

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, N.E.  
Atlanta, GA 30329  
404-636-8400

TC MINUTES COVER SHEET

TC/TG/TRG NO \_\_\_\_\_ TC 5.2 \_\_\_\_\_ DATE June 15, 2021

TC/TG/TRG TITLE Duct Design \_\_\_\_\_

DATE OF MEETING June 15, 2021 3:30pm EST LOCATION Virtual \_\_\_\_\_

MEMBERS PRESENT	TERM TO	MEMBERS ABSENT	Y E A	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Chris Van Rite, Chair	6/30/21			Patrick Brooks, CM
John Constantinide, Vice Chair	6/30/21		X	Aaron Gunzner
Cindy Bittel, Secretary (CM)				Ardi Moftakhari
Dr. Stephen Idem, Programs	6/30/23			Brandon Cudequest
Randy Young, Membership	6/30/23			Chris Ruch
Kevin Gebke	6/30/23			Jamie Fine
Robert Reid	6/30/23			John Hamilton
	6/30/21	Wes Davis		John Reints
	6/30/21	John Gierzak		Larry Smith
Ralph Koerber	6/30/21			Mark Smith
	6/30/22	Scott Hobbs		Perry Philp
Vikram Murthy *	6/30/23			Rick Smith
Akshay Bhargava	6/30/23		X	Sarp H
				Vinod Venugopal
				Walter Robison

**\* Member Non-Quorum**

**CM = Corresponding Member**

**PCM = Provisional Corresponding Member**

**G = Guest**

## DISTRIBUTION

All Members of TC plus the following:	
TAC Section Head	Kevin Marple
TAC Chair	Dustin Meridith
2021 Handbook Liaison (Fundamentals)	Dr. Bass Abushakra
2020 Handbook Liaison (Systems & Equipment)	Florentino Rodriguez
Research Liaison	Dennis L Loveday
Standards Liaison	Kwang Woo Kim
Chapter Tech Transfer	Somasundaram Natarajan
Staff Liaison	Steven J Hammerling

**AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING  
ENGINEERS**

**1791 Tullie Circle, N.E.  
Atlanta, GA 30329**

**ASHRAE Winter Conference – Virtual Meeting**

**TC 5.2 Duct Design**

**Tuesday June 15, 2021  
Time: 3:30-6:00 PM EDT  
Virtual Meeting – Zoom**

**TC 5.2 Duct Design**

6/15/2021

3:30:00 PM– 6:00:00 PM EDT

ASHRAE Platform: Zoom

**Link:** <https://ashrae-org.zoom.us/j/91769965867?pwd=TWdCQU80ZWVtektNNDBoNnltSzJldz09>

**Details:** Meeting ID: 917 6996 5867 Passcode: 652369 Find your local number: <https://ashrae-org.zoom.us/j/a6KAgVtW1>

**1) Call to Order**

**2) ASHRAE Code of Ethics Commitment – Chris Van Rite**

“In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interest. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)”

**3) Introductions and Attendance**

- a) Recognize attendees
- b) Quorum was reached with 9 voting members (*out of 12*)
- c) Quorum requires 7 voting members present
- d) Corrections/additions and approve agenda

**4) Virtual Winter Meeting Minutes January 12, 2021**

- a) The DRAFT minutes were posted to Basecamp in the Files>Minutes folder for Voting Members to review.
- b) Vote to approve 2020 Annual Meeting minutes: 8 / 0 / 0 (approve/reject/abstain).
- c) Approved FINAL minutes will be uploaded to the TC Web Page and to Basecamp.

**5) Special Announcements**

- a) ASHRAE Mission – To serve humanity by advancing the arts and science of heating, ventilation, air conditioning, refrigeration and their allied fields.
- b) ASHRAE Vision - A healthy and sustainable built environment for all.

- c) TC 5.2 Scope - TC 5.2 is concerned with the design, characteristics and construction of all types of ductwork for the handling of air and other gases, but does not include chimneys.
  - d) Virtual Meeting Protocols – John Constantinide
- 6) **TC 5.2 Items** – Chris Van Rite, John Constantinide
- a) Strategic Plan references \*\*
    - i) Position our TC to include more stakeholders and young engineers in ASHRAE to have continuity of knowledge passing on
- 7) **Herman and Dorothy Behls Endowment \*\*** – Dr. Stephen Idem
- a) Who was Herman Behls
  - b) Purpose of Endowment
    - i) To fund suplimental travel grants for travel to ASHRAE conferences
  - c) Who is eligible
    - i) YEA members slected from applications submitted
  - d) Report on status of awards
  - e) Follow-up on action item from June 2020 Virtual meeting:
    - i) Create at least one (1), with the goal of six (6), additional endowed Travel Grants through the ASHRAE Foundation for Young Engineers in ASHRAE (YEAs) in critical positions or with critical knowledge to travel to ASHRAE Annual and Winter Conferences.
      - 1. Can include additional fundraising through endowment
- 8) **Section 5 and TAC Report** – Kevin Marple
- a) Thank you to all of those involved with the TC
  - b) Basecamp vs ASHRAE website
    - i) Website is public – only post items that are open to the public, not working documents, etc.
    - ii) Basecamp is to be used for internal communication, work, and collaboration
  - c) Activity Report is due by this Friday June 18<sup>th</sup>. Appreciate getting that in by this Friday
  - d) TAC is creating a Meeting Agenda Template
  - e) TAC Basecamp site has TC leadership and general leadership training videos
  - f) Hoping to host an “open mic” TAC session at the Las Vegas meeting in 2022 if that is in person
- 9) **Subcommittee Reports**
- a) **Ducted Return Recommendation to ASHRAE Covid-19 Task Force** - Chris Rusch – Overview and Publication in ASHRAE Journal
  - b) **Membership \*\***- Randy Young, Chair
    - i) Recognize new Provisional Corresponding Members (PCMs) since June 2020.
      - 1. Mr Miguel Angel Ruiz Tataje 5-13-21
      - 2. Mr Sarp Hamamcioglu 1-15-21
    - ii) TC 5.2 will reach out to the following market segments for additional engagement and representation:
      - a) Duct Design Engineers;
      - b) Academics and Researchers Focused on Duct Design;
      - c) Code Authorities/Authorities Having Jurisdiction;

- d) Building Owners/Managers and Owner Authorized Representatives;  
and
  - e) General Contractors, Mechanical/Sheet Metal (including SMACNA)  
Contractors, and Associated Technicians.
- b) **2021 Handbook of Fundamentals** – Chris Van Rite
- i) Status report for 2024 edition
    - a) Craig and Steve have done the work to update
    - b) Next update will need a new chair in place, Jamie Fine volunteered
- c) **Programs \*\*** - Steve Idem
- i) **Planning \*\*** - Organize at least one (1) ASHRAE Chapter seminar every six (6) months addressing a topic within the scope of TC 5.2.
  - ii) **Request for anyone interested in presenting a program to get a hold of Steve and he will help you submit a program sponsored by TC5.2**
- d) **Duct Design Guide \*\*** (DDG) - Pat Brooks
- i) Updates:
    - a) Available at the ASHRAE book store \$137 or \$103 for members
    - b) Article will be published in the ASHRAE journal
    - c) Research project should be marked complete now
    - d) Aside- there was some funds leftover that were transferred over to the Herman Behls grant
  - ii) Follow-up after publication\*\*:
    - a) Create an education program utilizing content from the Duct Design Guide.
    - b) Create a plan to publicize the Duct Design Guide education program to ASHRAE and non-ASHRAE members.
- e) **Duct Fitting Database\*\*** (DFDB) - Pat Brooks
- i) Created a contract to maintain and update the DFDB
  - ii) Predicted to be finished July 2021
  - iii) Using a project management software (John Downey) to organize
  - iv)
  - v) Follow-up after publication\*\*:
    - a) Create a user guide assisting practitioners with utilizing the Duct Fitting Database, with a timeline for publication of the user guide.
    - b) Organize at least one (1) conference workshop or a TC-sponsored session that trains professionals on the Duct Fitting Database and accompanying user guide.
- f) **Research** – Kevin Gebke
- i) **If you have research, the money is very scarce right now**
  - ii) Bob Reid – RTAR Proposal “Duct Take-offs, Taps”
  - iii) Brandon Cudequest – WS 1919 Overview
    - a) The effects of duct size and aspect ratio on flow noise in elbows
      - 10. Right now there are 2 methods, algorithm or table look-up from Ch 49 of ASHRAE Applications Handbook Algorithm came from 1965, perhaps with

higher velocity and smaller duct size than in current applications

11. Looking to test several rectangular duct elbows to determine what velocities maintain noise restrictions at different distances from elbows (24x24 to 48x48)

12. Hoping to update algorithms and update and improve the ASHRAE table

g) **Codes & Standards Interaction** - Ralph Koerber

i) **Please see Attachment A**

ii) ASHRAE Standard 90.1 Mark Smith,

a) Meeting June 17<sup>th</sup>, after our meeting, but will share any relevant updates to TC5.2 if necessary

h) **Webmaster** - Akshay Bhargava

i) TC 5.2 Website: <https://TC0502.ashraetcs.org/>

i) **Historian** - Bob Reid

i) Herman Behls library and papers are listed on Basecamp for availability to the TC members

ii) Note: if you have information, publications, research. Etc to add to the TC's library, please contact Bob Reid

**10) ADI Research Report (Time Permitting) Chris Van Rite**

a) Contracted with Univ of Central FL

b) Identical houses with different duct systems (metal and flex) measured for leakages

c) Collected data over 3 months without drastic differences

**11) Deadlines**

a) **Roster changes in effect July 1<sup>st</sup>**

b) **Activity report due Fri June 18**

**12) Notifications**

**13) Action Items**

TC 5.2 Duct Design Action Items			
Number	Description	Assigned to	Status
1	Write content for the Duct Design chapter of the Fundamentals Handbook related to gypsum board.	Larry Smith, Ralph Koerber, and John Hamilton	Under review

**14) New Business**

**15) Adjournment at 5:38pm**

Upcoming Meetings:

2022 ASHRAE Winter Conference --- Las Vegas --- January 29-February 2, 2022

2022 ASHRAE Annual Conference --- Toronto, ON --- June 25 – 29, 2022

## Attachment A

### Codes & Standards Discussion (TC-5.2 on 6/15/21)

#### 1. Underwriters Laboratories

##### a. UL2518 Air Dispersion Systems Standard

- i. UL initiated a Call for Proposals to UL181 STP members -  
Proposals requested through UL's On-Line Collaborative Standards Development System (CSDS) by December 4, 2020

Ballot to reaffirm UL2518 completed May 25, 2021

Standard was approved by STP for republication

##### b. UL2158A Dryer Vent Transition Duct Standard

- i. Preliminary review - Status of test sample not clear in the UL2158A puncture test
  1. Proposed change by commenter -

**Puncture Test** 13.5 Duct samples 2 feet (0.60 m) long are to be subjected to this test. The samples ~~are to be provided with a firm support below and throughout their length and width.~~ shall be fully extended, be kept as straight as possible as per mfg. installation instructions, shall to be retained in place, as to prevent any possible movement by securing with tape at each end of the sample to a firm rigid flat surface with a masking tape 1/2 inch by 6 inches (12.7 mm by 152.4 mm) long or other acceptable/approved means, provided with a firm rigid flat surface below and throughout their entire length and width. At least three areas of each sample are to receive the impact of the plunger at the approximate center of the test sample along its length and at the impact points around its perimeter shown in Figure 13.1.

2. UL proposed change -

13.5 Duct samples 2 feet (0.60 m) long are to be subjected to this test. The samples shall be fully extended and ~~The samples~~ are to be provided with a firm support below and throughout their length and width. At least three areas of each sample are to receive the impact of the plunger at the approximate center of the test sample along its length and at the impact points around its perimeter shown in Figure 13.1.

#### 2. NFPA 90A & 90B Standards

- a. NFPA's 2021 Editions are printed and are available in print or downloadable online.
  - i. The First Draft public input for the 2024 cycle is now open with a closing deadline for proposals of June 01, 2021.
  - ii. The 90A & 90B TC will meet later in 2021 to review proposals (8/31-9/2 or 10/5-10/7 Tentative Dates).
  - iii. The First Draft Report posting will be on March 22, 2022.

### 3. International Code Council - 2021 Editions

- a. Group A Cycle -
  - i. IMC (2024)
    - 1. TC meetings were held 4/27 & 4/28 to review code proposals to the IMC & IRC(M). Items of interest -
      - a. M6-21 (IMC, 202)
        - i. Revision of the definition of Noncombustible to match the other codes. **Approved**
      - b. M7-21 (IMC, 202)
        - i. Revision of the definition of Plenum. **Disapproved**
      - c. M24-21 (IMC, Table 403.3.2.3)
        - i. Kitchen exhaust changed to 50 CFM continuous. Bathrooms and Toilet rooms changed to 25 CFM continuous. **Approved**
      - d. M50-21 (IMC, 512.1-512.5)
        - i. To apply the standard ANSI/AARST CC100 standard to subs lab soil exhaust system. **Disapproved**
      - e. M55-21 (IMC, 602.1-603.10)
        - i. Add new text:
          - ii. 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. **Approved as Modified**
          - iii. 602.3.2 Smoke detectors. Smoke detectors shall be listed and labeled. **Approved as Modified**
        - 1. The committee agreed that the proposed provides clarity as to what various materials are permitted within a plenum under specific conditions
      - f. M56-21 (IMC, 602.2-602.3)
        - i. This proposal was disapproved because there is clarification of text already regarding plenums in M55-21. **Disapproved**
      - g. M58-21 (IMC, 602.2&602.3)
        - i. Comment was to modify Conditions for stud cavity and joist space plenums. **Disapproved**
      - h. M59-21 (IMC, 603.1&603.5.1)

- i. Strike the use of gypsum board to form and shafts. **Disapproved**
- i. M60-21 (IMC, 604.3)
  - i. Coverings that are not plenums are treated like other building materials. The modification appropriately places the allowance for the higher smoke development (450) in the exception and the lower smoke development (50) in the base requirement. **Approved as modified**

## 2. IRC(M 2024)

- 1. IRC(M) proposals were heard following the IMC proposals. Items of interest
  - a. RM12-21 (IRC, M1504.3)
    - i. Added subsections to Exhaust openings
      - 1. (3.2) the exhaust opening is part of an approved factory-built / exhaust combination termination fitting installed in accordance with manufactures instruction, and exhaust air is drawn from a living space. **Approved**
  - b. RM13-21 (IRC, M1504.3)
    - i. Added to Exhaust Openings
      - 1. (2.0) “Except where the exhaust opening is located not less than 1 foot above the gravity air intake opening, operable windows and doors.” **Approved**
  - c. RM18-21 (IRC, M1602.2)
    - i. Return air openings: “Bathrooms” were removed from line item (4). **Approved**

## 1. IAPMO - UMC 2024 Revision Cycle

- a. Timeline for 2024 Cycle -
  - i. Call for proposals - July 6, 2020
  - ii. Deadline for proposals - January 4, 2021
  - iii. TC Meeting to review proposals - **May 17-21, 2021 (Virtual)**
  - iv. Vote on proposals - July 2, 2021
  - v. Distribute report of proposals (ROP) - September 3, 2021
  - vi. Call for comments re’ proposal actions - September 3, 2021
  - vii. Assembly Consideration Session - September 28, 2021
  - viii. Deadline to submit comments - January 4, 2022
  - ix. Distribute comments to TC - March 30, 2022
  - x. TC Meeting to consider comments - May 2-5, 2022
  - xi. Vote on comments - June 10, 2022
  - xii. Distribute report on comments (ROC) - August 12, 2022
  - xiii. Technical Correlating Committee Meeting - July 1, 2022
  - xiv. Associating Technical Meeting - September 27, 2022
  - xv. Final closing of votes - October 14, 2022
  - xvi. Standards Council Meeting for Appeals - November 16, 2022

b. UMC TC met virtual week of May 17 to review 349 proposals to the 2024 Uniform Mechanical Code

i. Items of interest -

1. #146 - add minimum sheet metal GA/Thickness chart from SMACNA
  - a. TC Action - Reject
2. #150 - ducts sealed to Seal Class A
  - a. TC Action - Accept as Submitted
3. #153 - Air Dispersion Systems, add "Fabric" to definition and allow installation under floors
  - a. TC Action - Reject
4. #156 - Flexible Duct Length Limitation - add Exception (2) referring to Chapter 5 for length limitation for Dryer Vent Transition Ducts
  - a. TC Action - Reject
5. #163 - Duct coverings and linings shall be listed and labeled. Duct coverings shall not penetrate a fire-resistance-rated assembly.
  - a. TC Action - Reject
6. #164 - Polyurethane spray foam insulation - 25/450 flame and smoke index
  - a. TC Action - Reject

4. ADC Flex Duct Installation Standard (Greenbook) - 6<sup>th</sup> Edition Revision

- a. ADC has finalized the sixth edition revisions and the Standard will go to print in late 2021