European COoperation in the field of Scientific and Technical research
Transport and Urban Development

COST Action C26:
"Urban Habitat Constructions Under Catastrophic Events"

Subject: Minutes of the MC meeting held in Anacapri on 14-15 May 2010.

Chair: Federico Mazzolani (IT)
Vice Chair: Euripidis Mistakidis (GR)

0. Welcome to the participants

Mazzolani opens the meeting and welcomes the participants to Anacapri. The objective of the meeting is the preparation of the final conference.

1. Adoption of the agenda

The participants approve the Agenda.

2. Approval of the minutes of the MC meeting in Nicosia

The CG members approve the minutes.

3. Matters arising

None

4. Report from the Scientific Officer

The scientific officer was not present in the meeting

5. Progress report of Working Group 1 (F. Wald)

The following list presents the contributions of the working group in the final conference and the current status.

nu	list nu	Authors - title	RECEIVED/ STATUS
1.	162	Pantousa, Mistakidis, Thermo-mechanical analysis of composite slabs under fire conditions.	YES
2.	163	Hajpál, Török, Alvarez De Buergo, Gómez-Heras, Varas-Muriel, Fort, Csicsely, Changes in properties of earthen materials under fire.	NO
3.	164	Hajpál, The effect of different plaster types on critical limit for fire resistance used by horizontal load-bearing structures.	YES
4.	165	Kwasniewski, Łącki, Numerical modeling of steel columns in fire.	YES

5.	6	Jána, Kyzlík, Wald, Composite beams with corrugated web.	YES
6.	23	Villa Real, Lopes, Evaluation of the steel structure fire resistance of a shopping centre using structural fire engineering.	YES
7.	41	Cvetkovska, Lazarov, Nonlinear stress strain analysis of composite columns exposed to fire.	ONGOING
8.	44	Carvalho Lopes, Santiago, Guilherme Santos Da Silva, Simões Da Silva, Behaviour of structural assembly between steel beam and cft column at high temperatures.	YES
9.	57	Carvalho Lopes, Santiago, Santos Da Silva, Da Silva, Behaviour of structural assembly between steel beam and cft column at high temperatures. [57]	NO
10.	117	Nigro, Ferraro, Cefarelli, member, Substructure and global structural fire analyses of composite steel-concrete frames.	NO
11.	118	Nigro, Ferraro, Cefarelli, Pintea, Dubina, Application of fse approach to the structural fire safety assessment of steel-concrete composite structures.	ONGOING
12.	128	Zaharia, Pintea, Dubina; fire after earthquake.	YES
13.	129	Audebert, Bouchaïr, Dhima, Taazount, Audebert, Thermal and thermo-mechanical behaviour of timber connections in fire.	NO
14.	145	Faggiano, De Gregorio, Mazzolani, Assessment of the resistance of steel structures subjected to fire following earthquake through a performance-based approach.	ONGOING
15.	42	M. Cvetkovska and L. Lazarov, Examination, assessment and repair of fire damaged RC structure of "refinery- Okta" in Skopje.	ONGOING
16.	119	E. Nigro, G. Cefarelli, A. Bilotta, G. Manfredi, E. Cosenza. Bar anchorage influence on fire resistance of concrete members reinforced with FRP bars	NO
17.	67	R. Absopoel. Fire safety of very slender plate girders under fire conditions	NO
18.	18	M. Heinisuo, M. Laasonen, J. Outinen. Fire design in Europe and a case study	YES

6. Progress report of Working Group 2 (D. Dubina and A. Mandara)

The following list presents the contributions of the working group in the final conference and the current status.

nu	list nu	Authors - title	RECEIVED/ STATUS
1.	174	Gustavo Ayala, Mabel Mendoza, Roberta Apostolska, Development and validation of a procedure of seismic performance evaluation of structures.	NO
2.	175	Krstevska L., Tashkov j., Gramatikov K., Mazzolani F., De Matteis G., Experimental methodology for verification of effectiveness of innovative seismic strengthening techniques of historical monuments.	YES
3.	176	Krstevska L., Tashkov Lj., Garevski M., Shendova V., Application of base isolation techniques for seismic protection of structures - study cases	YES
4.	177	Gaetano Della Corte, Seismic collapse assessment of steel frames: analysis methodologies and modeling issues.	CANCELLED
5.	178	Gaetano Della Corte, Federico M. Mazzolani, Failure modes of brbs in case of catastrophic earthquakes: experimental analysis and design guidelines.	NO
6.	179	Georgiadi-Stefanidi K., Mistakidis, Numerical investigation of old r/c frames strengthened against earthquakes by high dissipation steel link elements.	YES
7.	135	Dan Dubina, Sorin Bordea, Numerical and experimental evaluation of q factors for RC moment resisting frames strengthened of steel buckling restrained brace.	YES
8.	138	Adrian Dogariu, Sorin Bordea, Dan Dubina, behavior model for post-tensioned bolted RC frame – steel brace connection.	YES
9.	136	D. Dubina, A. Stratan ,F, Dinu, D. Grecea, N. Muntean, C. Vulcu, Application of high strength steel to seismic resistant multi-storey buildings.	YES

10.	139	Calin Neagu, Florea Dinu, Dan Dubina, experimental evaluation of q factor for dual steel frames of dissipative shear walls.	YES
11.	137	Aurel Stratan, Florea Dinu, Dan Dubina, Evaluation of re-centring capability of dual frames with removable dissipative members: case study for eccentrically braced frames with bolted links.	YES
12.	48	Giuliano F. Panza, Antonella Peresan, Fabio Romanelli, Franco Vaccari, scenarios based earthquake hazard assessment.	YES
13.	21	Karalis A., Salonikios T., Stylianidis K, Experimental investigation of old r/c frames strengthened against earthquakes by high dissipation steel link elements.	YES
14.	180	Matej Fischinger, Miha Kramar & Tatjana Isaković, Seismic behaviour of dowel beam-column connections in precast industrial buildings.	YES
15.	181	F. Portioli, M. Annecchiarico, O. Mammana, R. Landolfo, Seismic performance of RC building structures with masonry infill panels subject to lateral loadings.	NO
16.	75	F. Portioli, O. Mammana, R. Landolfo, F. M. Mazzolani, Seismic assessment of historical mosques under exceptional earthquakes: a case study in skopje.	NO
17.	86	Formisano, G. Florio, R. Landolfo & F. M. Mazzolani, Numerical modeling and analysis of a masonry building aggregate in poggio picenze (aq).	NO
18.	183	Roberta Apostolska, Golubka Necevska-Cvetanovska, Julijana Cvetanovska, Seismic performance of rc building structures with masonry infill.	YES
19.	184	A. Formisano, P. Di Feo G., Florio M. Grippa, L'Aquila earthquake: survey in the historical centre of castelvecchio subequo (aq).	NO
20.	79	Raffaele Landolfo, Mario D'Aniello, Susanna Tortorelli, Later al capacity of steel structures designed according to ec8 under catastrophic seismic events.	NO
21.	78	F. Portioli, M. Annecchiarico, O. Mammana, R. Landolfo, Micro and macro-finite element modelling of brick masonry panels subject to lateral loadings.	NO
22.	74	Raffaele Landolfo, Manuela Brescia, Mario D'Aniello, Susanna Tortorelli, Experimental vs numerical analyses of rotation capacity of steel beams.	NO
23.	185	A. Formisano, P. Di Feo & F. M. Mazzolani, Seismic behaviour of rc buildings designed according to new and old italian codes.	CANCELED
24.	186	J.- U. Sickert, A. Mandara , M. Kaliske & W. Graf, Robust design of seismic up-grading for R.C. structures with innovative bracing systems.	NO
25.	187	Mandara A., Ramundo F., Spina G., Experimental characterisation of mr device	NO
26.	188	Mandara A., Ramundo F., Spina G., Application of smart strategies against severe dynamic actions.	NO
27.	170	G. De Matteis et al., Seismic protection of high-rise buildings aluminium shear panels: a design application.	NO
28.	171	G. De Matteis et al., Seismic upgrading of existing R.C. frame buildings by local and global metal-based interventions.	NO

7. Progress report of Working Group 3 (M. Byfield and G. De Matteis)

The following list presents the contributions of the working group in the final conference and the current status.

nu	list nu	Authors - title	RECEIVED/ STATUS
1.	17	F. Pascualena, A comperative numerical simulation study on blast response of reinforced conrete structures subjected to fire	YES
2.	43	T. Linse, Modeling of masonry under blast and earthquake loadings with detailed micro-models	YES

3.	60	L. Roelle, Alternate load path method by joint ductility	YES
4.	90	Formisano, Mazzolani, On the catenary effect of steel buildings.	NO
5.	133	Dinu, Dubina, DeMatteis, Direct design approach for seismic resistant steel frame buildings under extreme loading	NO
6.	148	Vrouwenvelder, Gresnigt, Impact loading of a buried steel pipeline by a truck falling from a viaduct	NO
7.	152	Sendova, Jekic, Tashkov, Effectiveness of seismic strengthening of monuments for their blast resistance.	YES
8.	155-I	Lööf, Teich, van Doormal, Windows and glazing systems exposed to explosion loads: lethality	YES
9.	155-II	Lööf, Teich, Gebbeken, Van Doormaal, Windows and glazing systems exposed to explosion loads: protection	YES
10.	156	De la Quintana, C. Perez, M. Minguez, Identification of geometrical design criteria for reducing the vulnerability of buildings to blast effects in urban configurations.	YES
11.	157	Kwasniewski, A feasibility study on modeling blast loading using ALE formulation.	YES
12.	158	Tyas, Warron, Experimental studies of clearing effects in near field blast loading of finite targets.	NO
13.	159	De Matteis, Mechanical behavior of pure aluminium under static and dynamic loading.	NO
14.	161	Tyas, Experimental studies of semirigid steel connections subjected to impulsive loading.	NO
15.	203	Paramasivan, Byfield, Limitations of the tying force method for providing robustness in steel framed buildings	YES
16.	205	P. Smith, Blast loading assessment and mitigation in the context of the protection of constructions in an urban environment	YES
17.	149	Kilic, Smith, Simulation of pressures behind rigid blast walls	NO
18.	150	Kilic, Smith, Behaviour of deformable blast walls for protective structural design.	NO
19.	154	Seiler, Tests and simplified numerical simulation of vehicle impact on guardrails with respect to normative regulations.	NO

8. Progress report of Working Group 4 (M. Indirli)

The following list presents the contributions of the working group in the final conference and the current status.

nu	list nu	Authors - title	RECEIVED/ STATUS
1.	102	T. Rossetto, C. Coelho, J.P. Carlier, W. Allsop, T.O. Lloyd, Tsunami actions on constructions	YES
2.	40	T. Stathopoulos, C.C. Baniotopoulos, I. Zisis, Structural design of urban habitat construction against catastrophic wind actions	YES
3.	104	A. Talon, J.P. Muzeau, J.P. Carlier, Avalanche actions on constructions	YES
4.	48	F. Romanelli, A. Peresan, F. Vaccari, G.F. Panza, Scenarios based earthquake hazard assessment	YES
5.	33	C. Nunziata, F. Vaccari , G. F. Panza, The mw 6.3, 2009 l'Aquila earthquake: linear and non linear site effects	YES
6.	50	V. Sesov, J. Cvetanovska, Microzonation of landslide hazard – application of a	YES

		multi-hazard gis methodology	
7.	100	C. Nunziata, G. De Nisco, M.R. Costanzo, F. Vaccari , G. F. Panza, Measurements of shear wave velocities for seismic and volcanic hazard assessment in urban areas	YES
8.	91	R.P. Borg, L. Kouris, M. Indirli, T. Rossetto, damage assessment methodologies: l'Aquila earthquake field investigations of cost action c26 and eefit teams	ONGOING
9.	106	D. Vamvatsikos, L.A. Kouris, G. Panagopoulos, A.J.. Kappos, T. Rossetto, T.O. Lloyd,T. Stathopoulos, Structural vulnerability assessment under natural hazards: a review	YES
10.	86	G. Florio, R. Landolfo, A. Formisano, F. M. Mazzolani, A quick methodology for the seismic vulnerability assessment of masonry aggregates	ONGOING
11.	87	A. Formisano, F. M. Mazzolani, G. Florio, R. Landolfo, G. De Masi, G. Delli Priscoli, Vulnerability analysis of historic centers: a gis application	ONGOING
12.	88	A. Formisano, G. Florio, R. Landolfo, F. M. Mazzolani, Seismic and volcanic vulnerability analysis of the palazzo di città in torre del greco	ONGOING
13.	89	A. Formisano, M. Indirli, F. M. Mazzolani, Seismic vulnerability analysis of a masonry school in the vesuvius area	ONGOING
14.	207	L. Kouris, R. P. Borg, M. Indirli, the April 6th, 2009 L'Aquila earthquake: observations and remarks on seismic damage mechanisms	ONGOING
15.	206	M. Indirli, F. Mazzolani, A. Tralli, First considerations on the February 27, 2010 Chilean earthquake	YES
16.	101	T. Rossetto, R.P. Borg, A. Kappos, L. Kouris, M. Indirli, T.O. Lloyd, V. Sword-Daniels, Comparison of damage assessment methodologies for different hazards	ONGOING
17.	98	M. Indirli, F. Romanelli, C. Puglisi, A. Screpanti, Multi-hazard maps for the valparaiso area (Chile)	YES
18.	92	C. Coelho, J.P. Carlier, Extreme flood effects as a combination of river and sea action	YES
19.	105	A. Talon, J.P. Muzeau, J.P. Carlier, Avalanche risk assessment in populated areas	YES
20.	96	M.H. Faber, New light on global catastrophic risk management	ONGOING
21.	103	V. Sword-Daniels, T. Rossetto, J. Twigg, D. Johnston, T. Wilson, J. Cole, S. Loughlin, S. Sargeant, Review of the impacts of volcanic ash fall on urban environments	YES
22.	73	S. Tinti, G. Pagnoni, F. Zaniboni, A. Armigliato, Tsunami hazard and risk evaluation in the gulf of naples: state of the art and perspectives	ONGOING
23.	118	E. Nigro, Landslides as a secondary event of earthquakes and eruptions	ONGOING
24.	107	G. Zuccaro, F. Cacace, B. Faggiano, E. Nigro, Volcanic actions and their consequences on structures	ONGOING
25.	121	G. Zuccaro, F. Cacace, Seismic impact scenarios in the volcanic areas in campania	OK
26.	122	G. Zuccaro, M. Leone, Building technologies for the mitigation of volcanic risk	OK
27.	123	G. Zuccaro, F. Cacace, S. Nardone, Human and structural damage consequent ot a sub-plinian like eruption at mount Vesuvius	OK
28.	124	G. Zuccaro, F. Cacace, M. Rauci, Vulnerability functions for building structures under pyroclastic flow actions	OK
29.	99	F. Mazzolani, M. Indirli, The Vesuvius case study in the framework of the EU-COST action C26 activity	ONGOING
30.	144	D. De Gregorio, B. Faggiano, A. Formisano & F.M. Mazzolani AIR FALL DEPOSITS DUE TO EXPLOSIVE ERUPTIONS: ACTION MODEL AND ROBUSTNESS ASSESSMENT OF THE VESUVIAN ROOFS	ONGOING
31.	93	R. Borg, F. Cacace, C. Coelho, G. Conti, D. De Gregorio, G. De Luca, T. De Lucia, B. Faggiano, G. Fiorentino, G. Florio, A. Formisano, S. Gerasimidis, M. Indirli, F.M. Mazzolani, C. Pennone, G. Terracciano, G. Zuccaro, Survey activity for the seismic and volcanic vulnerability assessment in the vesuvian area: the historical centre and a residential area of Torre del Greco	ONGOING
32.	202	F.M. Mazzolani, B. Faggiano, A. Formisano, D. De Gregorio, M. Indirli, G. Zuccaro	ONGOING

		Survey activity for the volcanic vulnerability assessment in the vesuvian area: the 'quick' methodology and the survey form	
33.	94	D. De Gregorio, R.P. Borg, F. Cacace, C. Coelho, G. Conti, G. De Luca, T. De Lucia, P. Di Feo, B. Faggiano, G. Fiorentino, G. Florio, A. Formisano, S. Gerasimidis, G. Guarino, M. Indirli, S. Lettieri, F. Mazzolani, F. Pellegrino, S. Pellegrino, C. Pennone, G. Terracciano, G. Zuccaro, Survey activity for the seismic and volcanic vulnerability assessment in the vesuvian area: the school buldings of Torre del Greco	ONGOING
34.	95	D. De Gregorio, L. Alterio, R.P. Borg, F. Cacace, N. Chieffo, C. Coelho, P. Di Feo, A. Esposito, B. Faggiano, G. Florio, A. Formisano, L. Kouris, M. Indirli, F. Mazzolani, G. Palladino, I. Riccio, V. Sword-Daniels, G. Zuccaro Survey activity for the seismic and volcanic vulnerability assessment in the vesuvian area: the golden mile villas	ONGOING
35.	97	H. Narasimhan, R.P. Borg, F. Cacace, D. Di Gregorio, M. Faber, B. Faggiano, A. Formisano, M. Indirli, F. Mazzolani, J.P. Muzeau, V. Sword-Daniels, A. Talon, G. Zuccaro, Guidelines for volcanic risk assessment and suggestions for mitigation actions	ONGOING

9. Progress report on Lexicon group

Muzeau justified his absence and informed Mazzolani that the work on the lexicon is almost completed, also including the contribution of Turkey.

10. Organization of the final conference

The following decisions have been taken:
1. It was decided to organize a technical visit to Herculaneum on Saturday afternoon (18/9), in the framework of a special session devoted to Vesuvius. The transportation cost will be evaluated and will be included in the registration fees.

2. It was decided to ask the COST members for a contribution of 150 Euros, in order to cover the coffee breaks and the lunches that will be offered during the conference and also the official dinner (banquet).

3. An optional one-day tour will be organized on Sunday (19/9) to Pompeii and Vesuvius.

4. Oral presentations
It was decided to select a number of papers of the non-COST participants for oral presentations. The work done within the framework of COST-C26 will be presented through posters and through general reports that correspond to the sub-chapters of the volume summarizing the activity of the action. The oral presentations and the corresponding presenters are proposed as follows:

Topic I: Characterization of catastrophic actions on constructions

- I.1 Fire analyses (**Martin Gillie**)
- I.2 Characterization and modelling of seismic action (**Dan Lungu** [1] & Aurel Stratan [2])
- I.3 Modelling of impact and explosion (**Andy Tyas**)
- I.4 Actions due to volcanic eruptions (**Jean-Pierre Muzeau**)
- I.5 Actions due to other natural catastrophes (**Ted Stathopoulos**)

I.6 Tsunami hazard and risk evaluation in the gulf of Naples: State of the art and perspectives (**Stefano Tinti**) [it may be moved on Saturday before the technical visit]

Topic II: Analysis of behaviour of constructions under catastrophic events

II.1 Analyses of structures under fire (**Leslaw Kwasniewski**)
II.2 Evaluation of structural response under exceptional seismic actions (**Matej Fischinger [1]**) Gaetano Della Corte [2])
II.3 Analysis of structures under impact and explosion (**Gianfranco De Matteis**)
II.4 Consequences of volcanic eruptions on constructions (**Ruben Borg**)
II.5 Consequences of other natural disasters on constructions (**Carlos Coelho**)

Topic III: Evaluation of vulnerability of constructions

III.1 Vulnerability of existing buildings under fire (**Emido Nigro**)
III.2 Performance based evaluation and seismic risk analysis (Radu Vacareanu [1], Andreas Kappos [2]Euripides Mistakidis[3])
III.3 Vulnerability and damageability of structures under impact and explosion (**Florea Dinu**)
III.4 Performance assessment under multiple hazards (**Tiziana Rossetto**)

Topic IV: Protecting, strengthening and repairing

IV.1 Fire damaged structures (**Yong Wang[1]** Frantisek Wald [2])
IV.2 Innovative seismic protection technologies and case studies (**Alberto Mandara**)
IV.3 Protection of structures against impact and explosion (**Peter Smith**)
IV.4 Mitigation options for natural hazards, with a special focus on volcanic eruptions (**Beatrice Faggiano**)

Topic V: Strategy and guidelines for damage prevention

V.1 Fire design in Europe (**Markku Heinisuo**)
V.2 Demands and recommendations for damage prevention under exceptional earthquakes (**Andre Plumier** [1], Raffaele Landolfo[2])
V.3 Impact and Explosion (**Mike Byfield**)
V.4 Multi-Hazard Risk assessment methodology (**Narasimhan Harikrishna**)
V.5. Guidelines for volcanic risk assessment and suggestions for mitigation actions (**Maurizio Indirli**)

The WG leaders are kindly requested to contact the proposed reporters for getting their approval.

New keynote lectures

Two keynote lectures were agreed with the following titles:
Johanne Leissner (DG12) Climate and heritage, who will be contacted by Indirli.
Expert on the eruption of Iceland's volcano, who will be contacted by Indirli.

Categorization of the papers

The CG categorized the received contributions for the final conference according to the main topics of the conference, as listed below. The numbers of papers correspond to the enumeration of the list provided in ANNEX B.

TOPIC 1. Characterization of catastrophic actions on constructions: ***17 total contributions***

COST contributions: 33, 45,48,50,73,100,102,104,116,115-I, 115-II, 158
NON-COST contributions: 1,13,62,157,193

TOPIC 2. Analysis of behaviour of constructions under catastrophic events: *56 total contributions*
COST contributions:
6,18,23,40,41,44,74,75,77,78,103,109,117,118,128,133,136,144,145,159,162,164,175,178, 182,183,184, 198,201,206
NON-COST contributions:
2,5,14,17,19,22,25,31,32,34,36,43,58,60,61,64,71,82,113,165,166,167,168,169,195,199

TOPIC 3. Evaluation of vulnerability of constructions : *35 total contributions*
COST contributions:
86,87,88,89,90,91,92,93,94,95,97,99,106,107,121,123,124,132,146,181,186,202,203
NON-COST contributions:
12,15,24,27,28,29,35,37,51,52,112,156,160

TOPIC 4. Protecting, strengthening and repairing: *29 total contributions*
COST contributions:
42,76,119,122,135,137,138,149,150,152,170,171,176,179,180,187,188,207
NON-COST contributions:
7,8,9,10,21,49,56,63,81,85,108,120,140,153

TOPIC 5. Strategy and guidelines for damage prevention: *9 total contributions*
COST contributions: 79,96,98,101,105,139
NON-COST contributions: 39,65,80

TOTAL contributions:	150
COST contributions:	89
NON-COST contributions	61

Next meetings
The only scheduled event of the action is the final conference:

Final Conference	Naples, Italy, 16-18 September 2010

11. STSM Status – Applications

12. Publications, dissemination and outreach activities

None

13. Request for new members

None

14. Promotion of gender balance and of Early Stage Researchers

None

15. Non-COST country participations

None

16. Web news

None

17. AOB

The rapporteur of the action, Prof. Kiril Gramatikov, informed the CG about the procedures that are followed by the COST-Office for the final evaluation of the actions. He stressed the point that a new document has been prepared by the COST-Office concerning the assessment, monitoring, evaluation and dissemination of results of COST actions, which will enter into force in September 2010 (COST4115/10). Therefore, there is a possibility that COST-C26 will be evaluated using the procedures of the new regulations. In this respect, he will inform the chairman of the action as soon as the final decision will be taken by the corresponding Domain Committee (TUD).

ANNEX A
LIST OF PARTICIPANTS

1. **Federico MAZZOLANI (IT)**
2. **Euripidis MISTAKIDIS (GR)**
3. **Frantisek WALD (CZ)**
4. **Alberto MANDARA (IT)**
5. **Gianfranco DE MATTEIS (IT)**
6. **Maurizio INDIRLI (IT)**
7. **Dan DUBINA (RO)**
8. **Mike BYFIELD (UK)**
9. **Kiril GRAMATIKOV (MK-Rapporteur)**
10. **Beatrice FAGGIANO (IT - invited expert)**

ANNEX B
LIST OF RECEIVED PAPERS
(this list will be delivered by Beatrice Faggiano in the next days)