

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 February 2, 2022

TC/TG/TRG TITLE Duct Design

DATE OF MEETING February 2, 2022 11:00 AM Pacific Time LOCATION Las Vegas  
(Hybrid)

MEMBERS PRESENT	TERM TO	MEMBERS ABSENT	Y E A R A P P T D	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
John Constantinide, Chair	6/30/23			Dr. Jamie Fine, Handbook, CM
Cindy Bittel, Vice Chair	6/30/25			Ralph Koerber, Code Interaction, CM
Akshay Bhargava, Secretary	6/30/23		X	Christopher Ruch, Webmaster, CM
Robert Reid, Programs	6/30/23			Wes Davis, CM
Kevin Gebke, Research	6/30/23			Ed Janowiak, G
	6/30/25	Patrick Brooks, DFDB		Harrison Kesling, G
	6/30/21	Dr. Stephen Idem, Endowment		Aaron Guzner, PCM
Vikram Murthy *	6/30/23			Stephen Roth, G
Randy Young, Membership	6/30/23			Sarp Hamamcioglo, G
	6/30/22	Scott Hobbs		Matt Akins, G
				David Burd, G
				Robert Hassler, CM
				Joanis Legiste, G
				Bernardo Baldasso, PCM
				Allan Banegas, G

			Craig Wray, CM
			Hunter Brown, PCM
			Rick Smith, PCM
			Dane (Stephen) Carey, PCM
			Shilei Ma, G
			Larry Smith, TAC Chair, CM
			Scott Baar, PCM
			Tim Eorgan, CM
			John Hamilton, CM
			Vinod Venugopal, CM
			Mark Smith, CM
			Steven Rogers, G
			Jen Win, Research Liaison, G

**\* 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	Larry Smith
Handbook Liaison (Fundamentals)	
Handbook Liaison (Systems & Equipment)	
Research Liaison	Jen Win
Standards Liaison	Kwang Woo Kim
Staff Liaison	Steven J Hammerling

**ASHRAE 2022 Winter Conference  
ASHRAE TC 5.2 Duct Design  
FULL COMMITTEE MEETING**

**AGENDA**

**Wednesday, February 2, 2022  
Time: 11:00am - 12:30 PM PST  
Consul Boardroom (P), Caesar's Palace  
Las Vegas, NV, USA  
and  
Virtual Meeting**

Virtual Meeting Access Information: <https://events.rdmobile.com/Sessions/Details/1265487>

**1) Call to Order at 11:06am**

**2) ASHRAE Code of Ethics Commitment – John Constantinide**

“In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.”

- a) ASHRAE Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>
- b) ASHRAE Core Values: <https://www.ashrae.org/about/ashrae-s-core-values>

**3) Introductions and Attendance**

- a) Recognise attendees
- b) Quorum reached? 6 out of 10 voting members (Requires 6 present)
- c) Corrections/additions and approve agenda

**4) 2021 Virtual Annual Meeting Minutes**

- a) The DRAFT minutes were posted to Basecamp in the Files > Minutes folder for Voting Members to review.
- b) Approval of Minutes
  - i) Cindy moves, Randy seconds, Vote 6/0/0 CV
- c) Approved FINAL minutes will be uploaded to the TC Web Page and Basecamp.

**5) Reminders – John Constantinide**

- 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
- e) TC 5.2 MBOs are reflected by our Strategic Plan and referenced on the agenda with asterisk symbols (\*\*)

**6) Section 5 and TAC Report – Larry Smith**

- a) If you go to [www.ashrae.org/tac](http://www.ashrae.org/tac) or to ASHRAE website at [www.ashrae.org](http://www.ashrae.org) and search for TAC, you can find the Leadership development auto tutorial (takes 10 hrs to complete), working on PDH credits being approved for attending.
- b) “Think like a leader” last video is highly recommended for personal business growth.
- c) Significant changes have been made to the MOP. Ex: Balance in committees for voting members has become REQUIRED rather than suggested. To remove any perceived or possible conflict, only one member from each organization can be a VM (parent organizations/corporations will be watched).
- d) Hybrid meetings are also approved for continuation.
- e) Thank you to Larry Smith for his work on TAC and making significant changes to TCs.
- f) There are TC MOP and a reference manual also, and there’s TAC MOP and a reference manual.
  - i) <https://www.ashrae.org/communities/committees/standing-committees/technical-activities-committee>
  - ii) <https://www.ashrae.org/File%20Library/Technical%20Resources/Technical%20Committees/TC-MOP-SY-18-19.r2.pdf>

**7) Research Report – Jin Wen ([jinwen@drexel.edu](mailto:jinwen@drexel.edu))**

- a) Couple of major changes from breakfast meeting: RAC has reduced funding for awards, emerging projects
- b) Actively reviewing RTARs and Work Statements
- c) Issuing 17 new TRPs
- d) New Research Strategic Plan posted on ASHRAE website to make sure work and projects align with the Society Strategic Plan.
- e) any open projects need to be open to the public and added to conference programs
- f) RAC is working on a portal for RTAR submittals
- g) PTAR- Last year, divided into 2 divisions- publications go through PTAR instead of RTAR process

**2) Herman and Dorothy Behls Endowment – Dr. Stephen Idem**

- a) Report on status of awards
  - i) Two separate scholarships were set up. One will reimburse YEA members for the cost of taking/passing the ASHRAE HVAC designer certification course. The other will help pay for expenses for undergraduate or graduate students to attend the winter conference. The scholarship endowment remains fully funded, since no awards were made last year.
  - ii) Application forms for each scholarship are available under the Communities tab on the ASHRAE home page; refer to the YEA and Student Zone tabs, respectively. The fillable forms need to be updated for a 2022 submission deadline, but otherwise we should be able to initiate the scholarships this year. All applications will be electronically directed to the subcommittee members for evaluation.
- b) Thoughts/discussion about additional fundraising\*\*: Have Strategic Plan 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 - general feeling of the room is to wait until the first awards have been given
- c) Group agreed to re-invest funds from not applying awards from last year

**3) Subcommittee Reports**

- a) **Ducted Return Subcommittee** – Chris Ruch
  - i) Final Report has been posted
  - ii) Commentary has been received that research in this field is encouraged as necessary. Wray recommends coordination with Research committee to look at opportunity to submit a research project
  - iii) Chair asked for any objections for dissolving the subcommittee, with none received. Subcommittee is dissolved.
  
- b) **Membership** – Randy Young
  - i) Recognize new Provisional Corresponding Members (PCMs) since June 2021.
    - 1. Scott Barr, 1/6/22
    - 2. Hunter Brown, YEA, 10/8/21
    - 3. Stephen Carey, 7/6/21
    - 4. Philip M Daugherty, 6/23/21
    - 5. Zalmie Hussein, YEA, 7/30/21
    - 6. Ardeshir Moftakhari, YEA, 6/8/21
    - 7. Cary J Norberg, 10/27/21
    - 8. Phillip J Norman, 8/16/21
    - 9. Aakash A Patel, 6/7/21
    - 10. Rick Smith, 10/26/21
  - ii) Create outreach plan to meet Strategic Plan goal to recruit at least two (2) TC members from the following industry segments\*\*:
    - 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
    - e) General Contractors, Mechanical/Sheet Metal (including SMACNA Contractors, and Associated Technicians
  - iii) Track recruitment to assess whether Strategic Plan goal is met
  
- b) **Handbook** – Dr. Jamie Fine
  - i) Status report on 2023 Handbook Revision (Duct Construction Chapter)
  - ii) Handbook revision process about to begin. Most recent version will be uploaded to Basecamp. Everyone is asked to please review and send any changes to Jamie who will consolidate and revise. Updated draft will be provided.
  - iii) **Action Item:** Constantinide will attempt to download the chapter from the authoring portal and email to Fine. Constantinide also will talk to Society to try to help resolve the issues accessing the portal and uploading documents.
  - iv) The last chapter was submitted very late. We need to find the exact dates and make sure that those are watched carefully.
  - v) Handbook Subcommittee liaison should be contacted for deadlines and information.
  - vi) **Action Item:** When Jamie has uploaded the chapter to basecamp, he will message the group and request for people to revise the Duct Construction chapter, then post again once the new draft is ready to review.
  - vii) Volunteers to help review chapter: Bob Reid, Ralph Koerber, Craig Wray
  
- c) **Programs** – Robert Reid
  - i) Status Report
    - a) Received program tracks for Atlanta this morning. We don't have any programs submitted for Annual Conference in Toronto.

- b) Soliciting ideas for tracks for HVACR systems and equipment, Zero carbon emissions, Multi-Family & Residential Construction
        - a. Maybe opportunity for Chris Van Rite from his work at the FL Solar Energy Center
      - c) **Seminar and program proposals due by August 9. Approvals take place in October for 2023 Atlanta Winter Conference.**
        - d) For 2022 Annual Conference, deadline for proposals is Feb 18.
    - ii) Grassroots Outreach Update\*\*: Aim for Strategic Plan goal of having at least one (1) ASHRAE Chapter seminar every six (6) months addressing a topic within the scope of TC 5.2.
      - a) Can also be virtual seminars
      - b) One possible program from Chris Van Rite and FSEC
      - c) Chris Ruch possible with Randy Young on ducted returns
        - a. **Action Item:** CR & RY going to draft what that will look like
      - d) Jamie Fine proposed something done regarding corridor air distribution in Multi-Family and the poorly researched air flow between zones when changing central air handler fan settings or designing based on positive pressured corridors
      - e) Possible seminar on DDG and maybe the DFDB with Larry Smith, Kevin Gebke and other volunteers
    - iii) Distinguished Lecturer Nominations\*\*: Aim for Strategic Plan goal of nominating DL candidates to CTTC to address one or more topics on duct systems leakage.
      - a) Pat Brooks has been accepted as a DL
      - b) Chris Van Rite has applied
      - c) Constantinide is on the DL Working Group to approve applicants. Non-ASHRAE members are acceptable. Also, you are welcome to present on program topics at chapters. Constantinide welcomes any presenters to Florida chapters and suggested some cost-sharing.
  - d) **Duct Design Guide (DDG) – Larry Smith**
    - i) Guide Published
    - ii) Follow-up after publication per Strategic Plan\*\*:
      - a) Create an education program utilizing content from the Duct Design Guide.
        - a. ALI would like to offer a workshop based on the DDG.
      - b) Create a plan to publicize the Duct Design Guide education program to ASHRAE and non-ASHRAE members.
        - a. Larry Smith will volunteer to do a presentation with other volunteers (Kevin Gebke) for Winter Conference in Atlanta, possibly including Stephen Idem & Pat Brooks.
  - e) **Duct Fitting Database\*\* (DFDB) – Jamie Fine/Larry Smith**
    - i) Subcommittee Report
      - a) Jamie gave a short demo of the DFDB.
      - b) Going to add a Home page to land on upon login.
      - c) Discussion about the current app available on iOS
        - a. The app was developed 10 years ago or so.
        - b. ASHRAE owns the app, but it hasn't been regularly updated.
        - c. Not available on non-iOS devices.
        - d. Does not sync with the web portal of DFDB.
    - d) Subcommittee working on solution to better make a mobile version available while still maintaining link to the DFDB

- ii) 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) Bob Reid – RTAR Proposal “Duct Take-offs, Taps”
  - ii) Brandon Cudequest – WS 1919 Overview
  
- g) **Codes & Standards Interaction** - Ralph Koerber
  - i) For report, please refer to **Addendum A**.
  
- h) **Webmaster** – Chris Ruch
  - i) TC 5.2 Website: <https://TC0502.ashraetcs.org/>
  - ii) Talk to Chris about joining TC 5.2 Basecamp
  
- i) **Historian** - Bob Reid
  - i) Herman Behls library and papers

**4) Deadlines**

**5) Notifications**

**6) 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	Complete

**7) New Business**

**8) Adjournment**

Information about upcoming ASHRAE Conference Meetings is available at <https://www.ashrae.org/conferences/ashrae-conferences>.

## ADDENDUM A

### TC 5.2 Codes & Standards Interaction Report

#### 1. Underwriters Laboratories

a. UL181, UL181A, & UL181B, UL181C (New) Air Duct, Air Duct Closure, and Non-metal Joining Accessories Standards

i. New UL181C - Outline of Investigation for Non-Metal Joining Accessories for Use with Flexible Ducts, published May 20, 2020

##### 1. Scope -

Non-metal joining accessories, such as collars and sleeves, covered by these requirements are intended to join and connect flexible air ducts and air connectors that comply with the requirements of UL 181, Factory-Made Air Ducts and Air Connectors.

These requirements cover characteristics of the non-metal joining accessories, including: material, installation, mold growth and humidity, temperature, heat release and smoke, impact, pressure, tension, torsion, and leakage.”

Products approved to UL181C have entered the market and are available with UL181C Listing. Products seen include rigid board plenums, Class 1 non-insulated flexible ducts, and plastic fittings for bends, connections, and terminal devices.

b. UL2518 Air Dispersion Systems Standard

i. UL2518 was balloted for re-affirmation as an ANSI standard.

1. Reaffirmed for ANSI approval and published June 8, 2021.

c. 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.

3. Continued proposals include amendments for sample selection, quantity, and multiple impact points offset around the perimeter of the sample.

Current vote for the proposal is Yes - 6, No - 2, Abstain - 2, Not Returned - 5 as of 9/24/21. Waiting next step for the proposal and/or ANSI acceptance process.

## 2. NFPA 90A & 90B Standards

a. 2021 Editions have been printed and are available in print or online.

i. First Draft public input for the 2024 cycle with a closing deadline for proposals of 6/1/2021.

ii. TC met via tele-conference to review all proposals on 8/31 & 9/1.

iii. Items include a complete reorganization of the chapters in 90A to make the document easier to read.

1. Several task groups initiated to review the reorganized document for accuracy.

iv. First Draft Report posting will be March 22, 2022.

## 3. International Code Council - 2024 Editions

a. Group B cycle proposals by January 10, 2022

## 4. IAPMO - UMC 2024 Revision Cycle

a. Timeline for 2024 Cycle -

i. TC Meeting to review proposals - May 17-21, 2021 (Virtual)

ii. Vote on proposals - July 2, 2021

iii. Distribute report of proposals (ROP) - September 3, 2021

iv. Call for comments re' proposal actions - September 3, 2021

v. Assembly Consideration Session - September 28, 2021

vi. Deadline to submit comments - January 4, 2022

vii. Distribute comments to TC - March 30, 2022

viii. TC Meeting to consider comments - May 2-5, 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
- ii. Comments to the TC were due by January 4, 2022.
- iii. TC will consider the comments on May 4-5, 2022.

5. ADC Flexible Duct Installation Standard - 6th Edition

- a. Complete and will be published early 2022