bottom landing area having a minimum dimension of 30 inches (762 mm) by 30 inches (762 mm) centered in front of the ladder.
9. .Ladders shall be protected against corrosion by *approved* means.
10. Access to ladders shall be provided at all times.

Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

Exception: This section shall not apply to Group R-3 *occupancies*.

From the IBC

1011.12.2 Roof access. Where a *stairway* is provided to a roof, access to the roof shall be provided through a *penthouse* complying with Section 1511.2.

> **Exception:** In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m^2) in area and having a minimum dimension of 2 feet (610 mm).

Item 10 ISPSC Shallow water depth of 33 inches and sun shelfs AND 4 foot depth max.

From the ISPSC:

807.2 Shallow end water depths. The design water depth as measured at the shallowest point in the shallow area shall be not less than 33 inches (838 mm) and not greater than 4 feet (1219 mm). Shallow areas designed in accordance with Sections 809.6, 809.7 and 809.8 shall be exempt from the minimum depth requirement.

Item 11 NTSB fuel gas detection monitor. IFGC proposal from last cycle.

An IFGC proposal for fuel gas monitor was not found.

Item 12 ISPSC Minimum horizontal distance of buried pools in relationship to nearby footings.

This would require a new section somewhere in Section 307 GENERAL DESIGN

Item 13 IPC Use of standard material RPZ for resistance to carbonated water.

Table 608.1 and Section 608.17.1.1 would be involved.

Item 14 IPC Cleanup errors in Table E103.3(1)

The reported errors are:

1. Row E states "Static Head Loss 21 x 43 psi"

a. Following unit convention from the above rows, 21 should read as (21').

b. The conversion from feet to psi is .43 psi.

2. The addition of cold water friction loss does not equal what is presented in row K

a. 2.21 + .38 + .38 + 3.08 = 6.05. The table lists 5.93 as the total, which is correct, but not based off the table. The length of BC + equivalent fittings length is = 20 when it should be 15 (the sum of 8+7).

This is leading to error in summing the total friction losses.

From the IPC:

TABLE E103.3(1)
RECOMMENDED TABULAR ARRANGEMENT FOR USE IN SOLVING PIPE SIZING PROBLEMS

COLUMN	1		2	3	4	5	6	7	8	9	10
Line	Description		Lb per square inch (psi)	Gal. per min through section	Length of section (feet)	Trial pipe size (inches)	Equivalent length of fittings and valves (feet)	Total equivalent length col. 4 and col. 6 (100 feet)	Friction loss per 100 feet of trial size pipe (psi)	Friction loss in equivalent length col. 8 × col. 7 (psi)	Excess pressure over friction losses (psi)
A	Service and cold water distribution piping[a]	Minimum pressure available at main	55.00								

B		Highest pressure required at a fixture (Table 604.3)	15.00								
C		Meter loss 2″ meter	11.00								
D		Tap in main loss 2″ tap [Table E103.3(4)]	1.61								
E		Static head loss 21 × 43 psi	9.03								
F		Special fixture loss backflow preventer	9.00								
G		Special fixture loss—Filter	0.00								
H		Special fixture loss—Other	0.00								

I		Total overall losses and requirements (Sum of Lines B through H)	45.64								
J		Pressure available to overcome pipe friction (Line A minus Lines B to H)	9.36								
	Pipe section (from diagram) Cold water distribution piping	FU	264								
		AB	288	108.0	54	2½	15.00	0.69	3.2	2.21	—
		BC	264	104.5	8	2½	0.5	0.20	1.9	0.26	—
		CD	132	77.0	13	2½	7.00	0.20	1.9	0.38	—
		CF [b]	132	77.0	150	2½	12.00	1.62	1.9	3.08	—
		DE [b]	132	77.0	150	2½	12.00	1.62	1.9	3.08	—
K	Total pipe friction losses (cold)			—	—	—	—	—	—	5.93	—

L	Difference (Line J minus Line K)			—	—	—	—	—	—	—	3.43
	Pipe section (from diagram) Hot water distribution piping	A′B′	288	108.0	54	2½	12.00	0.69	3.3	2.21	—
		B′C′	24	38.0	8	2	7.5	0.16	1.4	0.22	—
		C′D′	12	28.6	13	1½	4.0	0.17	3.2	0.54	—
		C′F′ [b]	12	28.6	150	1½	7.00	1.57	3.2	5.02	—
		D′E′ [b]	12	28.6	150	1½	7.00	1.57	3.2	5.02	—
K	Total pipe friction losses (hot)			—	—	—	—	—	—	7.99	—
L	Difference (Line J minus Line K)			—	—	—	—	—	—	—	1.37

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psi = 6.895 kPa, 1 gpm = 3.785 L/m.

1. a.To be considered as pressure gain for fixtures below main (to consider separately, omit from "I" and add to "J").
2. b.To consider separately, in K use C-F only if greater loss than above.

Staff remark: I could not figure out what is being stated about "The length of BC + equivalent fittings length is = 20 when it should be 15 (the sum of 8+7)." The person who reported this is no longer at the email address.

Item 15 IPC fix Table 103.3(3) conversion errors

The reported error is the following:

IPC Table 103.3(3) and IRC Table AP103.3(3) (Wfsu to gpm and cfm tables) 3.0 gallons per minute does not equal 0.04104 cubic feet per minute. The decimal is off by a factor of 10. 3.0 GPM is equal to 0.40110 CFM

5.0 gallons per minute does not equal 0. 0684 cubic feet per minute. The decimal is off by a factor of 10. 3.0 GPM is equal to 0.6685 CFM

From the IPC:

TABLE E103.3(3)
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSHOMETER VALVES		
Load	Demand		Load	Demand	
(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)	(Water supply fixture units)	(Gallons per minute)	(Cubic feet per minute)
1	3.0	0.04104	—	—	—
2	5.0	0.0684			

Item 16 IPC Point of use hot water recirculation pumps for commercial buildings

This is what was relayed by Ron George in the meeting chat:

Remove Code language allowing HW recirc in CW piping for multi-tenant buildings. (Single Family-Owner occupied Residential only - Not public Rental Property)

Staff remark: Is Section 607.2.1.2 the section that is involved?

From the IPC:

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or *tempered water* to a fixture fitting or appliance.
2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

Item 17 IPC Absence of prohibition of using a water heater thermostat for final temperature control.

This is what was relayed by Ron George in the meeting chat:

Correct a past code change that removed prohibition of the water heater thermostat as the final control for purposes of preventing scalding at fixtures. The addition of ASSE listed heaters caused proponent to strike prohibitions of using the WH thermostat for meeting the scald provisions at the fixture. During the prior code cycles (2) cycles ago, A code change proposal was presented to allow ASSE 1082, 1084 WHs as an exception in the code. Add restriction on WH thermostat being used to control temperature at fixtures. Add Exception for ASSE 1084 WHs only!

1. ASSE 1084 are point -of Use HWs intended for temperature limiting only, not temperature control.
2. ASSE 1082 are whole house WHs and cannot control temps at individual fixtures in large systems with temp drops across the system.
3. ASSE 1085 WHs are intended for limiting HW temps to 95 F at emergency fixtures only and not intended for use on a HW Distribution System.

Staff remark: Section 607.1.1 is involved with this topic.

From IPC:

607.1.1 Temperature limiting means. A thermostat control for a water heater shall only serve as the temperature limiting means for the purposes of complying with the requirements of this code for maximum allowable *hot* or *tempered water* delivery temperature at fixtures where the water heater complies with ASSE 1082 or ASSE 1085.

Item 18 IMC A pointer is needed for piping of Bulk CO2 piping for over 100 lb.

Need more information about where pointer should be and where it should be pointing to.

Item 19 IPC Section 403.1.1, Exception 2. The language states that when using multiple-user facilities, the fixture count shall be calculated on 100% occupancy but fails to mention that the total number of fixtures, in the table 403.1, shall be added together for both sexes identified in the chart headings.

From the IPC:

4**03.1.1 Fixture calculations.** To determine the occupant load of each sex, the total occupant load shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple *occupancies*, such fractional numbers for each *occupancy* shall first be summed and then rounded up to the next whole number.

Exceptions:

1. The total occupant load shall not be required to be divided in half where *approved* statistical data indicate a distribution of the sexes of other than 50 percent of each sex.
2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.
3. Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.