

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

**TC/TG/MTG/TRG MINUTES COVER SHEET**

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. TC 5.9 DATE June 28, 2016

TC/TG/MTG/TRG TITLE Enclosed Vehicular Facilities  
DATE OF MEETING June 28, 2016 LOCATION St. Louis, MO

VOTING MEMBERS PRESENT	YEAR APPT'D - TERM ENDING	VOTING MEMBERS ABSENT	YEAR APPT'D - TERM ENDING	EX-OFFICIO MEMBERS AND ADDITIONAL GUEST ATTENDANCE (CM) (G)
Igor Maevski Kevin Chang Jane Miller David Newman Bill Lampkin Andrew Louie Nader Shacheraghi Asesh Raychaudhuri	2011-2016 2015-2019 2014-2018 2015-2019 2012-2016 2014-2018 2014-2018 2015-2019	Robert Smith John Murphy	2015-2019 2014-2018	Troy Goldsmidt (CM) Yuan Li (CM) Michael Feuser (CM) John Haukap (CM) Tom O'Dwyer (CM) Fred Shortts (CM) Yoon Ko (PM) Joe Brooks (G) Natasha de los Rios (G) Duncan Phyfe (G) Scott Haberman (G) Marco Adolph (G) David Hettlage (G) Larry Stegall (G) Kyle Vach (G)

**DISTRIBUTION**

*All Members of TC/TG/MTG/TRG plus the following:*

TAC Section Head:	Kenneth Peet
TAC Chair:	Michael Biderbeck
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	James Bochat, James Arnold, Harris Sheinman David John, Arsen Helikov, Michael Vaughn
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.  
Technical Committee TC 5.9 – Enclosed Vehicular Facilities  
Meeting Minutes – 28 June 2016 - St. Louis, MO

Igor Maevski called the meeting to order at 3:30 pm.

There were 8 of 10 voting members present. The voting member attendance met requirements for a quorum.

Minutes of January meeting in Orlando were distributed and approved.

Chair Comments by Igor Maevski

*Las Vegas Conference Tracks: Fundamentals & Applications; HVAC&R Systems & Equipment; Water-Energy Nexus; Commercial and Industrial IAQ; Mission Critical Design and Operation; Effects of Climate Change on HVAC&R; Energy Efficient Industrial Buildings; Building Operation and Performance*

Section 5 - report presented by Ken Peet. (Activity Report due June 28, 2016)

*Seminar/Forum program requests due Monday, August 8. If not accepted, TC will know within 2 weeks. It could then be presented at the TC meeting.*

#### Subcommittee reports

*Program Sub-Committee Report: (Igor Maveski for Mark Colino)*

2016 Annual Meeting – St Louis, MO (Conference Paper Abstracts were due Sep 21, 2015; Conference Paper Submittals were due Feb 15, 2016; Seminar & Forum Proposals were due Feb 8, 2016)

ST2 (Seminar) – “Indoor Air Quality Standard in Road, Rail and Mass Transit Tunnels”; Chair: Igor Maevski; Presenters: Yuan Li and David Newman; Mark Colino and Robert Smith not able to attend ; Co-sponsor: TC 4.10 6-28-16 @ 5 pm following TC 5.9 general meeting

*St Louis Conference Tracks: HVAC&R Fundamentals & Applications; HVAC&R Systems & Equipment; Research Summit; Advances in Refrigeration Systems and Alternate Refrigerants; Smart Building Systems/Remote Monitoring and Diagnostics; Indoor Environment: Health, Comfort, Productivity; Professional Skills Beyond Engineering; Renewable Energy Systems and Net Zero Buildings*

2017 Winter Meeting – Las Vegas, NV (Conference Paper Abstracts were due Mar 21, 2016; Conference Paper Submittals are due July 8, 2016; Seminar & Forum Proposals are due Aug 8, 2016)

LV1 (Seminar) – “Sustainable Environment for Enclosed Vehicular Facilities & Related Design Guidance”; Chair: Anthony York; Presenters: Mohammad Tabarra, TBD; Potential Co-sponsor: TC2.8

LV2 (Seminar) – “Introduction to Enclosed Vehicular Facilities”; Chair: Tom O’Dwyer; Presenters: Tom O’Dwyer, Jim McCarron, David Newman; Co-sponsor: TBD

LV3 (Conference Paper) – “Parking Garage Ventilation”; Chair: Troy Goldschmidt; Presenters: TBD; Co-sponsor: TBD, possible combination with LV2

*Las Vegas Conference Tracks: Fundamentals & Applications; HVAC&R Systems & Equipment; Water-Energy Nexus; Commercial and Industrial IAQ; Mission Critical Design and Operation; Effects of Climate Change on HVAC&R; Energy Efficient Industrial Buildings; Building Operation and Performance*

2017 Annual Meeting – Long Beach, CA

LB1 (Conference Paper) – “Innovative Rail Station Ventilation”; Chair: Mark Colino; Presenters: Tom O’Dwyer, Jim McCarron; Co-sponsor: TC5.6

*Long Beach Conference Tracks: Fundamentals and Applications. HVAC&R Systems and Equipment. Refrigeration. Building Life Safety Systems. Controls: Smart Building Systems and the Security Concerns as Technology Emerges. Commissioning: Optimizing New and Existing Buildings and their Operation. Net Zero Energy Buildings: The International Race to 2030, Residential Buildings: Standards and Guidelines and Codes. Research Summit*

2018 Winter Meeting – Chicago, IL

At this time, no Program events are scheduled for this meeting.  
*Chicago Conference Tracks: TBD*

**Future Program Topics**

- Can Wireless Control Improve Ventilation Performance (Champion: Steve Presser)
- Air Cleaning for Tunnels (Champion: Igor Maevski)
- Extreme Events Ventilation Requirements (Champion: Greg Sanchez)
- Best Practices for Enclosed Vehicular Facilities (Champion: Tom O'Dwyer)
- Tunnel Ventilation Velocity Profile on Egress Calculations (Champion: Ahmed Kashef)
- Matrix Development to Achieve LEED Certification in Station Design (Champion: Mohammad Tabarra)
- Platform Screen Doors (Champion: Greg Sanchez)
- Natural Ventilation Applications in Enclosed Vehicular Facilities (Champion: Mark Colino)
- BIM in Tunnel Ventilation Design (Champion: Igor Maevski)
- Parking Garage Ventilation (Champion: Troy Goldschmidt)
- Special Ventilation Issues in High-Speed Rail Tunnels (Champion: Ian Ong)
- Boundary Conditions for Tunnel Ventilation Modeling (Champion: Tom O'Dwyer)
- Ventilation Design for Road Tunnels Based on Risk Analyses (Champion: Ahmed Kashef)
- Perspectives on Design-Build Projects (Champion: Mark Colino)

**Standards Sub-Committee Report: (Yuan Li)**

*Committee for SPC 217 met today from 7:30 am to noon. This committee is developing a new standard "Non-Emergency Ventilation in Enclosed Road, Rail and Mass Transit Facilities".*

- *Chapter 4/ Rail Tunnels was reviewed, discussed, and approved.*
- *Chapter 7/System, Equipment and Components is almost ready for voting, however we ran out of time today to review this chapter.*
- *Several conference calls have been held since the January meeting in Orlando. There are generally conference calls every month – to help expedite the standard development process.*
- *Next conference call scheduled for July 21 - Chapter 7/System Equipment review, August 19 - Chapter 9/Testing and Commissioning.*
- *Chapter 5/Mass Transit Tunnel and Chapter 6/Mass Transit Station will be tackled next.*

• *SPC Schedule*

Completion of first draft of document	07/2017
PC approval for public review	01/2018
PC approval of responses to public review comments	01/2019
PC vote for publication	07/2019

- *Today's Seminar at 5 today will be a presentation of Chapters 3/ Road Tunnel and 4/Railway Tunnel from Yuan Li and David Newman respectively.*
- *Need more member! Only one voting member from each company, but can have additional members - will be non-voting member. Check application forms online to be added. All meetings open to public. Cannot distribute materials to general group until the material is submitted for public review.*
- *There has been interest from around the world in this standard. No standard exists for non-emergency ventilation anywhere.*
- *Las Vegas SPC217 meeting will again start at 7:30 am Tuesday – come join us.*

*Handbook Sub-Committee Report: (Andrew Louie)*

Andrew provided information on the New ASHRAE Authorizing Portal – suggested by ASHRAE to use for developing new documents. This new Share Point based system is a more secure process for editing/creating new content. The Handbook group is the first to use it. This may be used for standards also. If you are on TC roster – you already have access. Very user friendly - can't mess it up, can back up to original work if needed. The new system only works in Internet Explorer, and uses ASHRAE Word version which ensures everyone has the same version.

- o Content - current content
- o New Material - would be in this section; nothing here for Chapter 15 (at this time)
  
- o All current edits have been sent to be uploaded; probably not until after conference is over
- o Also sent to editors for review

On track for 2019 update:

Review April 2017

Vote in Jan 2018 meeting – plan longer handbook sub-committee mtg/full

Submit July 31, 2018

EDITING – need at least one consultant, one mfg, one owner for each section

- o Consultants        David Newman, Igor Maevski
- o Manufacturers     Michael Feuser, David Presser
- o Owners             Kevin Chang, suggested to contact Elias Papadopoulos

*Research Sub-Committee Report (Igor Maevski for Ahmed Kashef)*

1690-WS, *Performance of Ventilation and Fixed Firefighting Integrated Systems and Their Impact on Road Tunnel Resilience*: Responsible Committee: TC 5.9 (Enclosed Vehicular Facilities); Co-Sponsors: FHWA, AASHTO; Outside Funding: FHWA - \$300k+; Estimated Duration: 2 years; Estimated Cost to ASHRAE: \$50,000; Status: APPROVAL PENDING.

Finally have an approved RTAR. Igor Maevski, Bill Bergeson/FHWA and Gary English/Seattle Fire Department have met for conference calls every 3 weeks. (Bill Connell/WSP-PB representing NFPA 502, Igor representing ASHRAE.) These 4 are the current committee members. SPECIAL PROJECT to be co-sponsored by ASHRAE, funded by FHWA. Research committee will formally vote tomorrow – but will be approved since there is FHWA, AASHTO and NFPA as well as ASHRAE support.

To start Oct/Nov 2016 duration – 2 years. Out for bid October/November - select RAMAT committee January 2017.

How to selection RAMAT, TRP members from TC 5.9 – discussed today:

Select 4-5 people for committee; final selection after contractor is selected. (could have conflict with contractor or NFPA)

Interested in serving on RAMATcommittee:

1. Nader Shadcheraghi/AECOM,
2. David Newman, Mott MacDonald,
3. Igor Maevski/Jacobs,
4. Duncan Fife/Alden,
5. Yoon Ko/National Research Council of Canada
6. Andrew Louis, WSP/PB

New Memorial Tunnel Fire Testing    2<sup>nd</sup> phase of 1690, new RTAR in development now

- *Testing of water deluge, water mist*

*\$300-\$350k 1<sup>st</sup> stage        Federal looking at \$400k funding*

- *World review also a concern since fixed fire suppression has been used in Asia (50+ yrs), Australia (40+ yrs) and Europe.*
- *ORIGINAL MEMORIAL TUNNEL TEST– was only ventilation, no fixed fire suppression*
- *Some current CFD does not have full scale testing to verify*

- *Economic ramifications – may reduce ventilation requirements overall*
- *Can develop list of projects/concerns to continue to develop Memorial Tunnel testing – jet fans, etc for lots of future RTARs.*
  - *Jet fan in corner, in niche, in center of tunnel, Mo-Jet, Banana Jet, etc*
  - *Test results – then verify modeling results*

Web Site: (David Newman) new TC format – about a year ago. Still working on final setup for TC secure area on web site.

### Liason reports

TC 5.1 (Ashesh Raychaudhuri) No seminars for St. Louis, submitting (2) programs for Las Vegas.

TC 5.6 no report

NFPA 130, 502 (Igor Maevski) have finished review cycles/voted; next meeting in a year for new cycle of NFPA 130/502

PIARC no report

APTA - (Nader Shadcheraghi) no report

Mining (Jane Miller) International MineExpo September 26-28 Las Vegas; every 4 years – covers all aspects of mining

Upcoming conferences BHR sept 2017 Lyon, France

NEW ROSTER effective after July 1:

- New secretary David Newman
- New voting members Troy Goldschmidt, Yuan Li 06/30/2016 – 07/01/2020

Adjournment Igor Maevski adjourned the meeting at 5:00 pm; seminar followed – see below.

Next Meeting scheduled for Las Vegas, NV - Tuesday, January 31, 2017.

Recorded by Jane Miller, TC 5.9 Secretary.

❖ Seminar 5 pm: [Indoor Air Quality in Underground Stations and Tunnels: Development of a New ASHRAE Standard](#)

- Yuan Li presented on Road Tunnels
- David Newman presented on Rail Tunnels